

CALIFORNIA COOPERATIVE OCEANIC FISHERIES INVESTIGATIONS

ATLAS No.29

CALIFORNIA COOPERATIVE OCEANIC FISHERIES INVESTIGATIONS

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Cooperating Agencies: CALIFORNIA DEPARTMENT OF FISH AND GAME NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, NATIONAL MARINE FISHERIES SERVICE UNIVERSITY OF CALIFORNIA, SCRIPPS INSTITUTION OF OCEANOGRAPHY

AUGUST 1981

THE CALCOFI ATLAS SERIES

This is the twenty-ninth in a series of atlases containing data on the hydrography and plankton from the region of the California Current. The field work was carried out by the California Cooperative Oceanic Fisheries Investigations,¹ a program sponsored by the State of California. The cooperating agencies in the program are:

California Department of Fish and Game

National Oceanic and Atmospheric Administration, National Marine Fisheries Service² University of California, Scripps Institution of Oceanography

University of Camorina, Scripps Institution of Occanography

CalCOFI atlases³ are issued as individual units as they become available. They provide processed physical, chemical and biological measurements of the California Current region. Each number may contain one or more contributions. A general description of the CalCOFI program with its objectives appears in the preface of Atlas No. 2.

This atlas was prepared by the Marine Life Research Group, Scripps Institution of Oceanography.

CalCOFI Atlas Editorial Staff:

Abraham Fleminger, Editor Fred J. Crowe, cartographer

CalCOFI atlases in this series, through August 1981, are:

- No. 1. Anonymous, 1963, CalCOFI atlas of 10-meter temperatures and salinities 1949 through 1959.
- No. 2. Fleminger, A., 1964. Distributional atlas of calanoid copepods in the California Current region, Part I.
- No. 3. Alvarino, A., 1965. Distributional atlas of Chaetognatha in the California Current region.
- No. 4. Wyllie, J.G., 1966. Geostrophic flow of the California Current at the surface and at 200 meters.
- No. 5. Brinton, E., 1967. Distributional atlas of Euphausiacea (Crustacea) in the California Current region, Part I.
- No. 6. McGowan, J.A., 1967. Distributional atlas of pelagic molluses in the California Current region.
- No. 7. Fleminger, A., 1967. Distributional atlas of calanoid copepods in the California Current region, Part II.
- No. 8. Berner, L.D., 1967. Distributional atlas of Thaliacea in the California Current region.
- No. 9. Kramer, D., and E. H. Ahlstrom, 1968. Distributional atlas of fish larvae in the California Current region: northern anchovy, *Engraulis mordax* (Girard). 1951 through 1965.
- No. 10. Isaacs, J.D., A. Fleminger and J. K. Miller, 1969. Distributional atlas of zooplankton biomass in the California Current region: Spring and Fall 1955-1959.
- No. 11. Ahlstrom, E. H., 1969. Distributional atlas of fish larvae in the California Current region: jack mackerel, *Trachurus symmetricus*, and Pacific hake, *Merluccius productus*, 1951 through 1966.
- No. 12. Kramer, D., 1970. Distributional atlas of fish eggs and larvae in the California Current region: Pacific sardine, Sardinops caerulea (Girard). 1951 through 1966.
- No. 13. Smith, P. E., 1971. Distributional atlas of zooplankton volume in the California Current region, 1951 through 1966.
- No. 14. Isaacs, J. D., A. Fleminger and J. K. Miller, 1971. Distributional atlas of zooplankton biomass in the California Current region: Winter 1955-1959.
- No. 15. Wyllie, J. G., and R. J. Lynn, 1971. Distribution of temperature and salinity at 10 meters, 1960-1969 and mean temperature, salinity and oxygen at 150 meters, 1950-1968 in the California Current.
- No. 16. Crowe, F. J. and R. A. Schwartzlose, 1972. Release and recovery records of drift bottles in the California Current region, 1955 through 1971.
- No. 17. Ahlstrom, E. H., 1972. Distributional atlas of fish larvae in the California Current region: six common mesopelagic fishes—Vinciguerria lucetia, Triphoturus mexicanus. Stenobrachius leucopsarus, Leuroglossus stilbius, Bathylagus wesethi and Bathylagus ochotensis. 1955 through 1960.
- No. 18. Brinton, E., 1973. Distributional atlas of Euphausiacea (Crustacea) in the California Current region. Part II.

- No. 19. Bowman, T. E. and M. W. Johnson, 1973. Distributional atlas of calanoid copepods in the California Current region, 1949 and 1950.
- No. 20. Thomas, W. H. and D. L. R. Seibert, 1974. Distribution of nitrate, nitrite, phosphate and silicate in the California Current region, 1969.
 Owen, R. W., Jr., 1974. Distribution of primary production, plant pigments and Secchi depth in the California Current region, 1969.
 Smith, P. E., 1974. Distribution of zooplankton volumes in the California Current region, 1969.
- No. 21. Fleminger, A., J. D. Isaacs and J. G. Wyllie, 1974. Zooplankton biomass measurements from CalCOFI cruises of July 1955 to 1959 and remarks on comparison with results from October, January, and April cruises of 1955 to 1959.
- No. 22. Namias, J., 1975. Northern hemisphere seasonal sea level pressure and anomaly charts, 1947-1974.
- No. 23. Ahlstrom, E. H. and H. G. Moser, 1975. Distributional atlas of fish larvae in the California Current region: flatfishes, 1955 through 1960.
- No. 24. Brinton, E., and J. G. Wyllie, 1976. Distributional atlas of euphausiid growth stages off southern California, 1953 through 1956.
- No. 25. Eber, L. E., 1977. Contoured depth-time charts (0 to 200m, 1950 to 1966) of temperature, salinity, oxygen and sigma-t at 23 CalCOFI stations in the California Current.
- No. 26. Ahlstrom, E. H., H. Geoffrey Moser, and Elaine M. Sandknop, 1978. Distributional atlas of fish larvae in the California Current region: rockfishes, *Sebastes* spp., 1950 through 1975.
- No. 27. Namias, J., 1979. Northern hemisphere seasonal 700 mb height and anomaly charts, 1947-1978, and associated North Pacific sea surface temperature anomalies.
- No. 28. Hewitt, R., 1980. Distributional atlas of fish larvae in the California Current region: northern anchovy, *Engraulis mordax* (Girard). 1966 through 1979.
- No. 29. Namias, J., 1981. Teleconnections of 700 mb height anomalies for the northern hemisphere.

'Usually abbreviated CalCOFI, sometimes CALCOFI or CCOFI.

²Formerly called U.S. Fish and Wildlife Service, Bureau of Commercial Fisheries. ³For citation this issue in the series should be referred to as CalCOFI Atlas No. 29.

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TELECONNECTIONS OF 700mb HEIGHT ANOMALIES FOR THE NORTHERN HEMISPHERE

Jerome Namias

CALCOFI ATLAS NO. 29

A. Fleminger, Editor Marine Life Research Program Scripps Institution of Oceanography La Jolla, Californa

August, 1981

TELECONNECTIONS OF 700 mb HEIGHT ANOMALIES FOR THE NORTHERN HEMISPHERE

Jerome Namias¹

Text ntroductionvii Charts
20°N
25°N 26-49
30°N 50-73
35°N
40°N
45°N 122-145
50°N
55°N 170-193
60°N
65°N 218-241
70°N 242-253
75°N 254-259
80°N

Introduction

The concept of teleconnections or long distance interactions among phenomena has been explored in meteorology at least since the turn of the century. Early research involved selecting cross-correlating sea level pressures at several stations believed to be good indices of the strength of certain well-known large-scale features of the atmosphere's general circulation (the "centers of action"). These features include the Aleutian Low, the North Pacific High, the Icelandic Low and the North Atlantic High. With the development of circumpolar charts and high-speed computers, teleconnections could be established using areal rather than point averages, not only to characterize interactions among the "centers of action," but also to find relationships between the strength of the Westerlies and other branches of the general circulation, for example, the sub-tropical easterlies (Northern Trades). With the advent of more sophisticated computers and graphic displays, we initiated a greatly expanded program to determine hemisphere-wide teleconnections for many areas and for each season. Since the 700 mb surface is most frequently used in long range prediction, practice and research, this level was chosen as the one to employ. It should be emphasized that throughout the history of meteorological research and operations, teleconnections have never been an "ad hoc" effort, but one adapted to emerging problems.

The charts in this volume are based on monthly values for the years 1947-72. They are arranged by season and give the cross-correlations between the 700 mb height anomaly at each point in a lattice of 5° latitude and 10° longitude with the anomaly at all other such points over much of the Northern Hemisphere (468 points). The selected point (where the correlation is by definition 1.00) is denoted by a solid circle. Isolines are contoured at intervals of 0.20 (decimals omitted on charts), with areas greater than +0.20 being shaded by stippling and areas of negative values less than -0.20being shaded by a random "v" pattern. Zero isolines are indicated by heavy lines.

From these charts one may quickly see the interdependence of certain large scale features, for example the North Pacific and Bermuda winter anticyclones (on page 82), the Icelandic Low and the North Atlantic High to its south (on page 196).

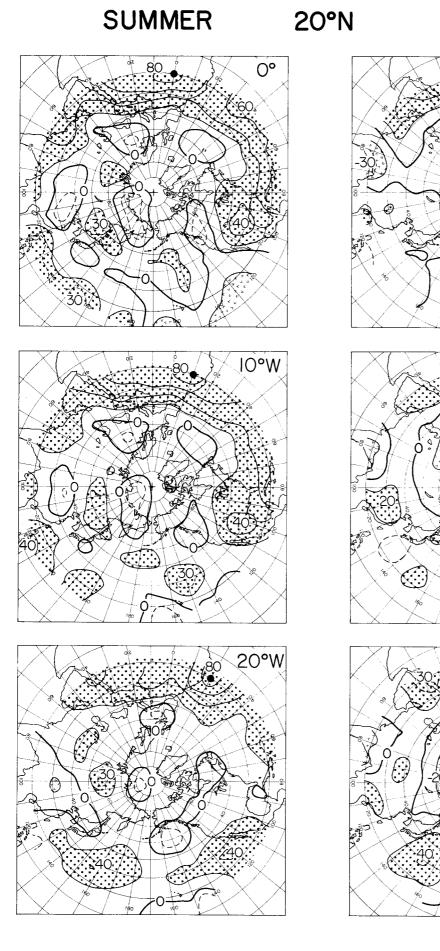
Obviously, these charts are very useful in long range forecasting as well as in research relating to climatic fluctuations on all time scales. This research can assist in studies by geochemists, fisheries experts, biologists as well as by oceanographers, meteorologists and climatologists.

This project to reproduce teleconnections was largely funded by the National Science Foundation under contract number NSF OCE79-19237, with much appreciated assistance from CalCOFI for publishing it.

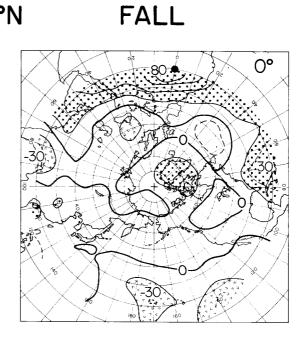
This volume was the result of the combined effort of several individuals of the Climate Research Group at the Scripps Institution of Oceanography. First and foremost, Robert M. Born designed the computational and plotting patterns and spent a great deal of time and effort to see that this phase of the work was completed; Mrs. Madge Sullivan and Mrs. Marguerette Schultz compiled data, assisted in illustration, and provided quality control; Fred Crowe and his illustration facility prepared the final charts.

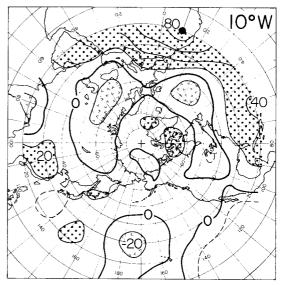
^{&#}x27;Scripps Institution of Oceanography, University of California, San Diego, La Jolla, California.

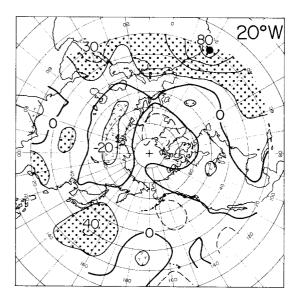
20°N
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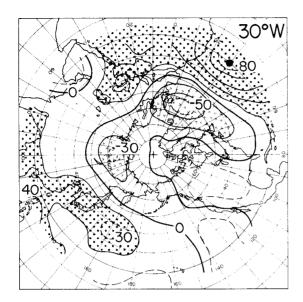


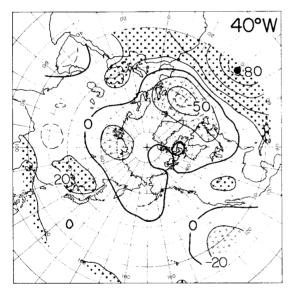


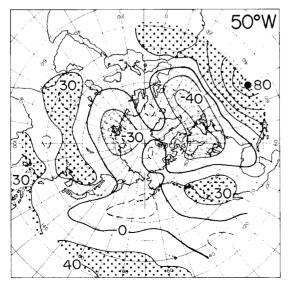
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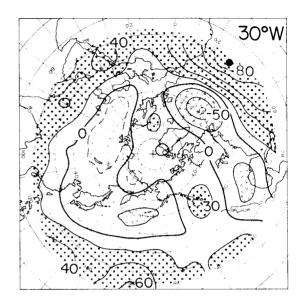
WINTER

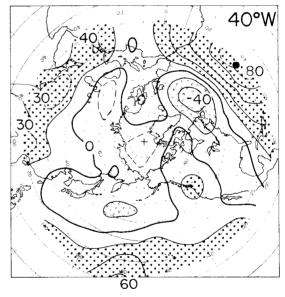


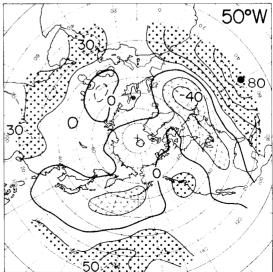


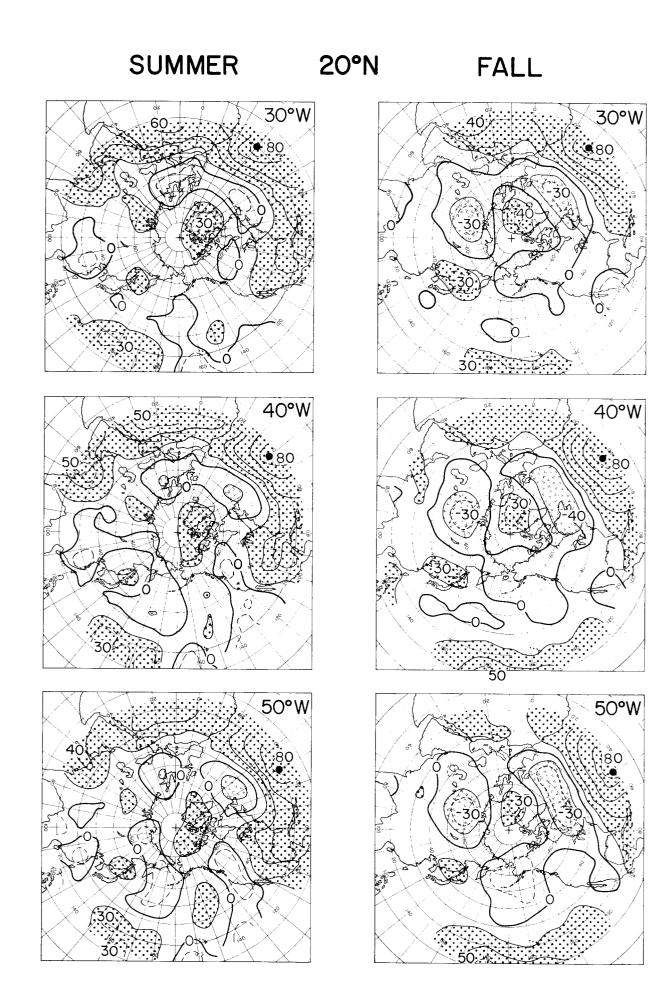






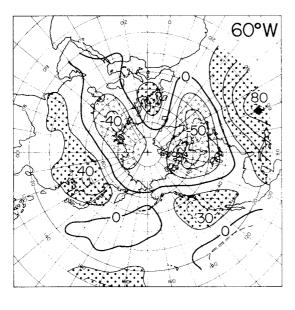


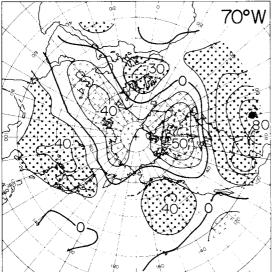


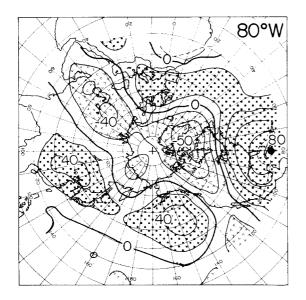


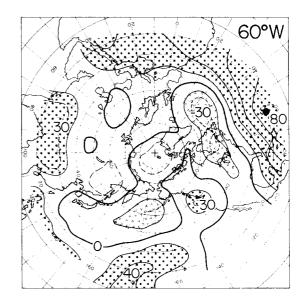
WINTER 20°N

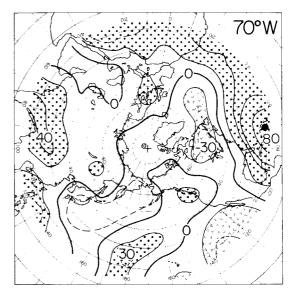
SPRING

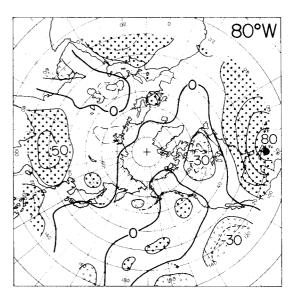


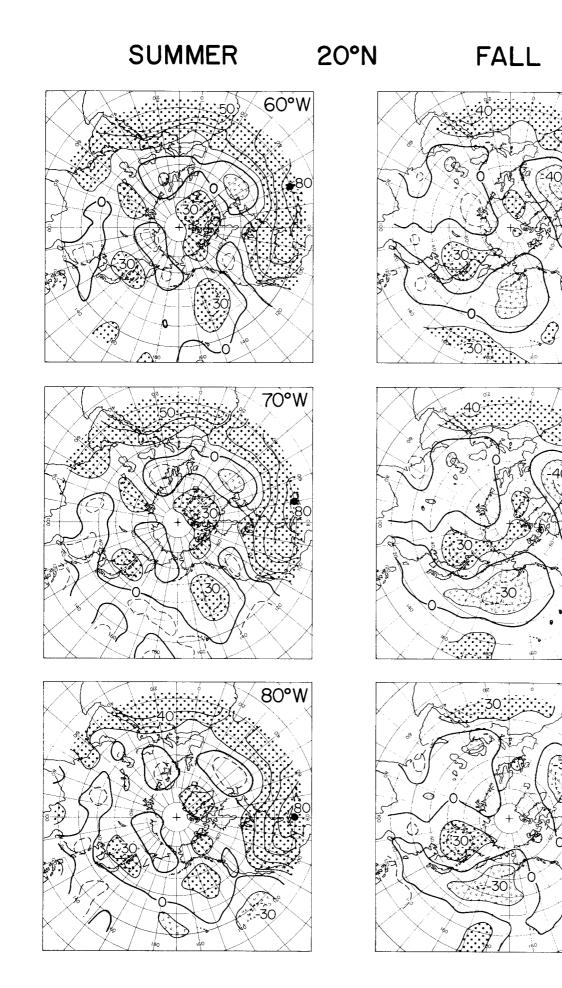












60°W

70°W

80°W

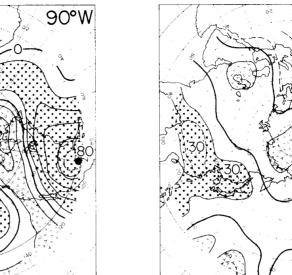
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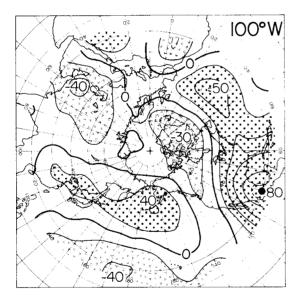
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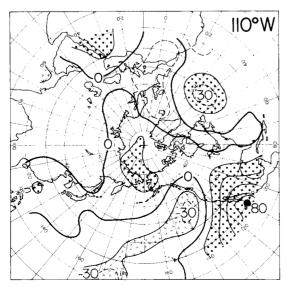
20°N

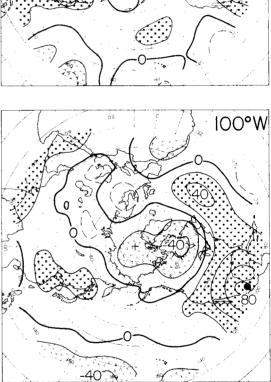


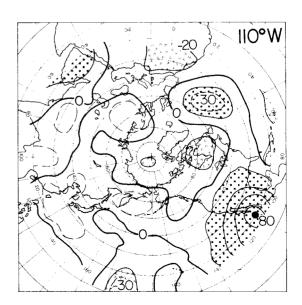
90°W

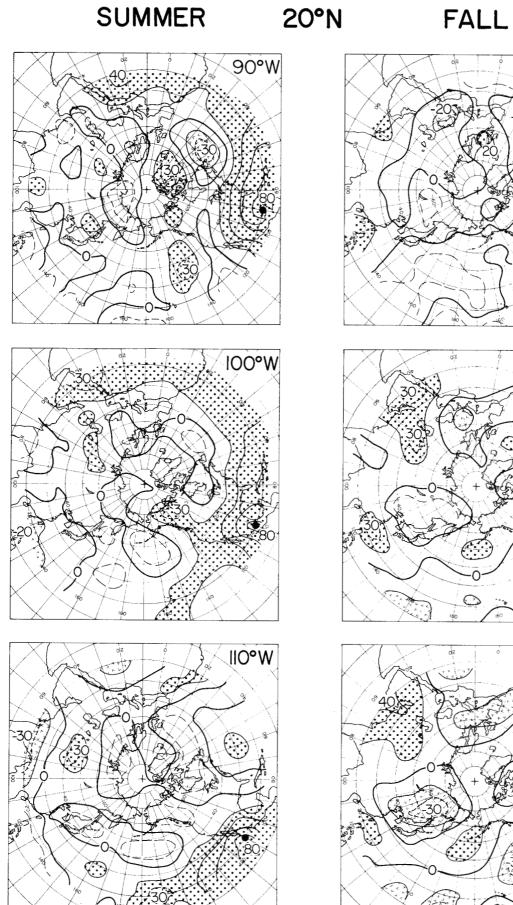


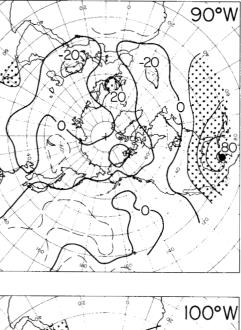


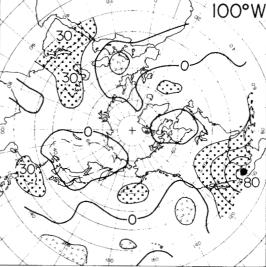


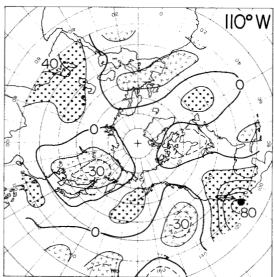






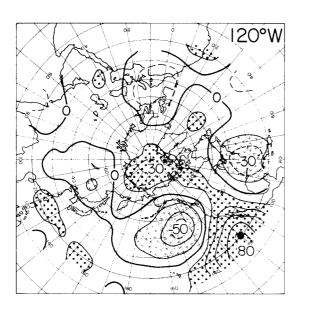


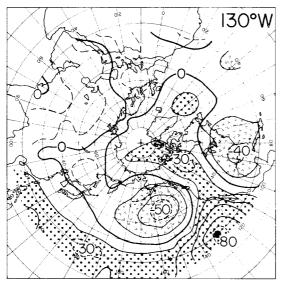


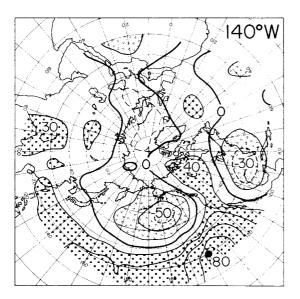


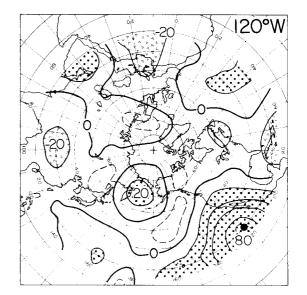
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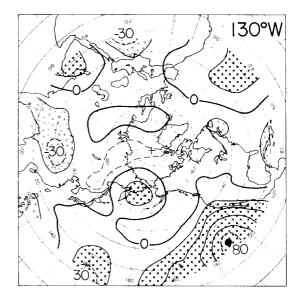


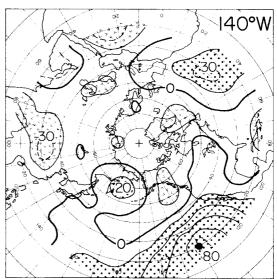


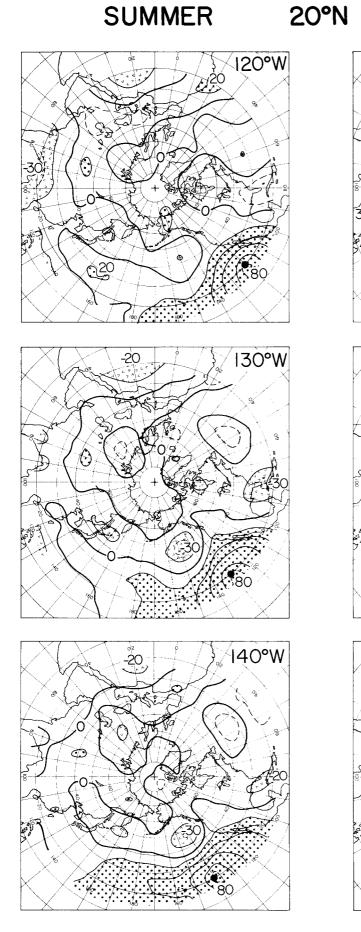


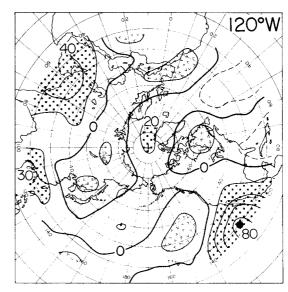




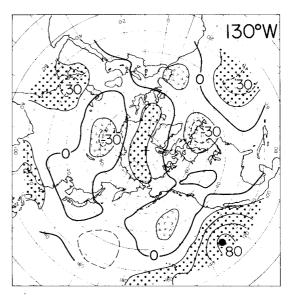


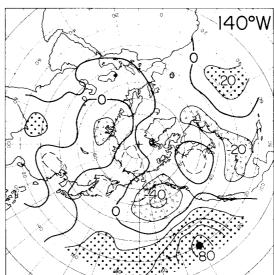






FALL

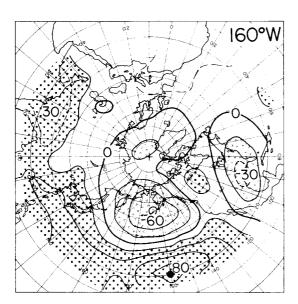


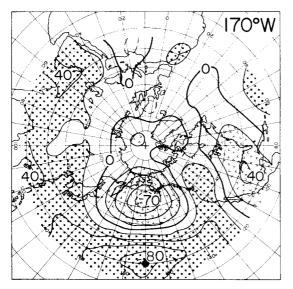


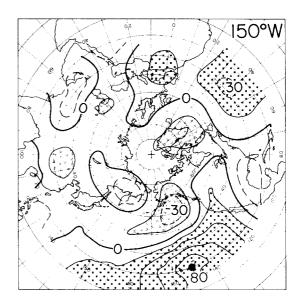
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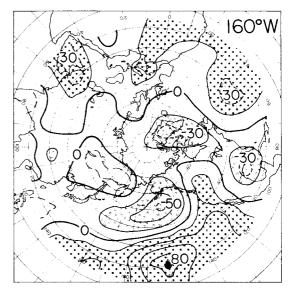


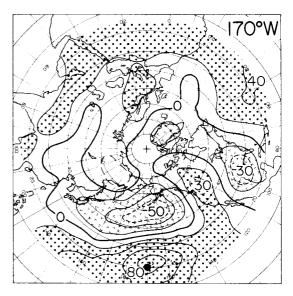
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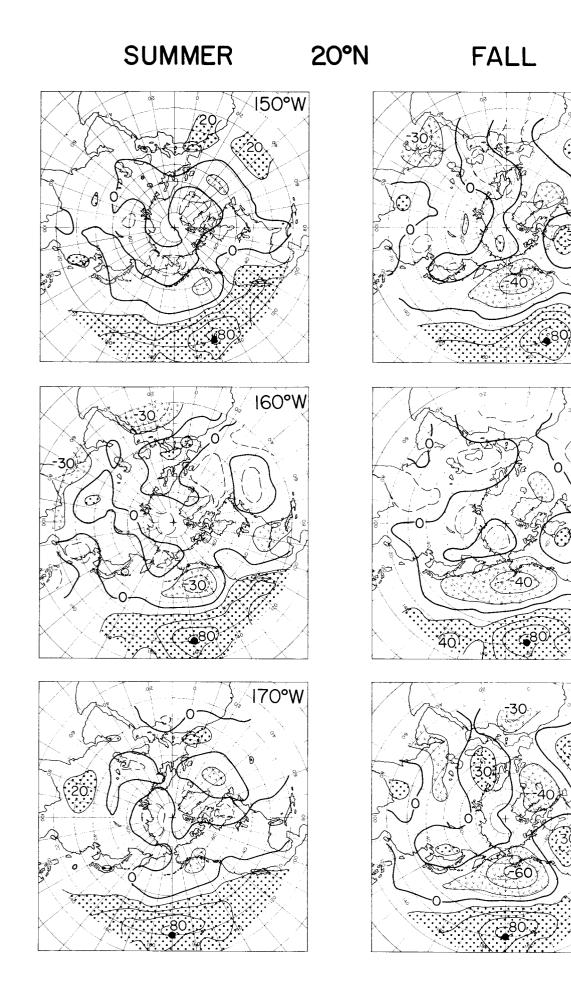










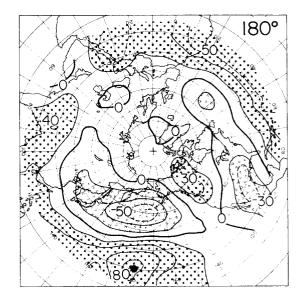


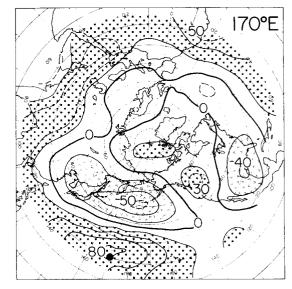
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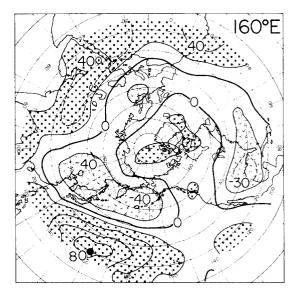
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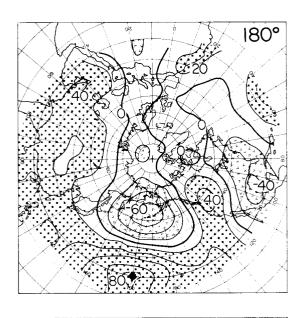
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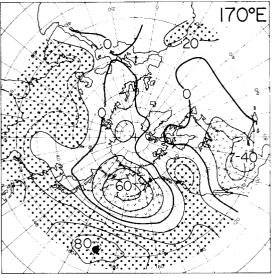


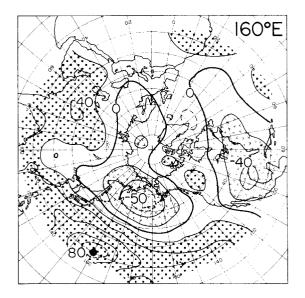


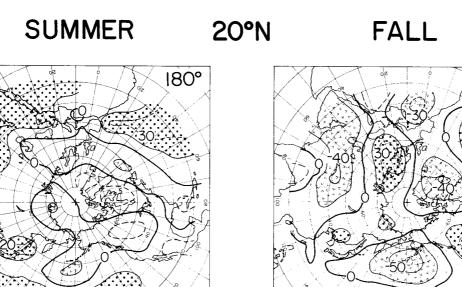


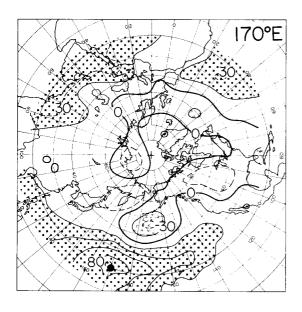


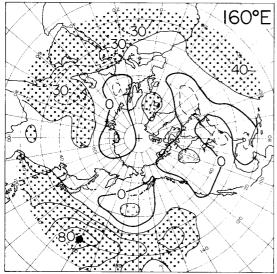


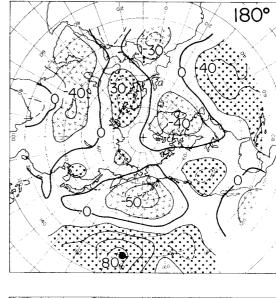


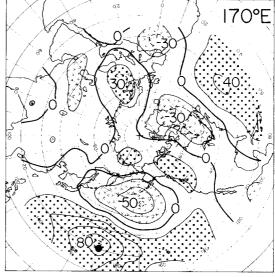


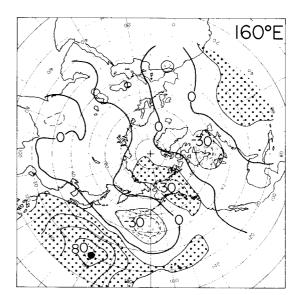






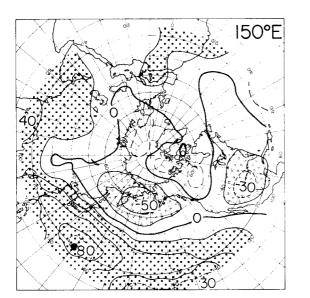


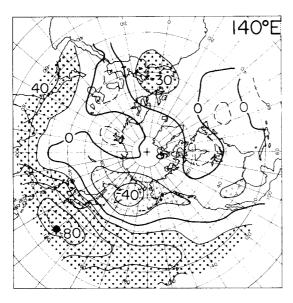


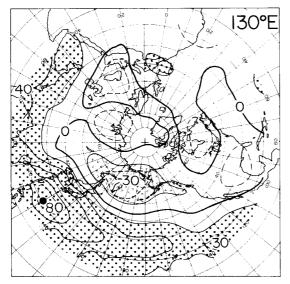


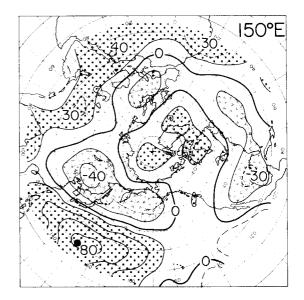
WINTER 20°N

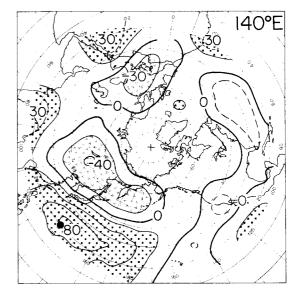


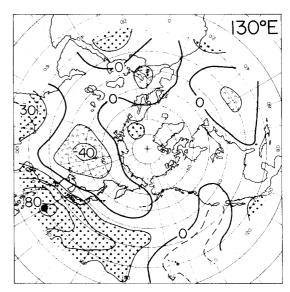


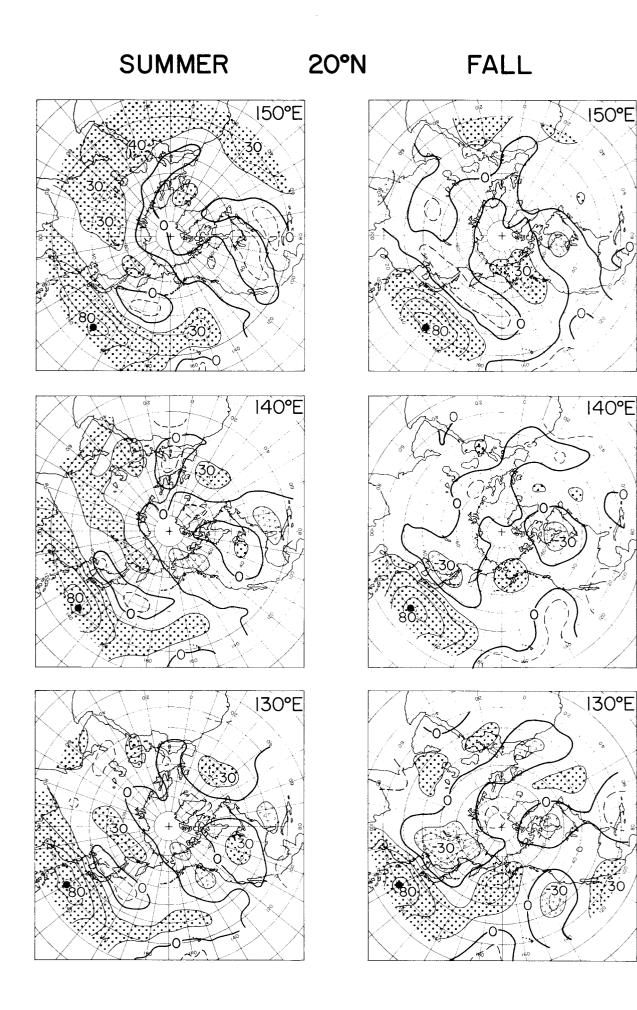




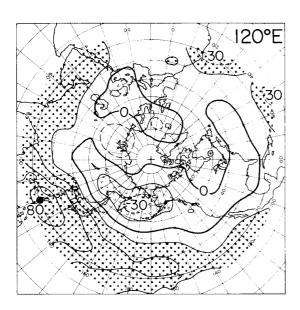


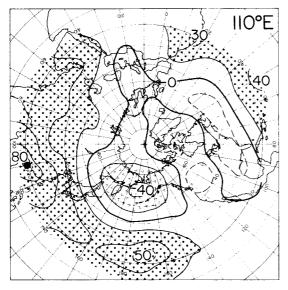


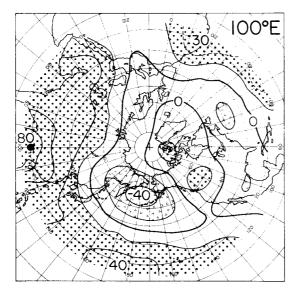


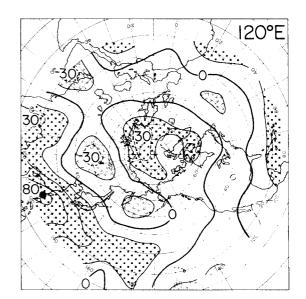


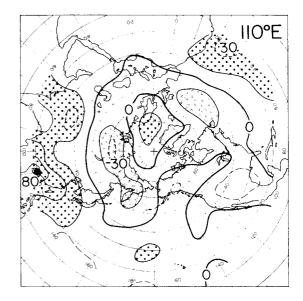


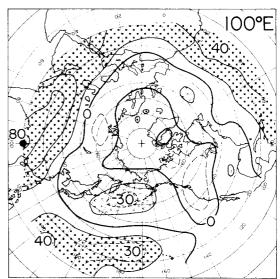


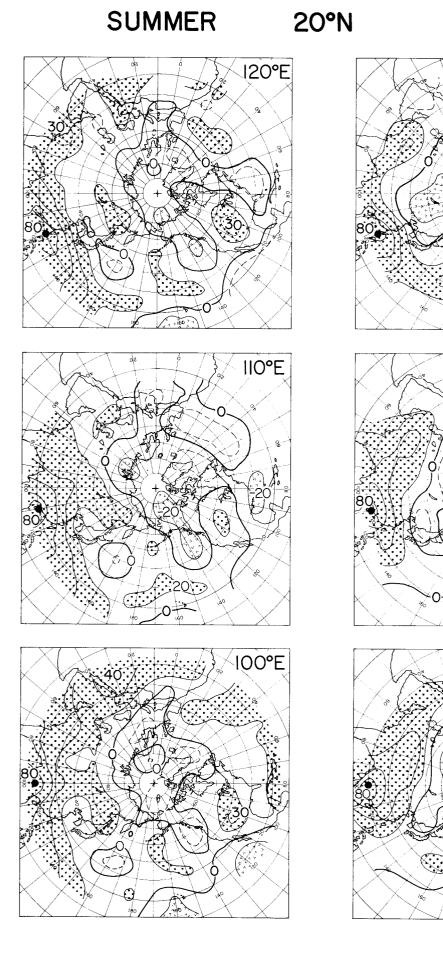


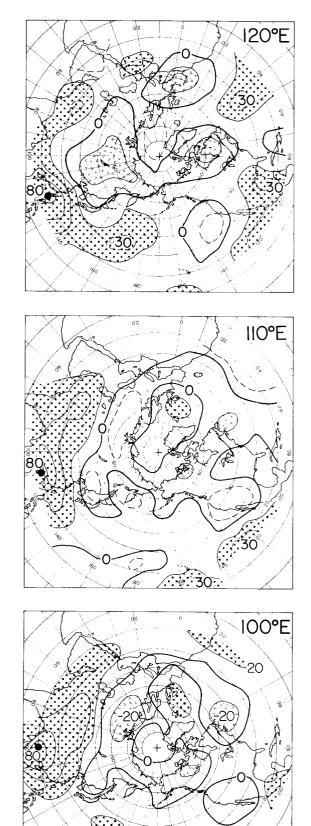






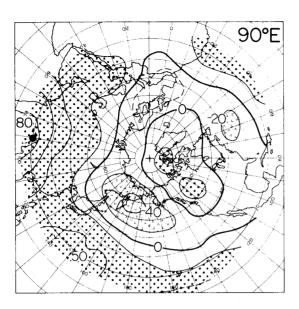


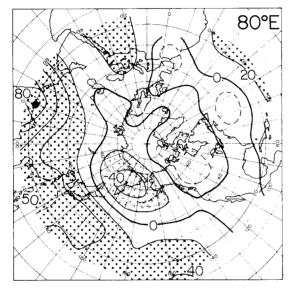


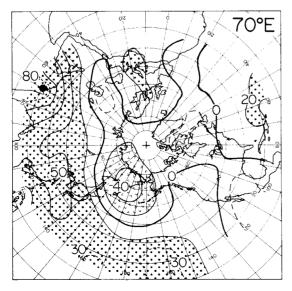


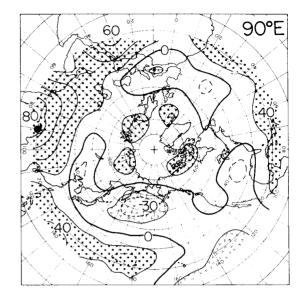
FALL

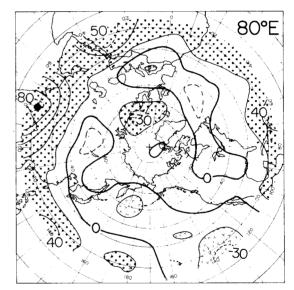


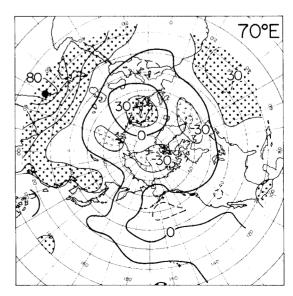


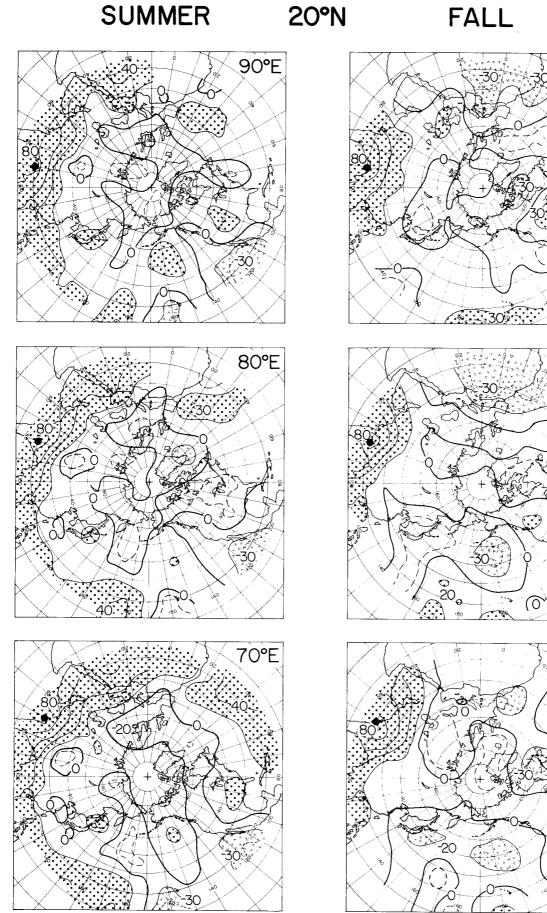


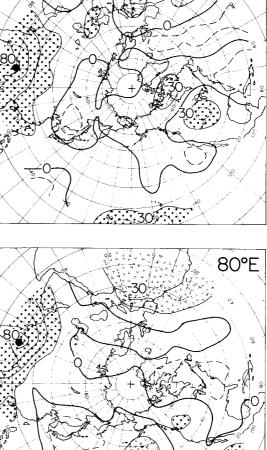


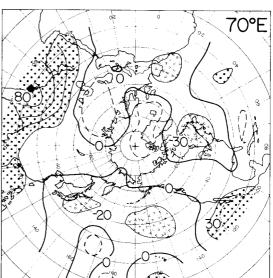






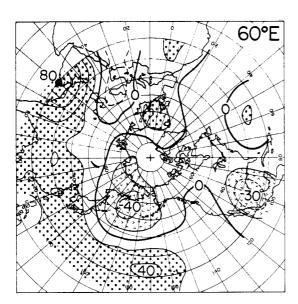


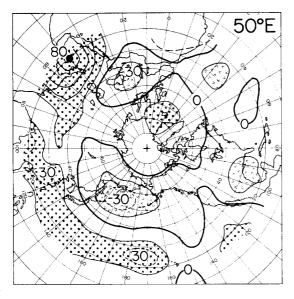


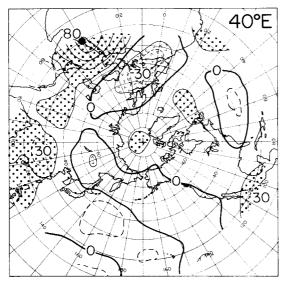


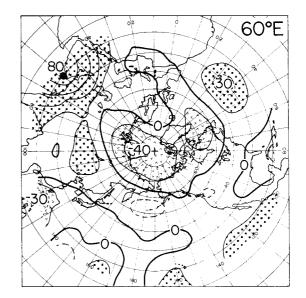
90°E

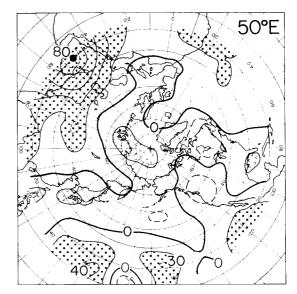


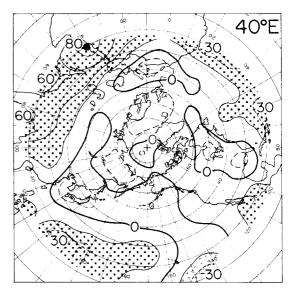


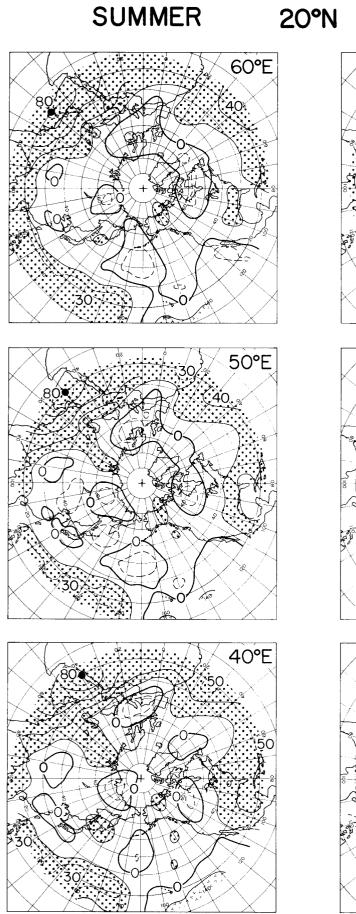


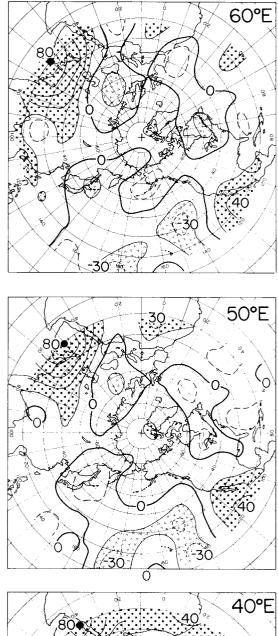




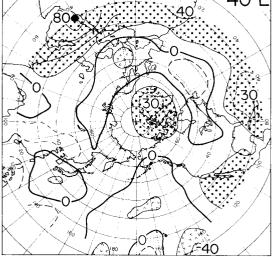






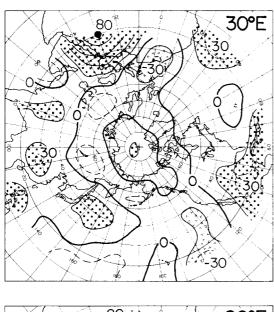


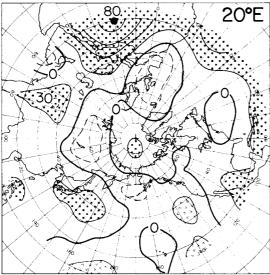
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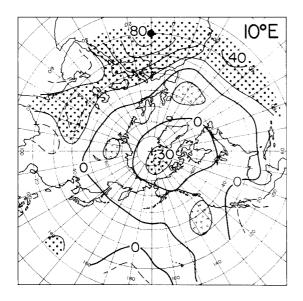


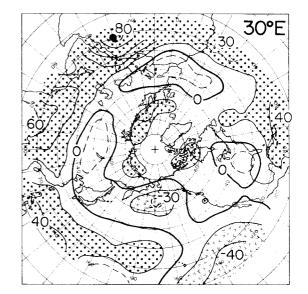
20°N

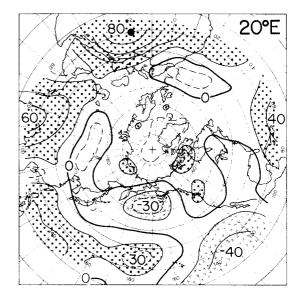
SPRING

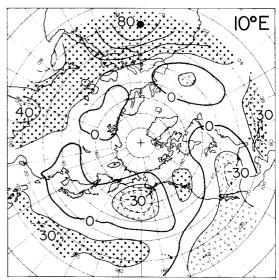


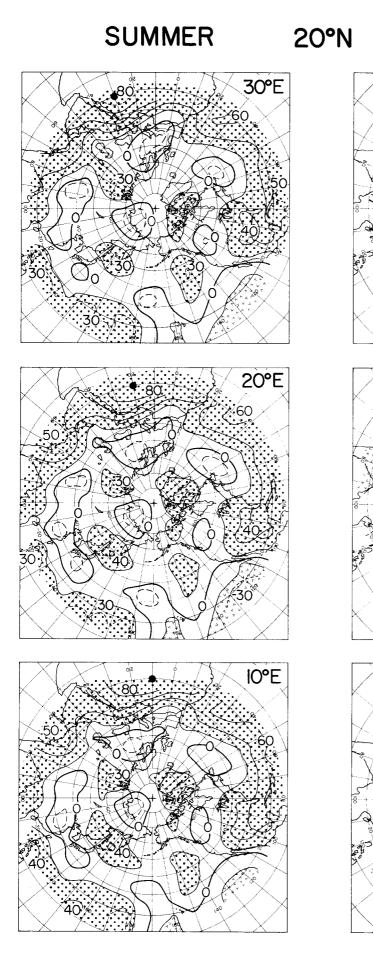


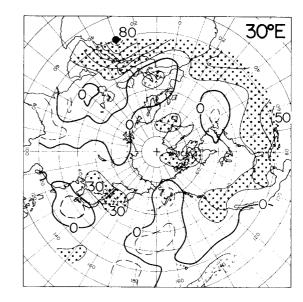




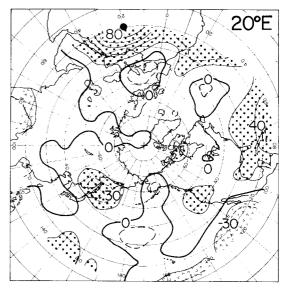


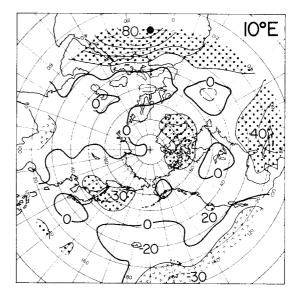


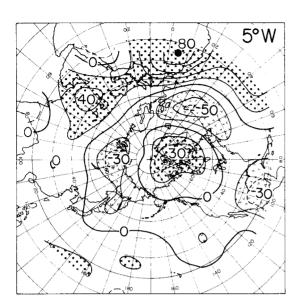


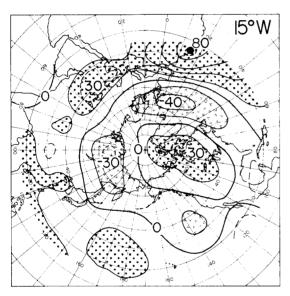


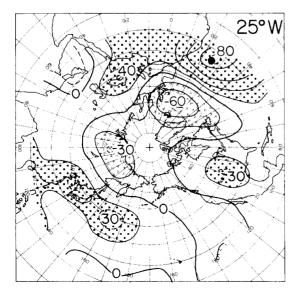
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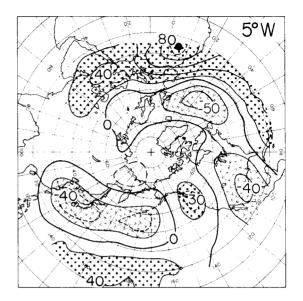


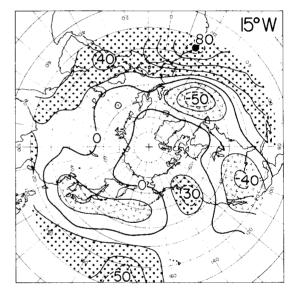


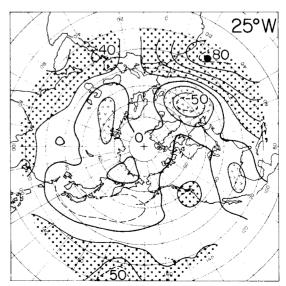


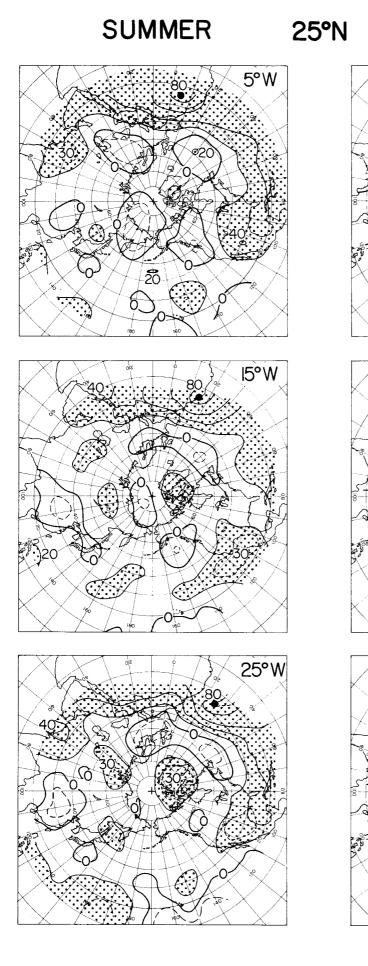


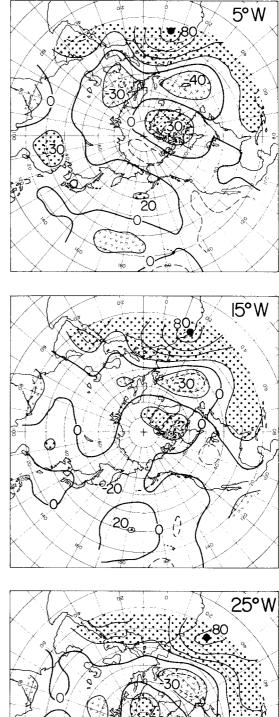




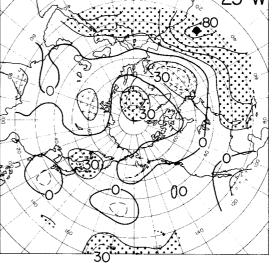






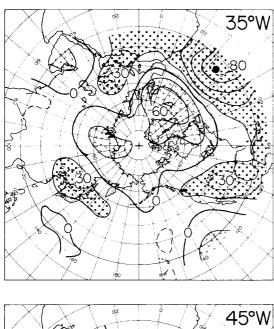


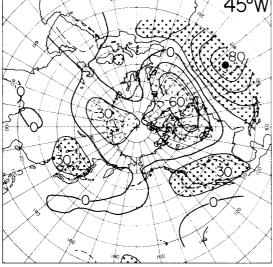
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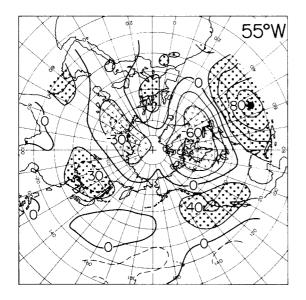


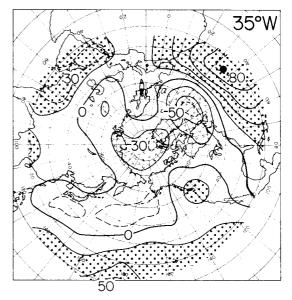
25°N

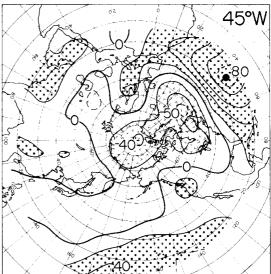
SPRING

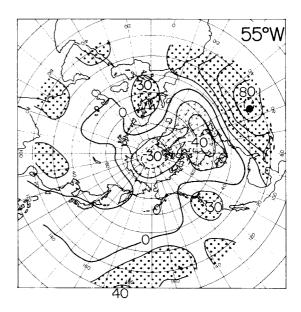


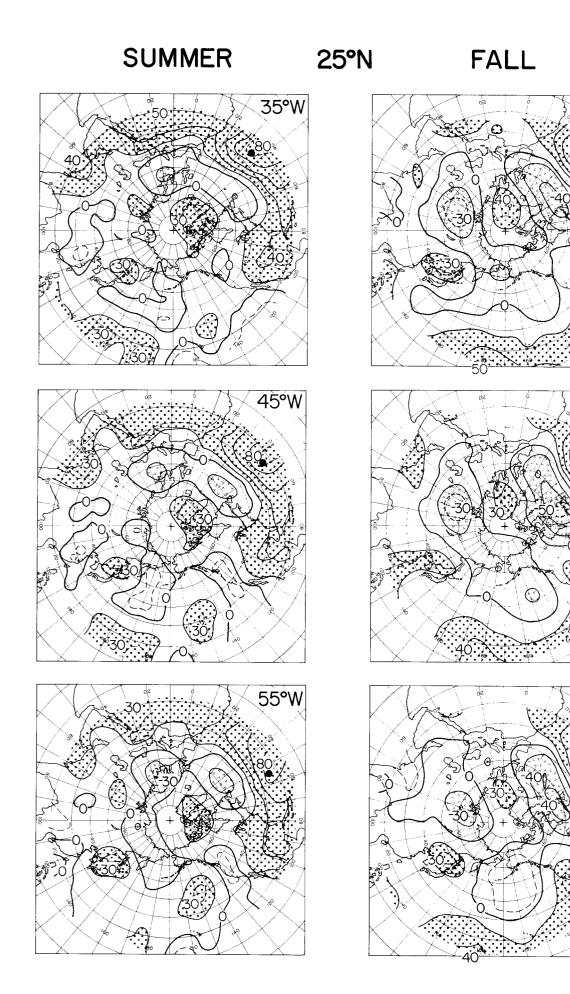








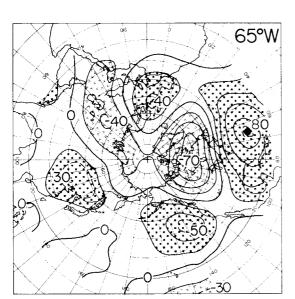


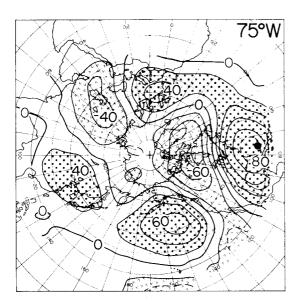


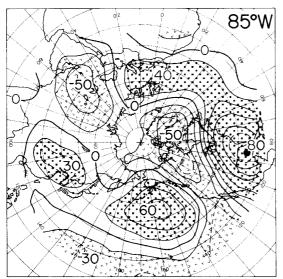
35°W

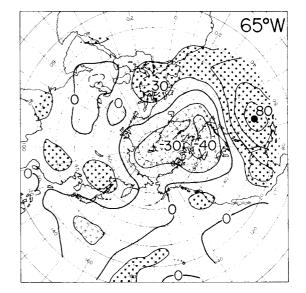
45°W

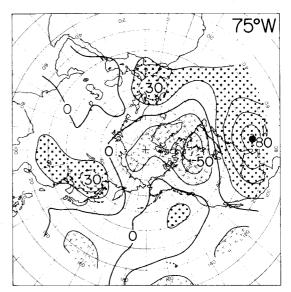
55°W

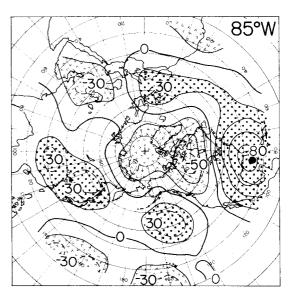


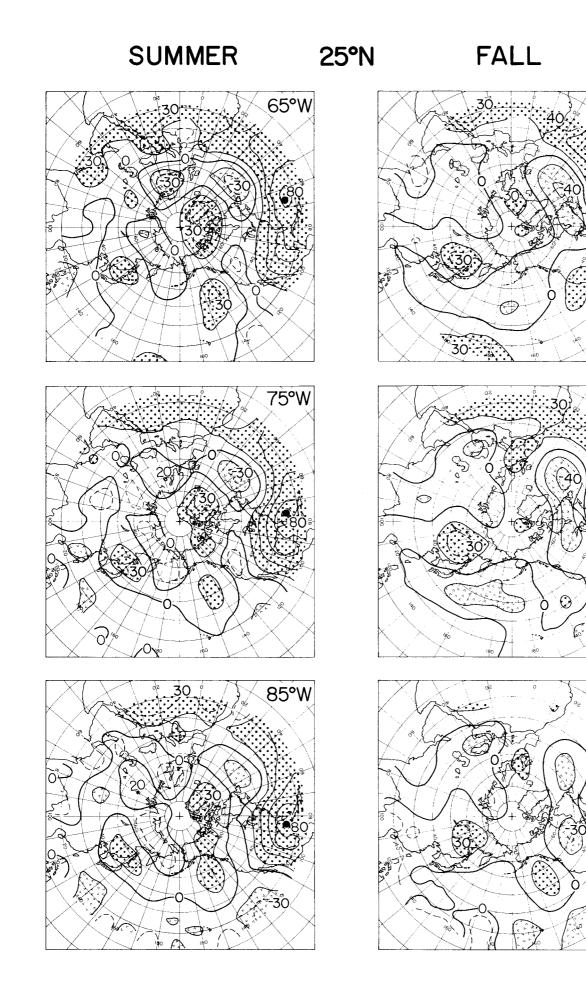










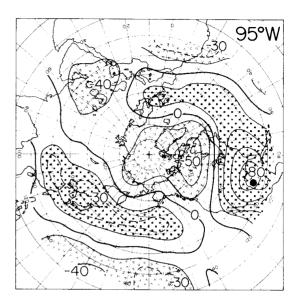


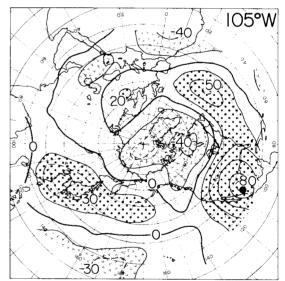
65°W

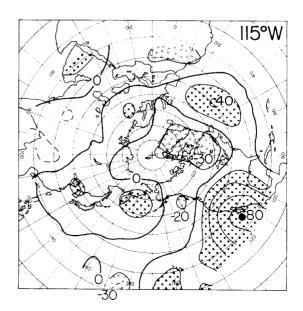
75°W

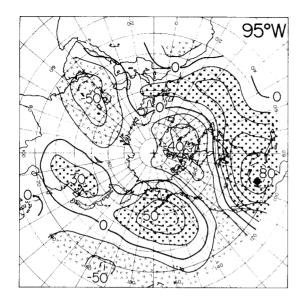
85°W

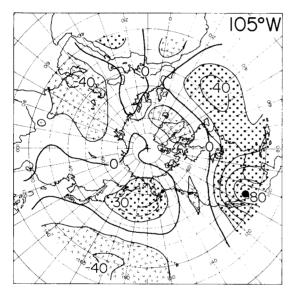


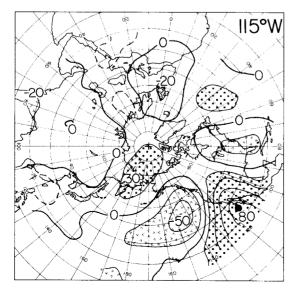


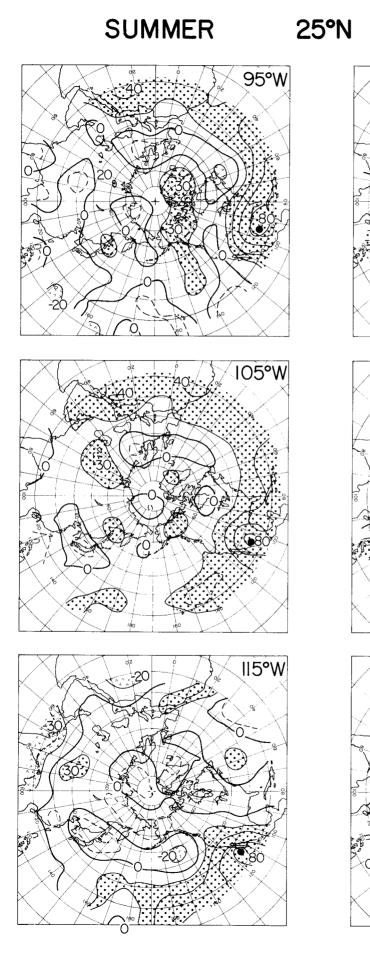


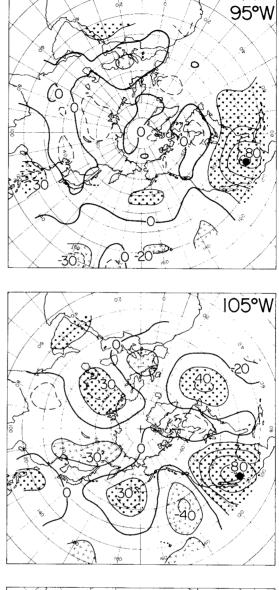


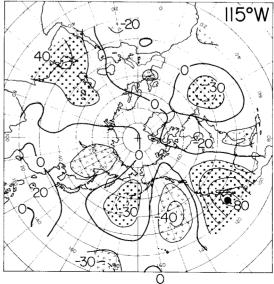








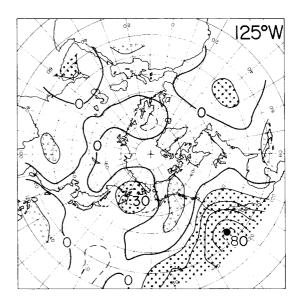


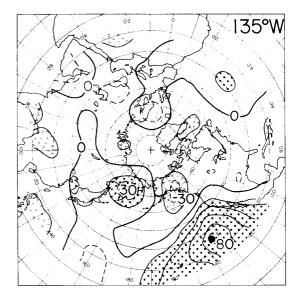


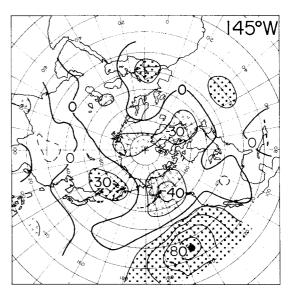
WINTER

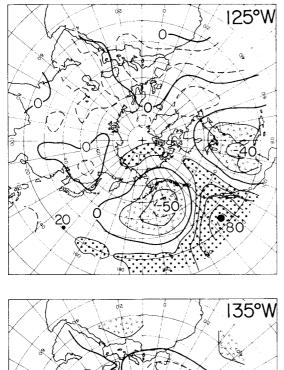
25°N

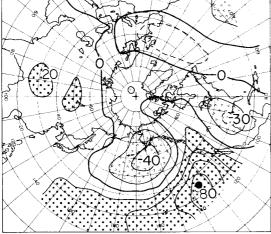
SPRING

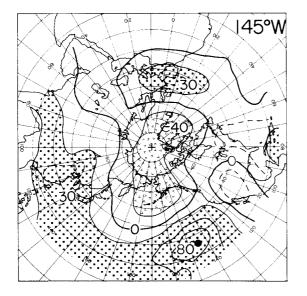


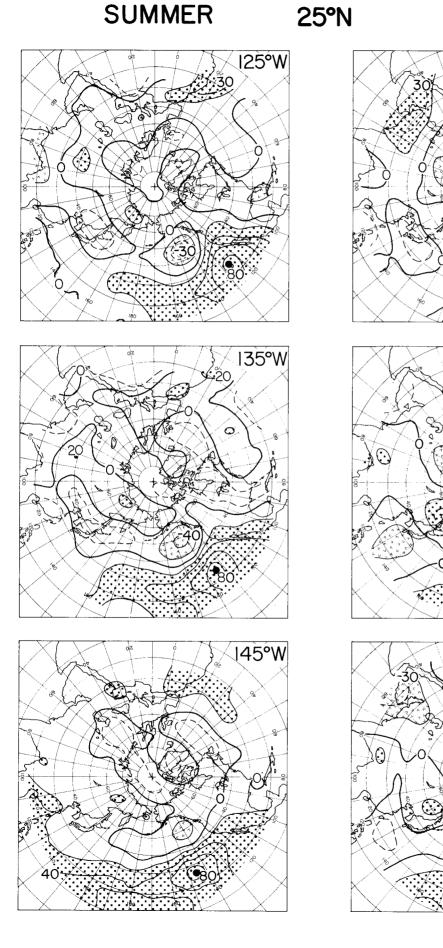


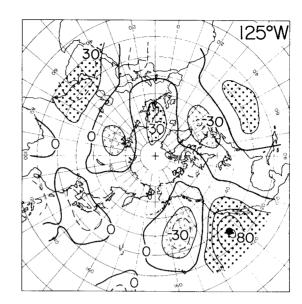


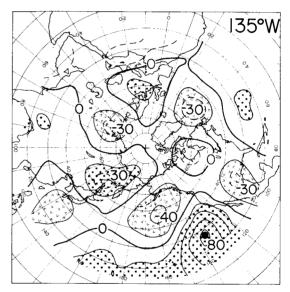


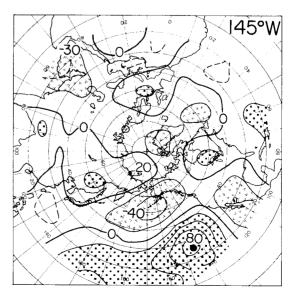


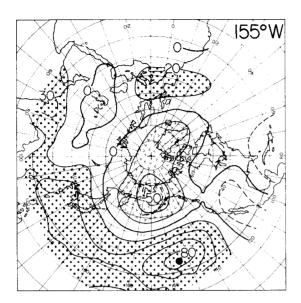


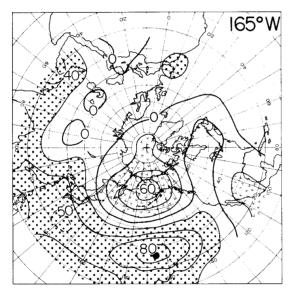


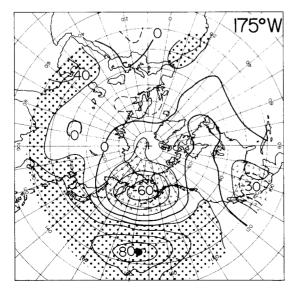




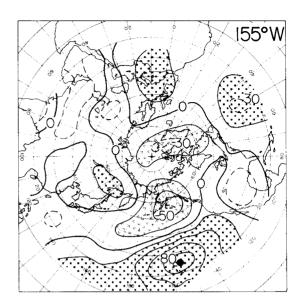




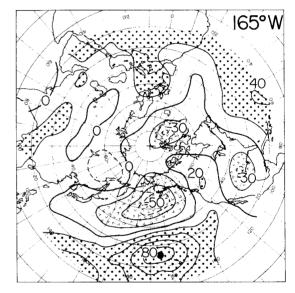


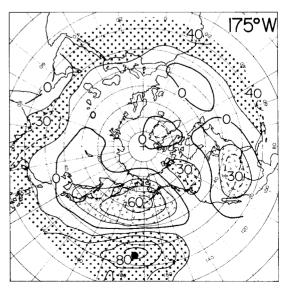


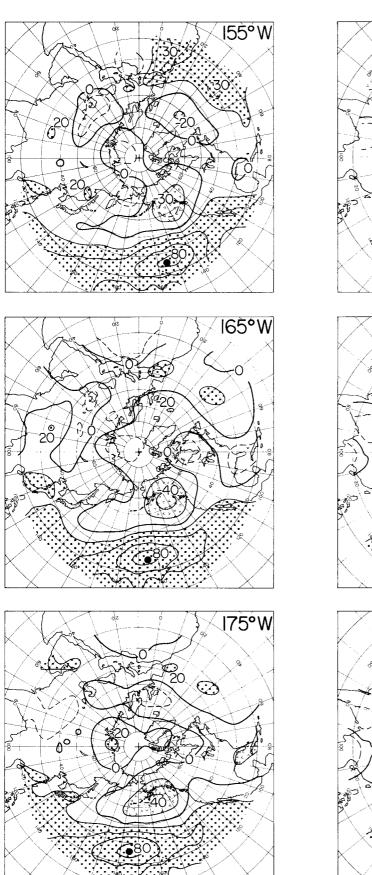
25°N



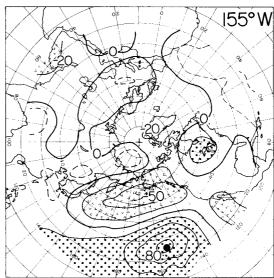
SPRING



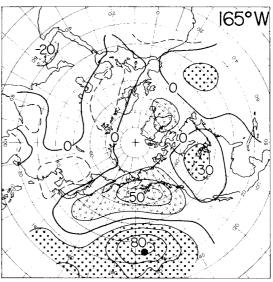


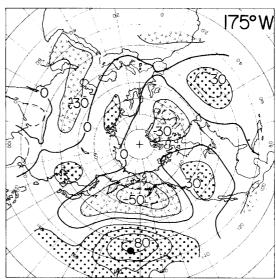


SUMMER



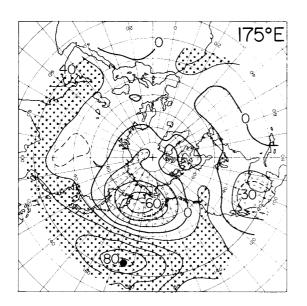
FALL

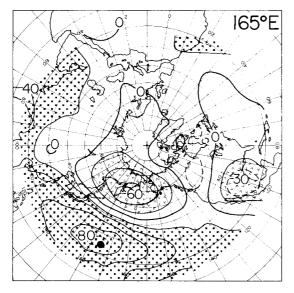


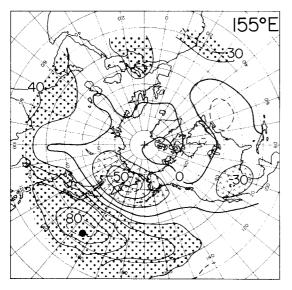


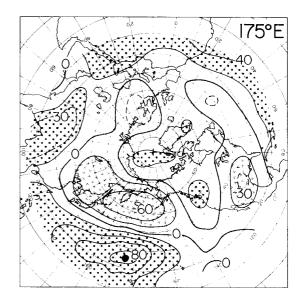
WINTER 25°N

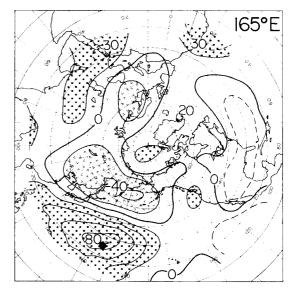


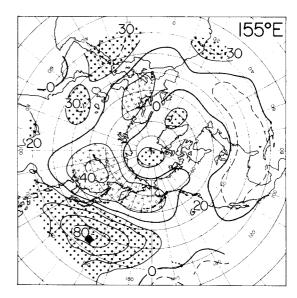




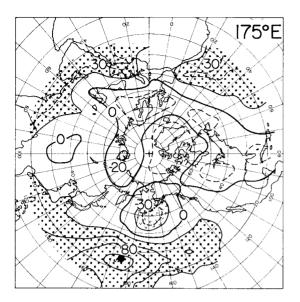


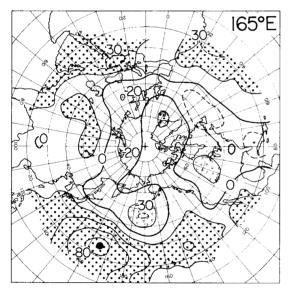


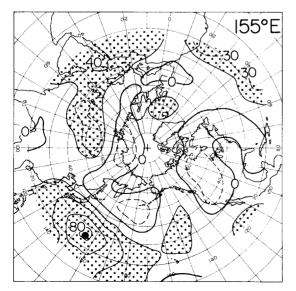


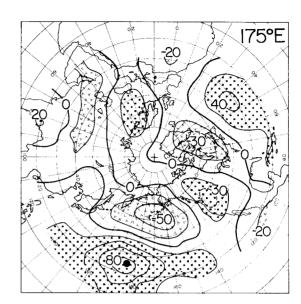


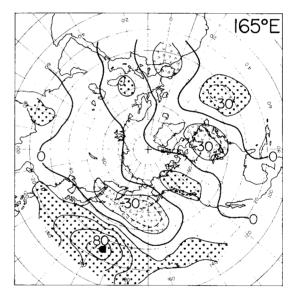


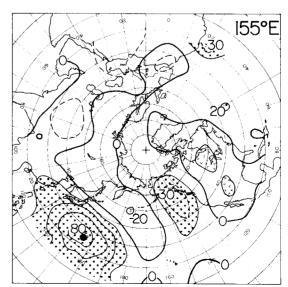




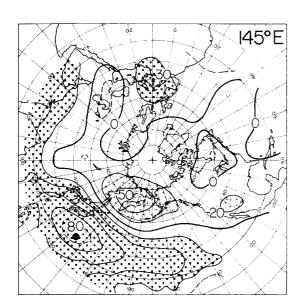


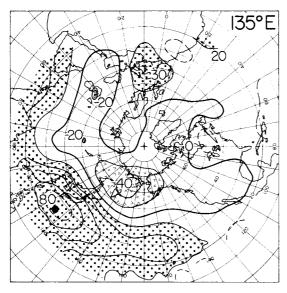


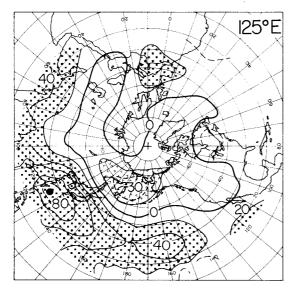


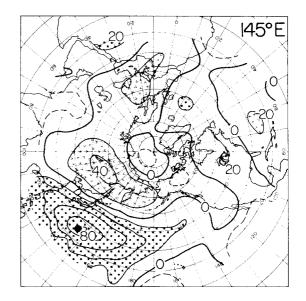


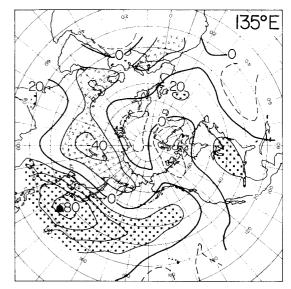


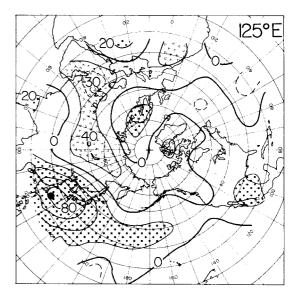


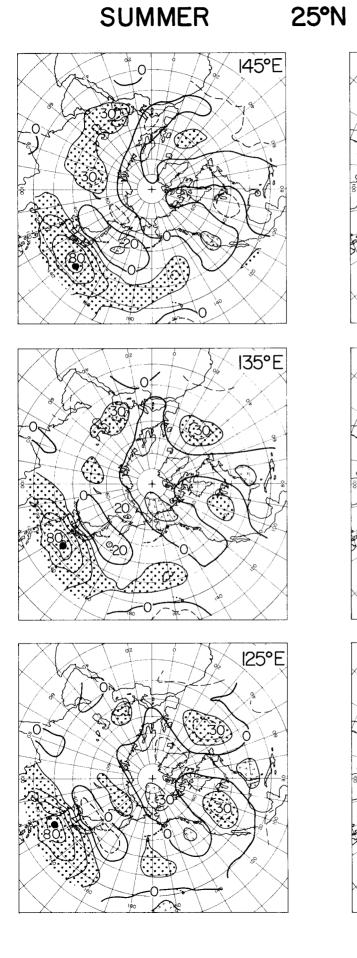


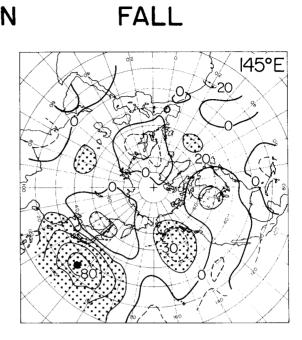


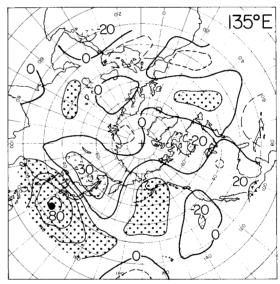


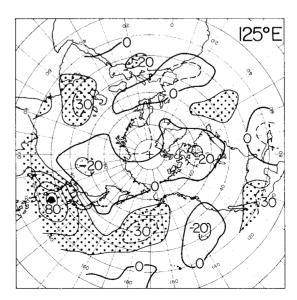


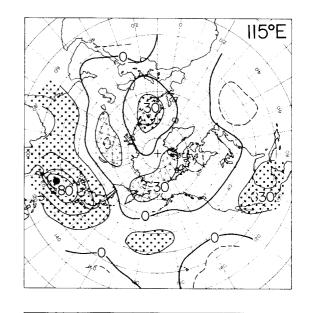


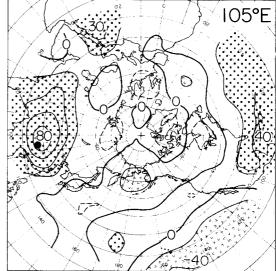


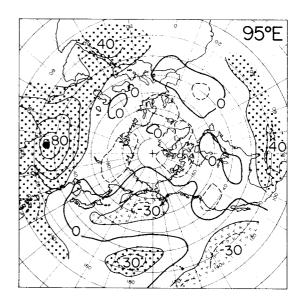


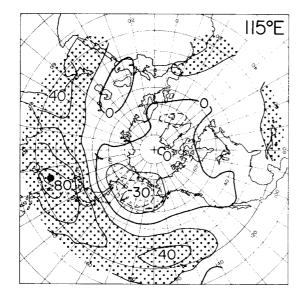


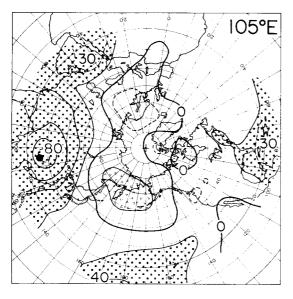


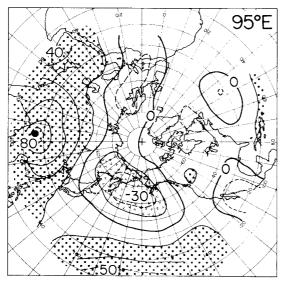




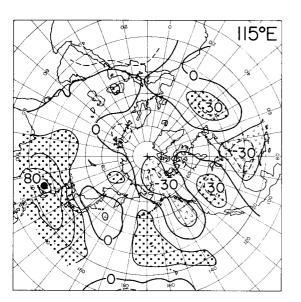


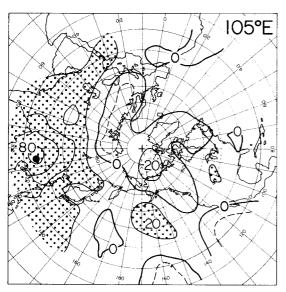


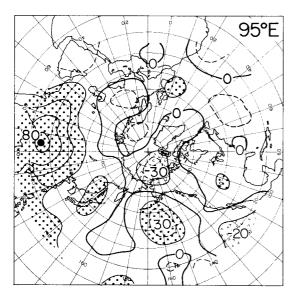


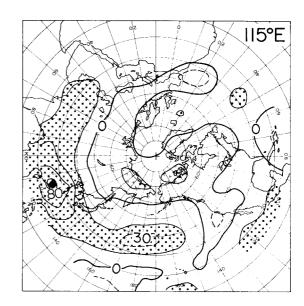


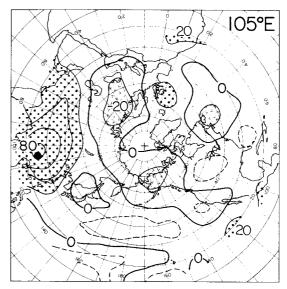
SUMMER 25°N

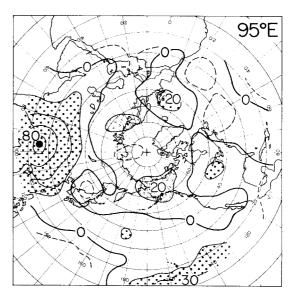


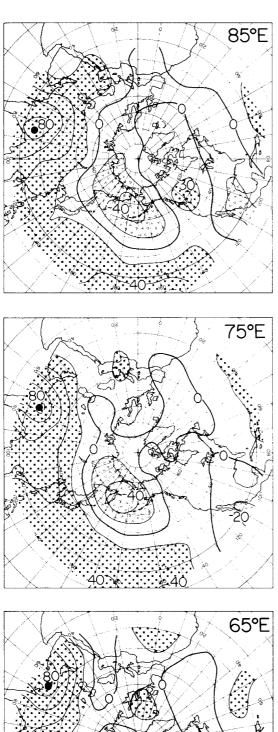


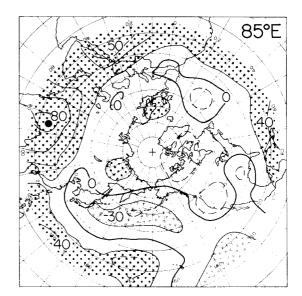


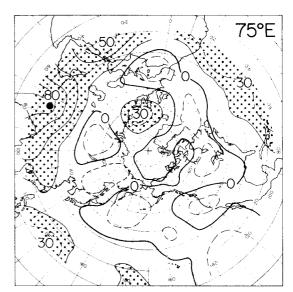


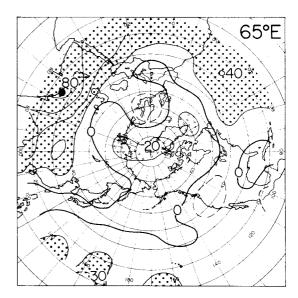


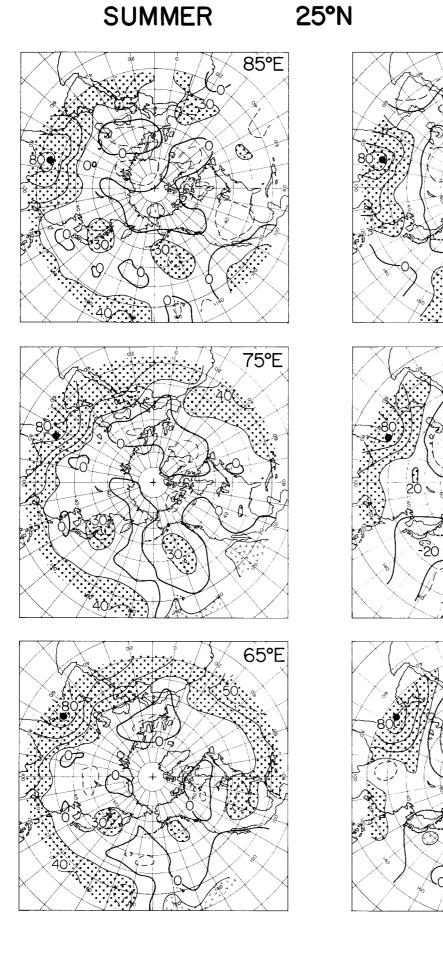


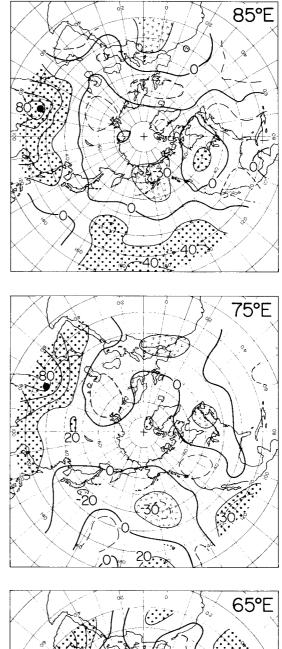


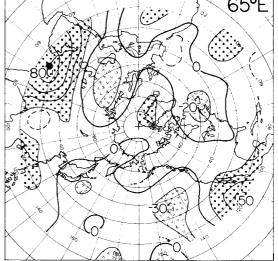




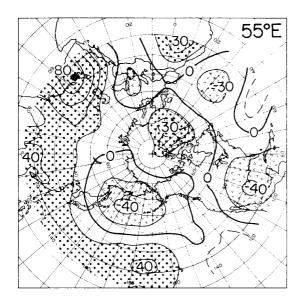


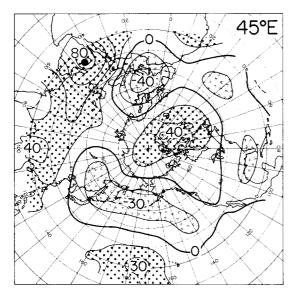


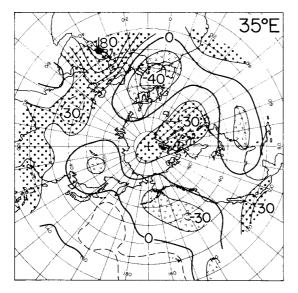


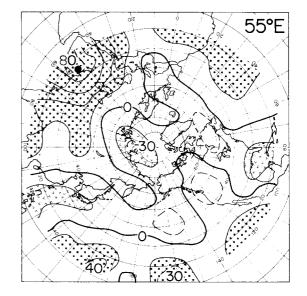


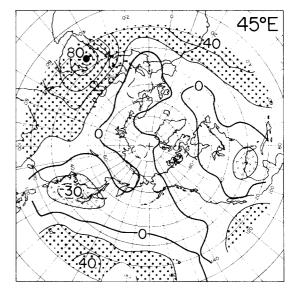


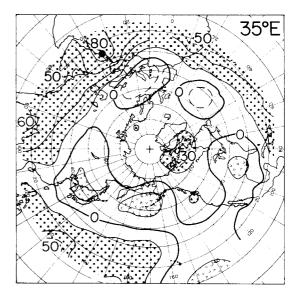


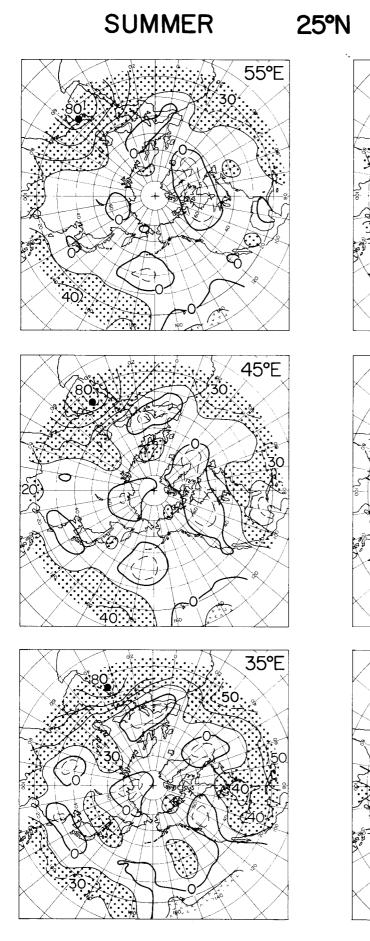


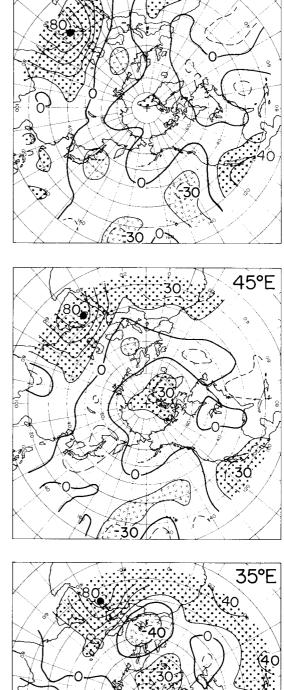


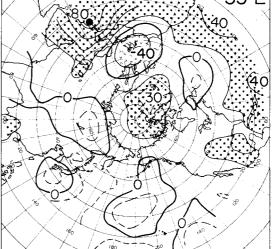




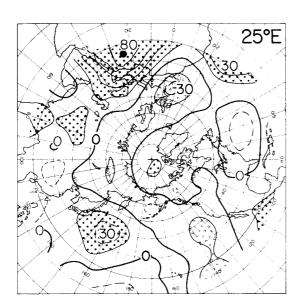


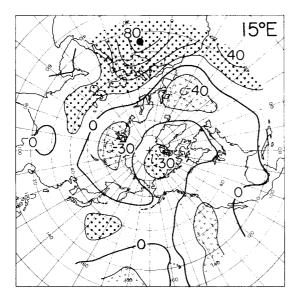


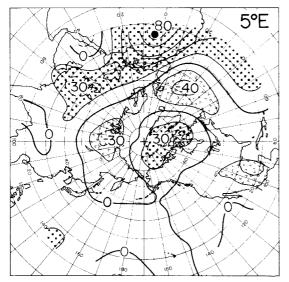


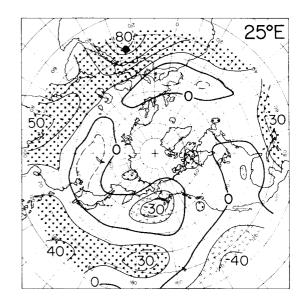


55°E

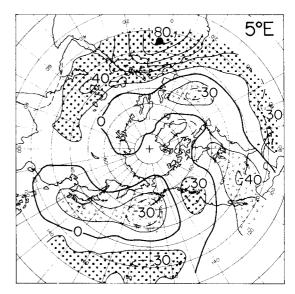


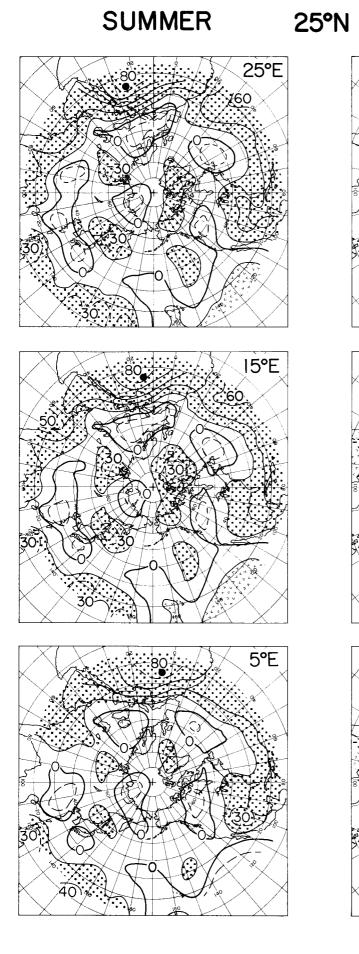


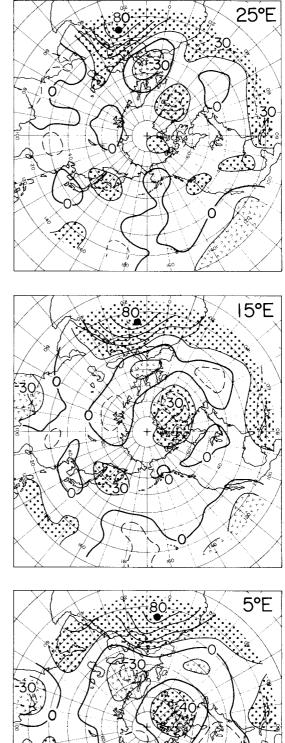


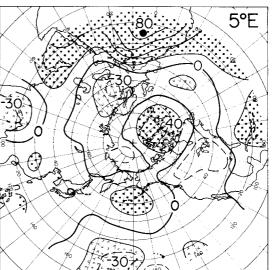








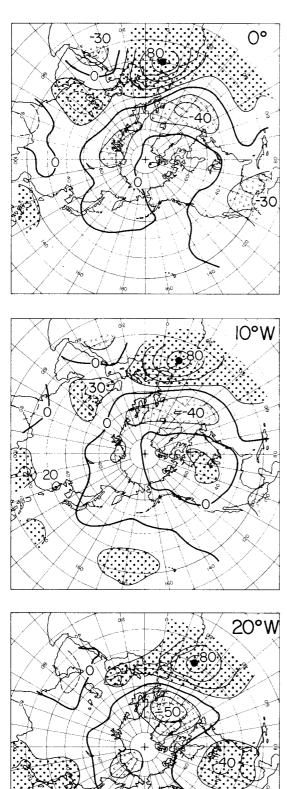




WINTER

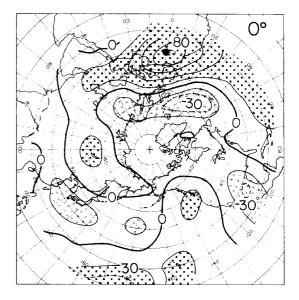


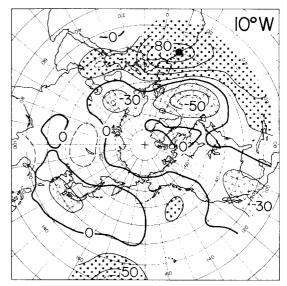
SPRING

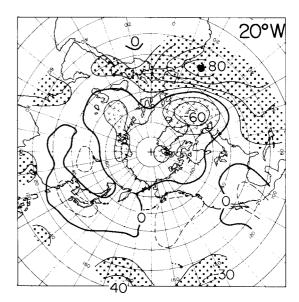


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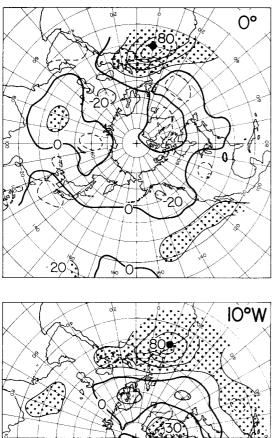
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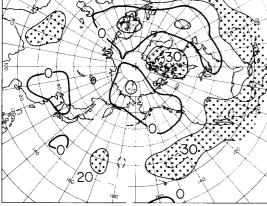


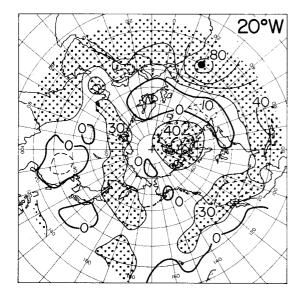


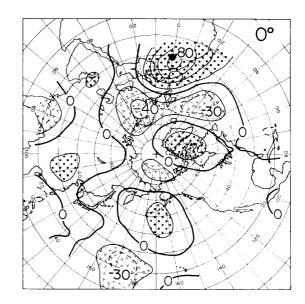


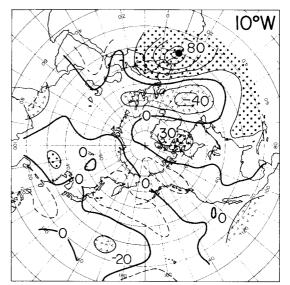
SUMMER

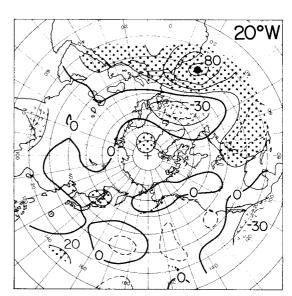




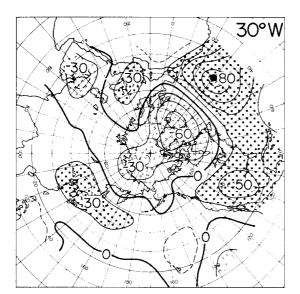


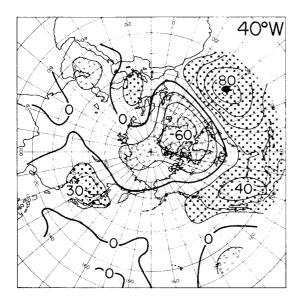


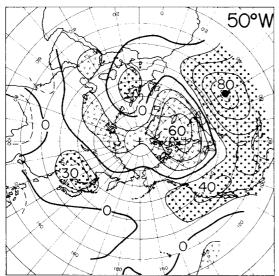




WINTER

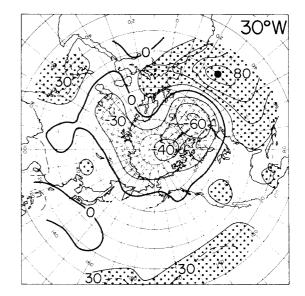


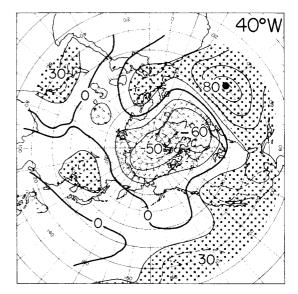


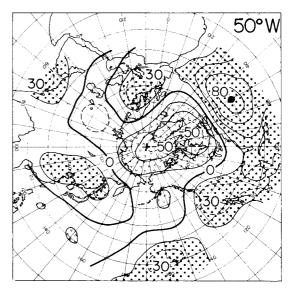


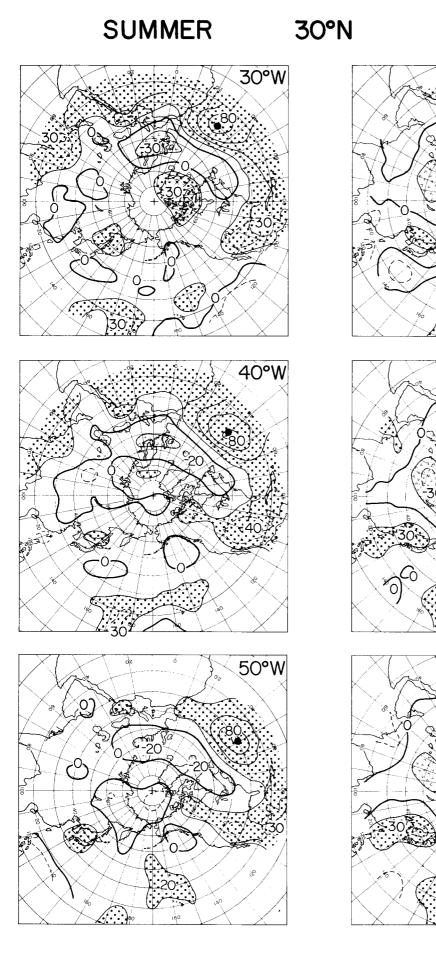
30°N

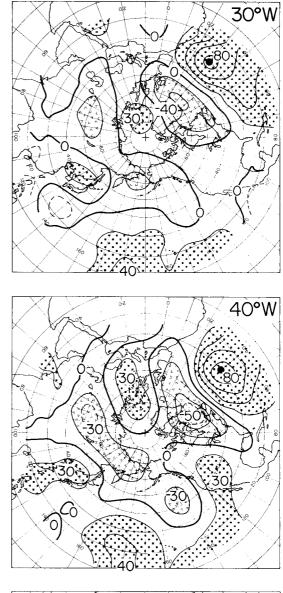


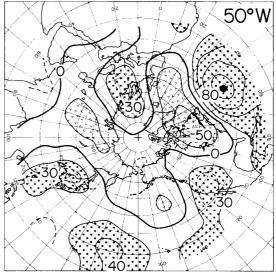




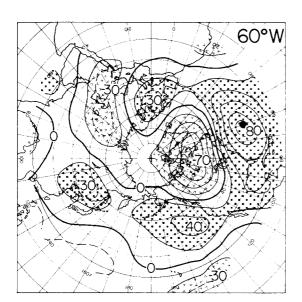


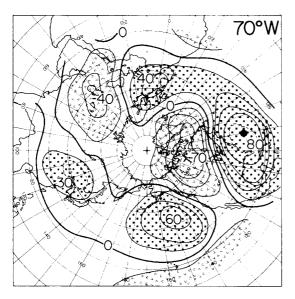


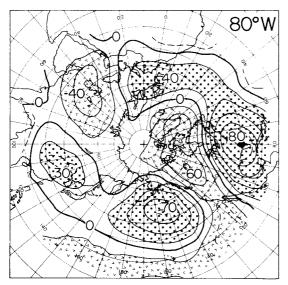


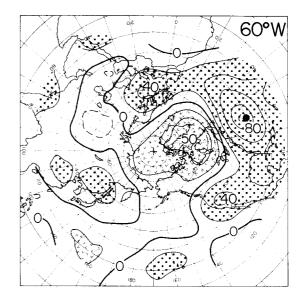


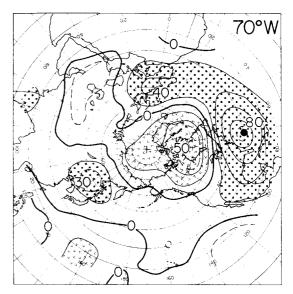


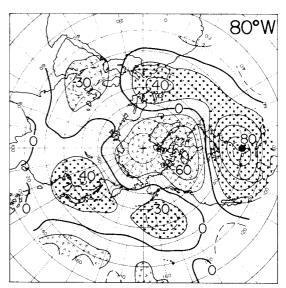


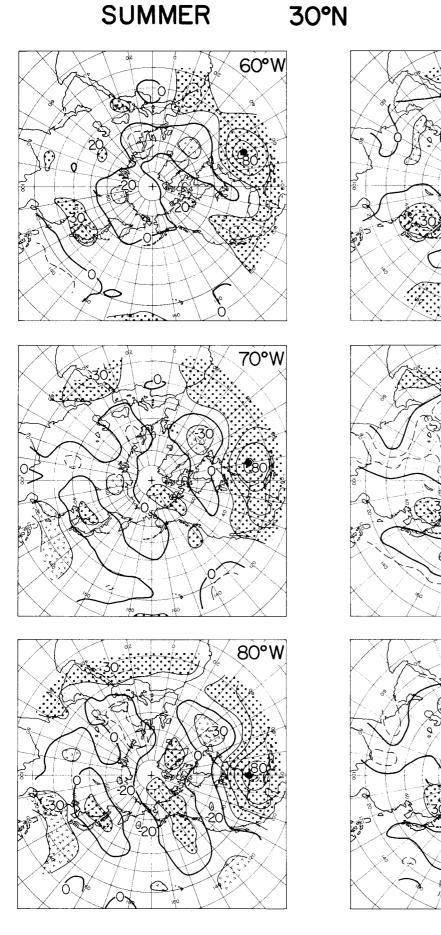


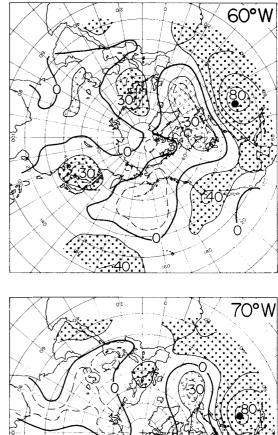


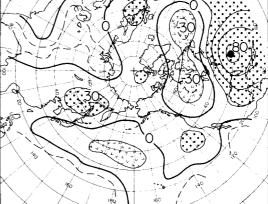


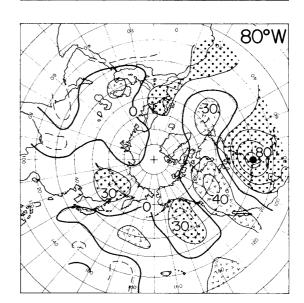




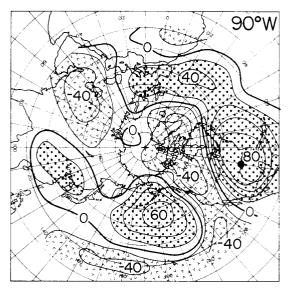


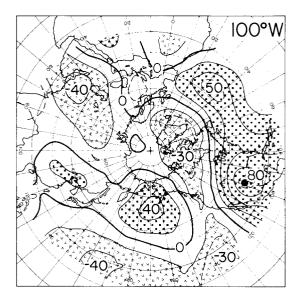


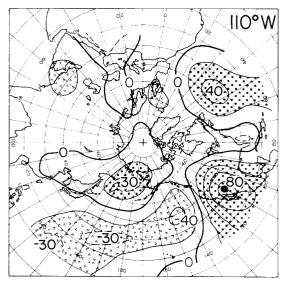


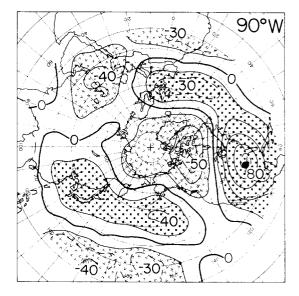


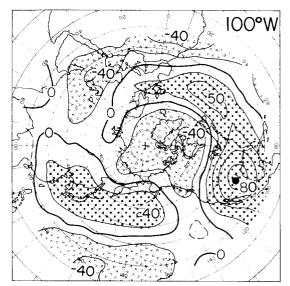
WINTER 30°N SPRING

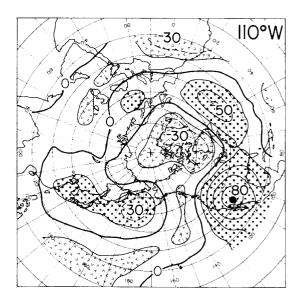


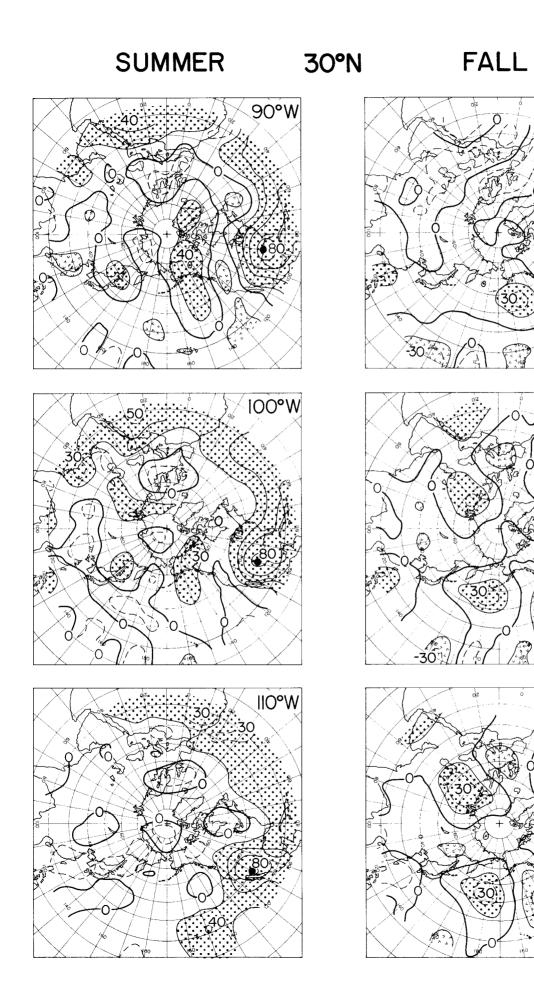














90°W

100°W

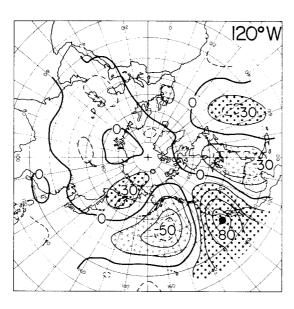
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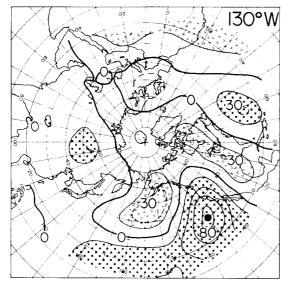
llÒ°W

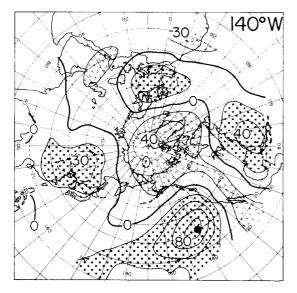
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-30

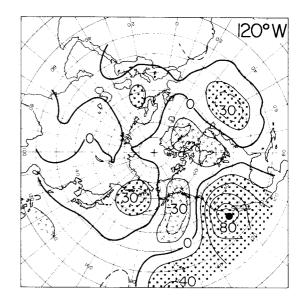
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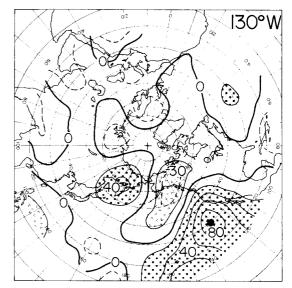


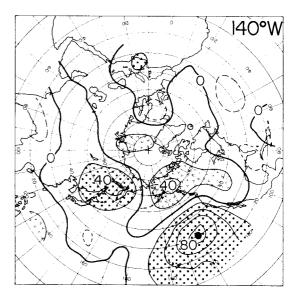


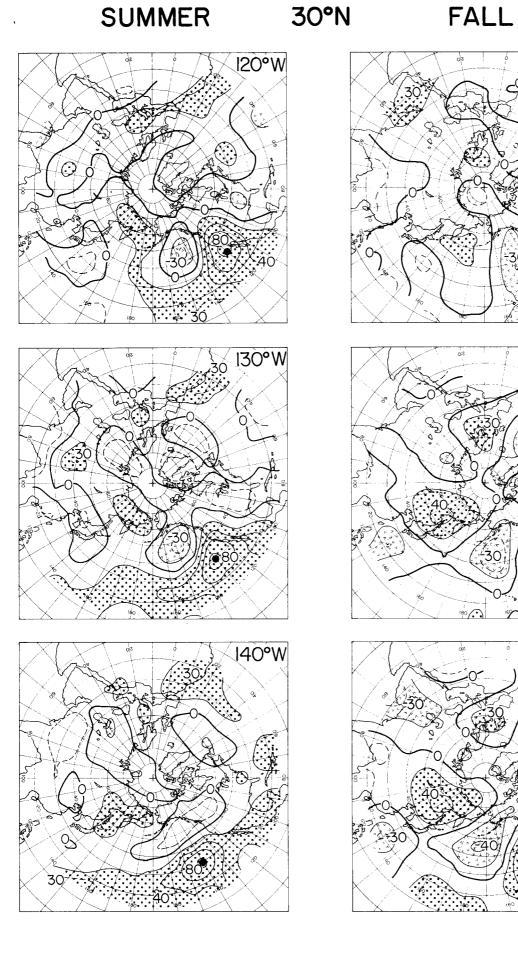


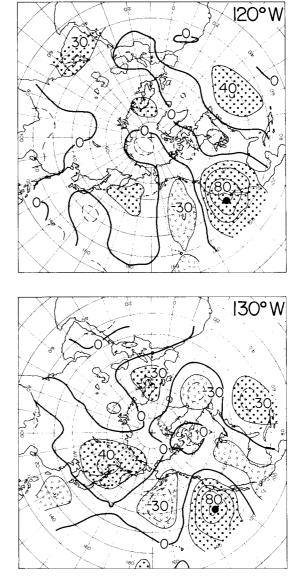


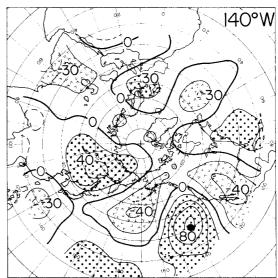






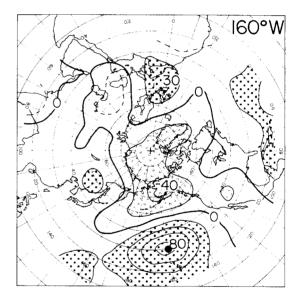


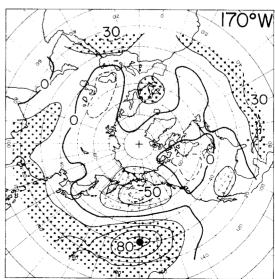


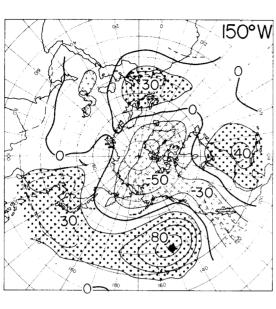


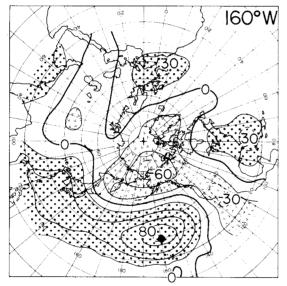
WINTER 30°N

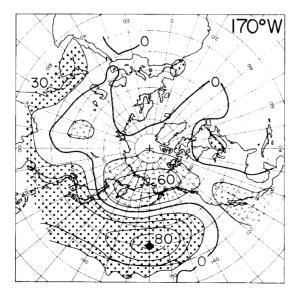


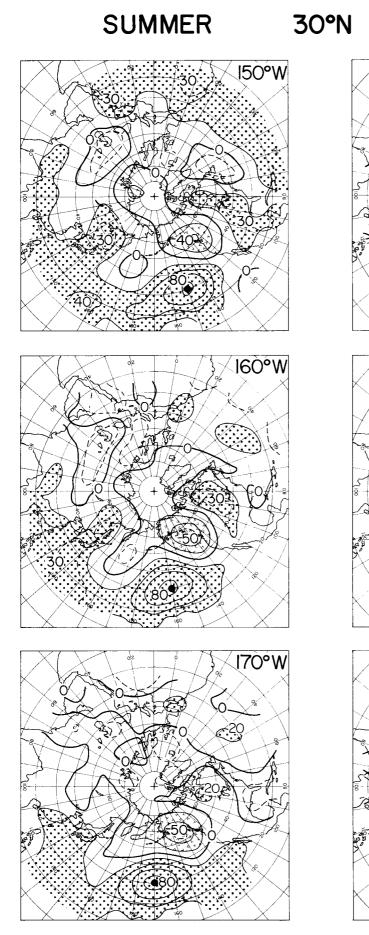


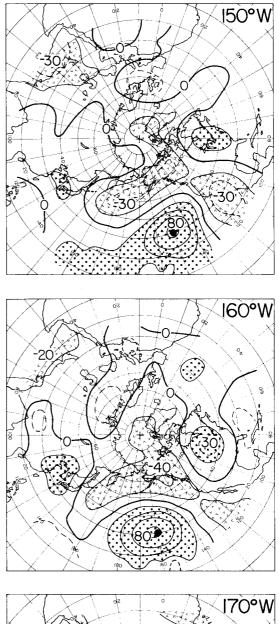


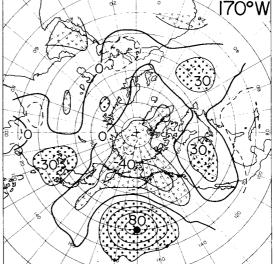




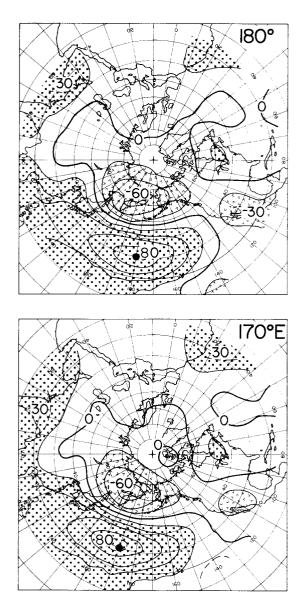


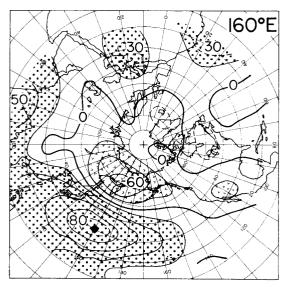


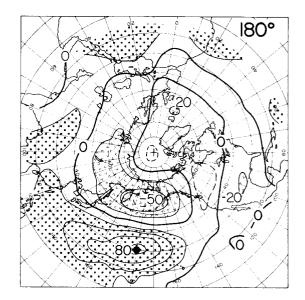


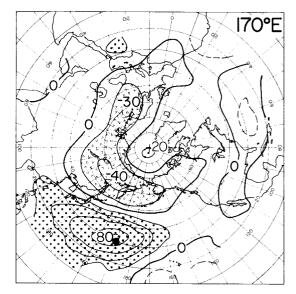


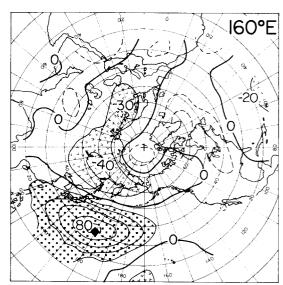


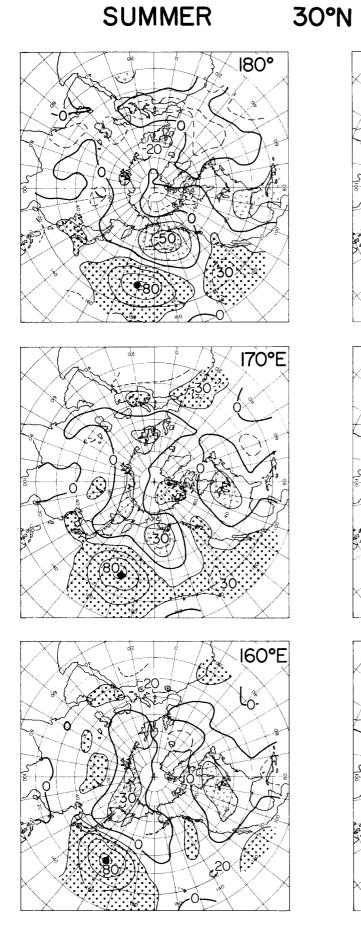


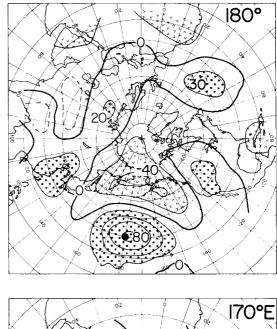


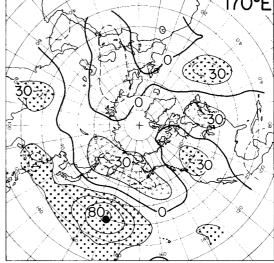


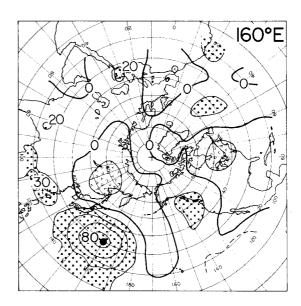




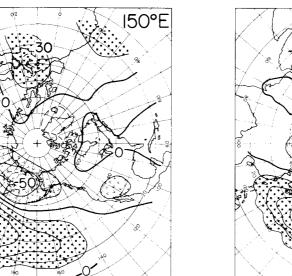


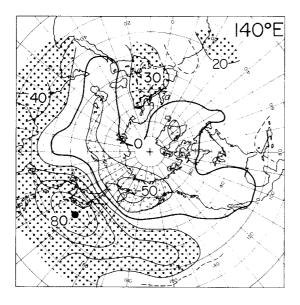


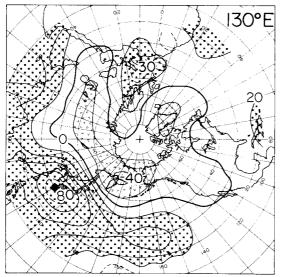


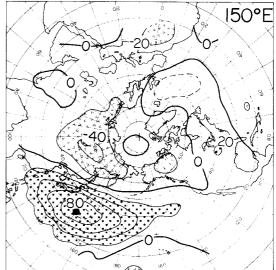


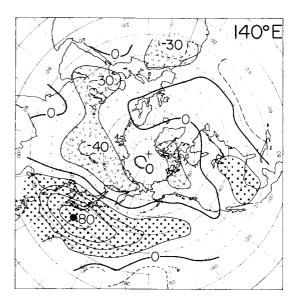


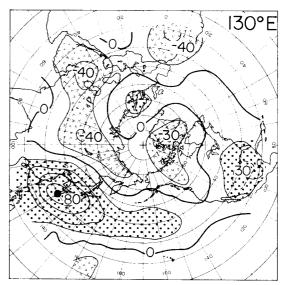


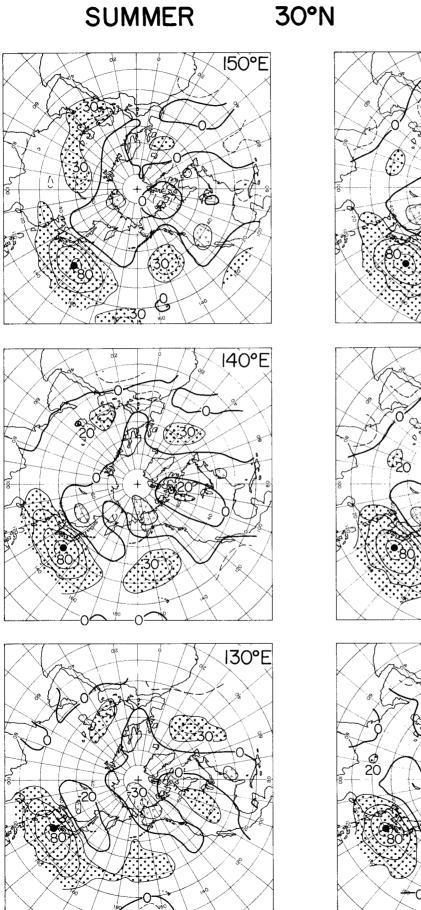


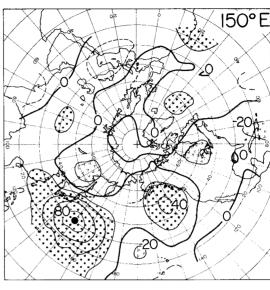


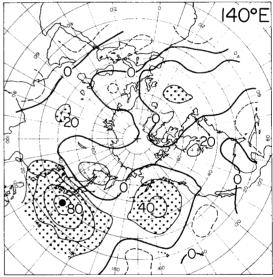


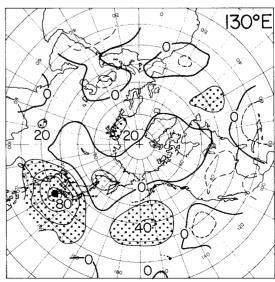






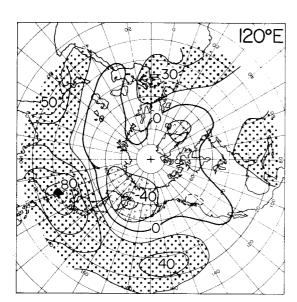


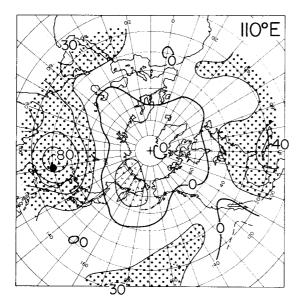


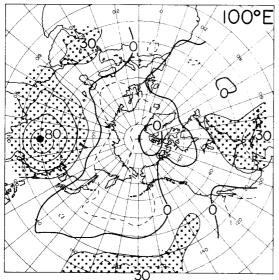


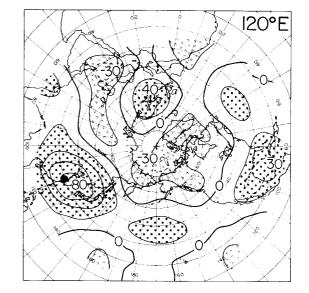
30°N

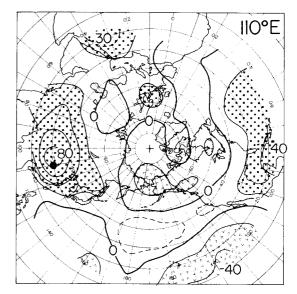
SPRING

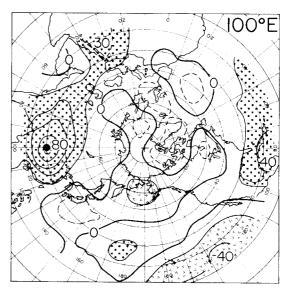


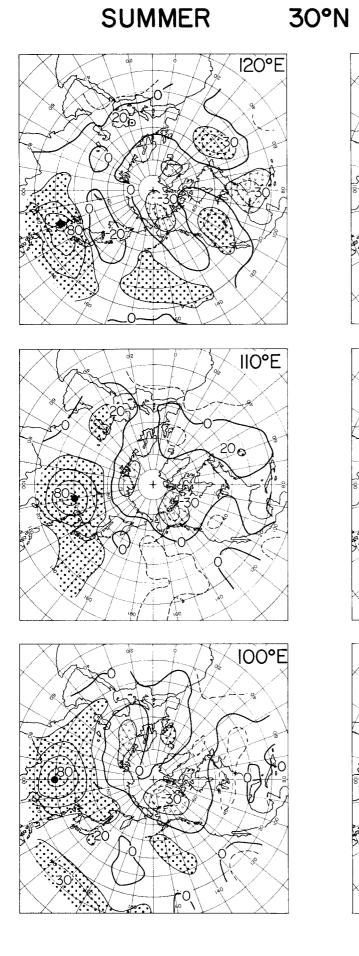


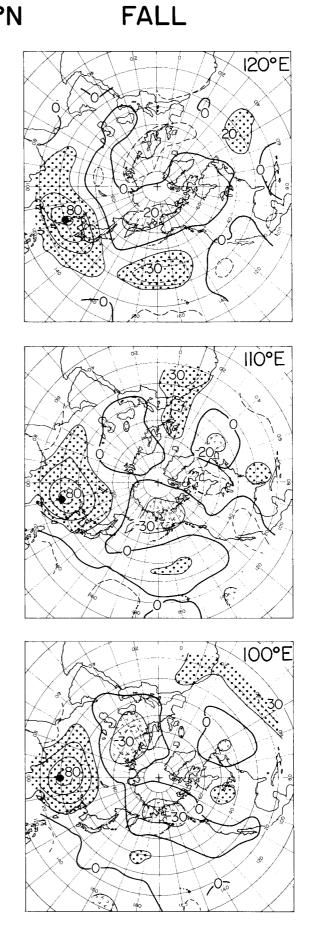






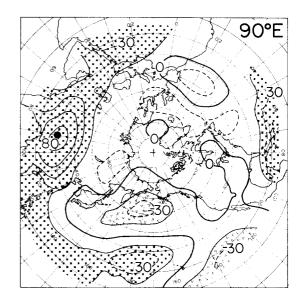


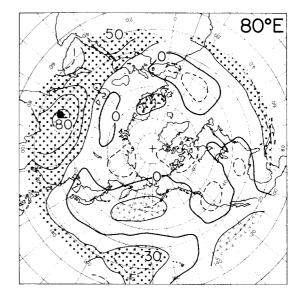


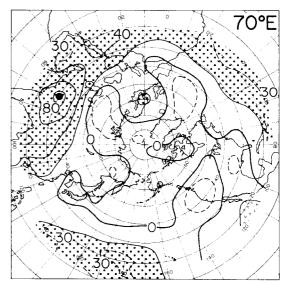


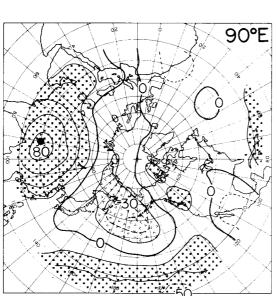
WINTER

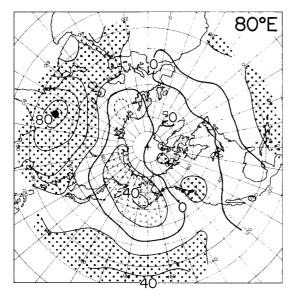


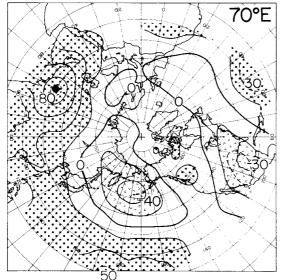


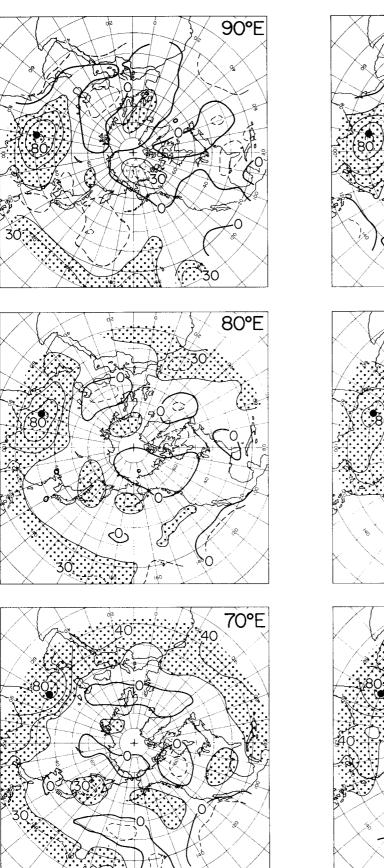




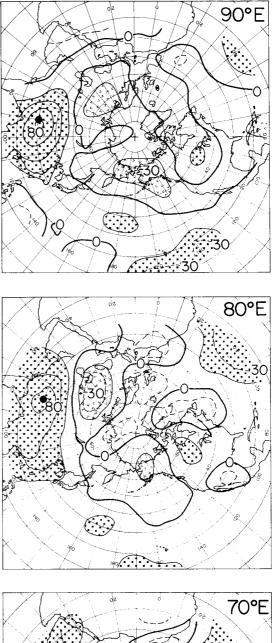


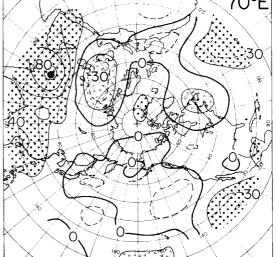


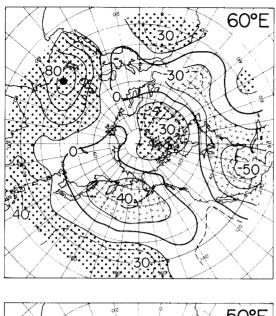


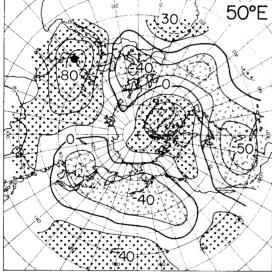


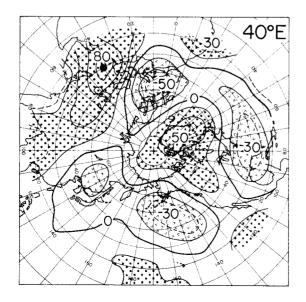
SUMMER 30°N



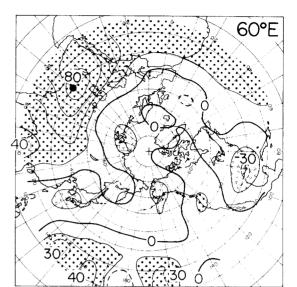




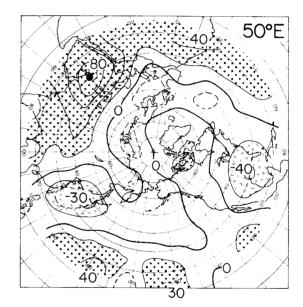


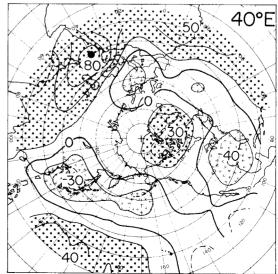


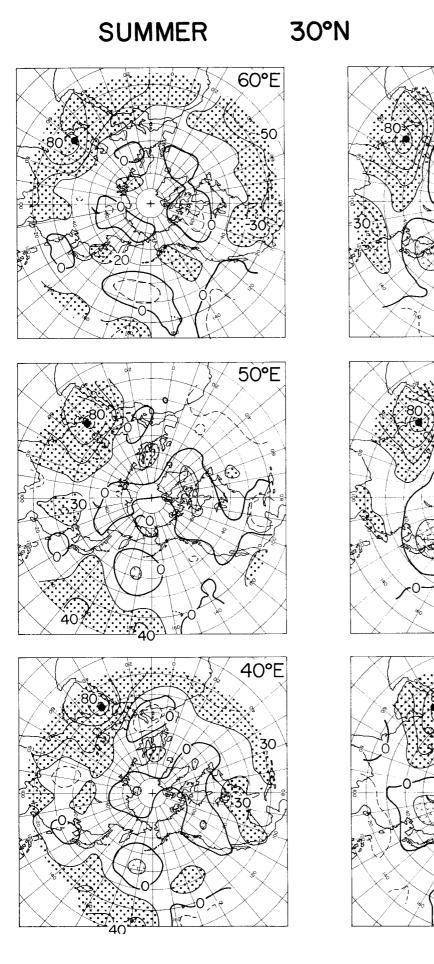
30°N

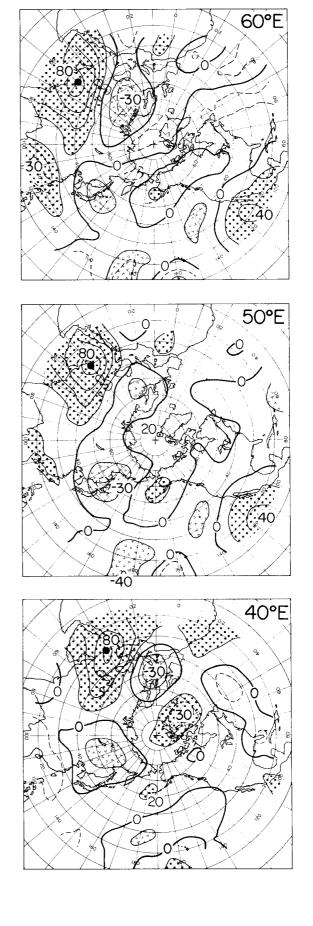


SPRING



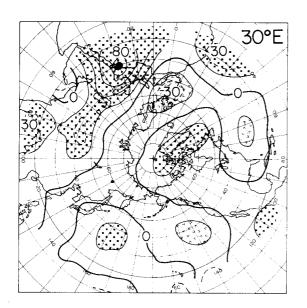


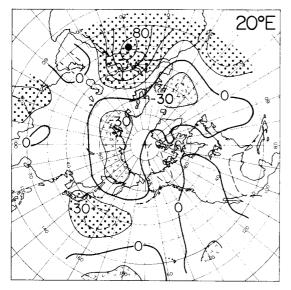


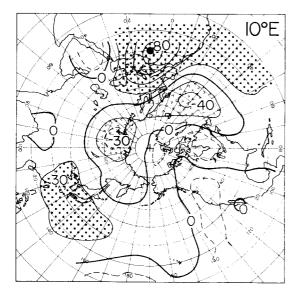


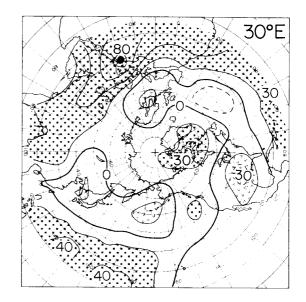
71

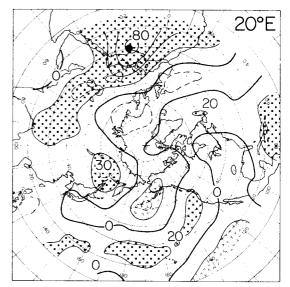


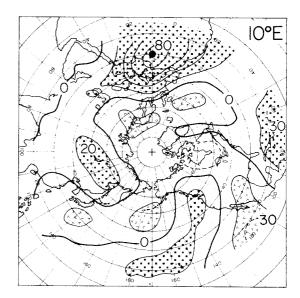


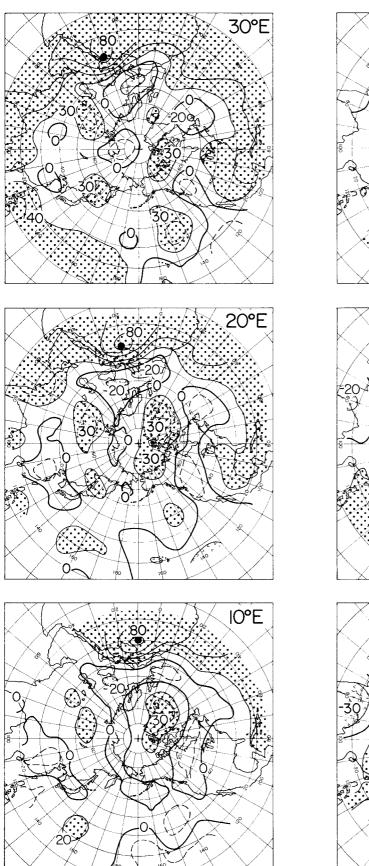




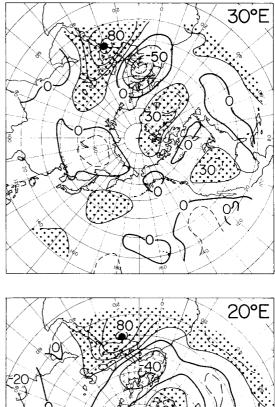




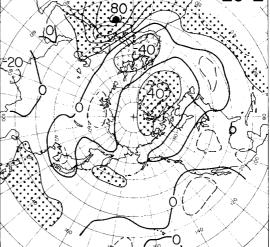


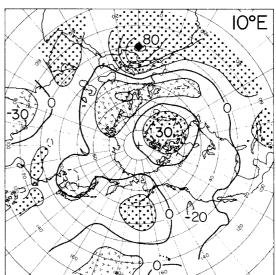


SUMMER

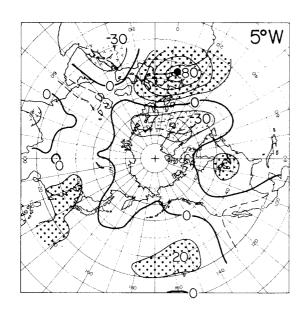


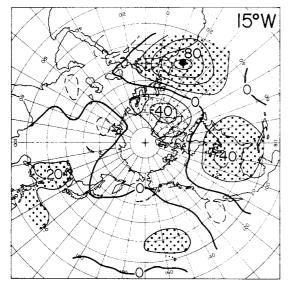
FALL

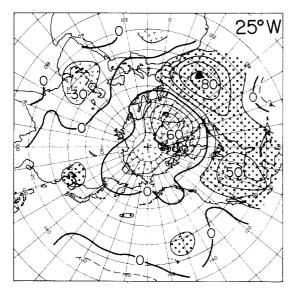


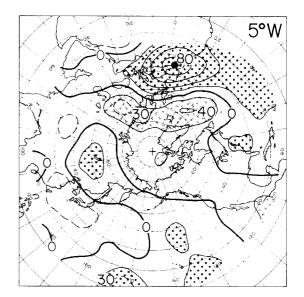


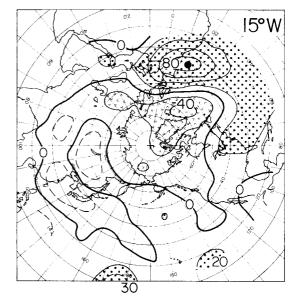


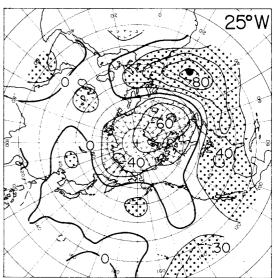


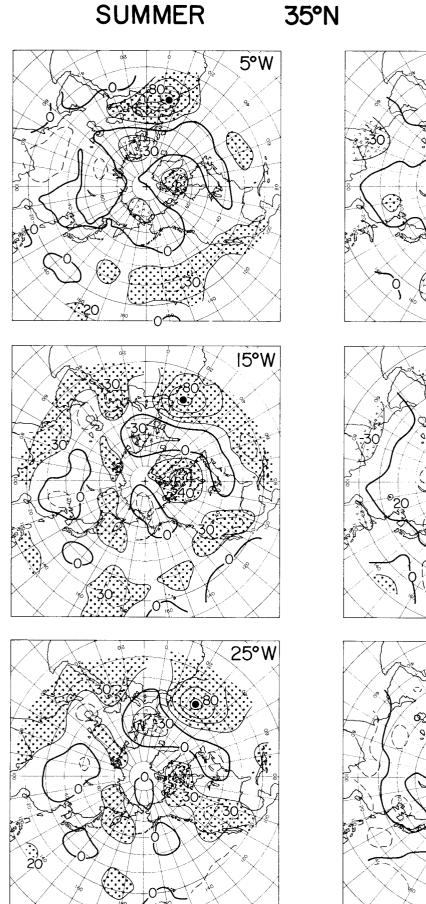


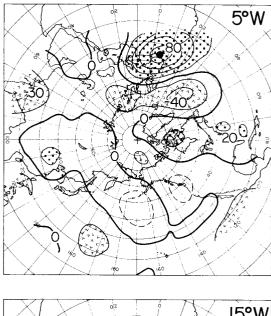


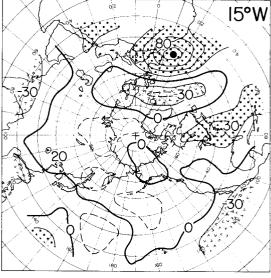


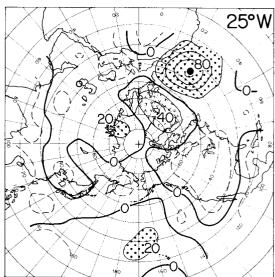






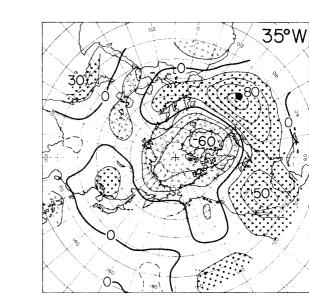


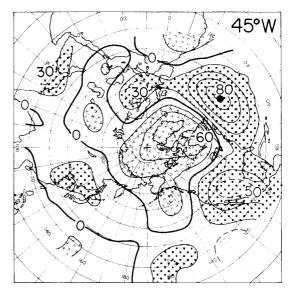


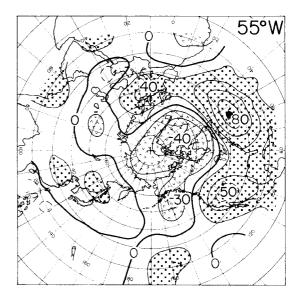


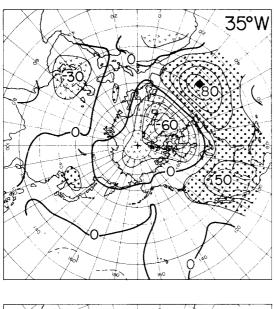
35°N

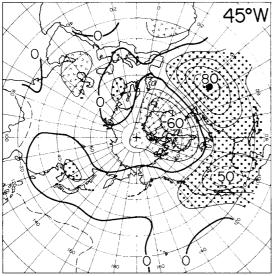
SPRING

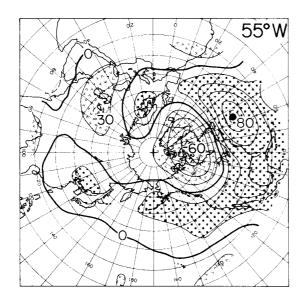


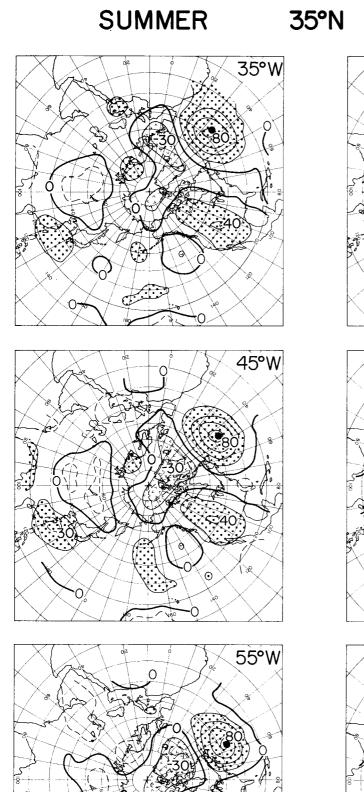


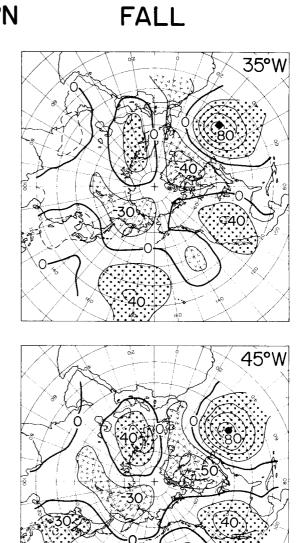


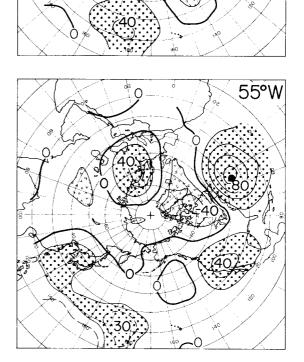


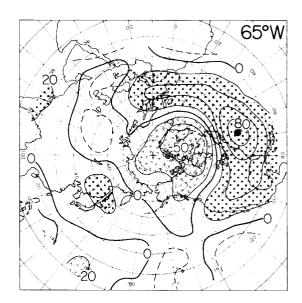


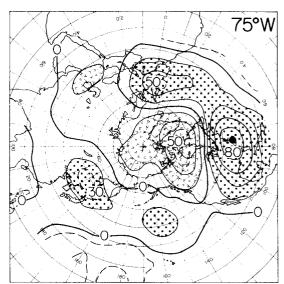


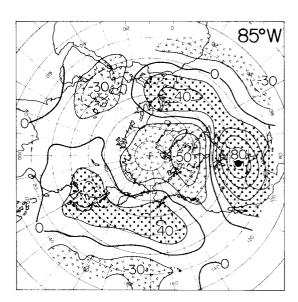


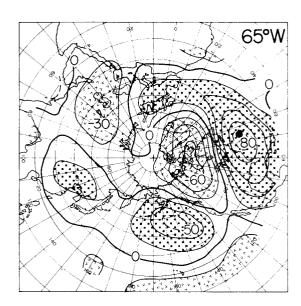


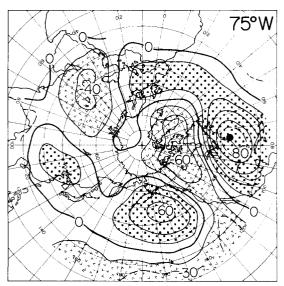


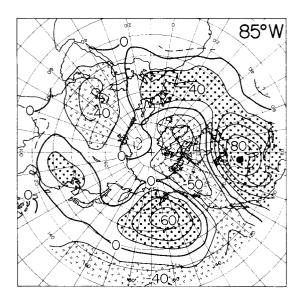


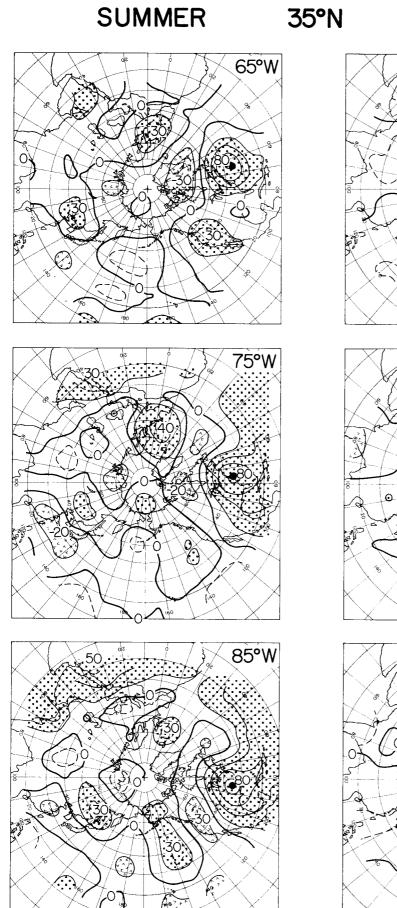


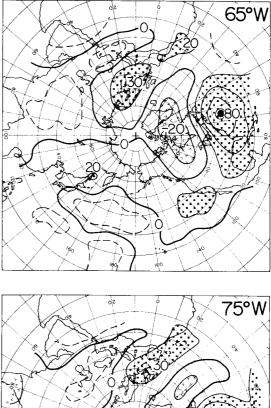


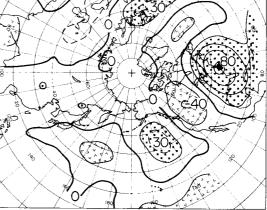


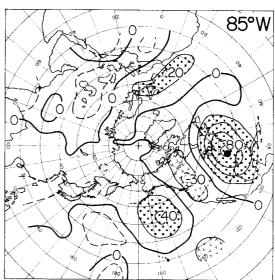




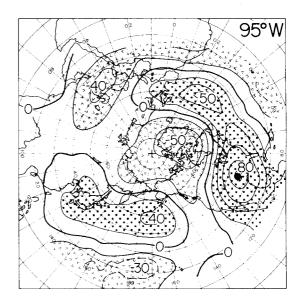


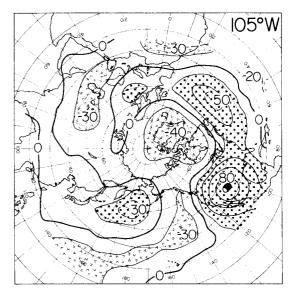


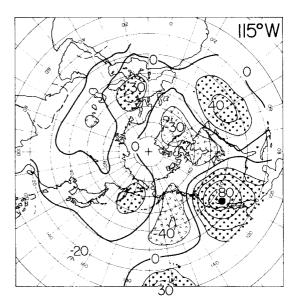


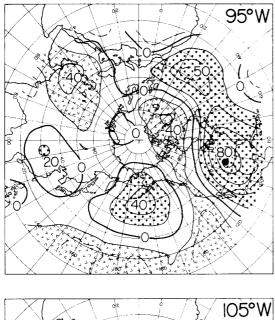


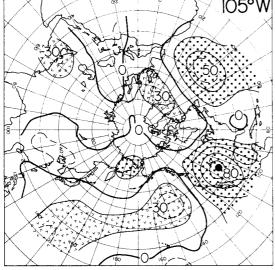


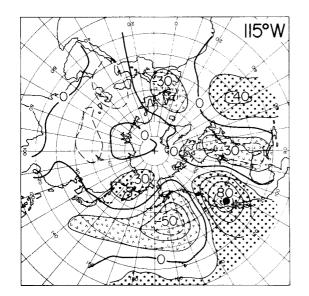


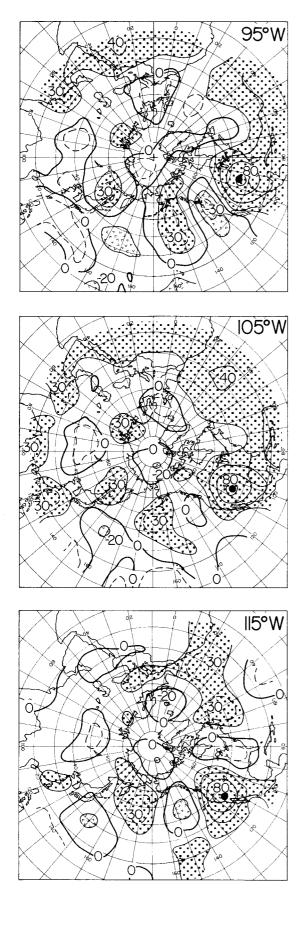




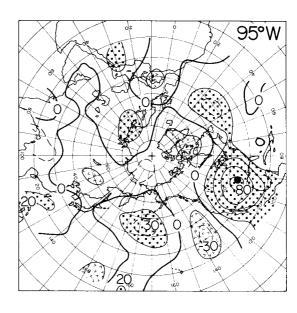




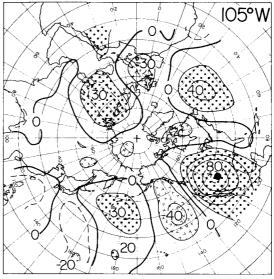


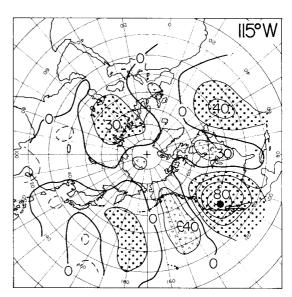


SUMMER

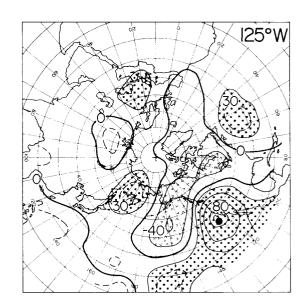


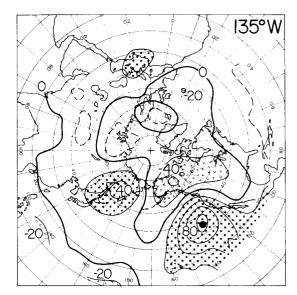
FALL

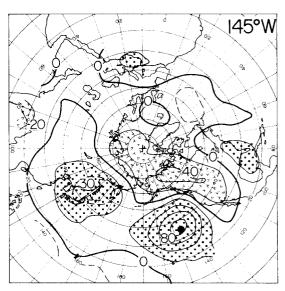


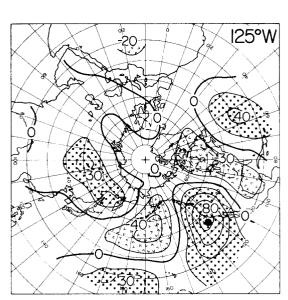


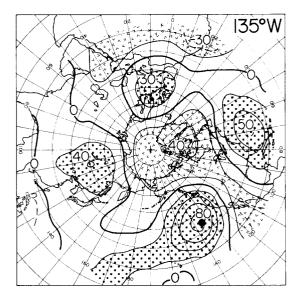
WINTER

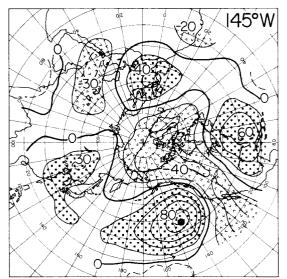


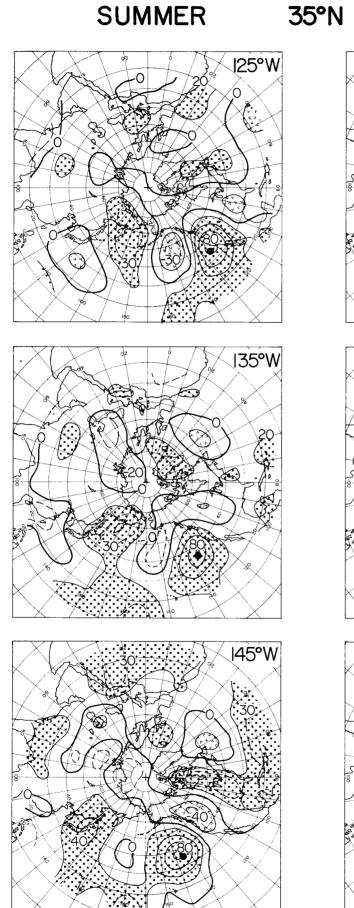


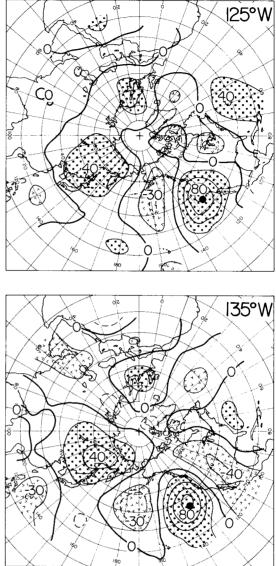


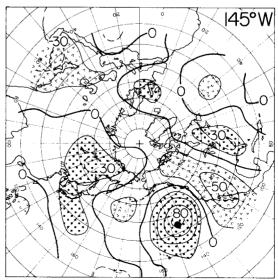






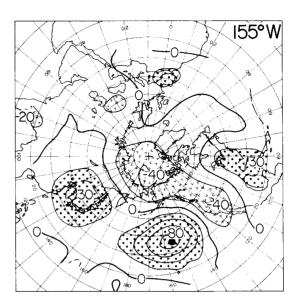


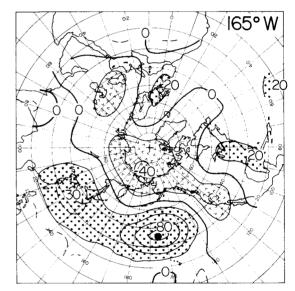


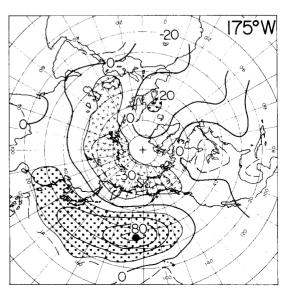


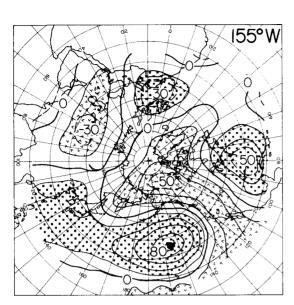
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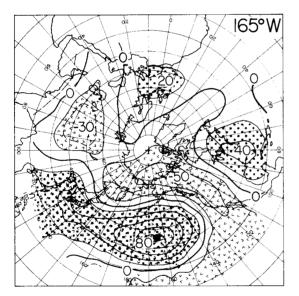


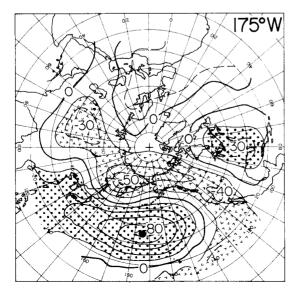


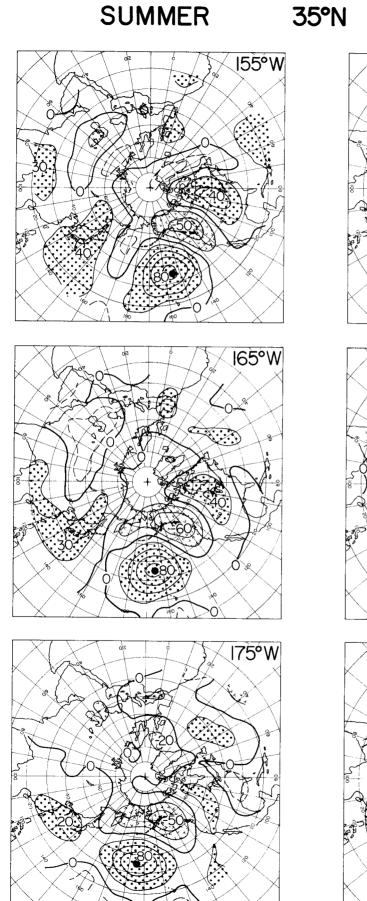


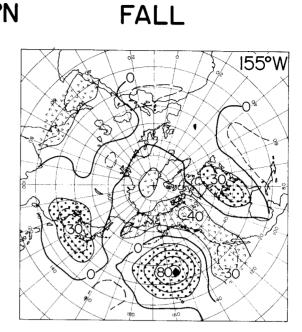


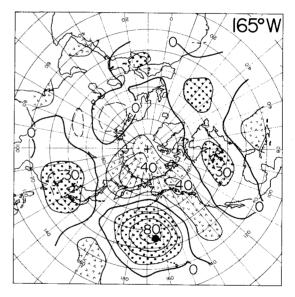


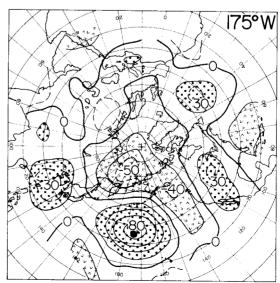


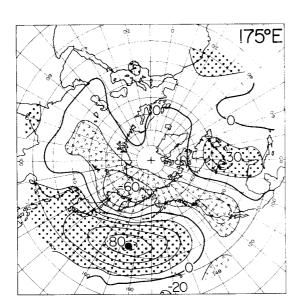


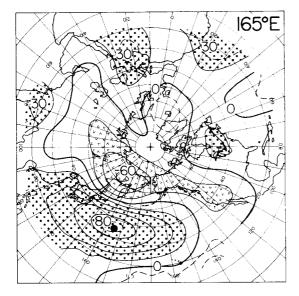


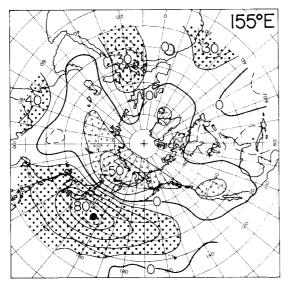


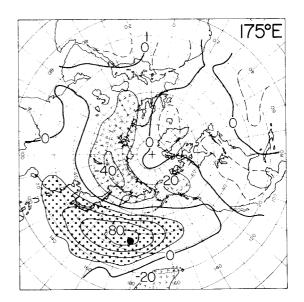


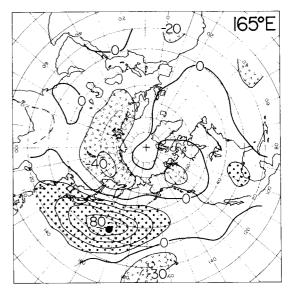


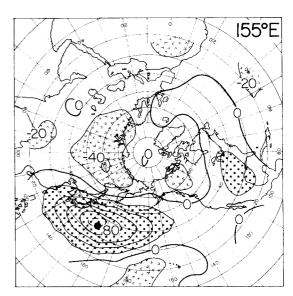




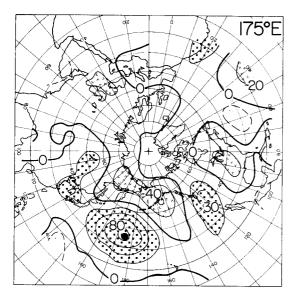


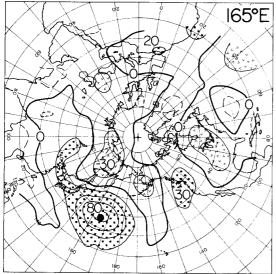


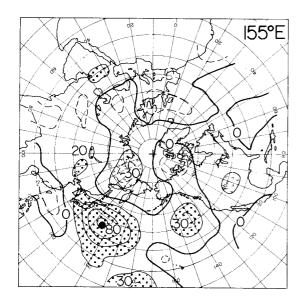


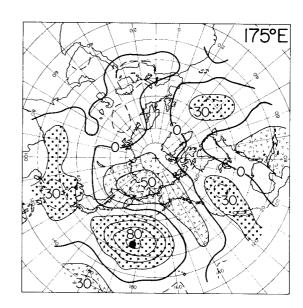


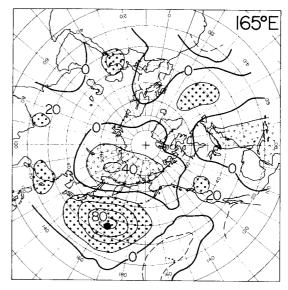
SUMMER

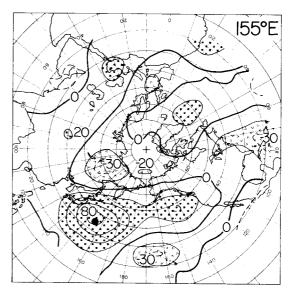






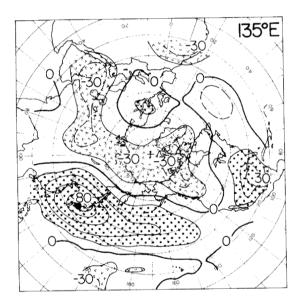


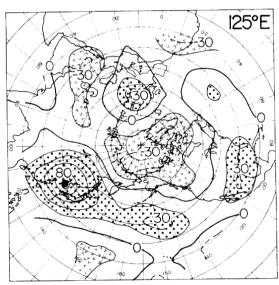




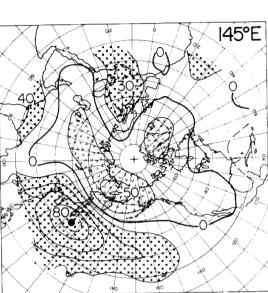
₹ 35°N

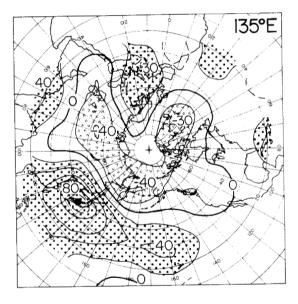


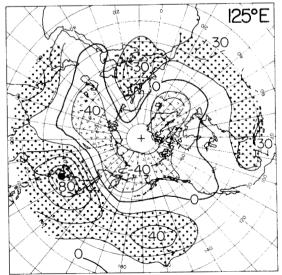


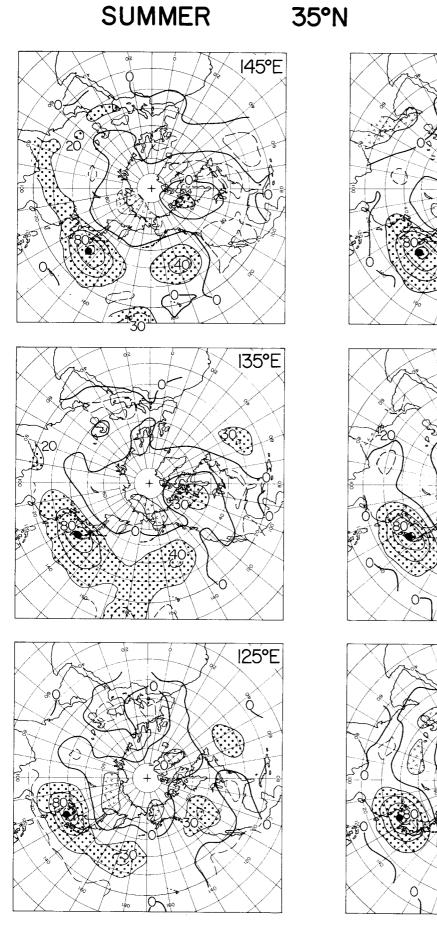


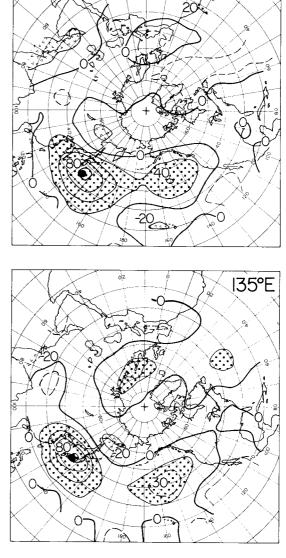
WINTER

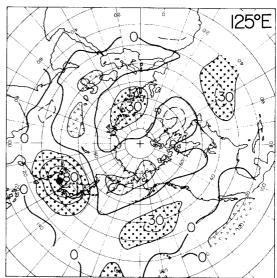








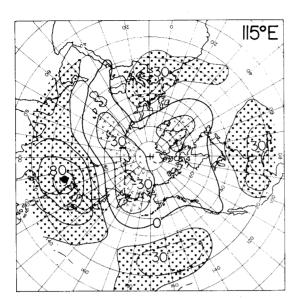


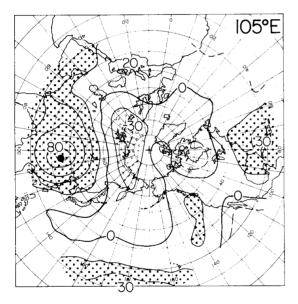


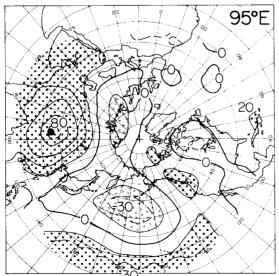
145°E

0/

35°N

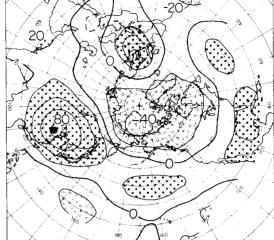


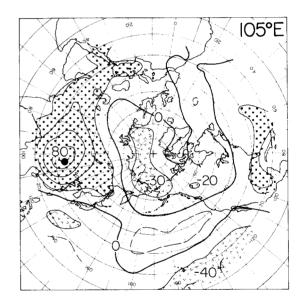


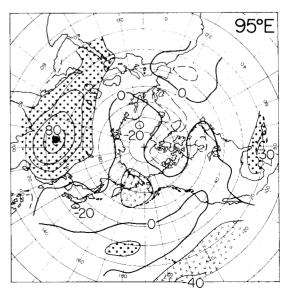


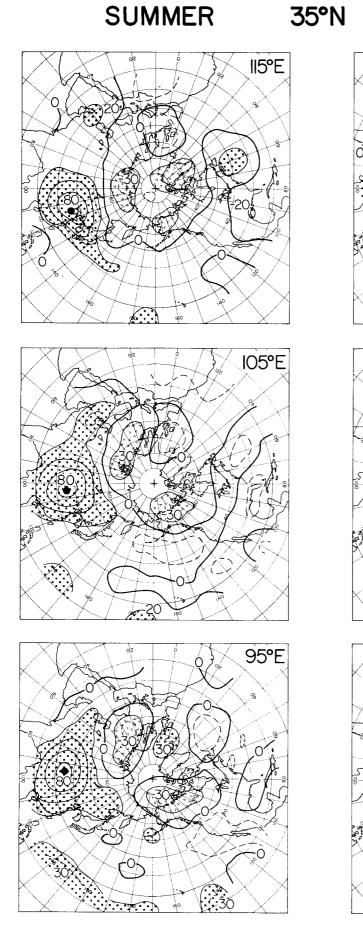


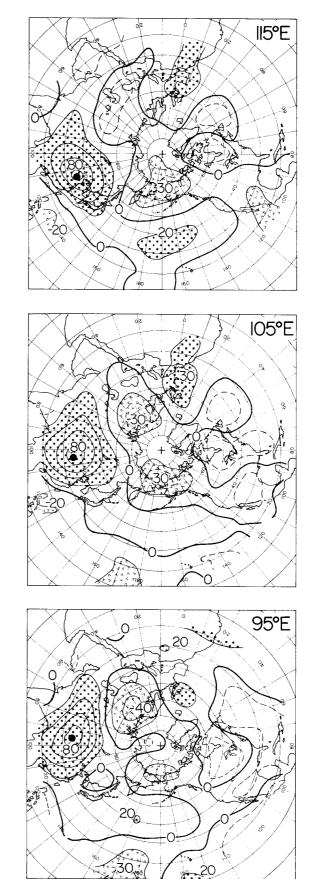
II5°E



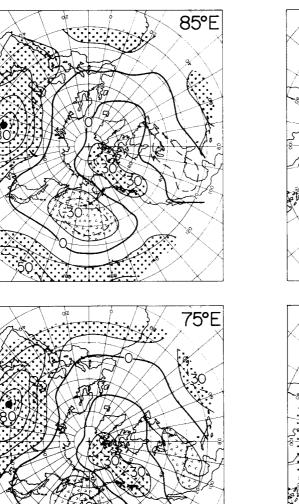


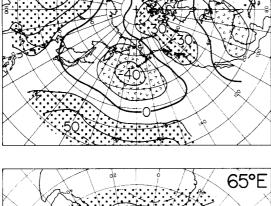


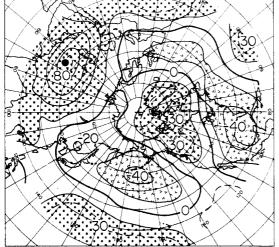


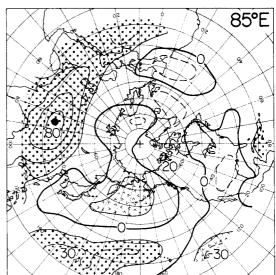


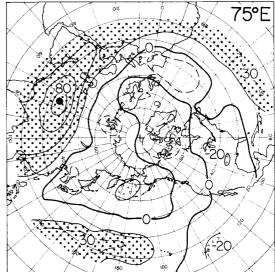
WINTER

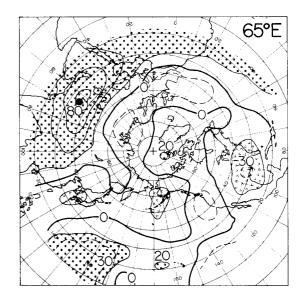






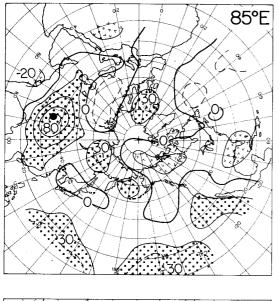


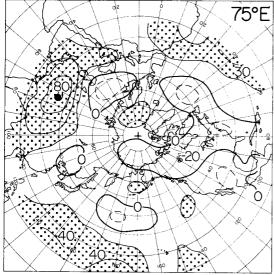


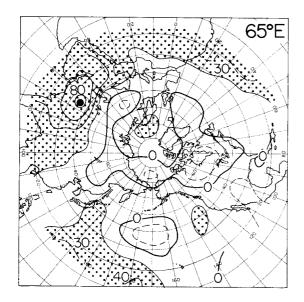


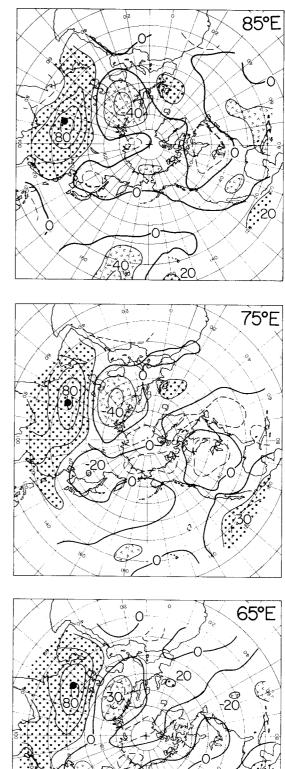


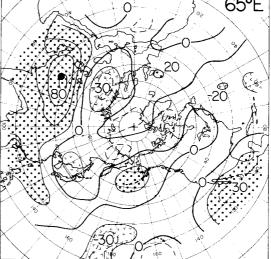




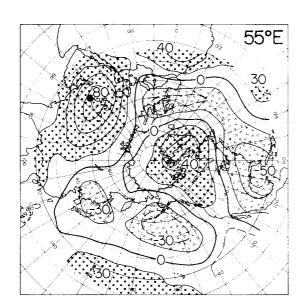


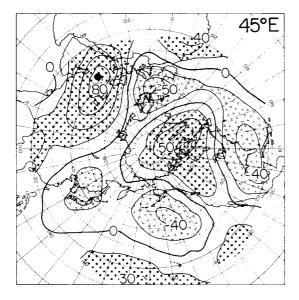


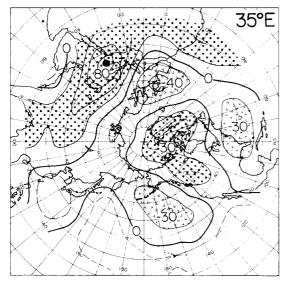


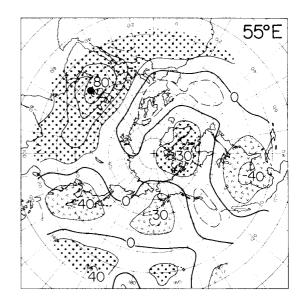


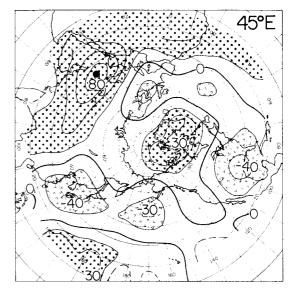


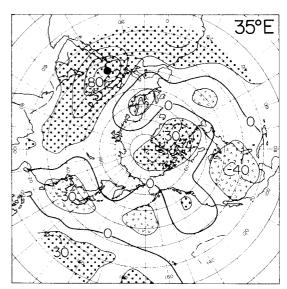


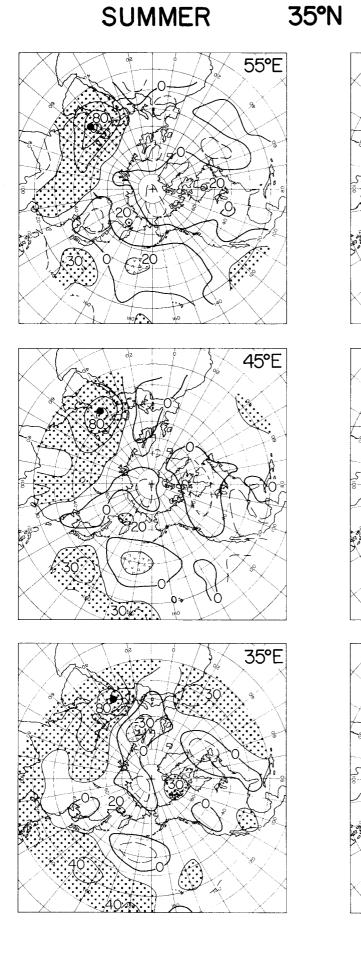


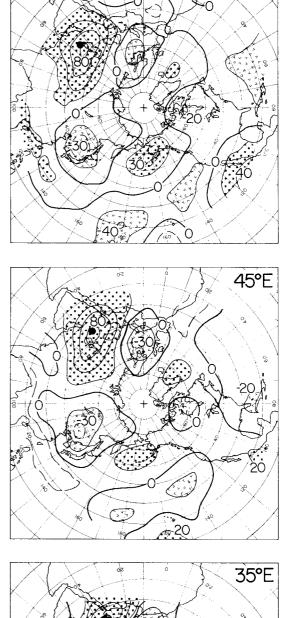


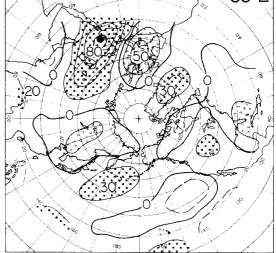






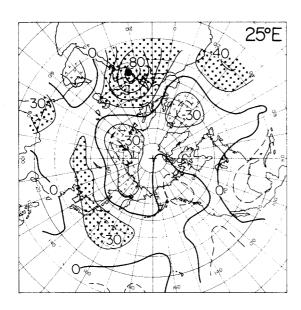


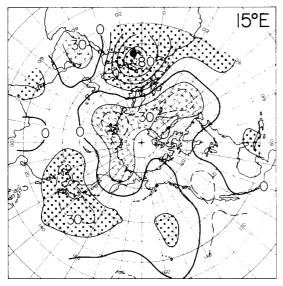


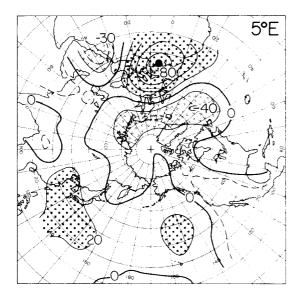


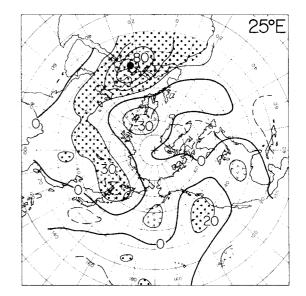
55°E

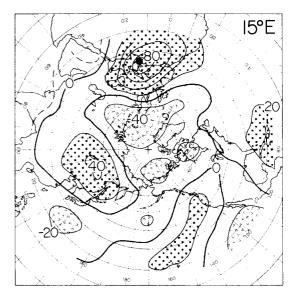


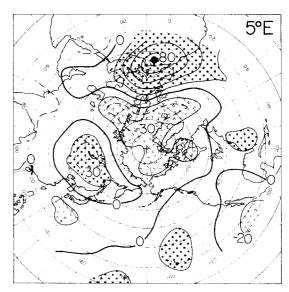


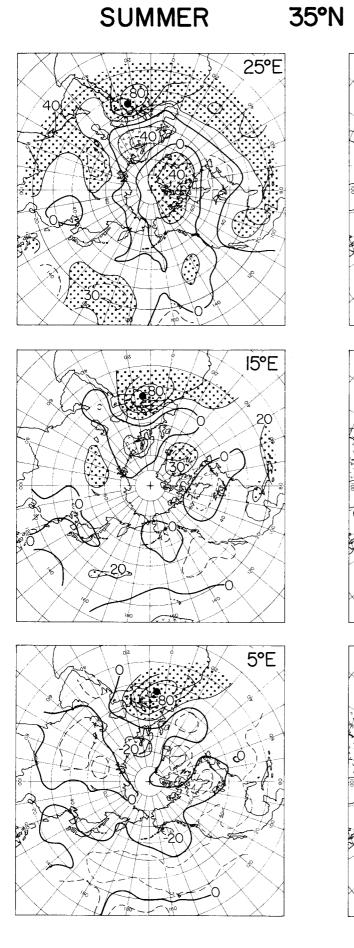


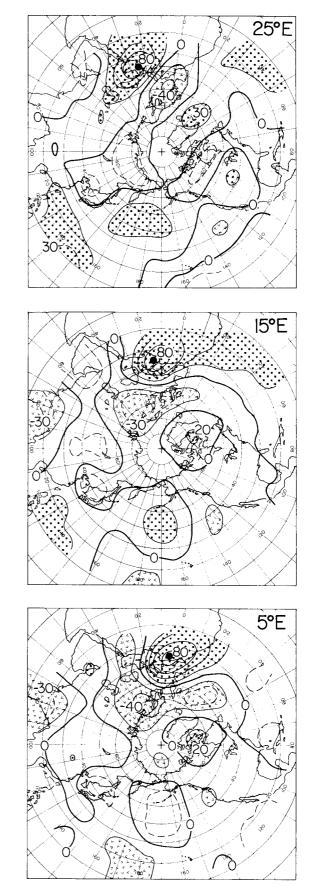


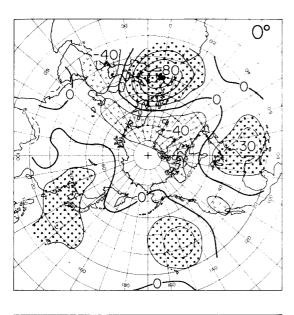


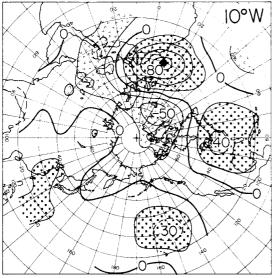


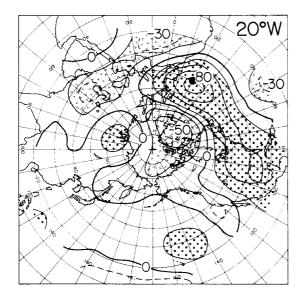


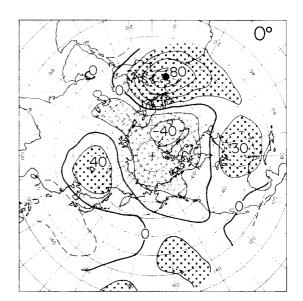


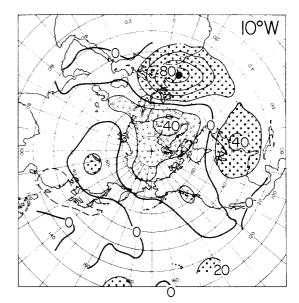


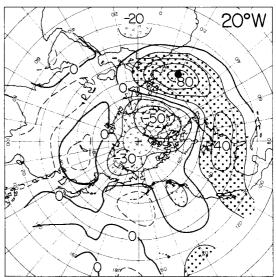




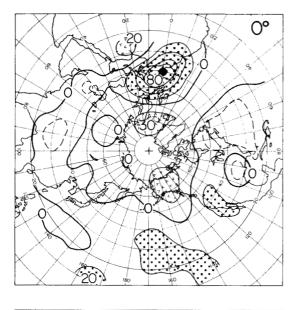


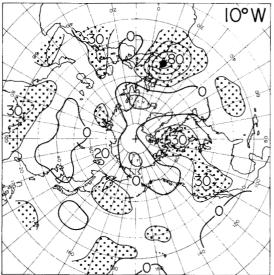


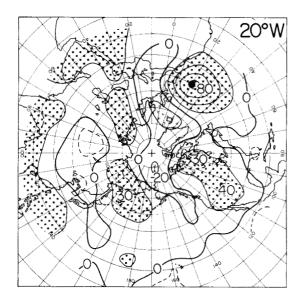


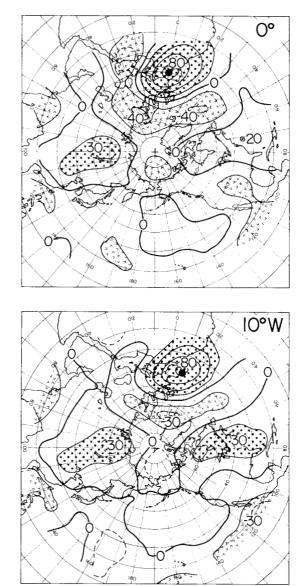


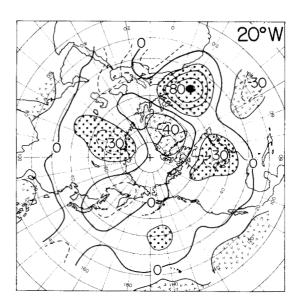
SUMMER



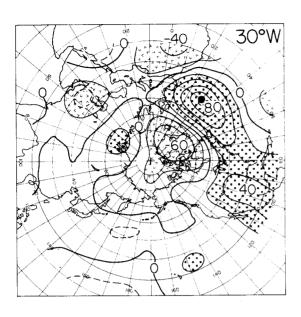


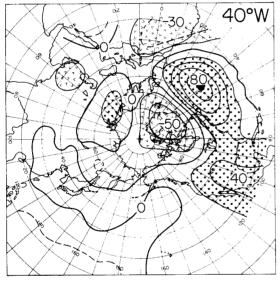


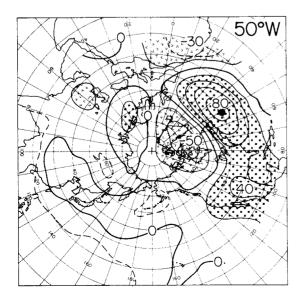


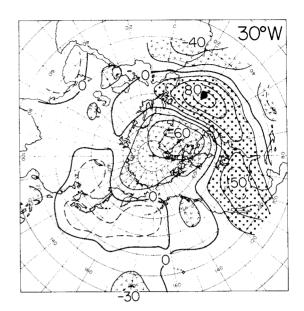


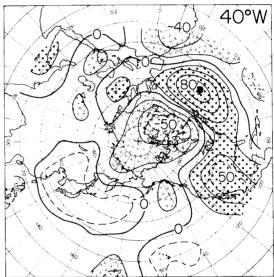


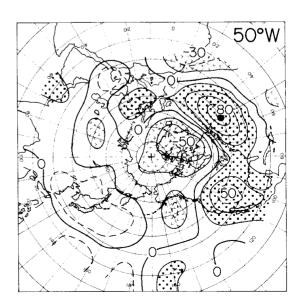


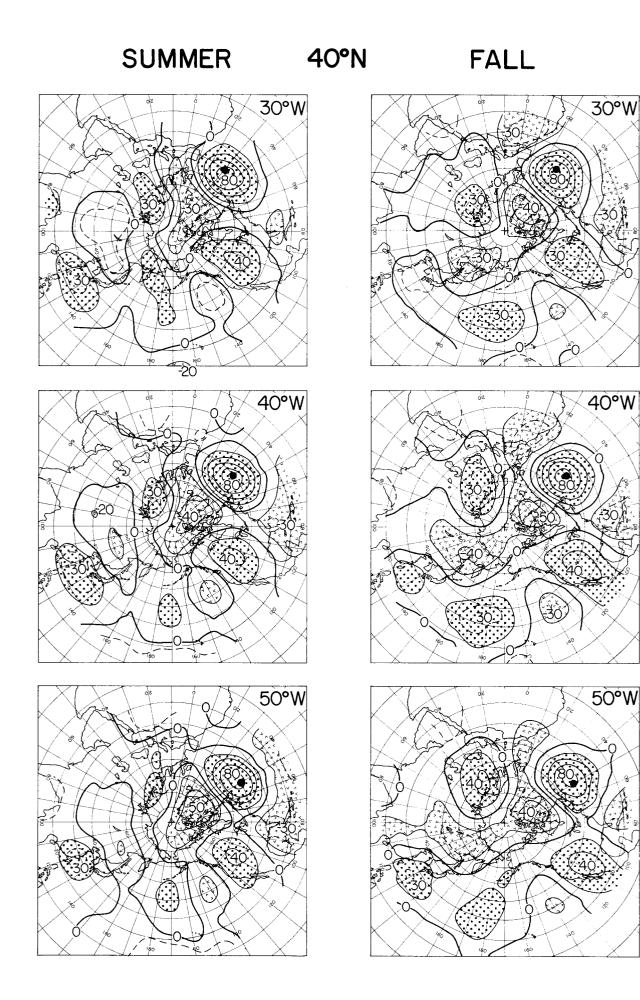




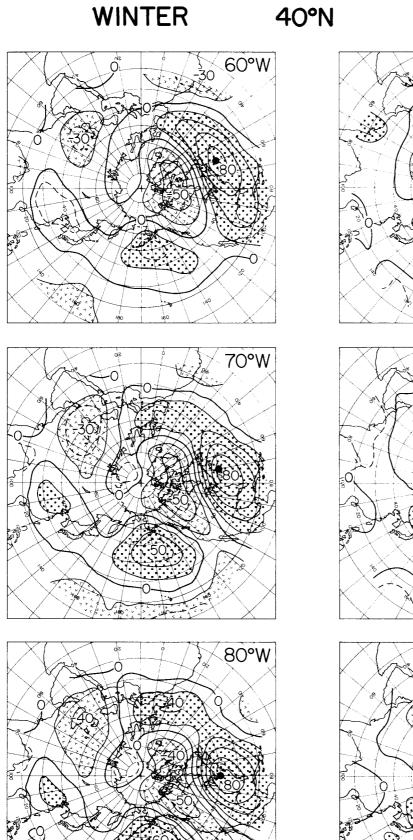


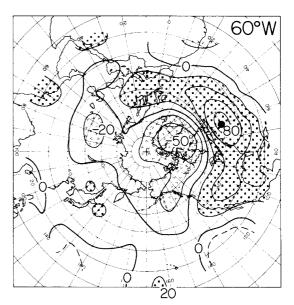


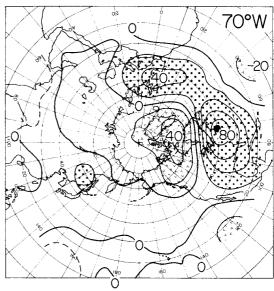


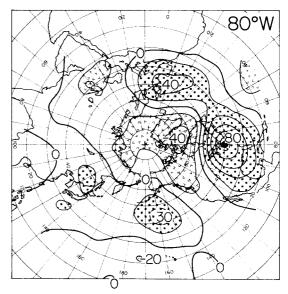


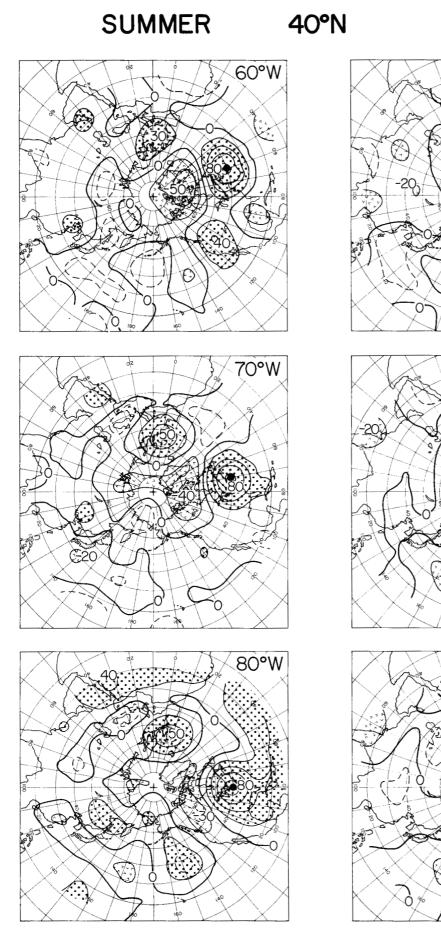
SPRING

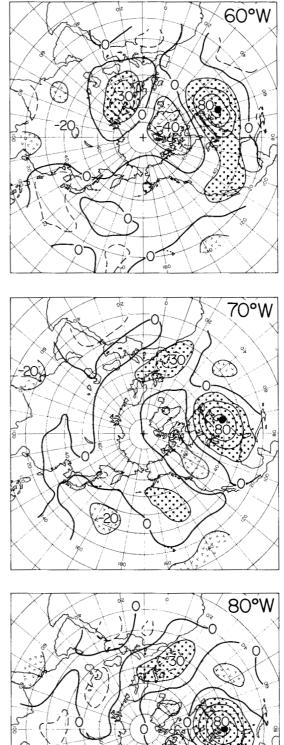


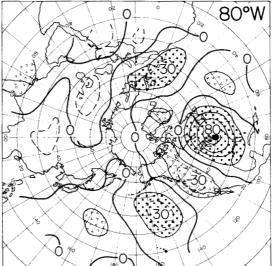




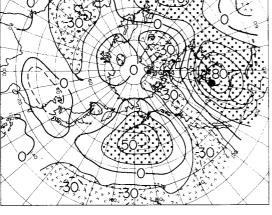


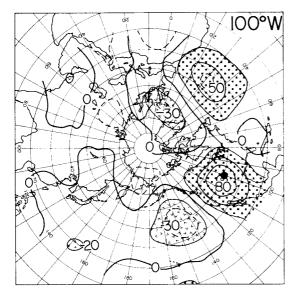


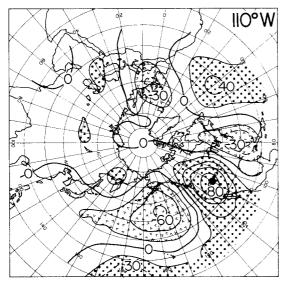


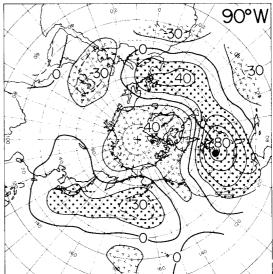


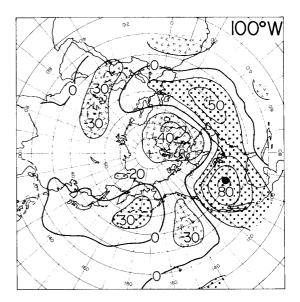
WINTER 40°N SPRING

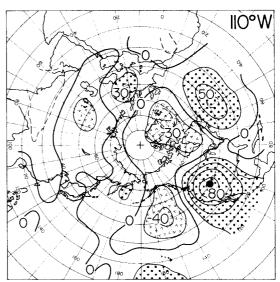


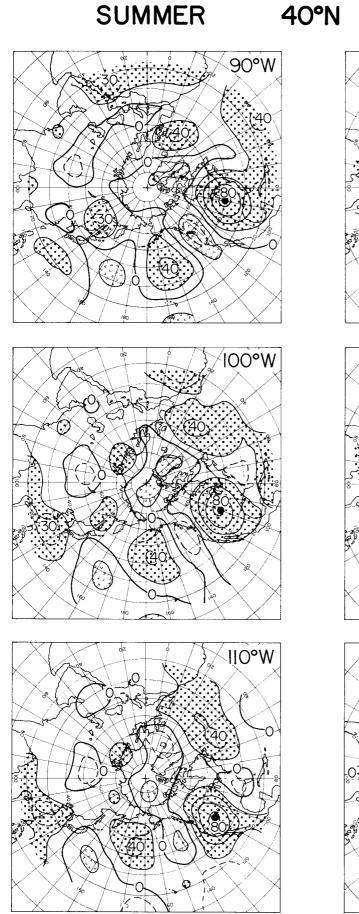


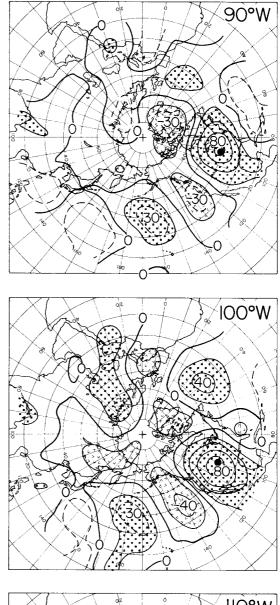


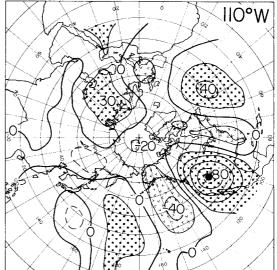






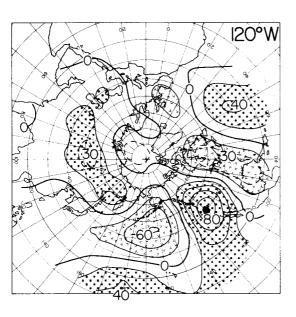


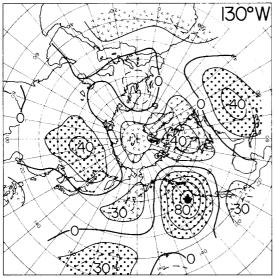


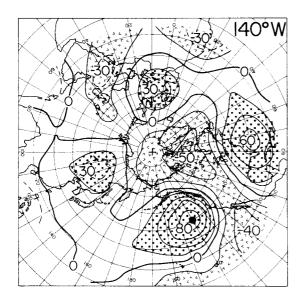


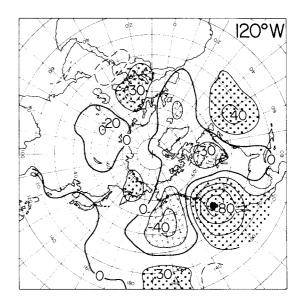
40°N

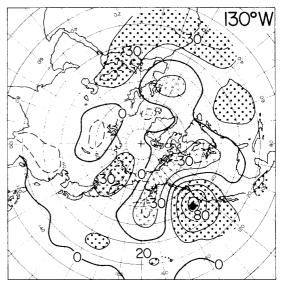


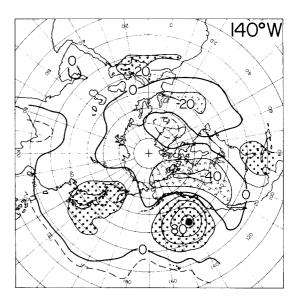


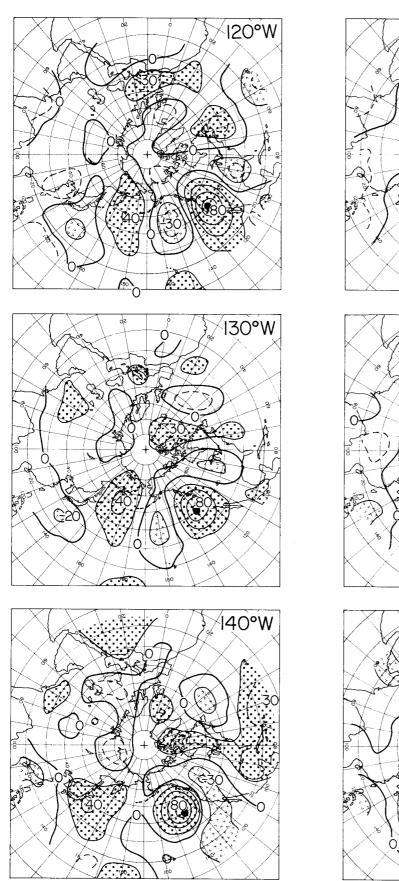




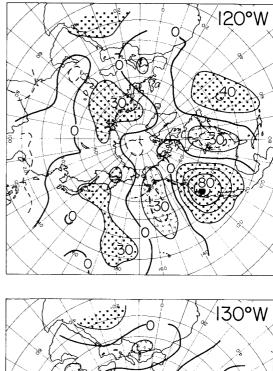


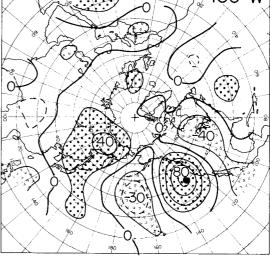


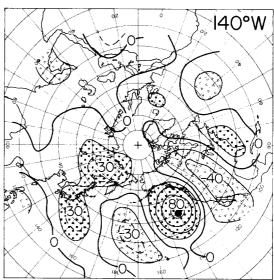




SUMMER 40°N



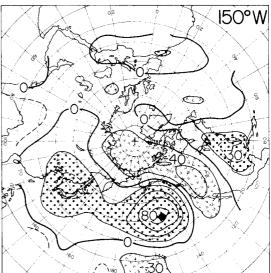


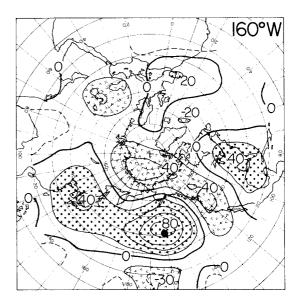


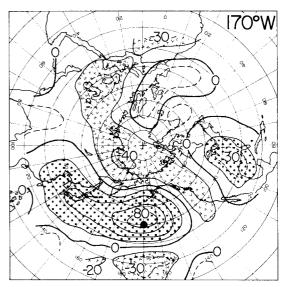
WINTER 40°N

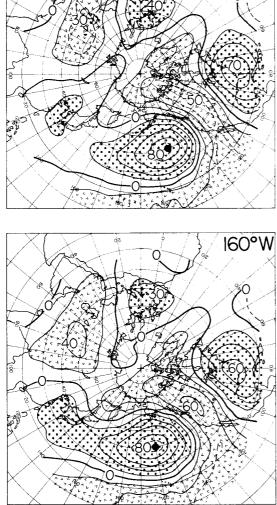


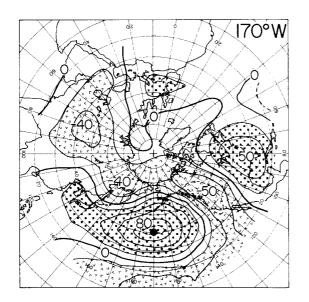


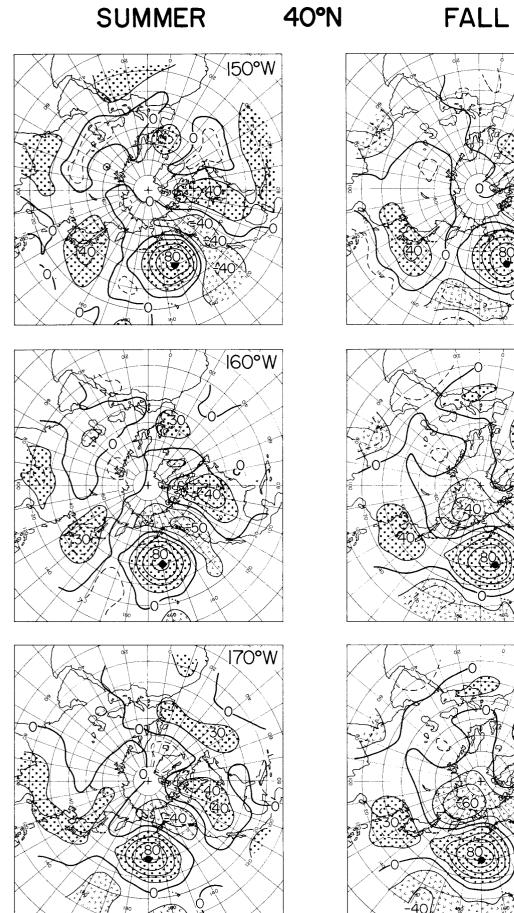


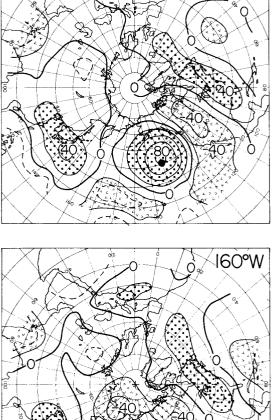


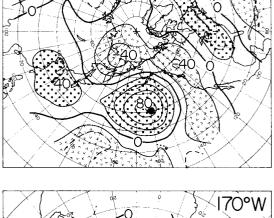


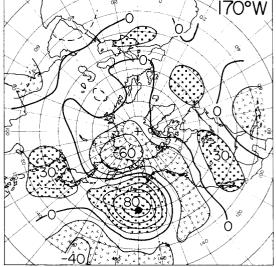








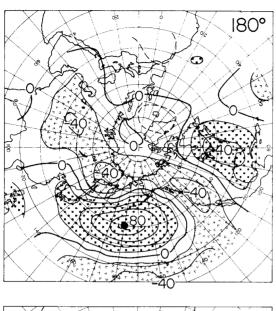


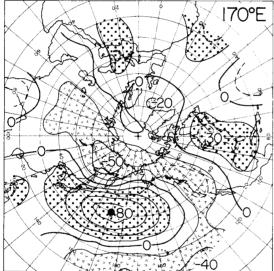


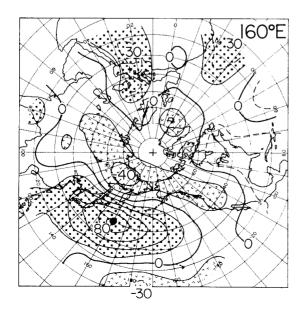
×I5Ò°W

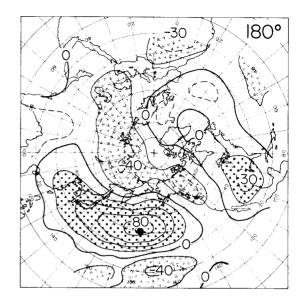
40°N

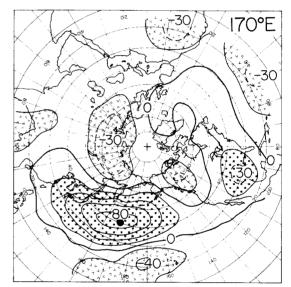


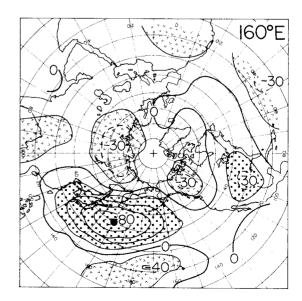


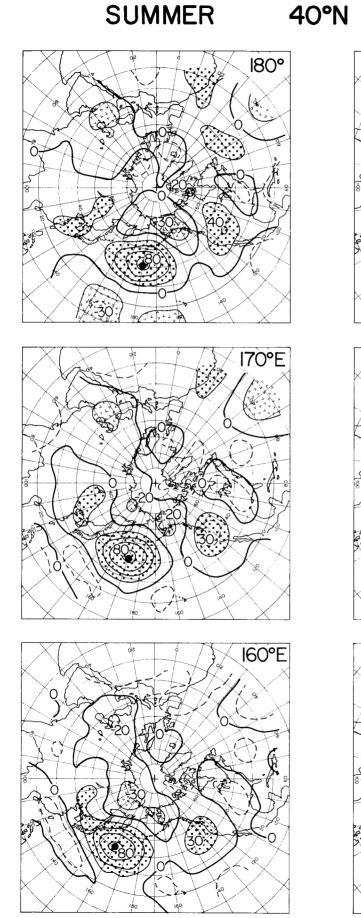


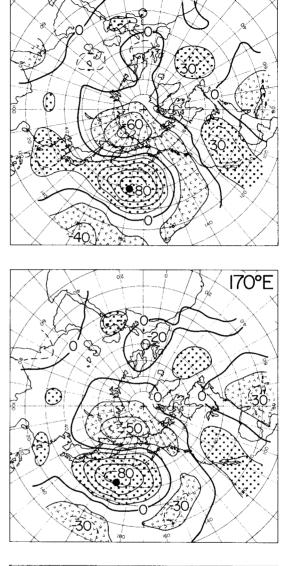


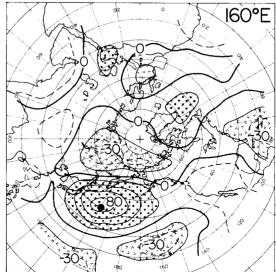








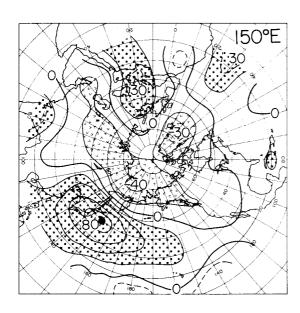


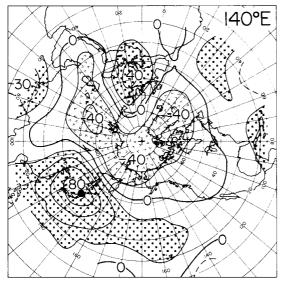


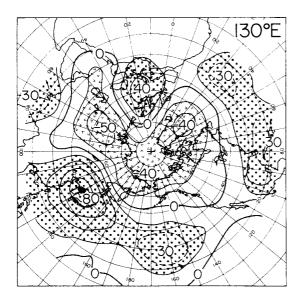
180°

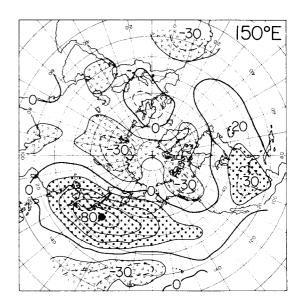
WINTER 40°N

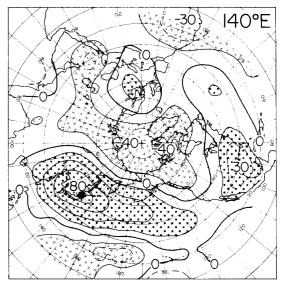


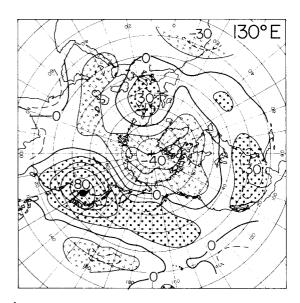


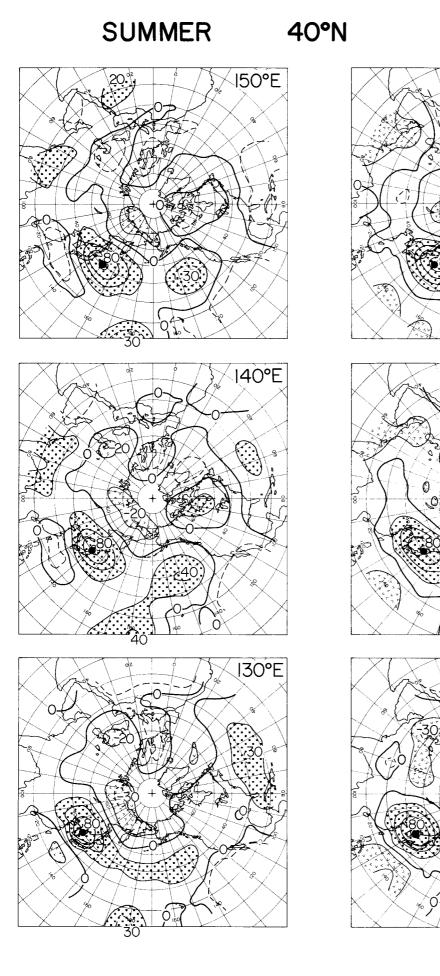


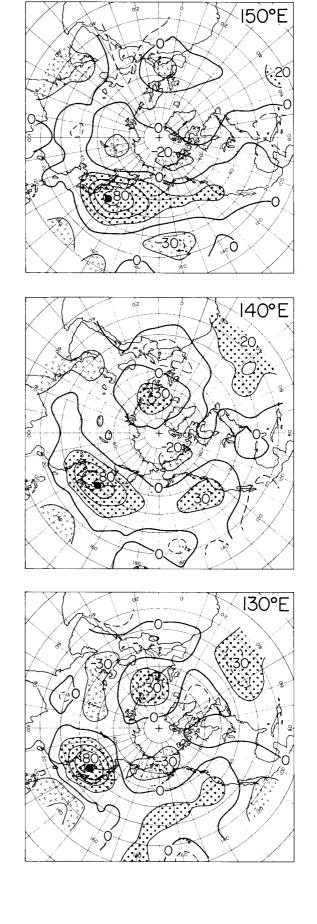






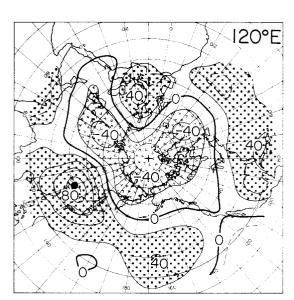


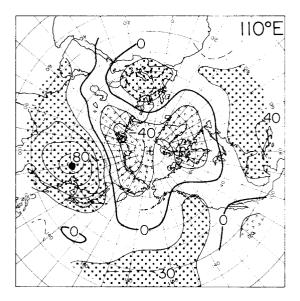


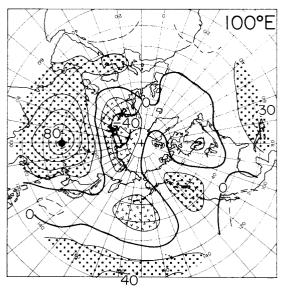


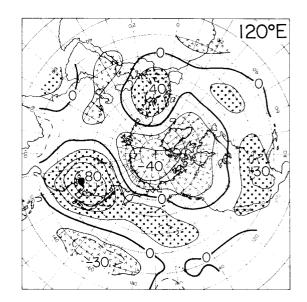
WINTER 40°N

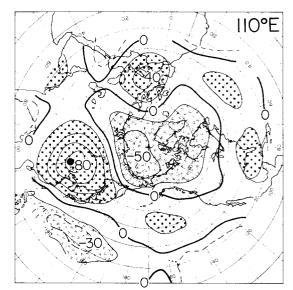
SPRING

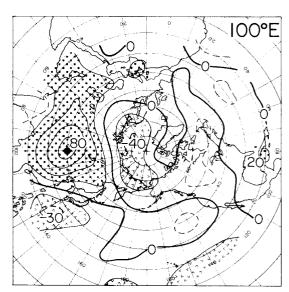


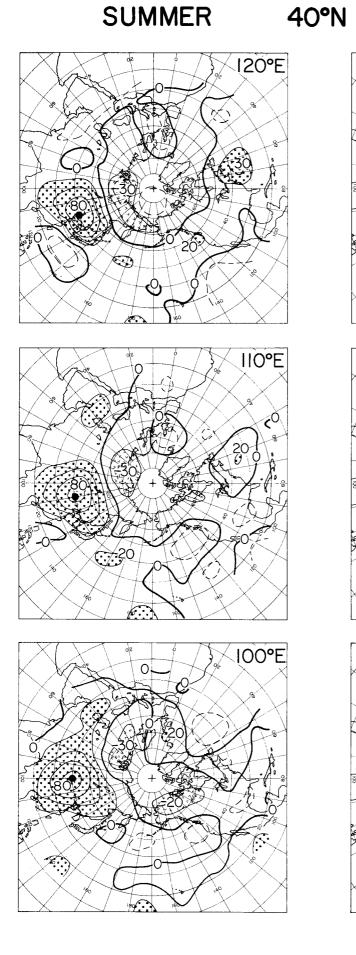


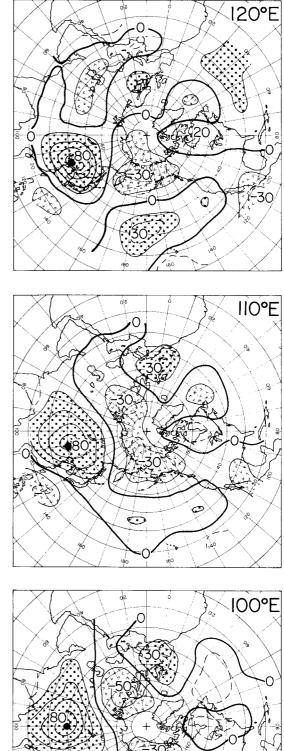


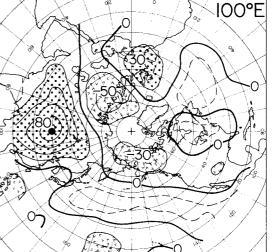








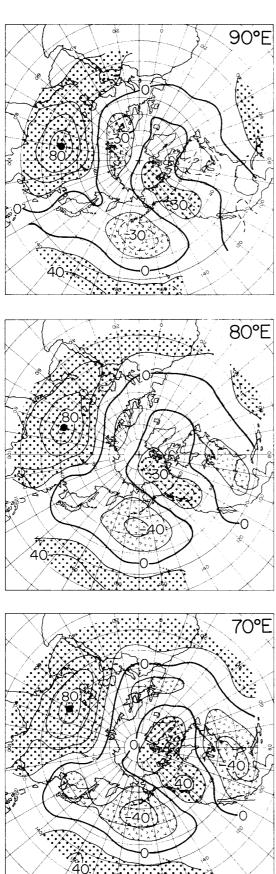




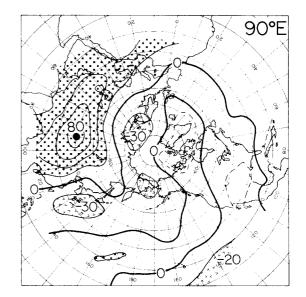
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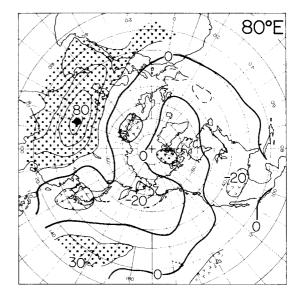
40°N

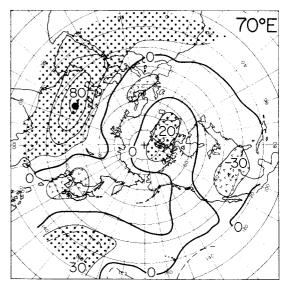


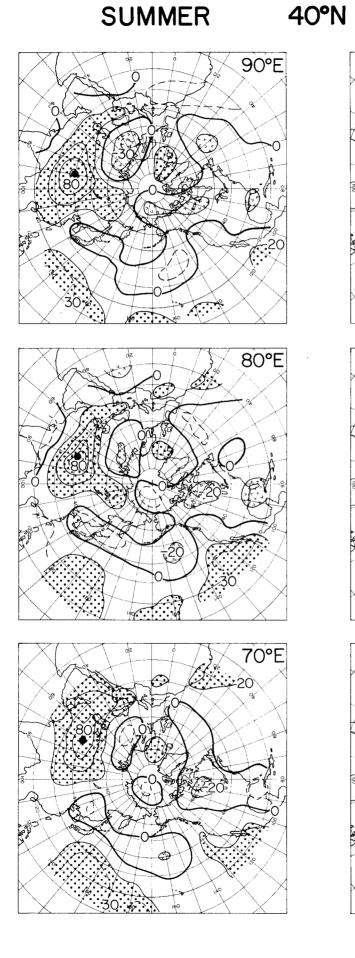


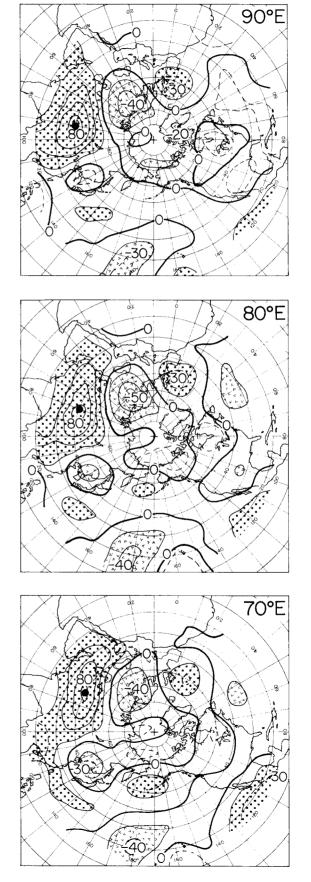
160





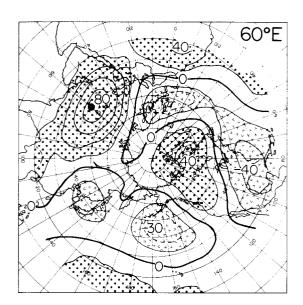


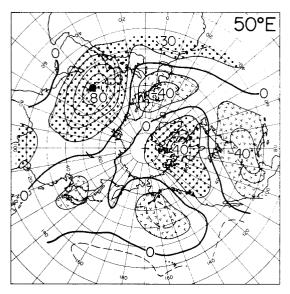


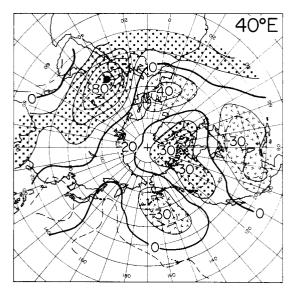


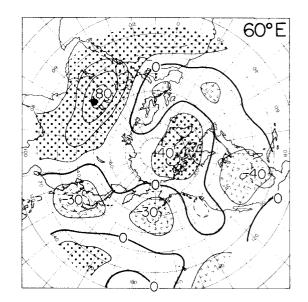
WINTER 40°N

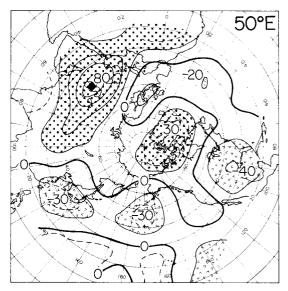


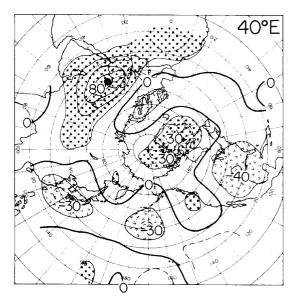


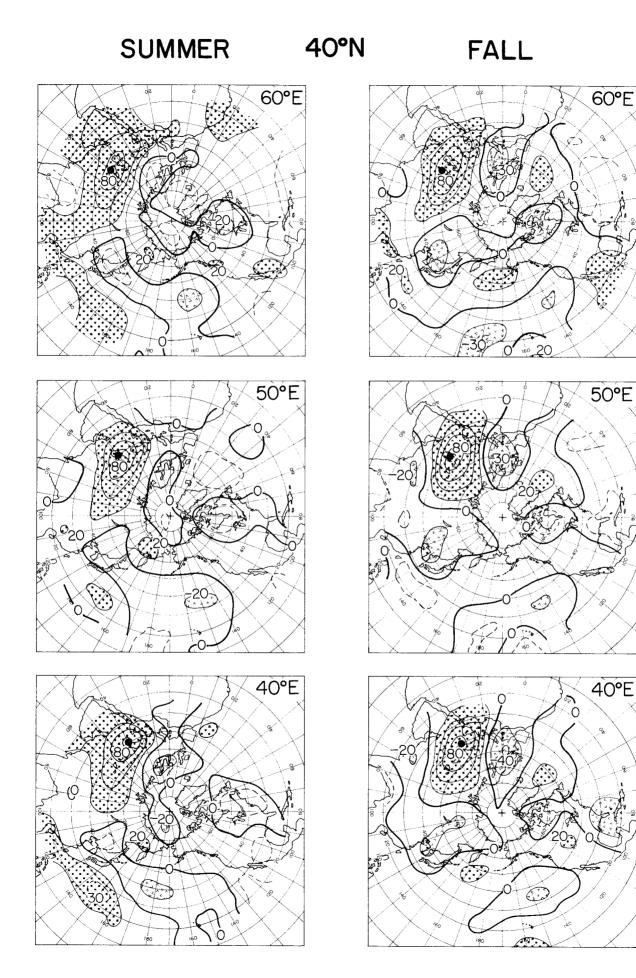






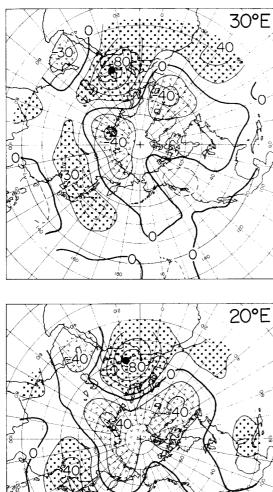


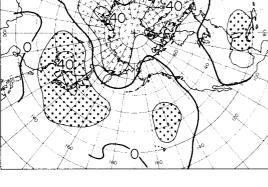


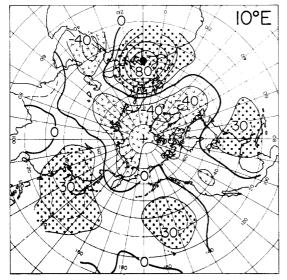


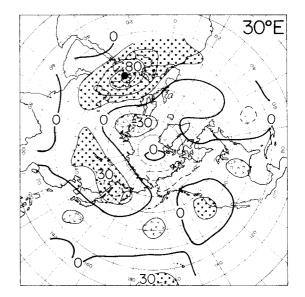
40°N

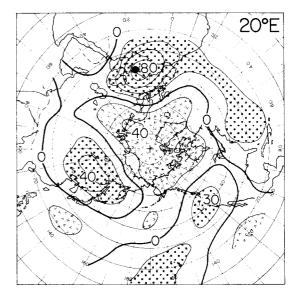
SPRING

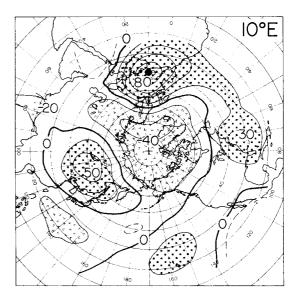


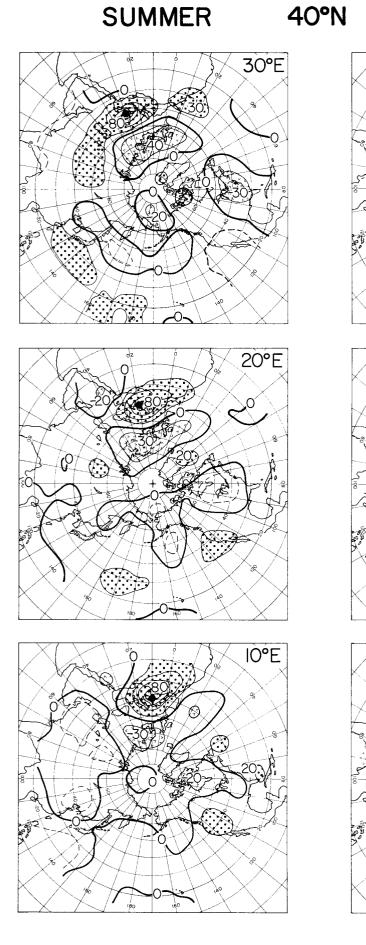


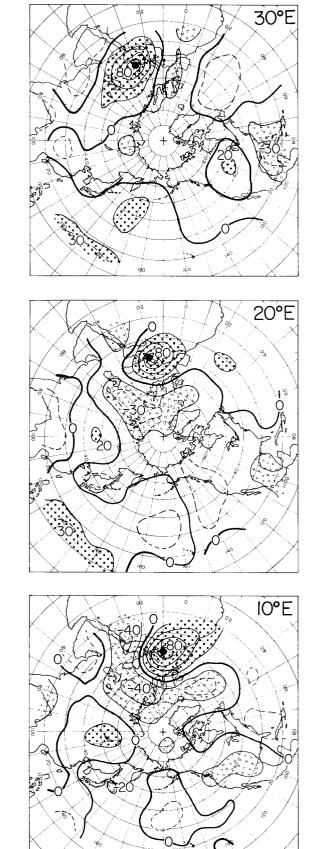






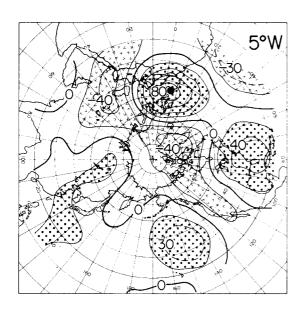


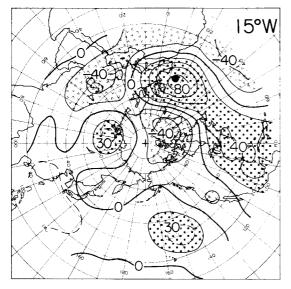


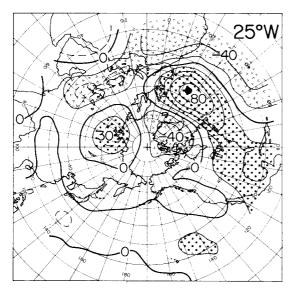


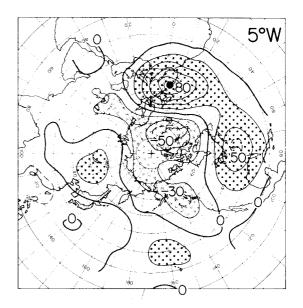
45°N

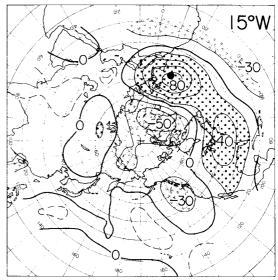


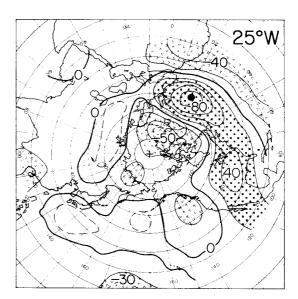


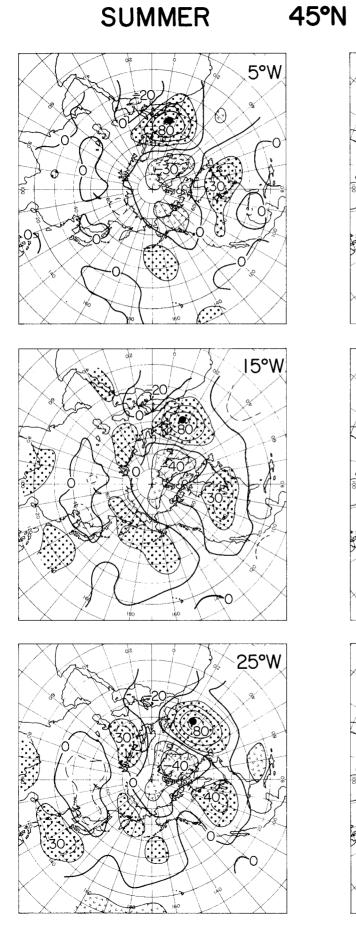


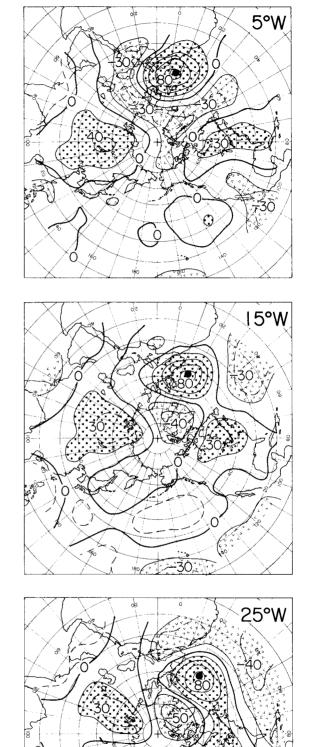












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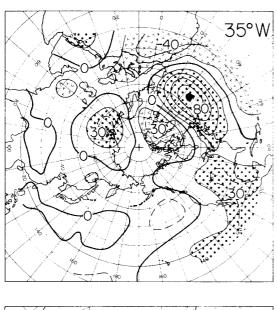
FALL

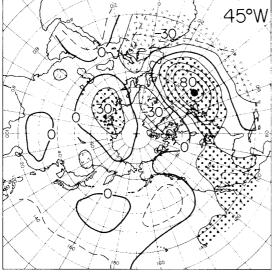
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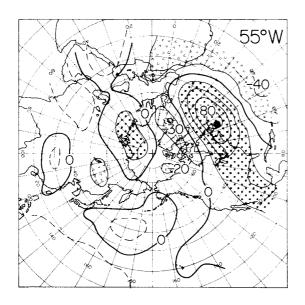
WINTER

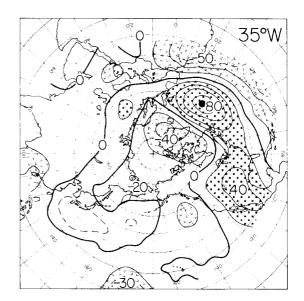
45°N

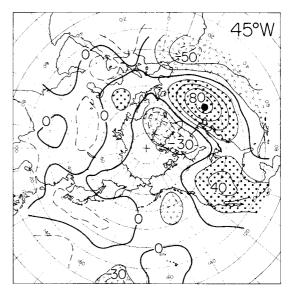


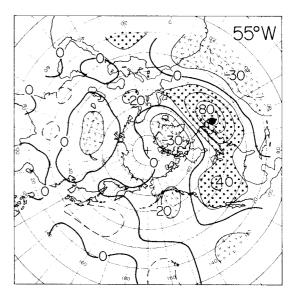


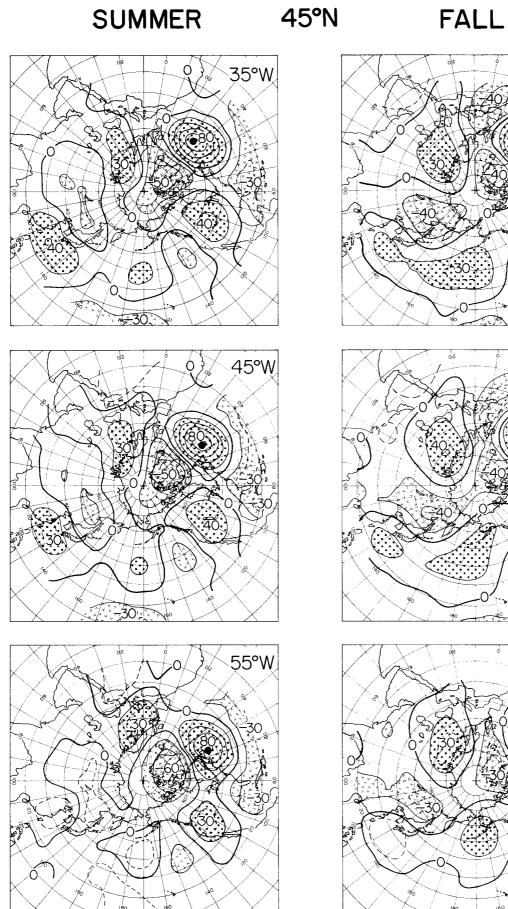


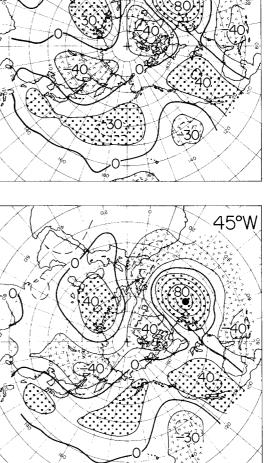


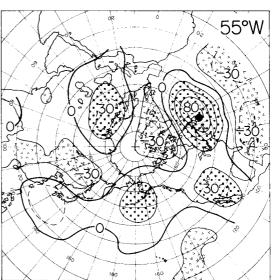








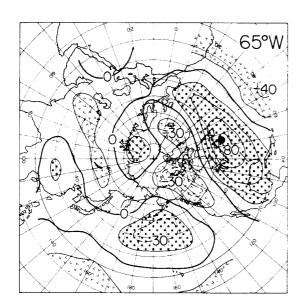


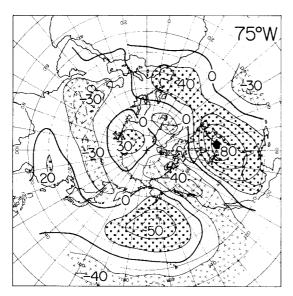


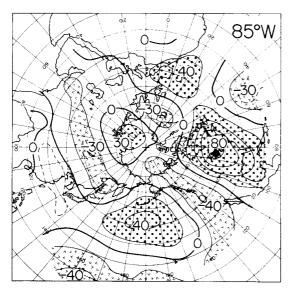
35°W

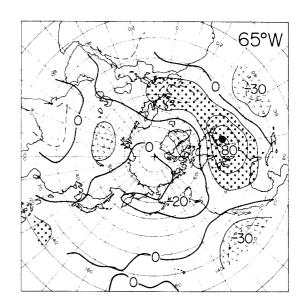
WINTER 45°N

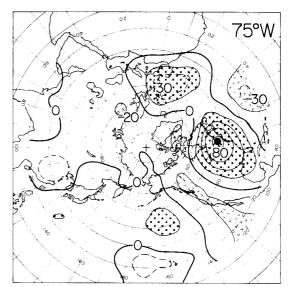


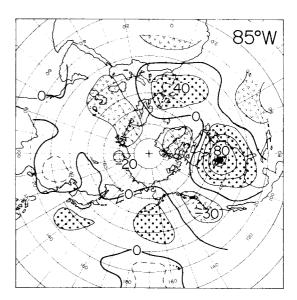








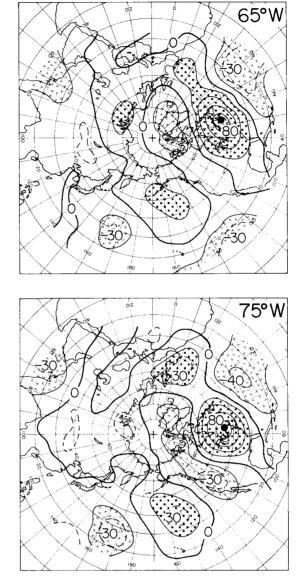




65°W ó -1 502 Ð 200 \otimes 20 Ċx ſ 75°W da Ó O KN <u>_2</u>0 1 160 i k 85°W dz - - - 2 1%

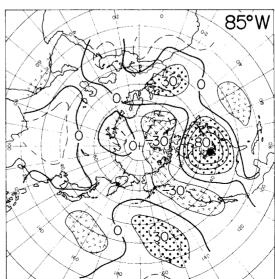
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SUMMER 45°N



FALL

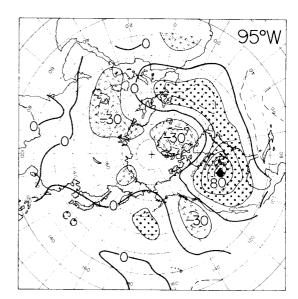
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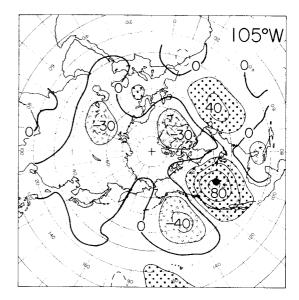


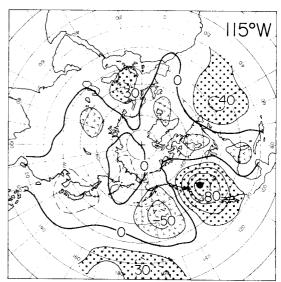
95°W

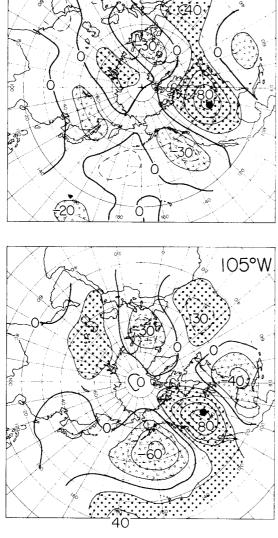
45°N

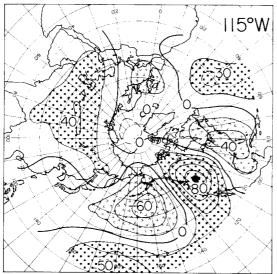


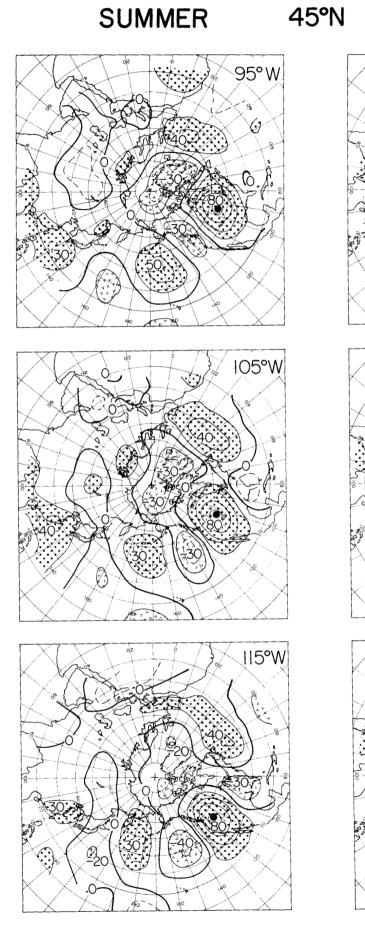


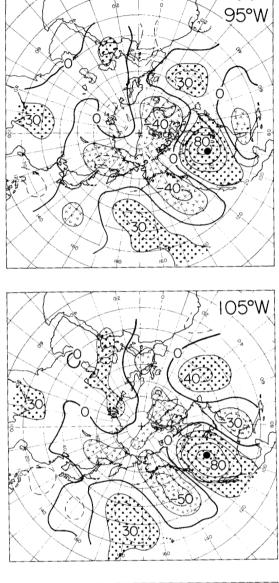


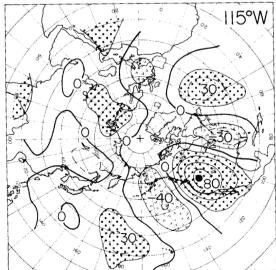




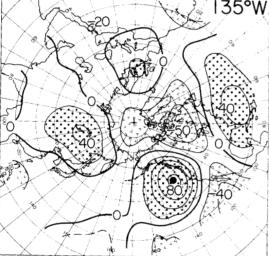


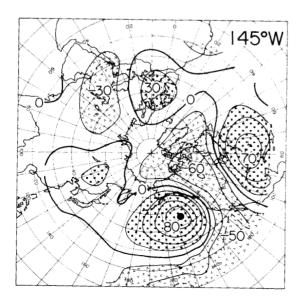


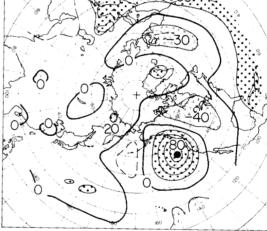




WINTER 45°N SPRING

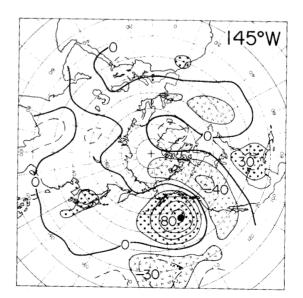


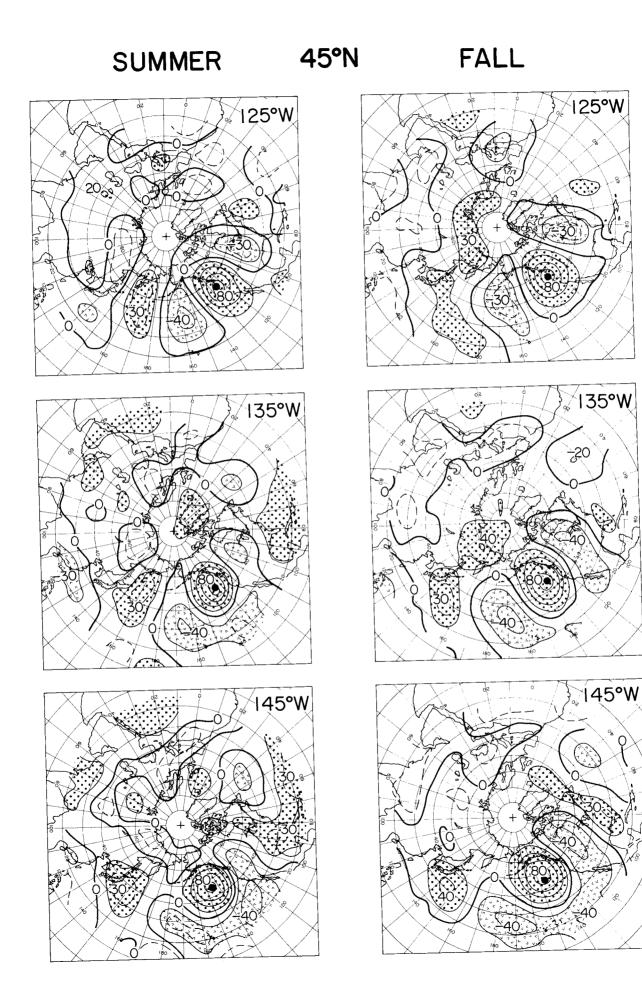




⊘I25°₩

}.135°W

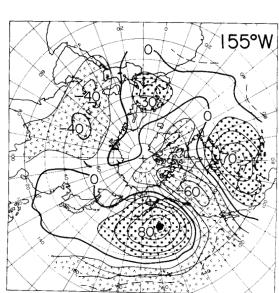


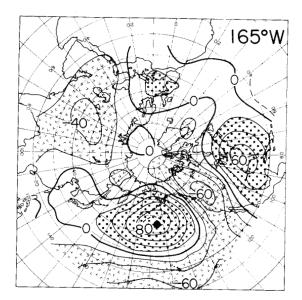


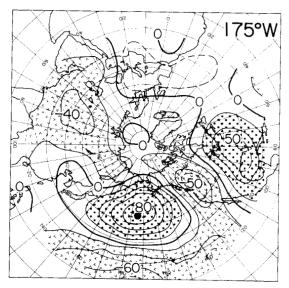
WINTER 45°N

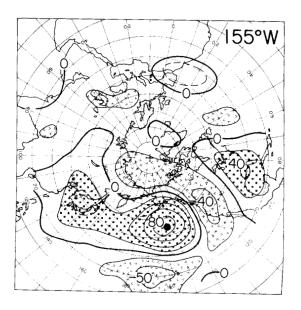


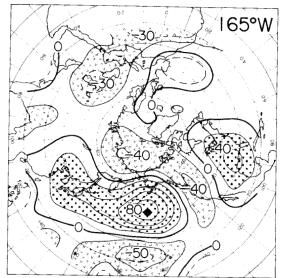


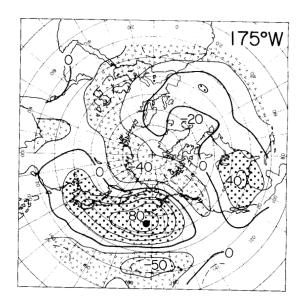


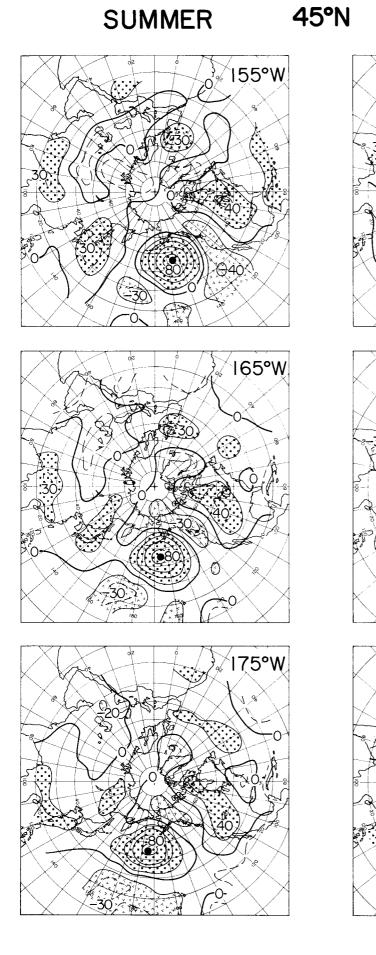


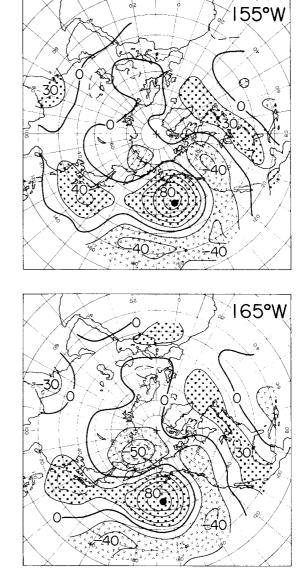


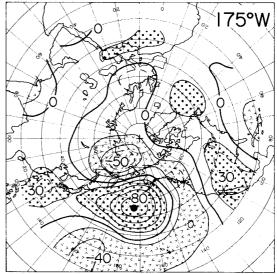






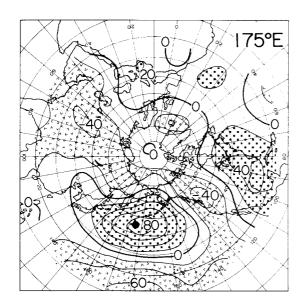


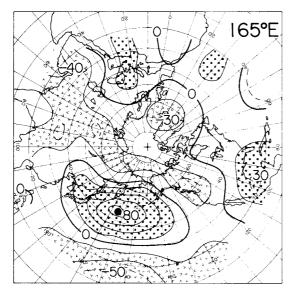


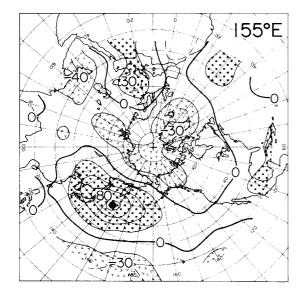


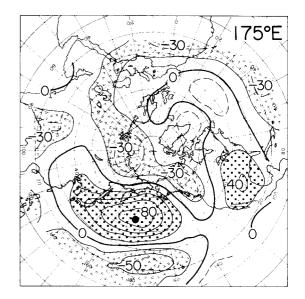
WINTER 45°N

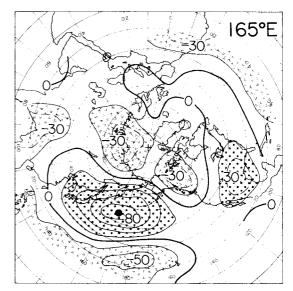


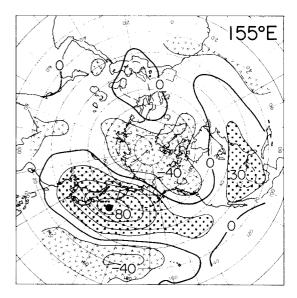


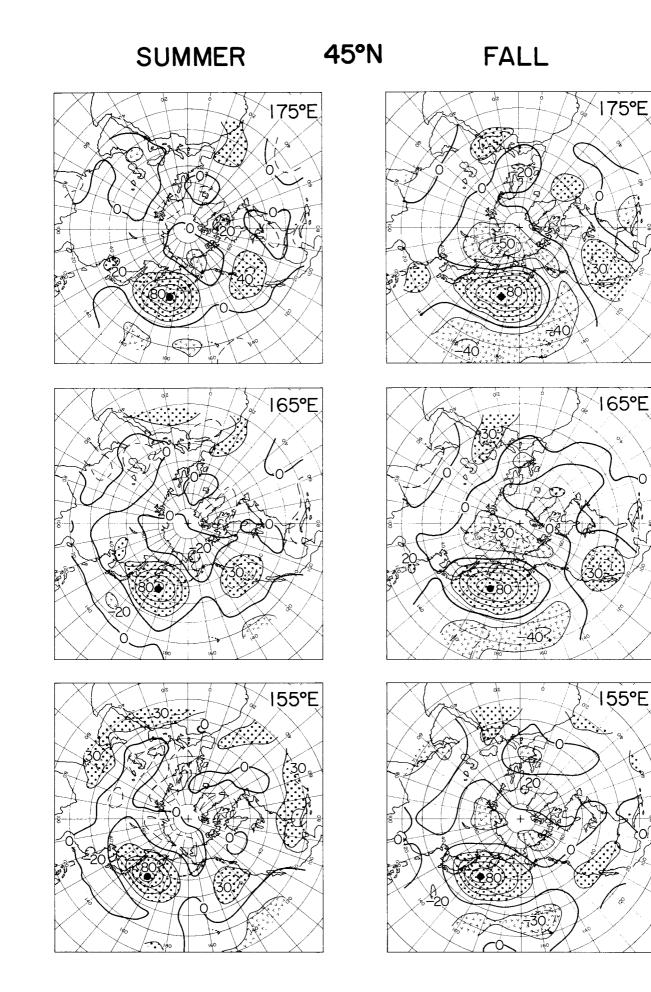








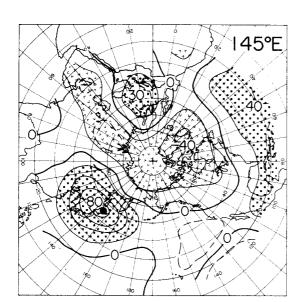


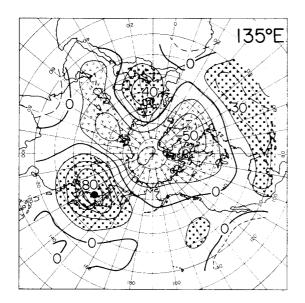


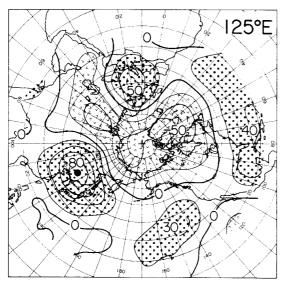
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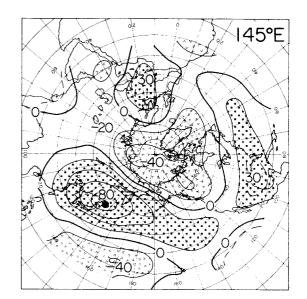
45°N

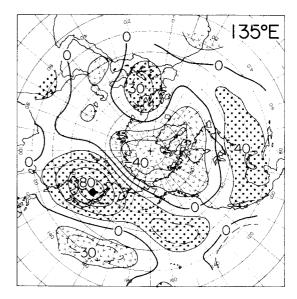


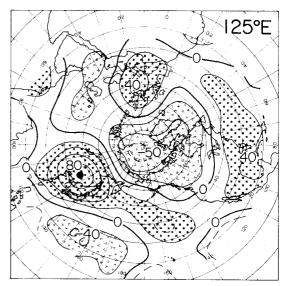


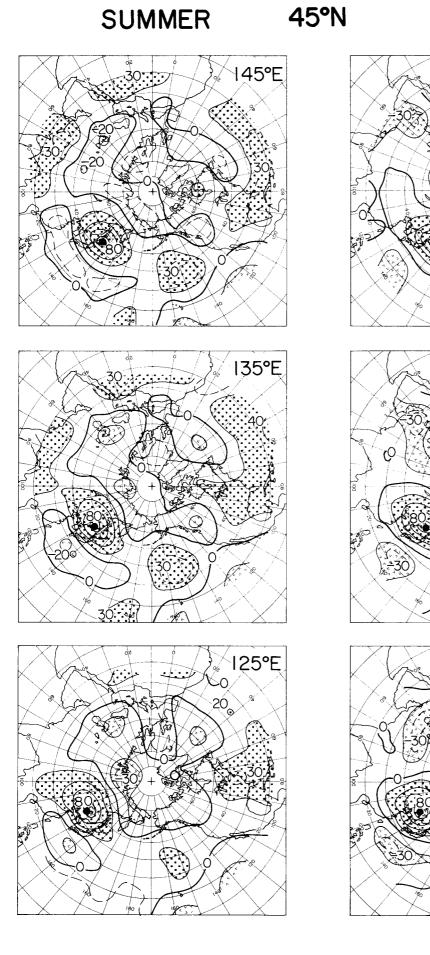


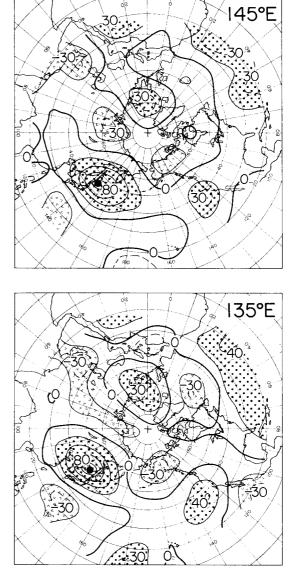


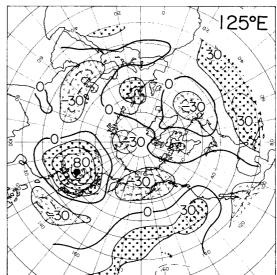






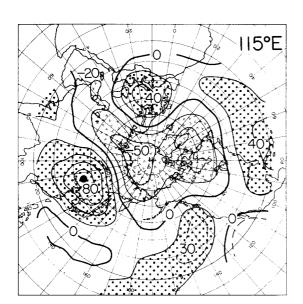


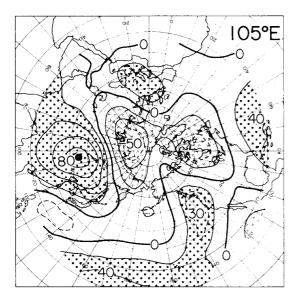


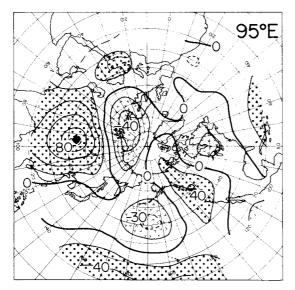


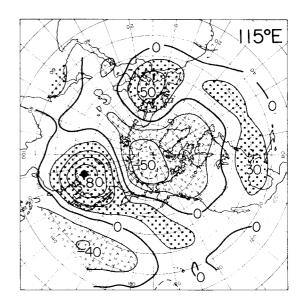
WINTER 45°N

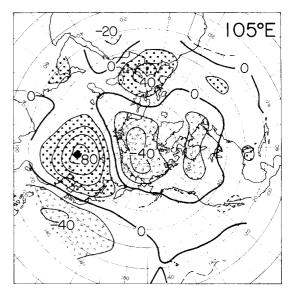


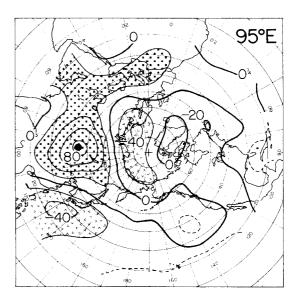


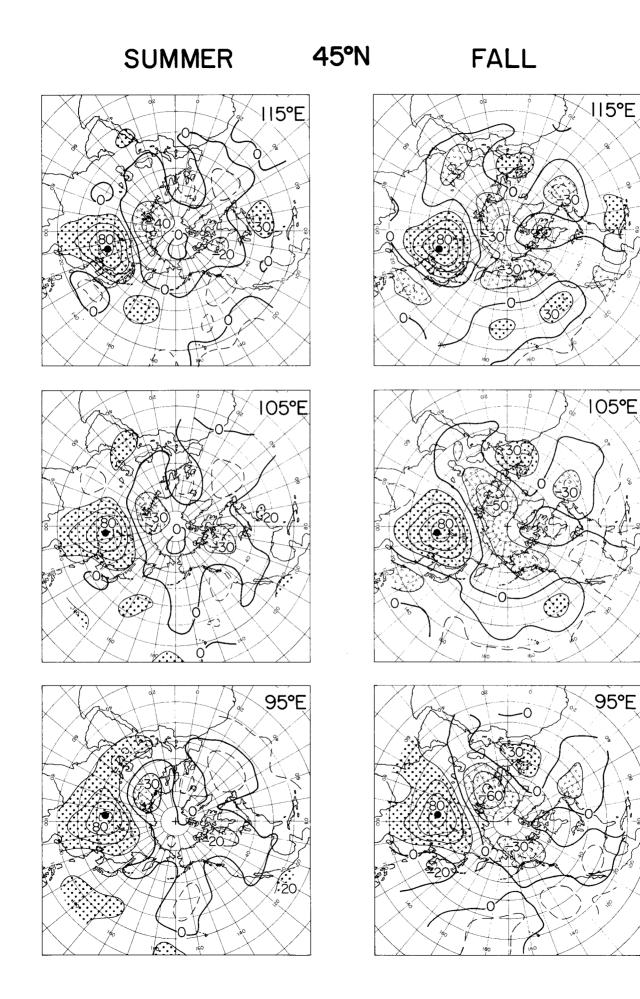






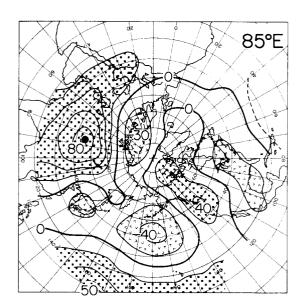


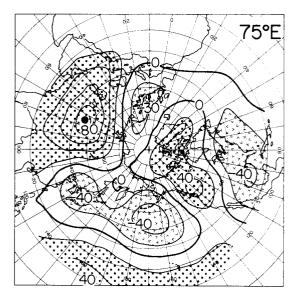


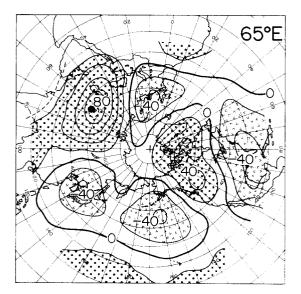


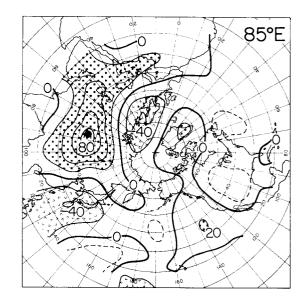


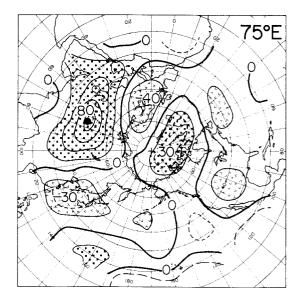


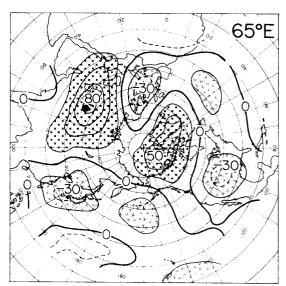


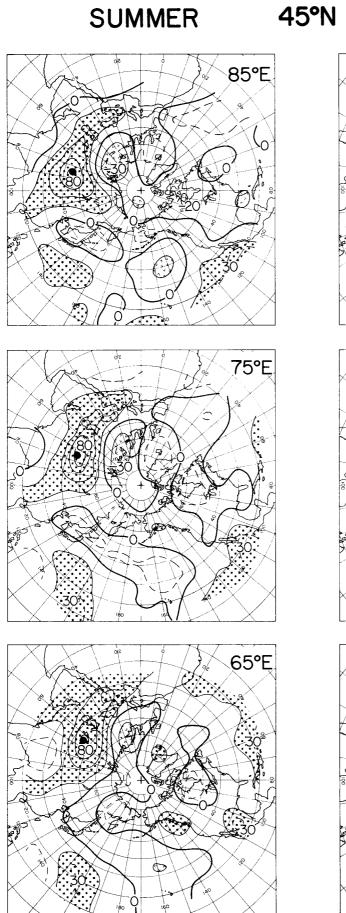


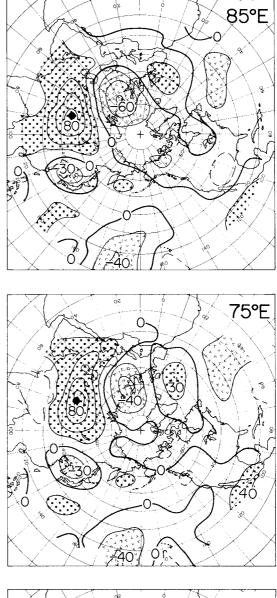


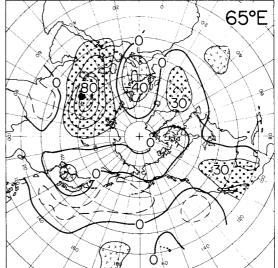




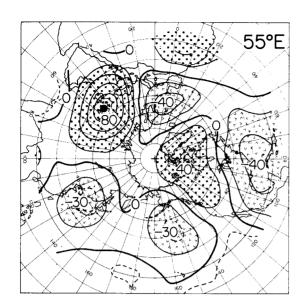


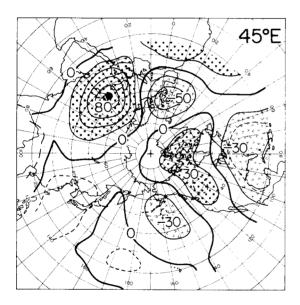


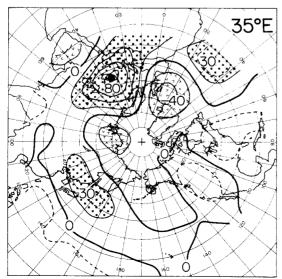


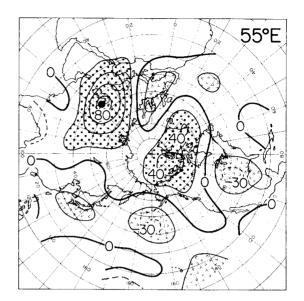


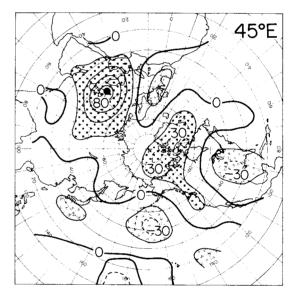


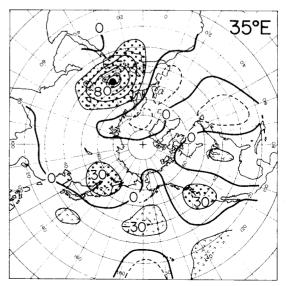




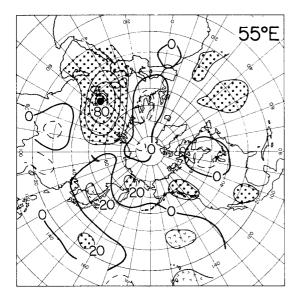


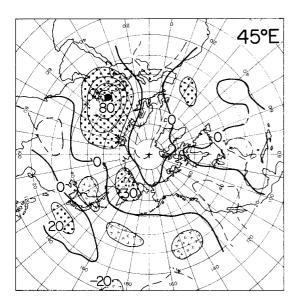


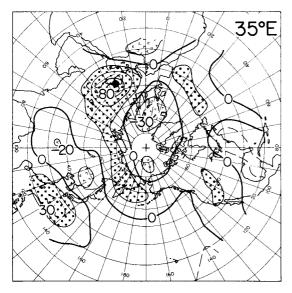


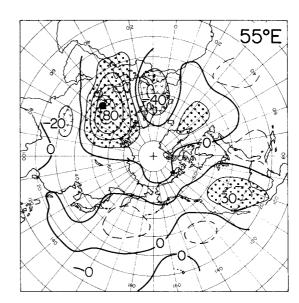


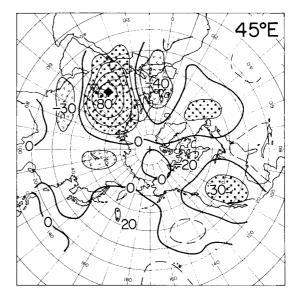


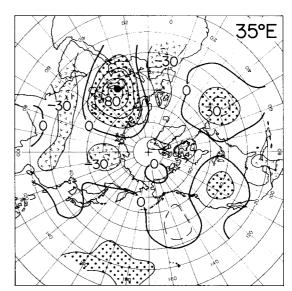






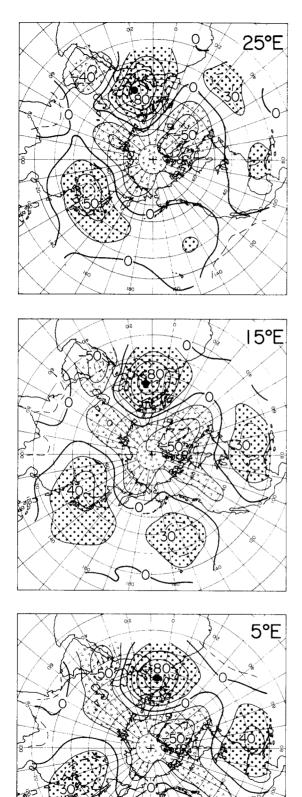




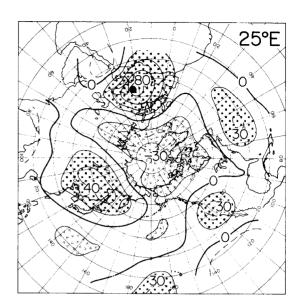


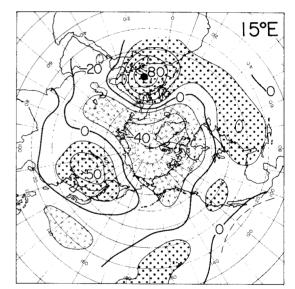
WINTER 45°N

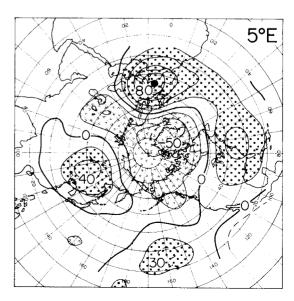
SPRING

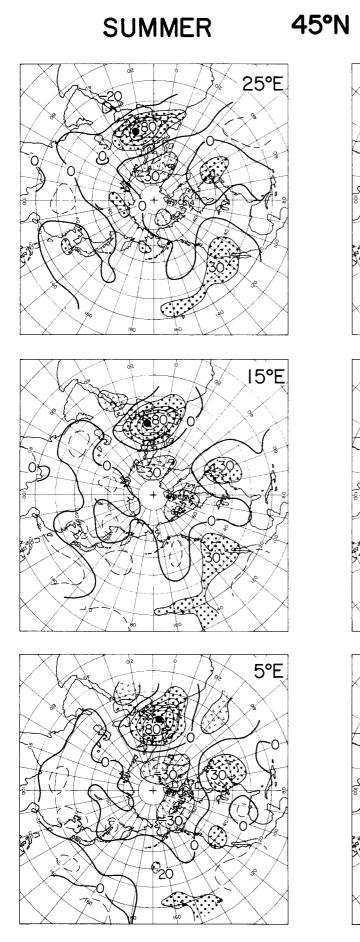


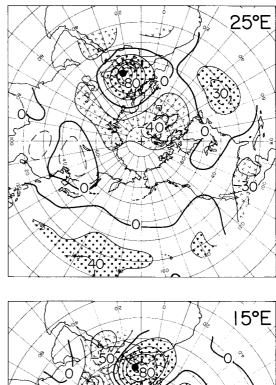
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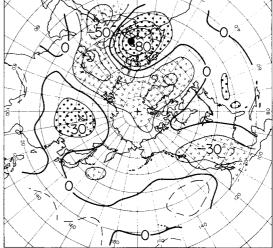


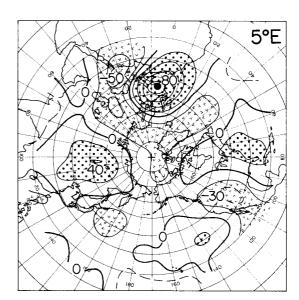




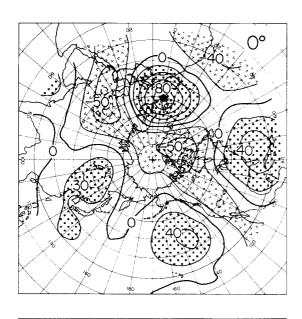


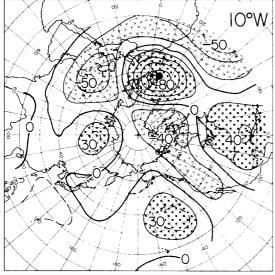


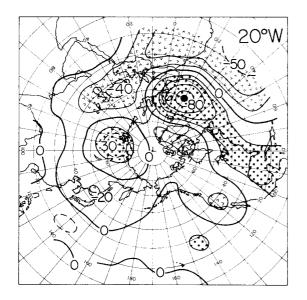


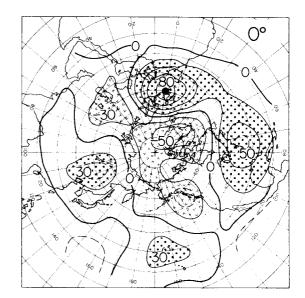


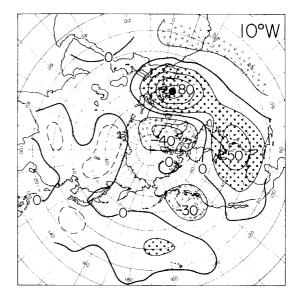


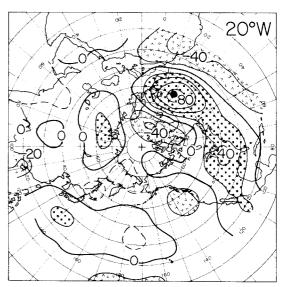




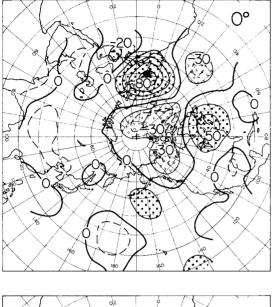


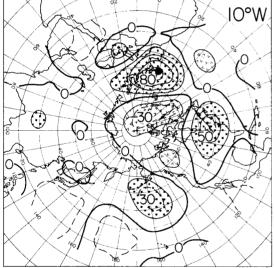


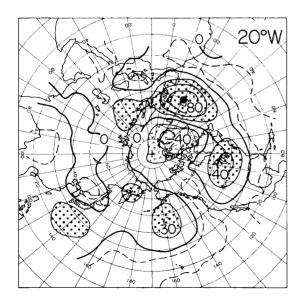


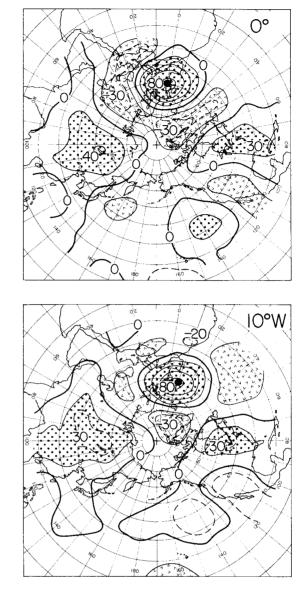


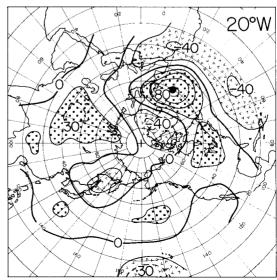




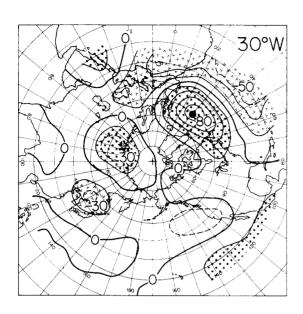


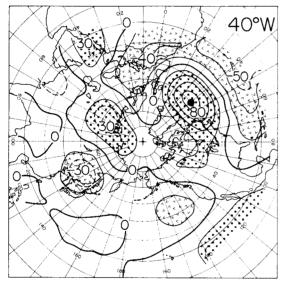


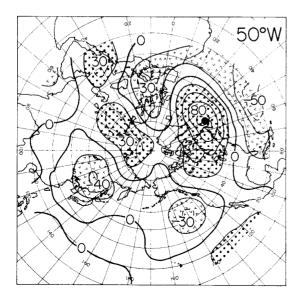


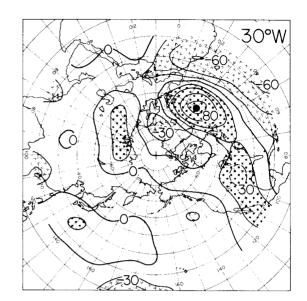


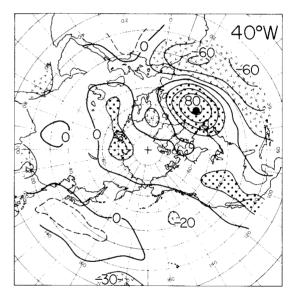


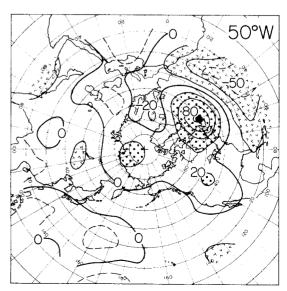


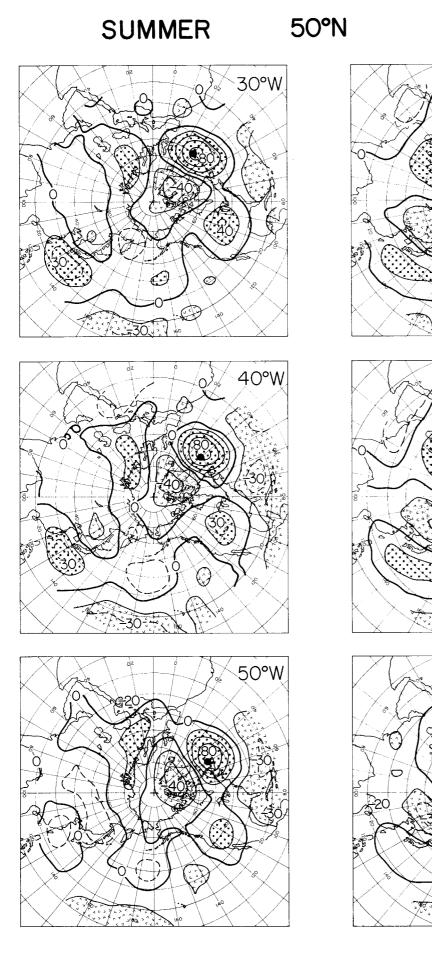


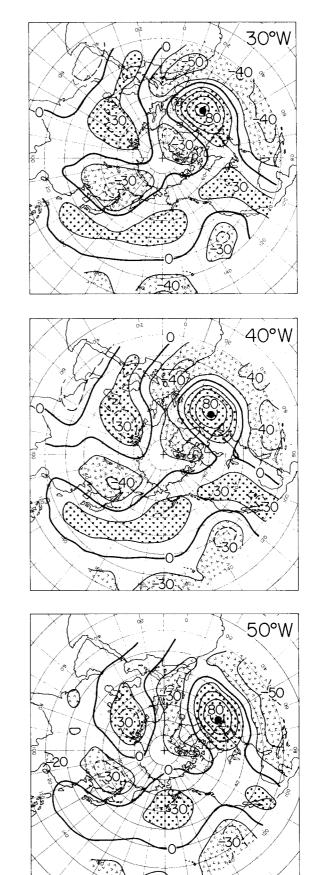




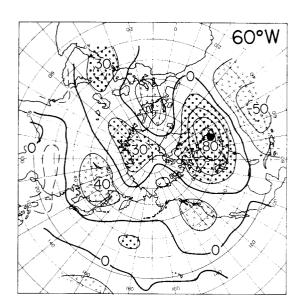


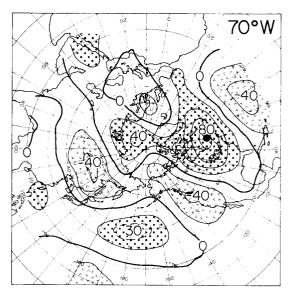


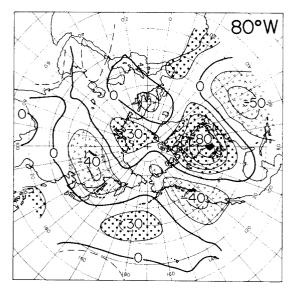


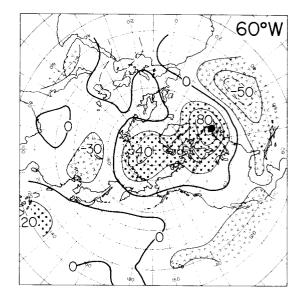


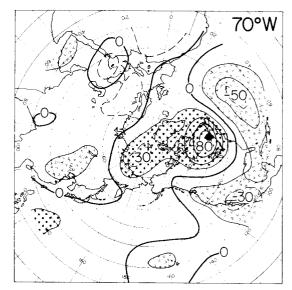


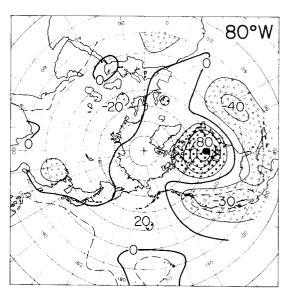


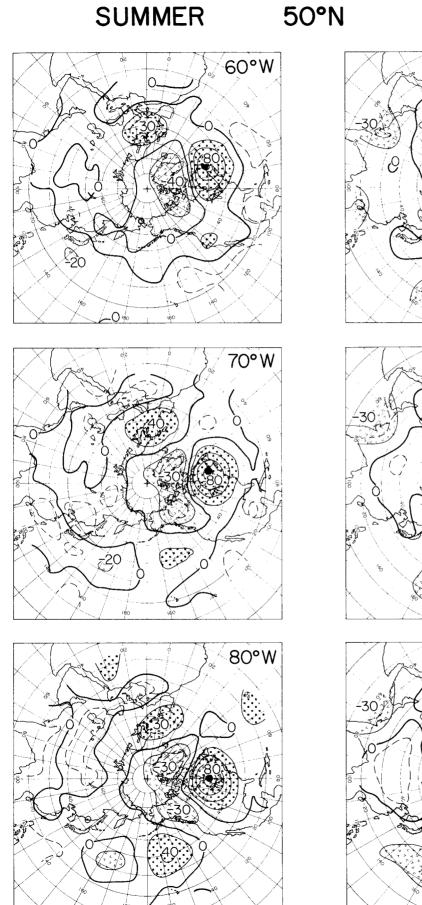


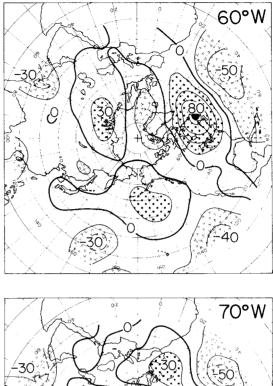


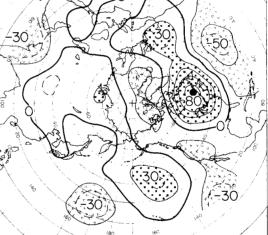


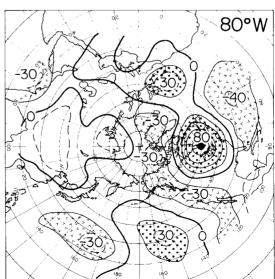




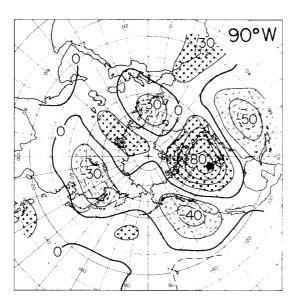


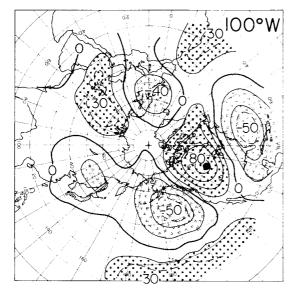


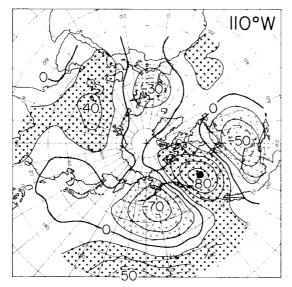


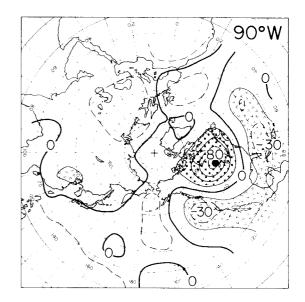


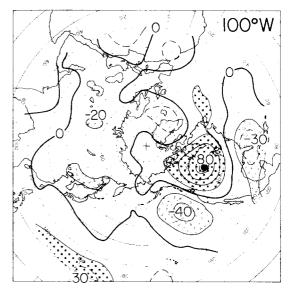


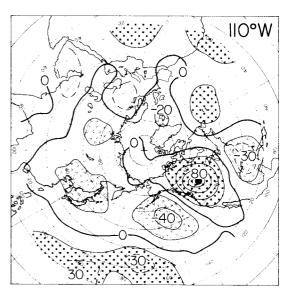


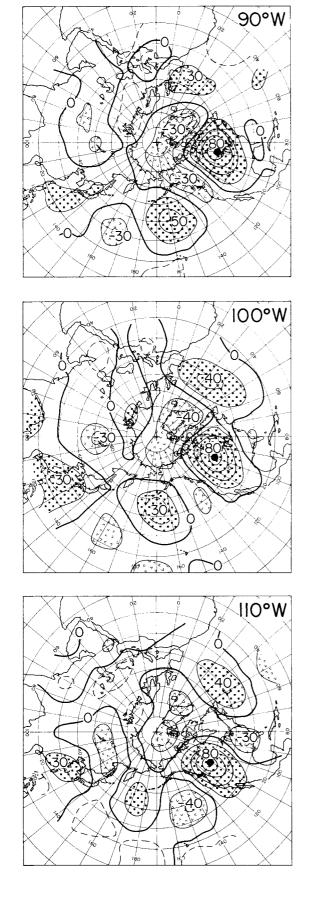


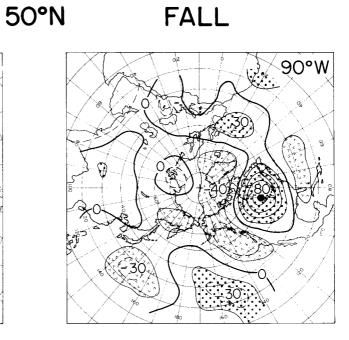


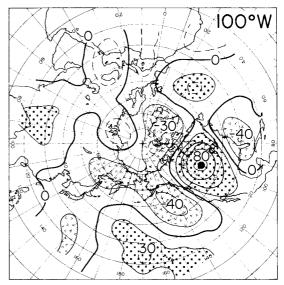


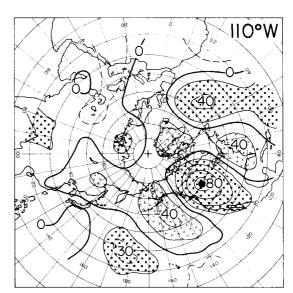






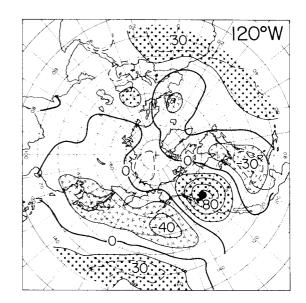


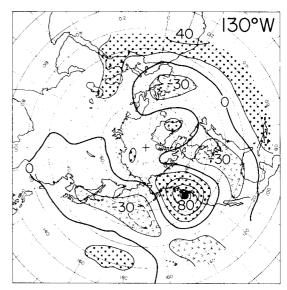


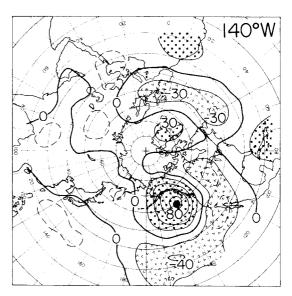


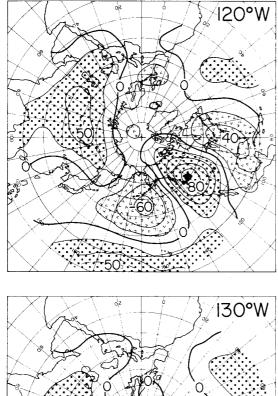
WINTER 50°N

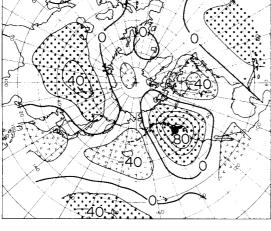


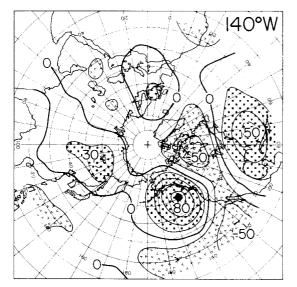


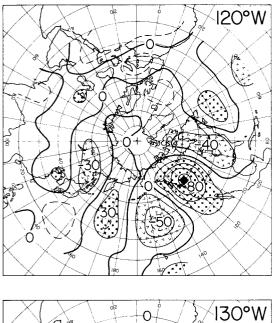


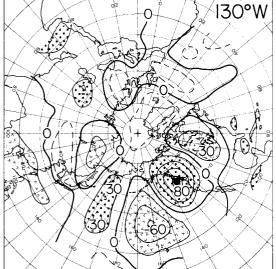


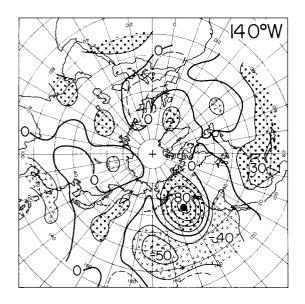


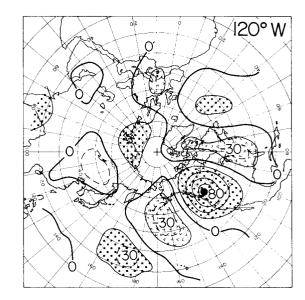


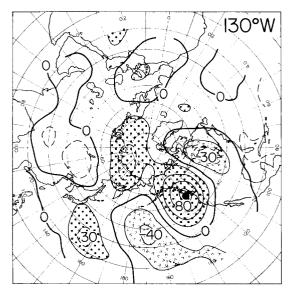


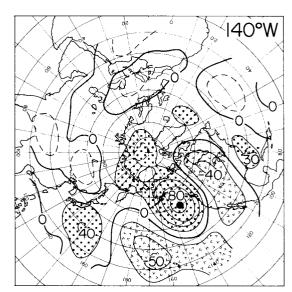






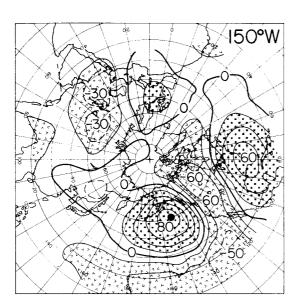


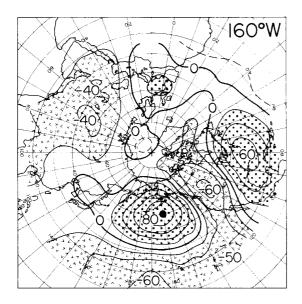


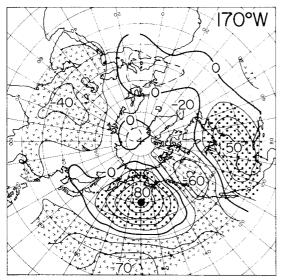


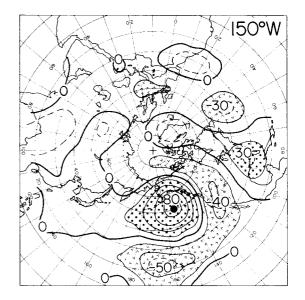
50°N

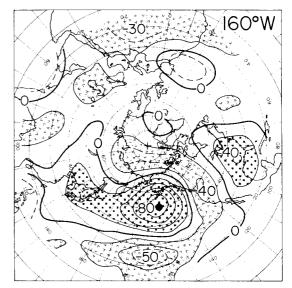
SPRING

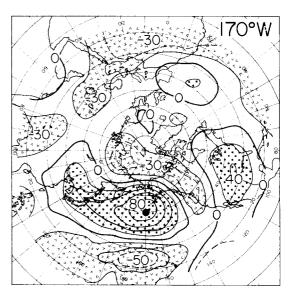


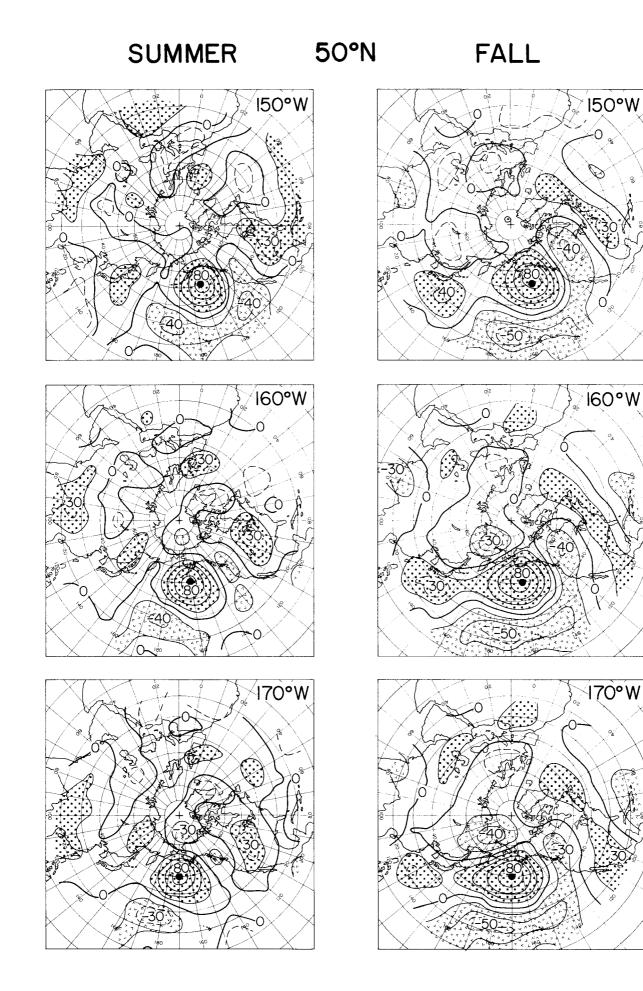




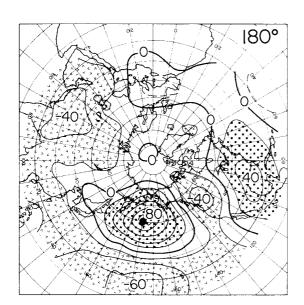


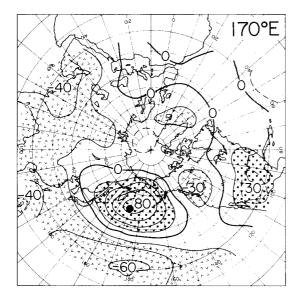


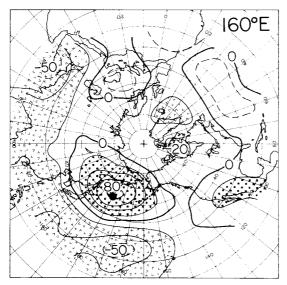


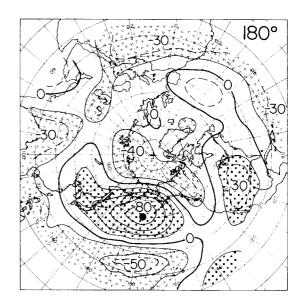


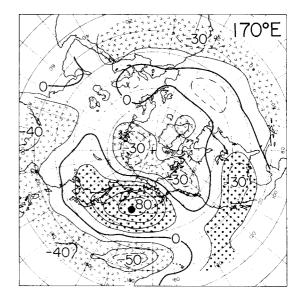


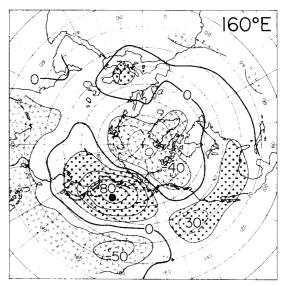


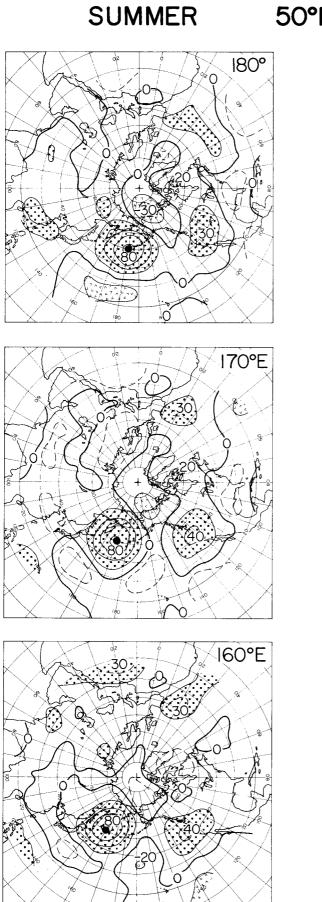


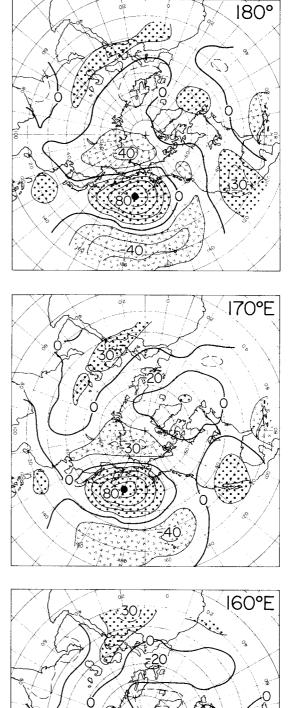






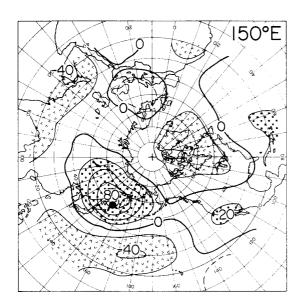


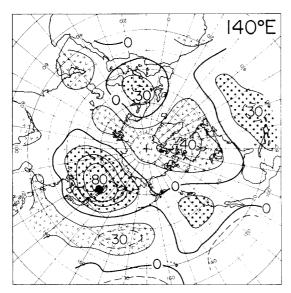


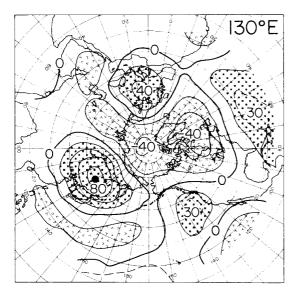


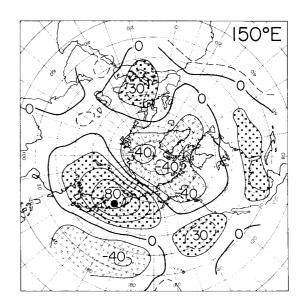
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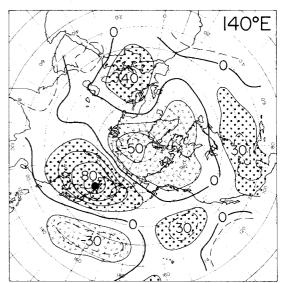


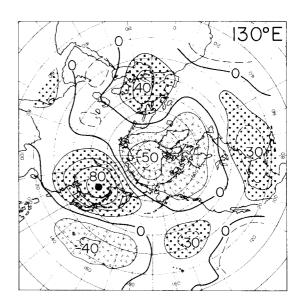


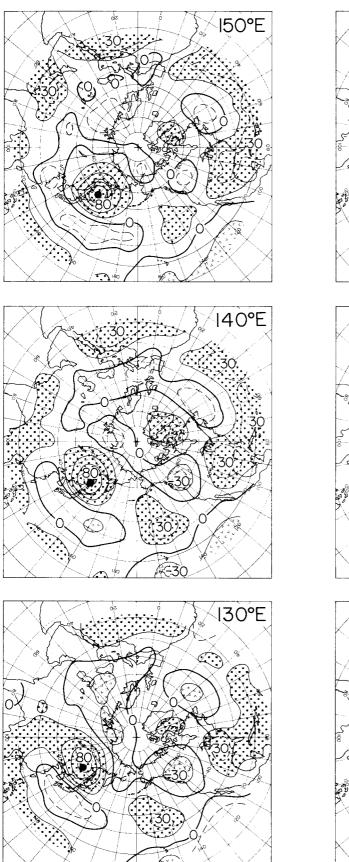


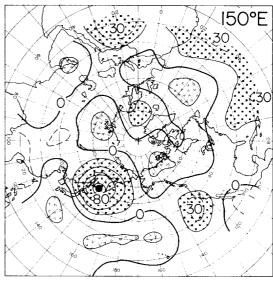




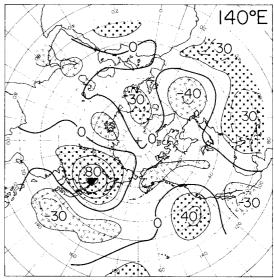


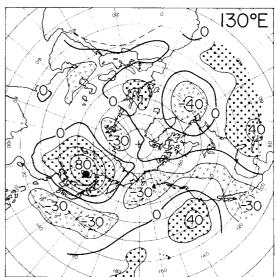






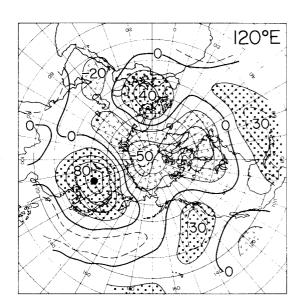
FALL

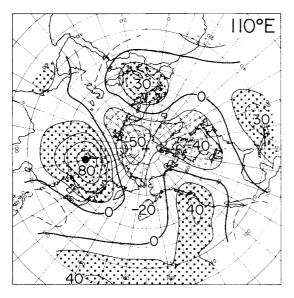


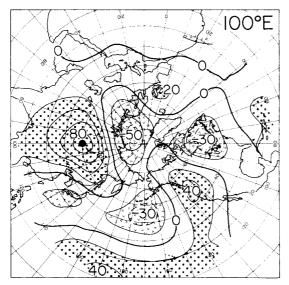


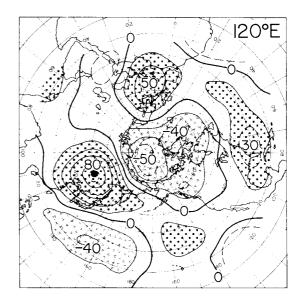
WINTER 50°N

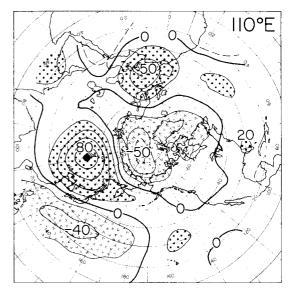
SPRING

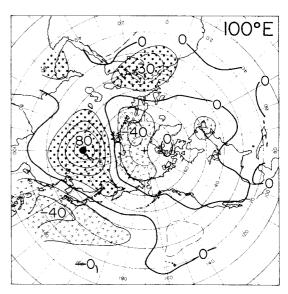


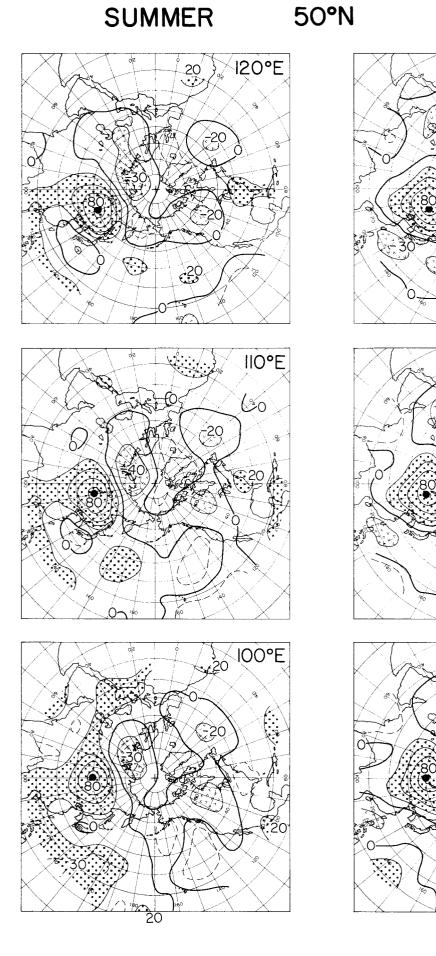


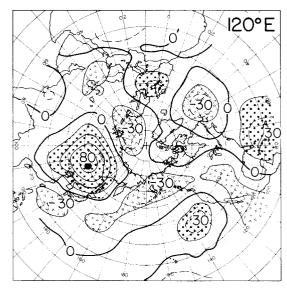


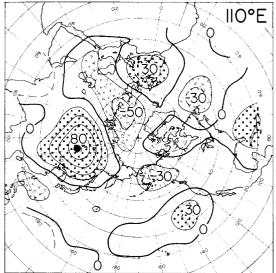


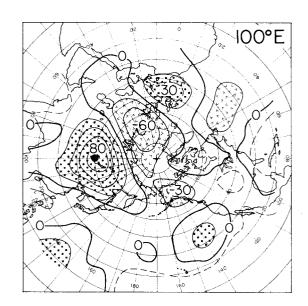




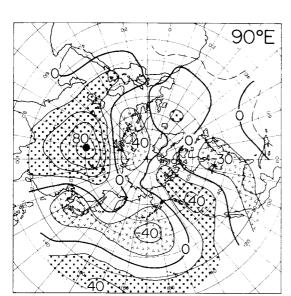


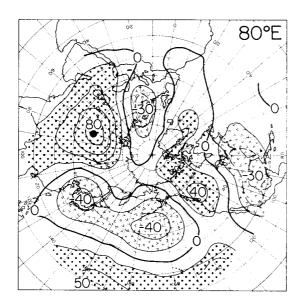


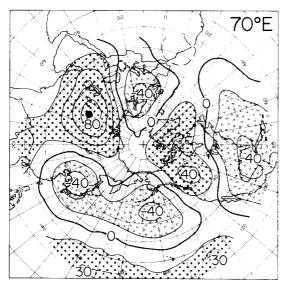


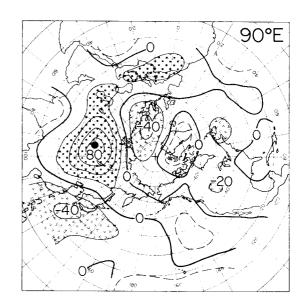


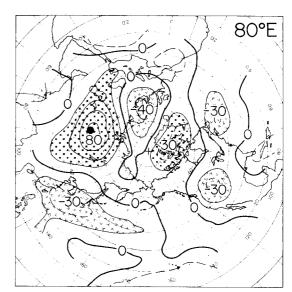


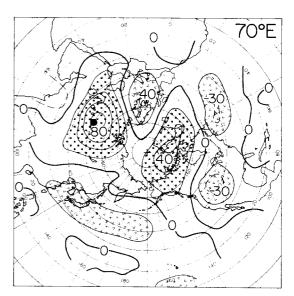


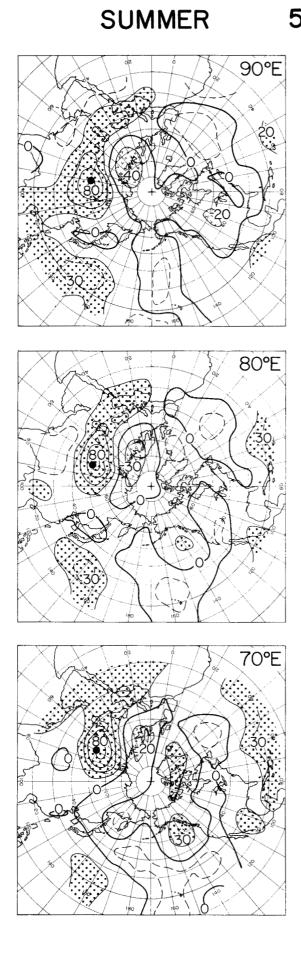


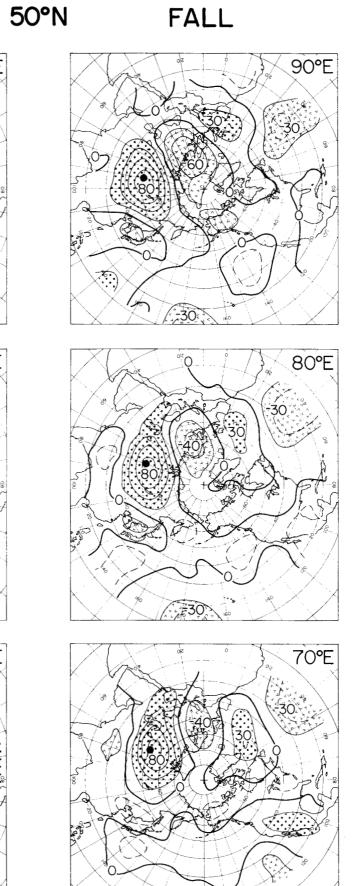




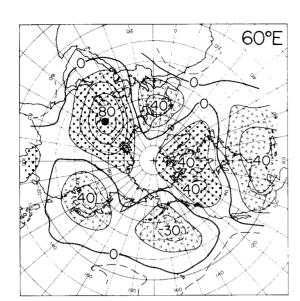


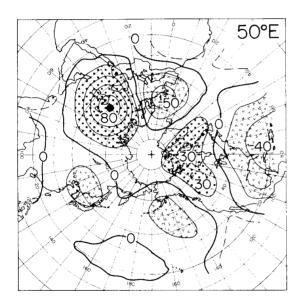


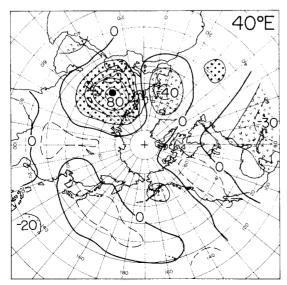


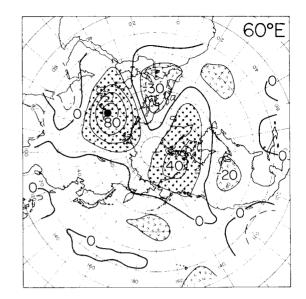


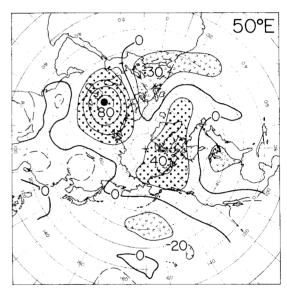


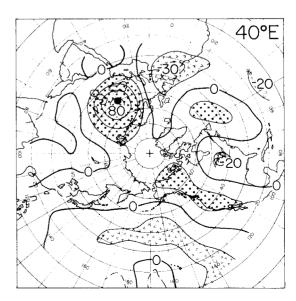


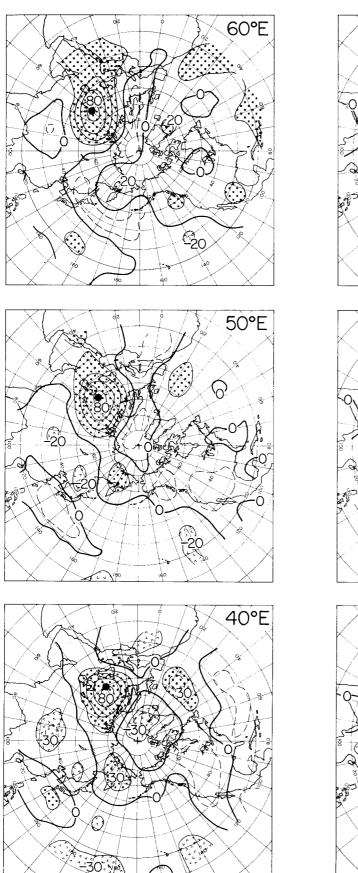




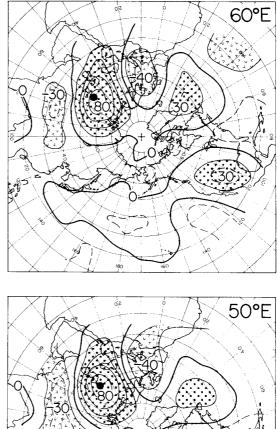


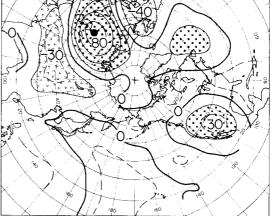


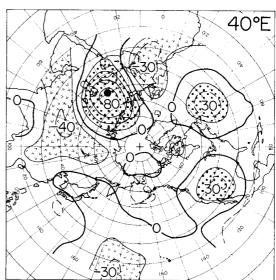




50°N

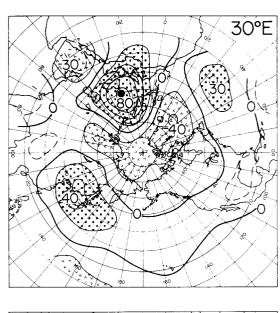


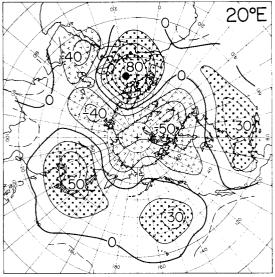


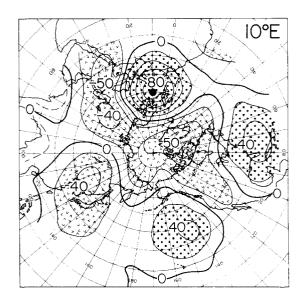


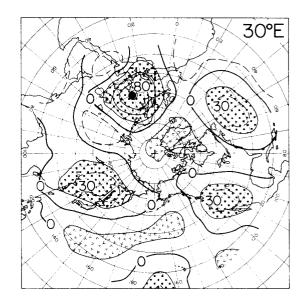
50°N

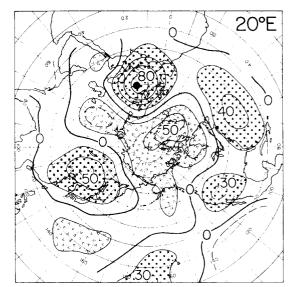
SPRING

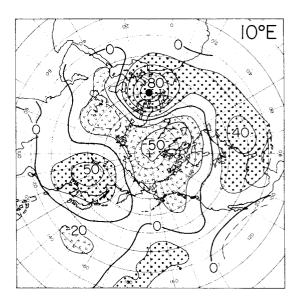








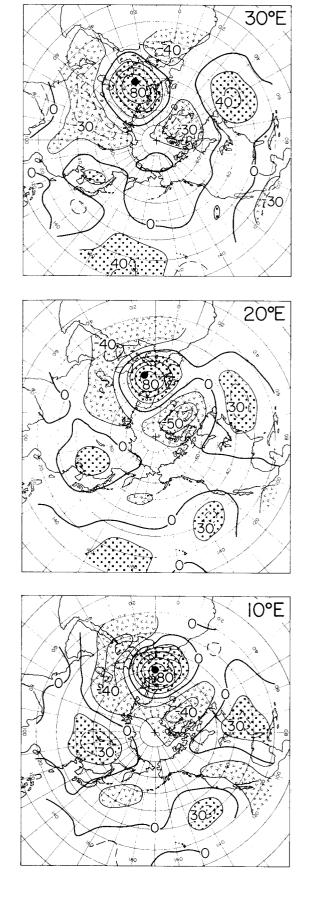




30°E 20°E olz ó IO°E slo 30 Ò

SUMMER

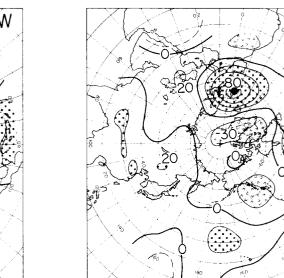
50°N

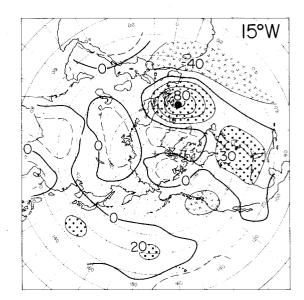


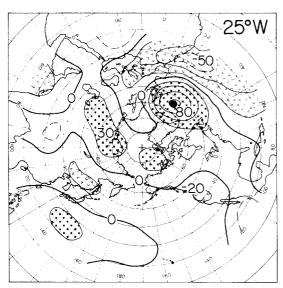
55°N

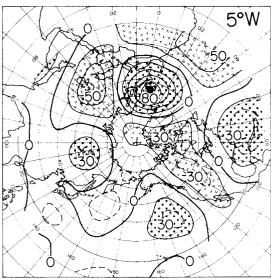


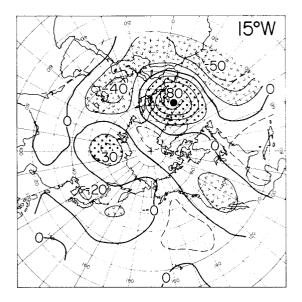
5°W

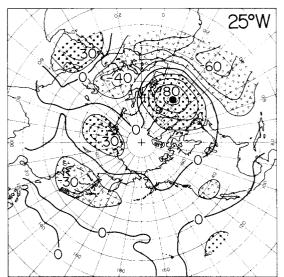




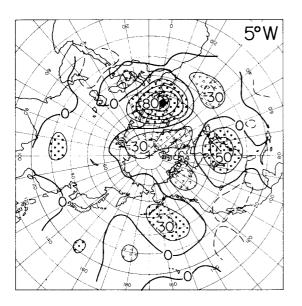


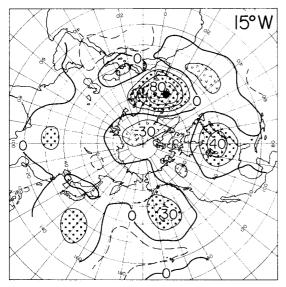


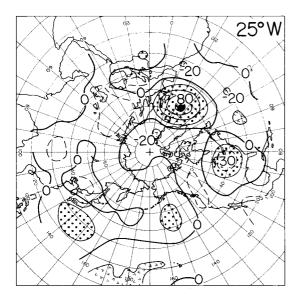


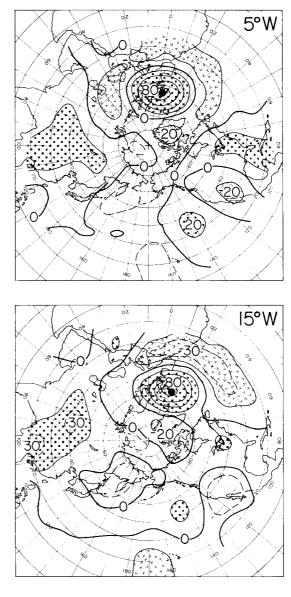


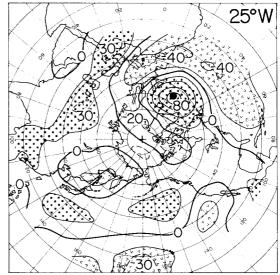
FALL











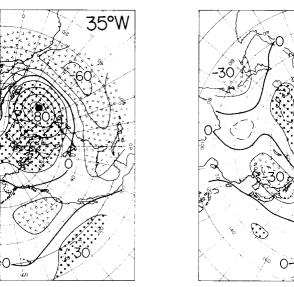
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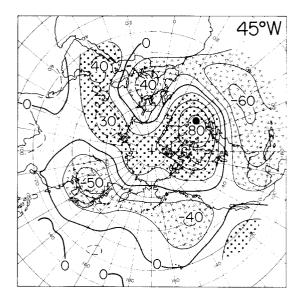
WINTER

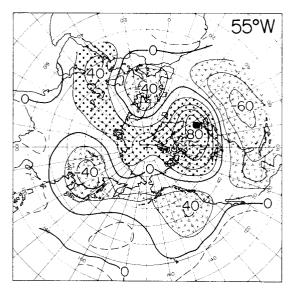
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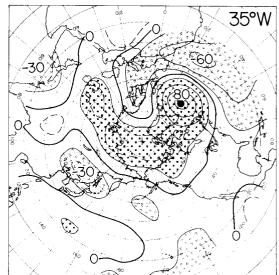
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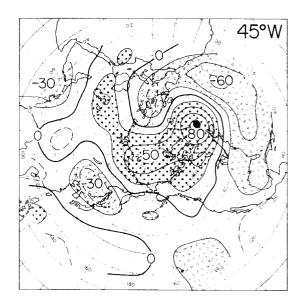


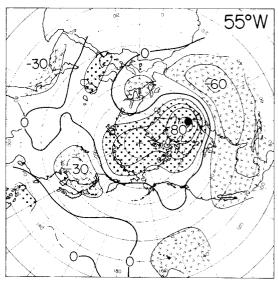


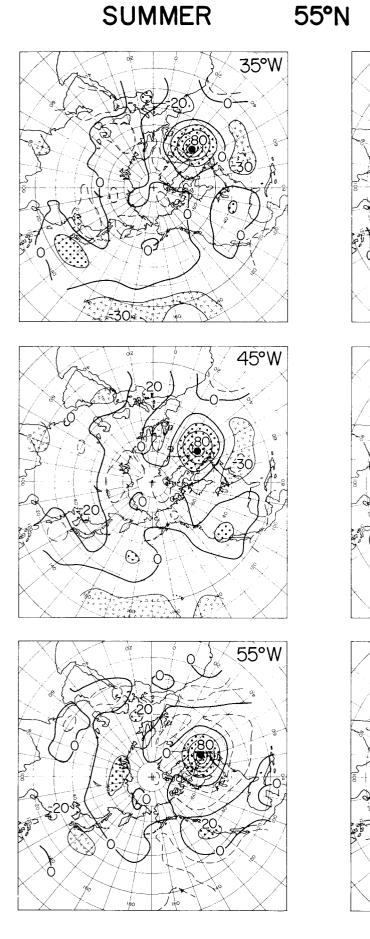


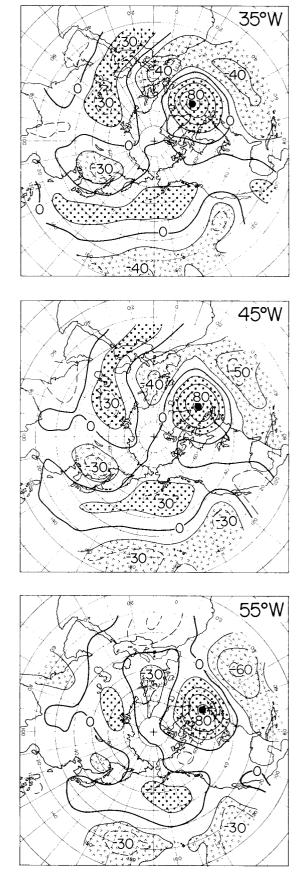


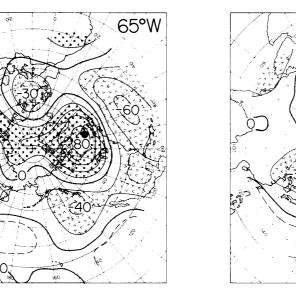


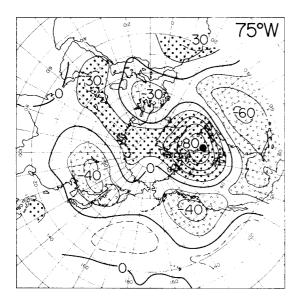


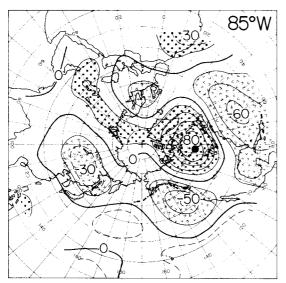


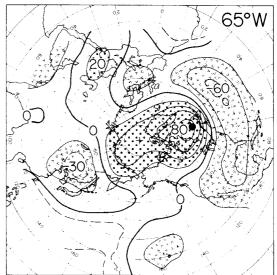


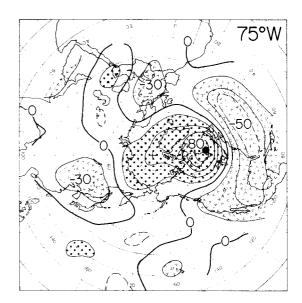


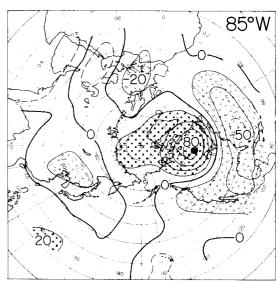


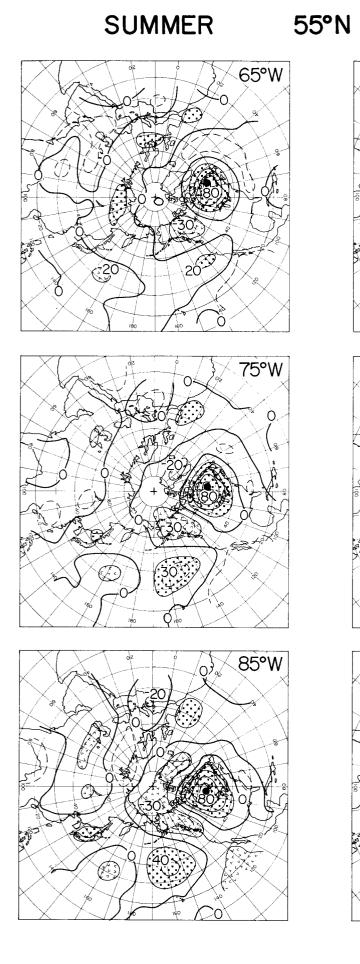


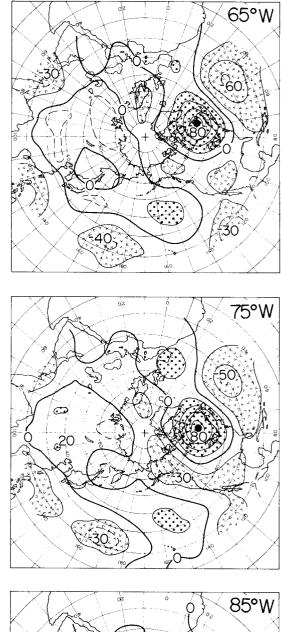


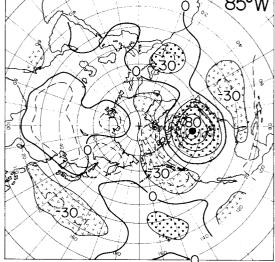






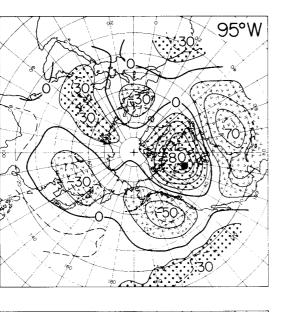


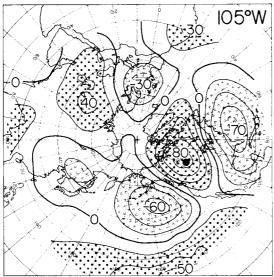


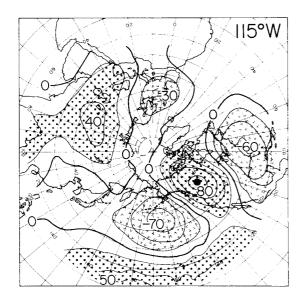


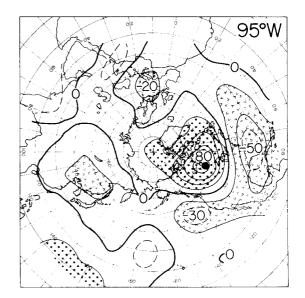
WINTER 55°N

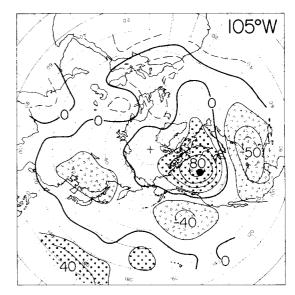
SPRING

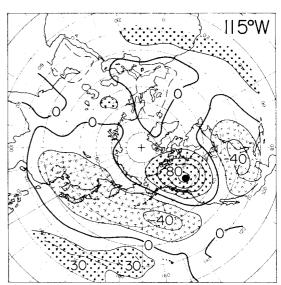


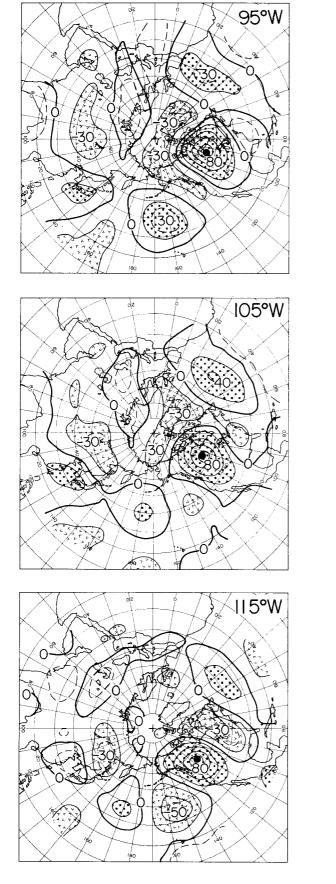




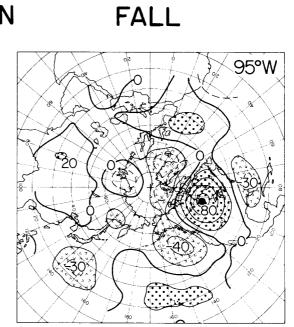


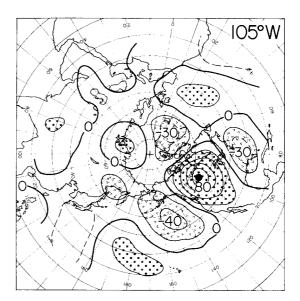


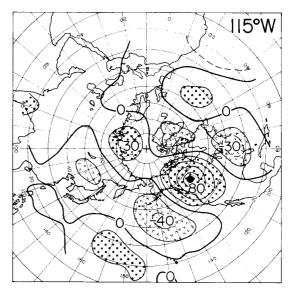




SUMMER

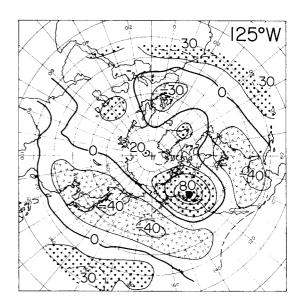


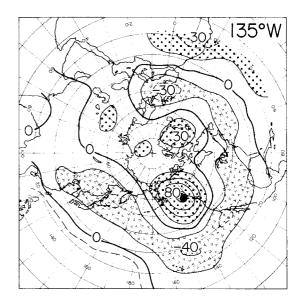


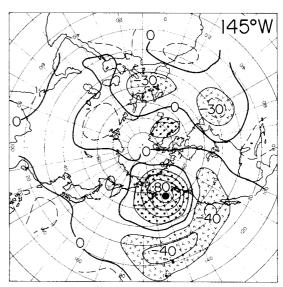


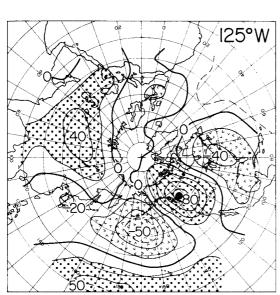
WINTER 55°N

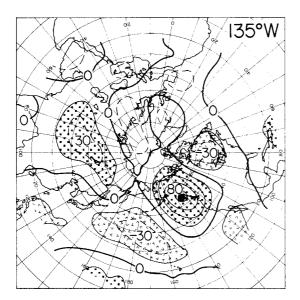
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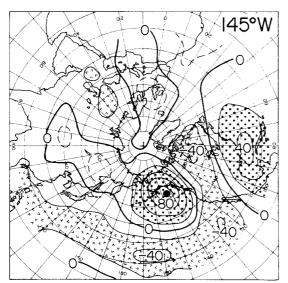


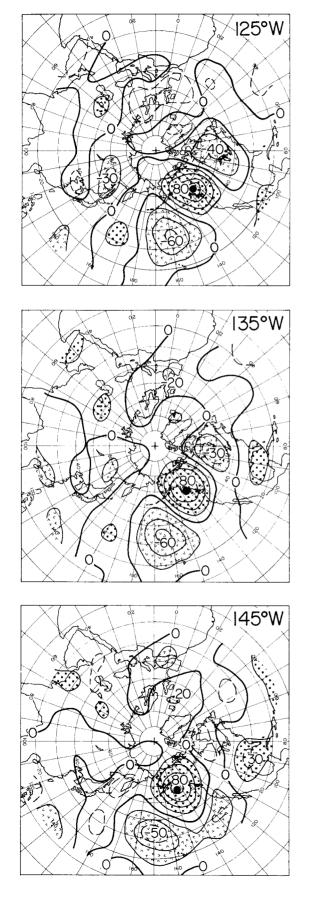






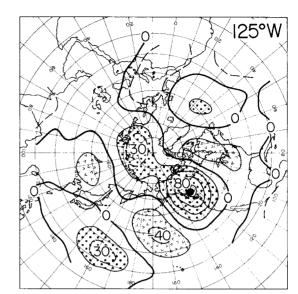


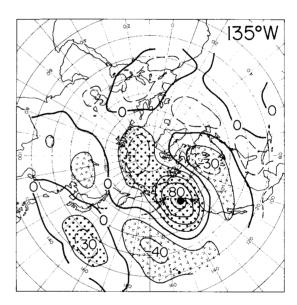


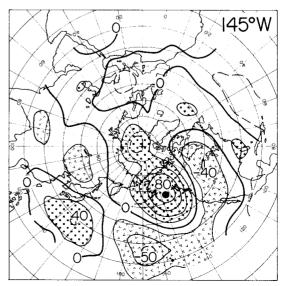


SUMMER

55°N

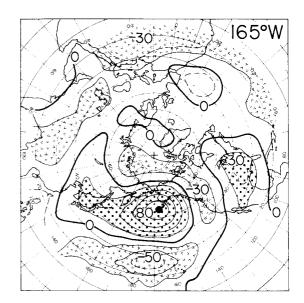


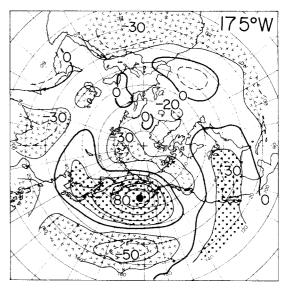


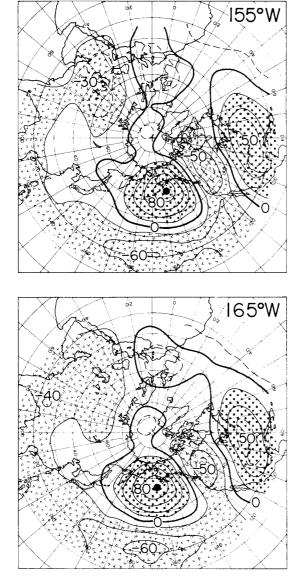


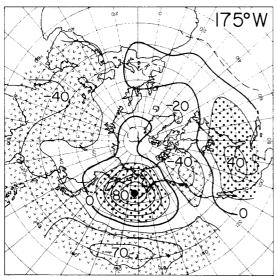
WINTER 55°N





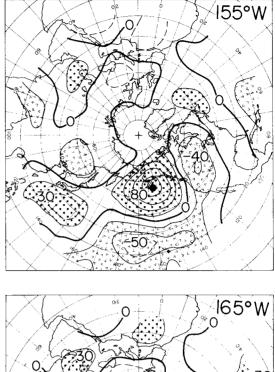




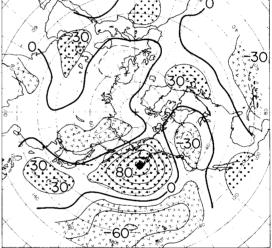


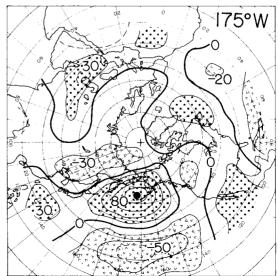
<u>/155°W</u> 72r } -20 0 Ô 20 C /165°W dia റ Ò. Õ Ó √I75°W 2020 0 Ò ς3Q

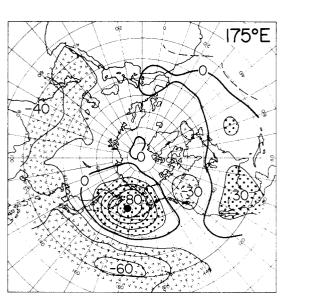
SUMMER

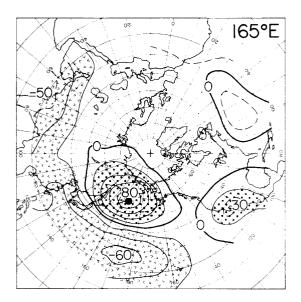


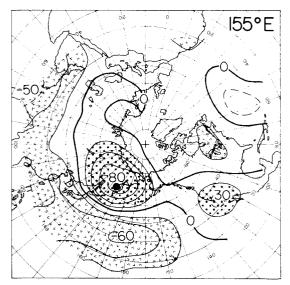
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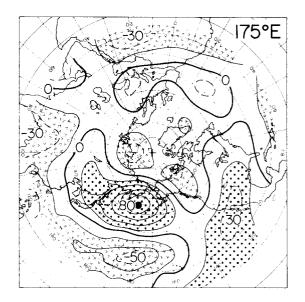


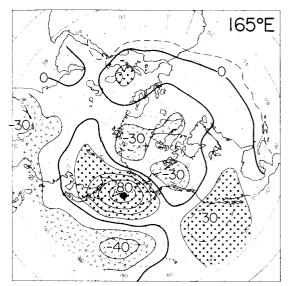


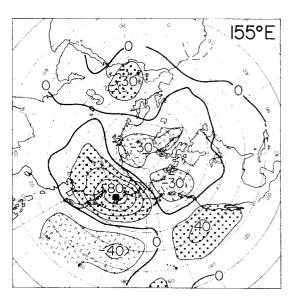






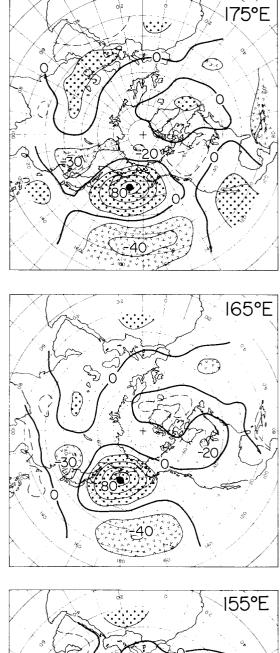






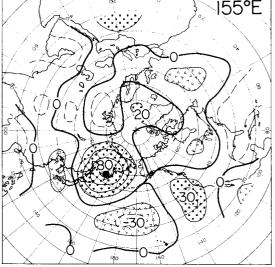
175°E Ó. (..., 200 Ο 165°E dz -20 155°E 0 0 160

SUMMER 55°N

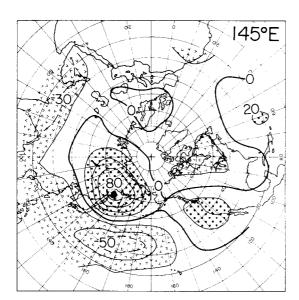


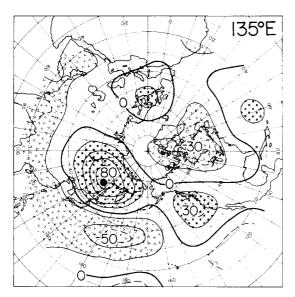
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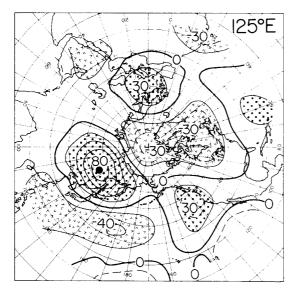
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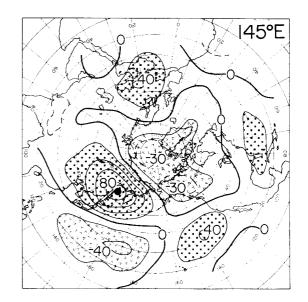


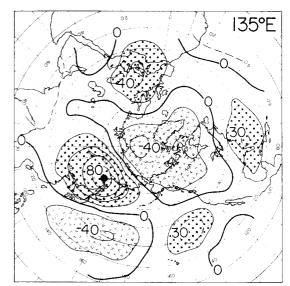


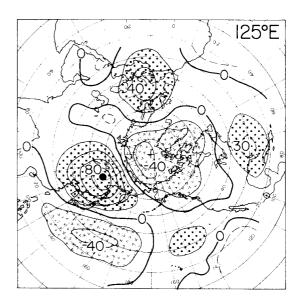


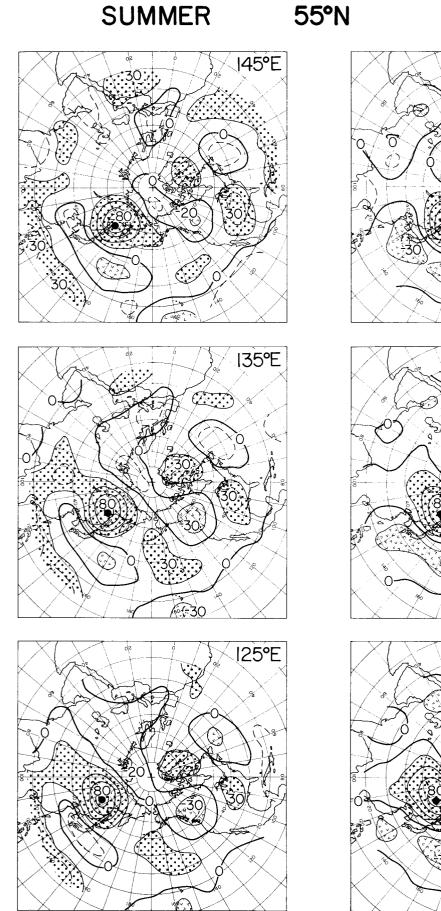


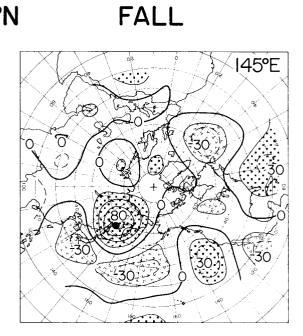


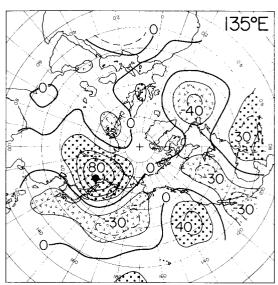


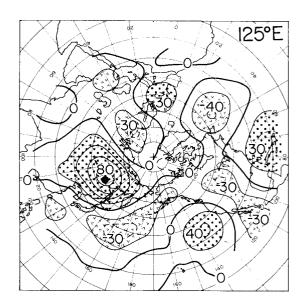




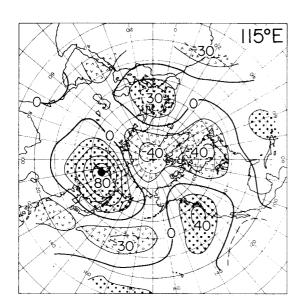


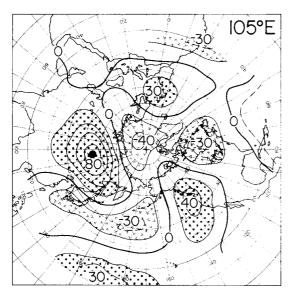


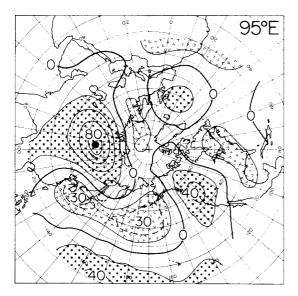


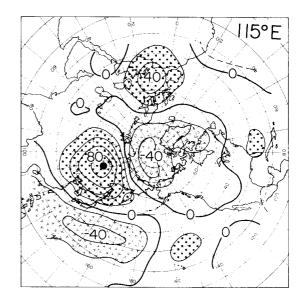


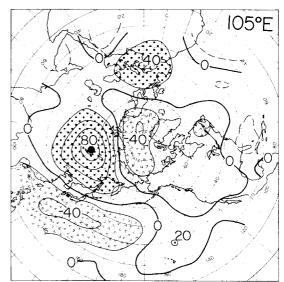


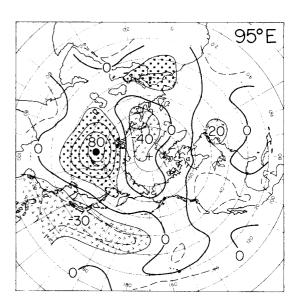


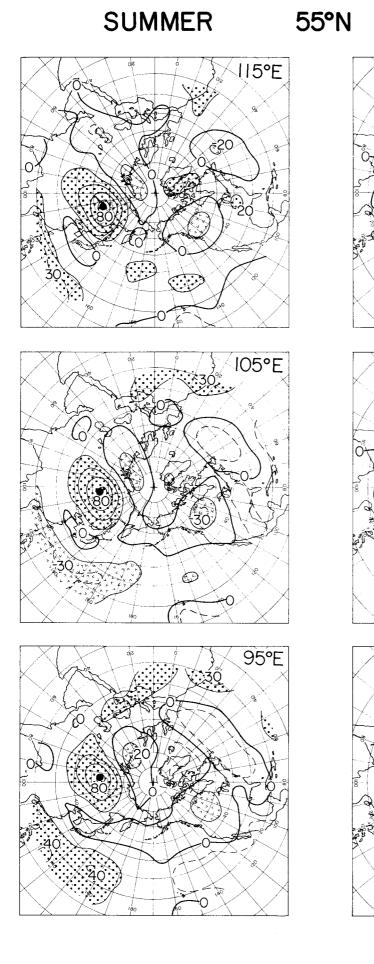


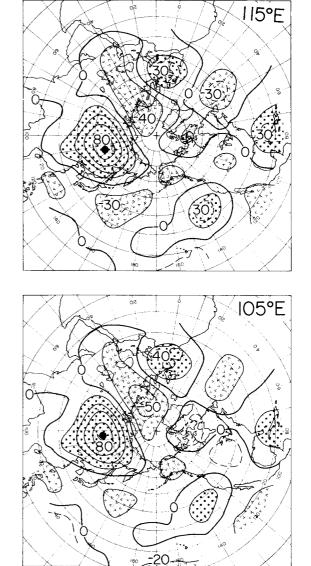


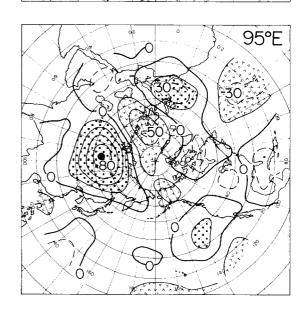




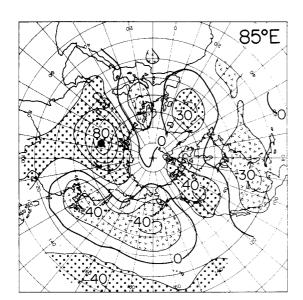


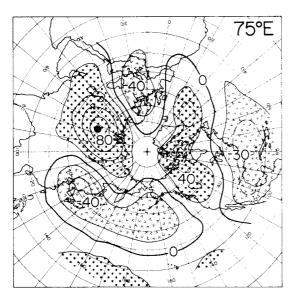


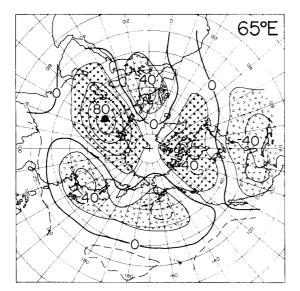


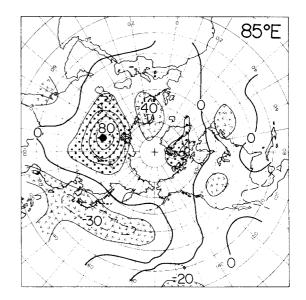


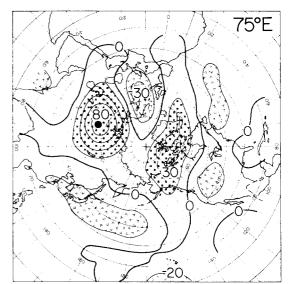


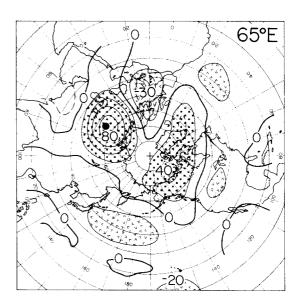












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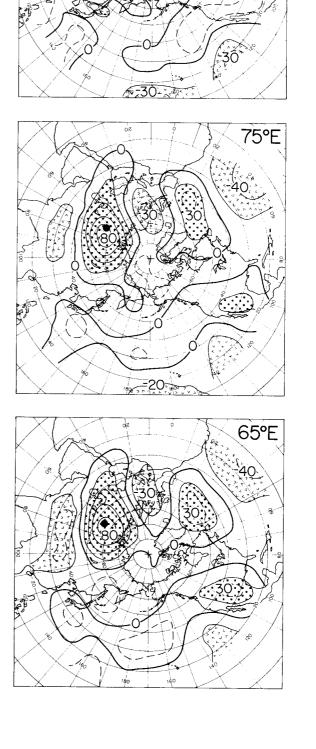
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55°N



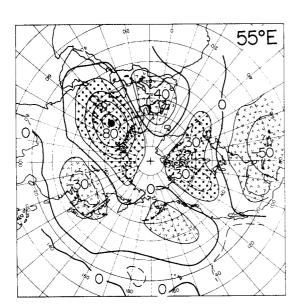
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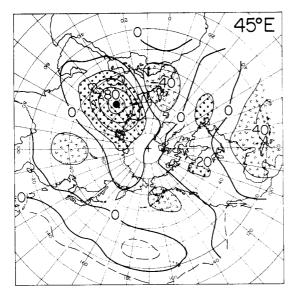


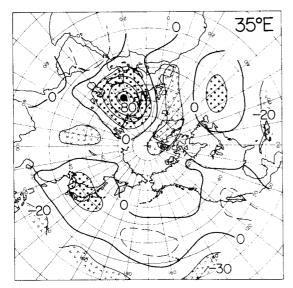
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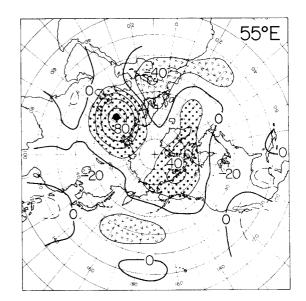
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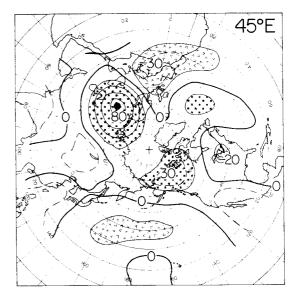


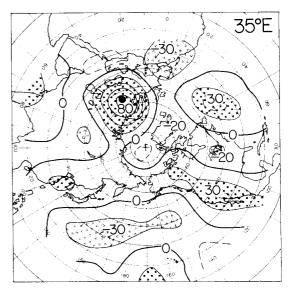


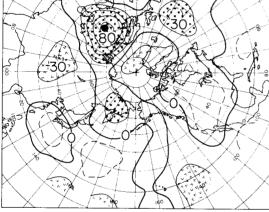


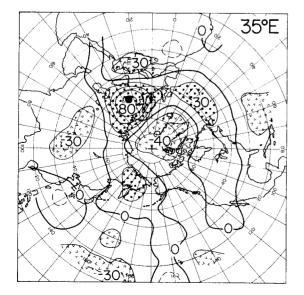


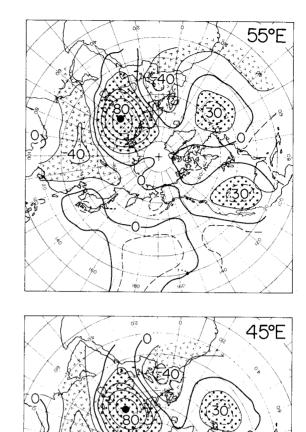




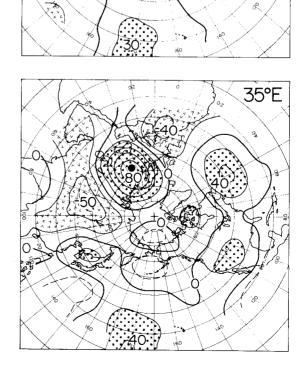


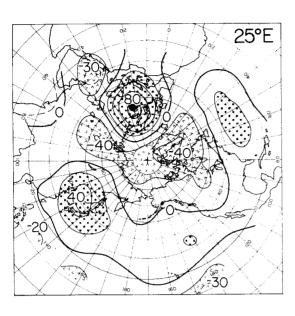


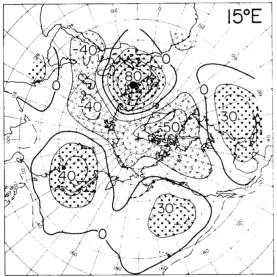


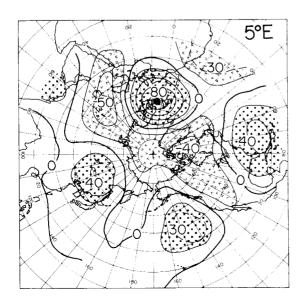


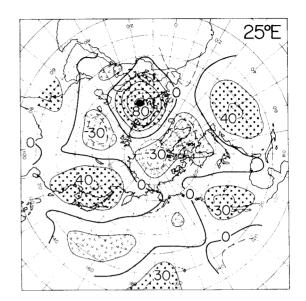
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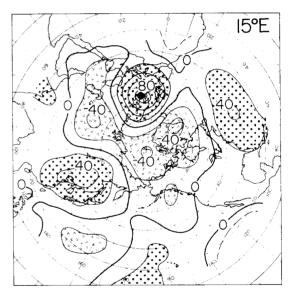


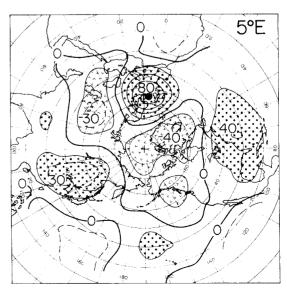








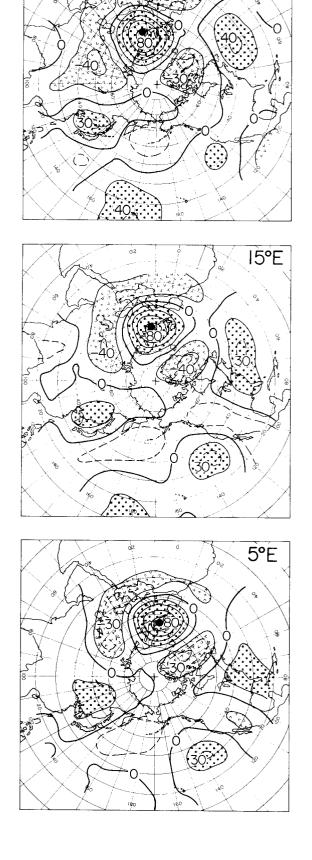




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SUMMER

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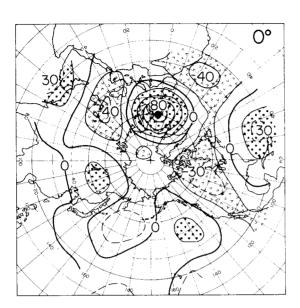


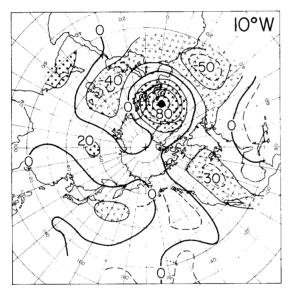
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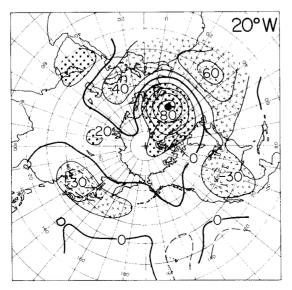
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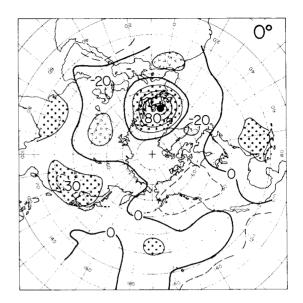
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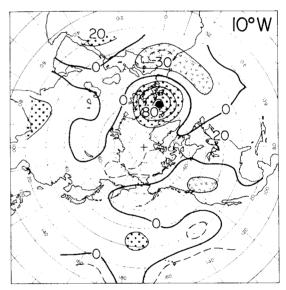


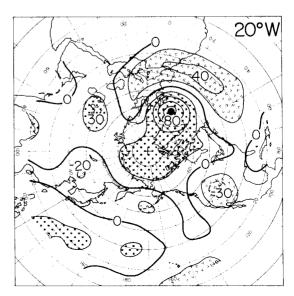




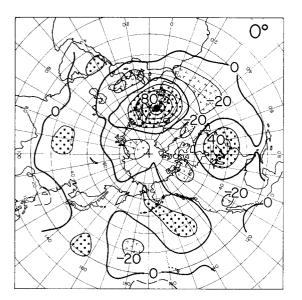


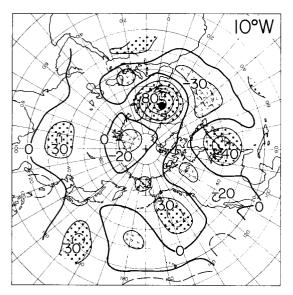


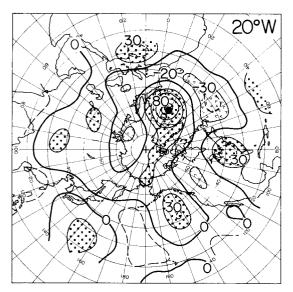


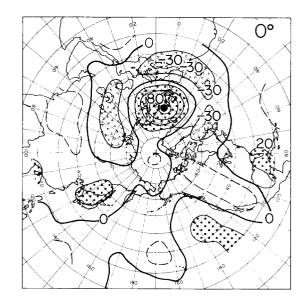


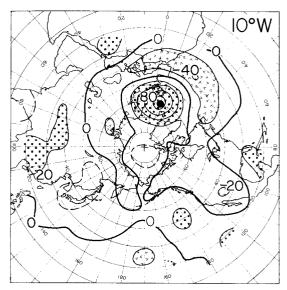
SUMMER

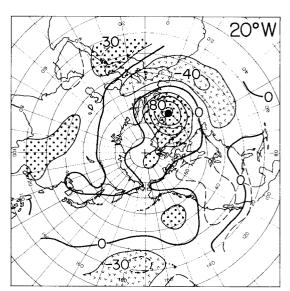




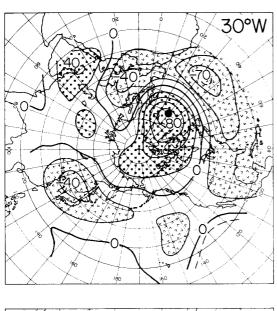


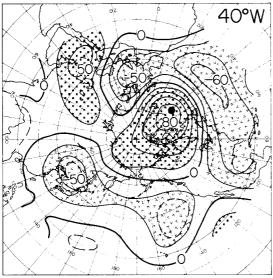


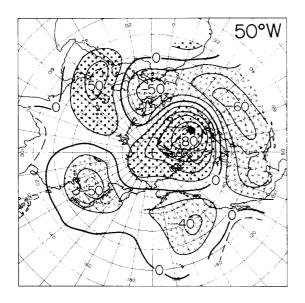


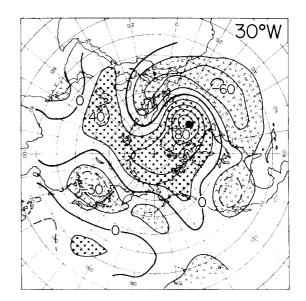


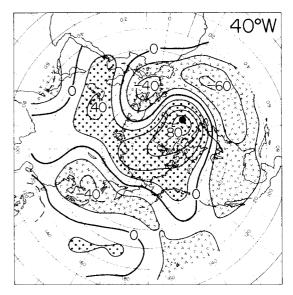


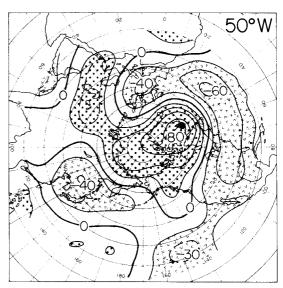






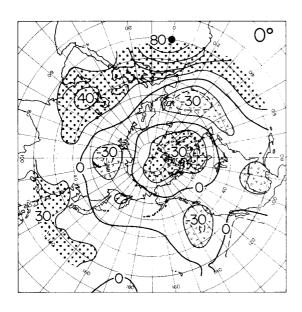


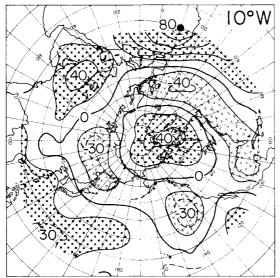


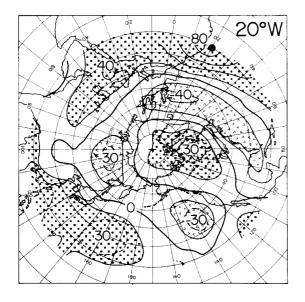


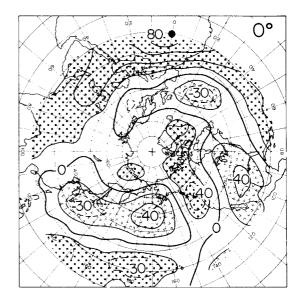
20°N

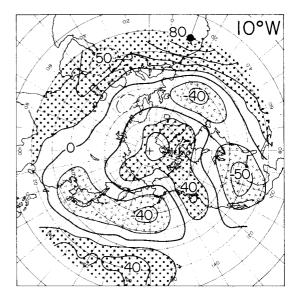
SPRING

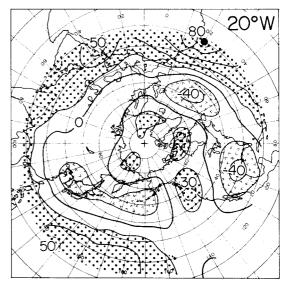


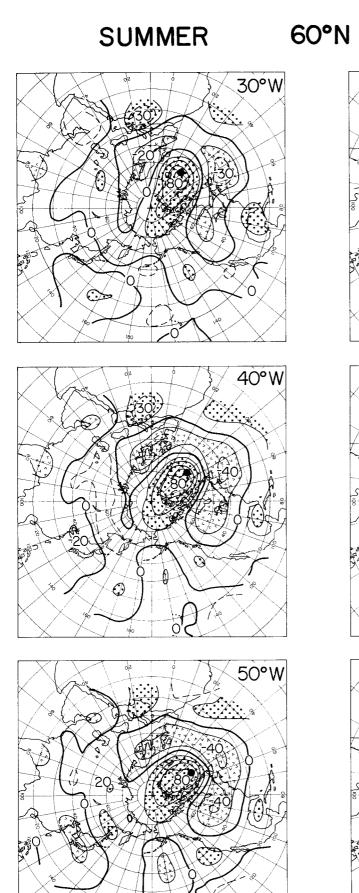


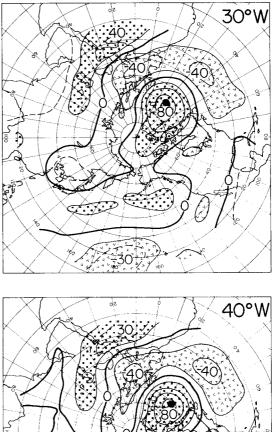




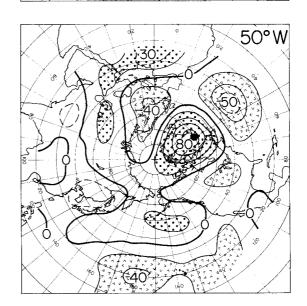








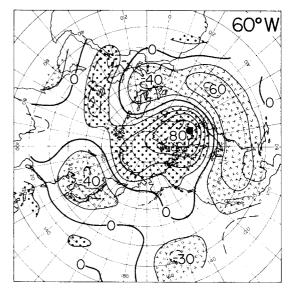


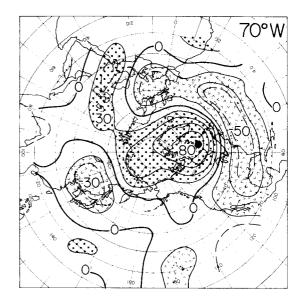


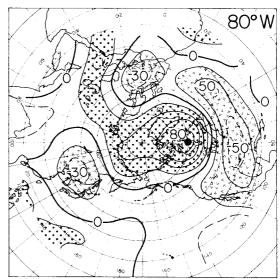
60°N

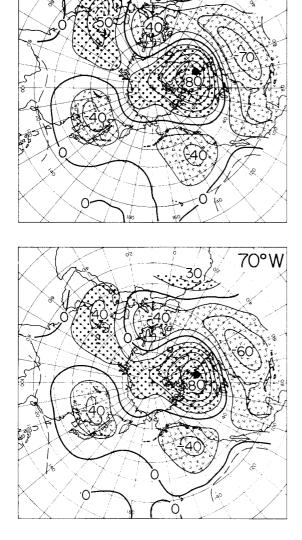
60°W

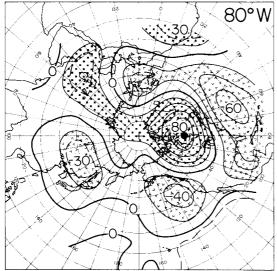


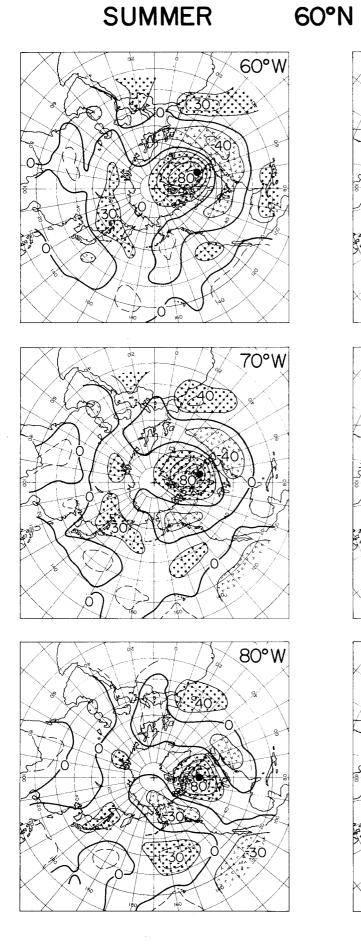


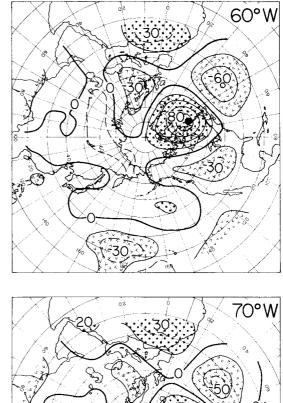


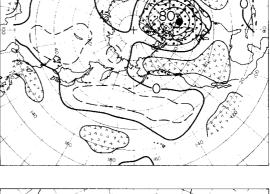


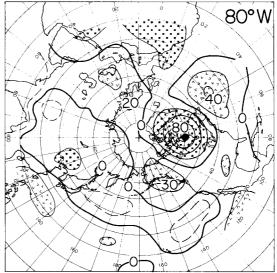




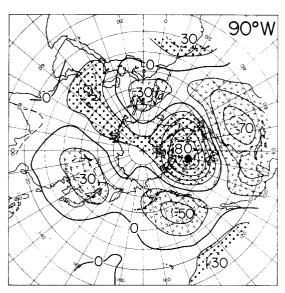


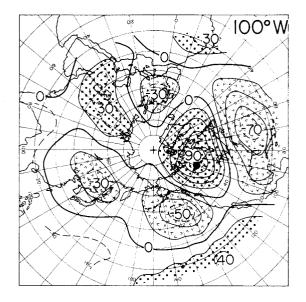


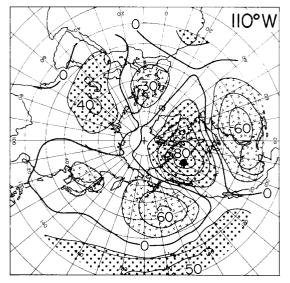


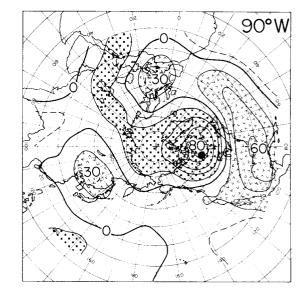


WINTER 60°N

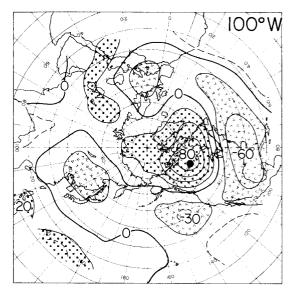


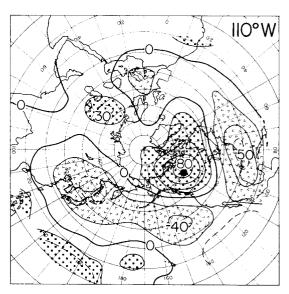


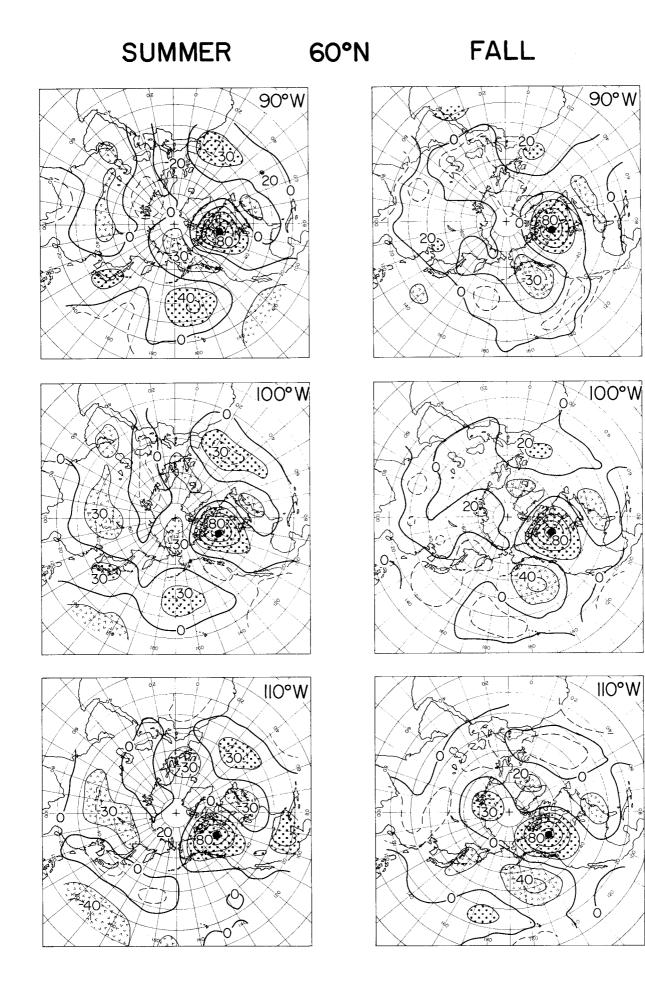




SPRING









90°W

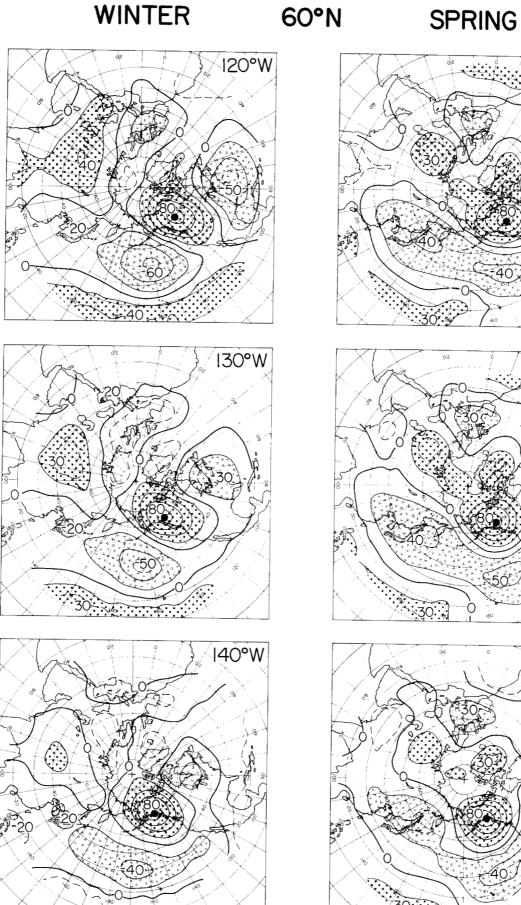
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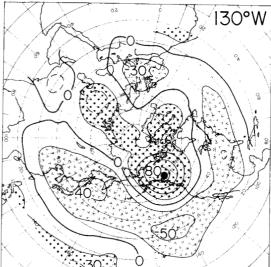
llò°W

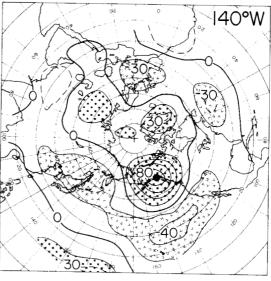
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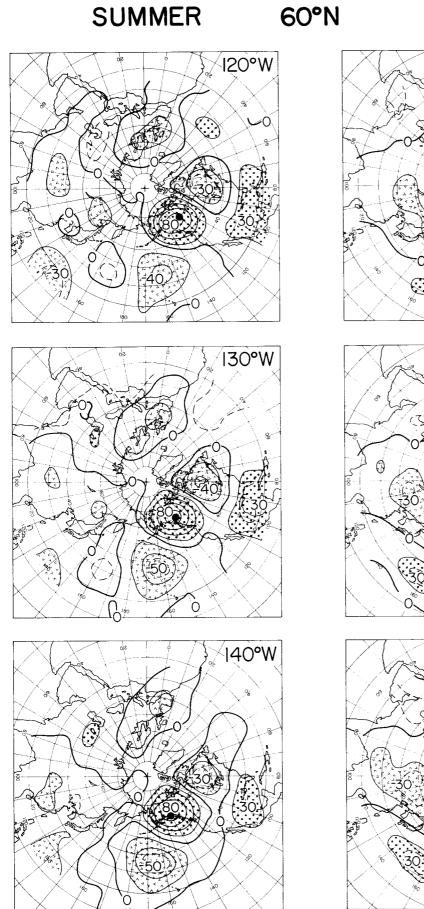
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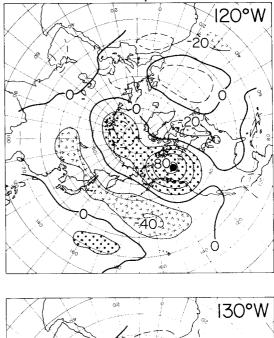


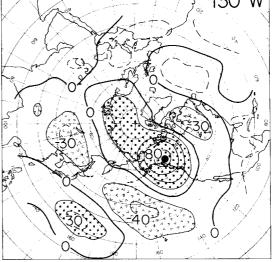


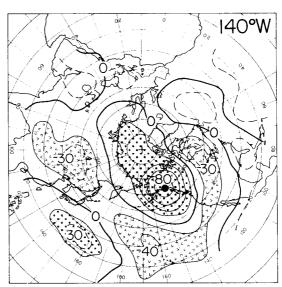




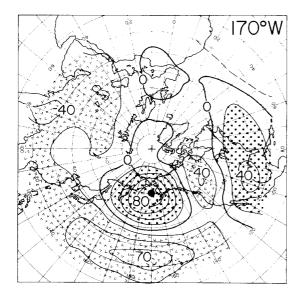




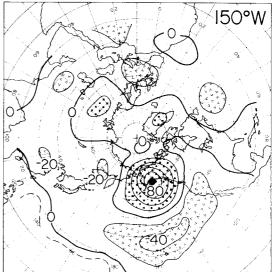


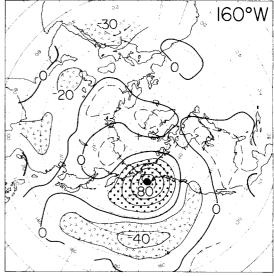


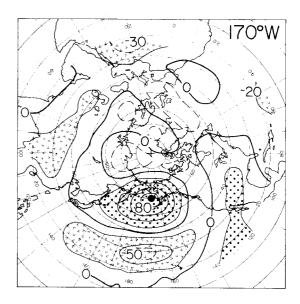
WINTER



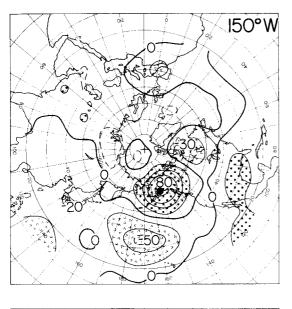


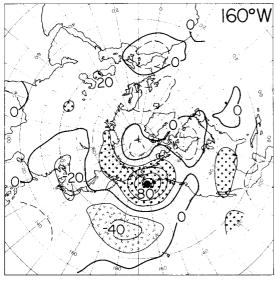


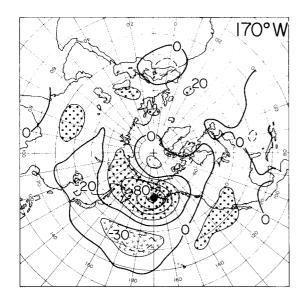


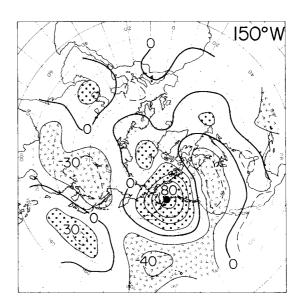


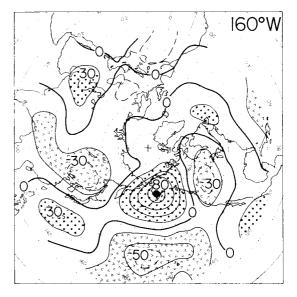
SUMMER 60°N

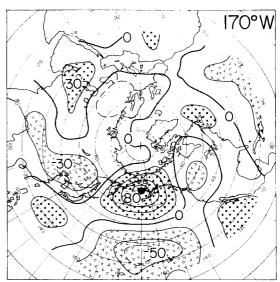


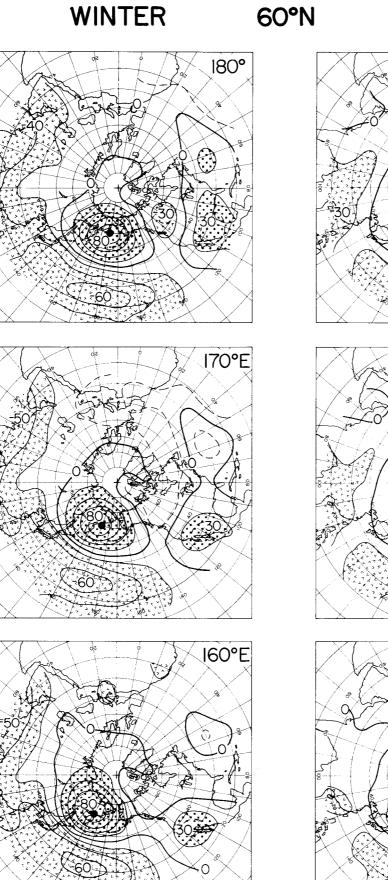


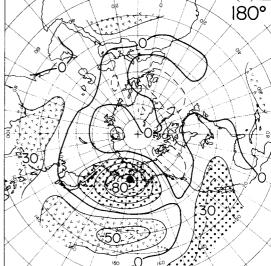




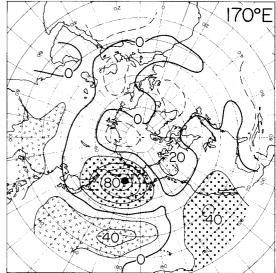


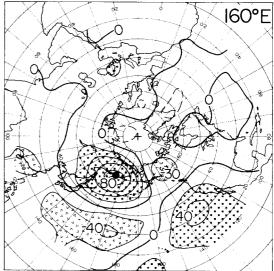


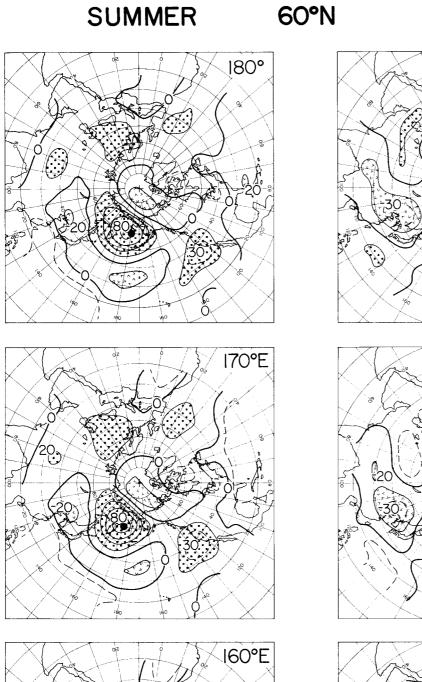


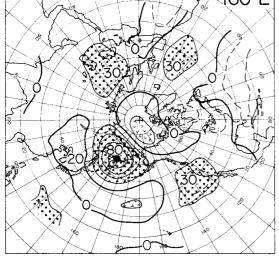


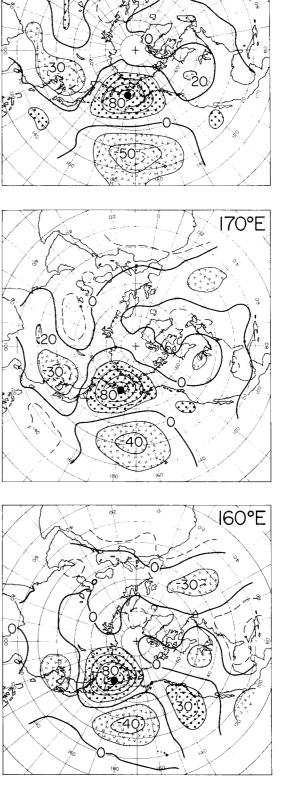
SPRING

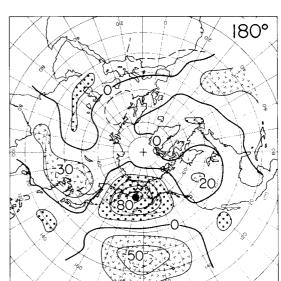


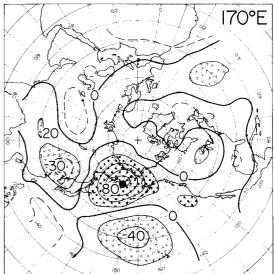




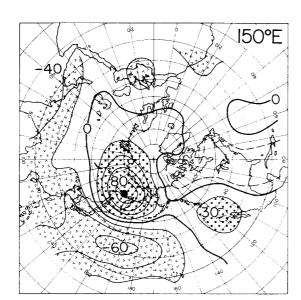


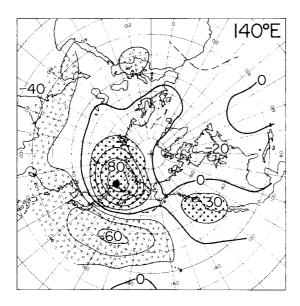


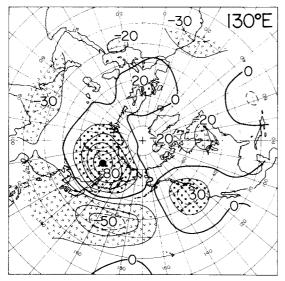


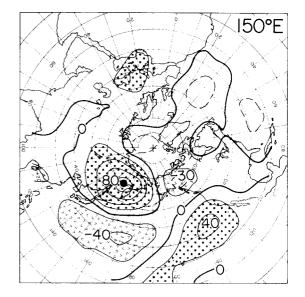


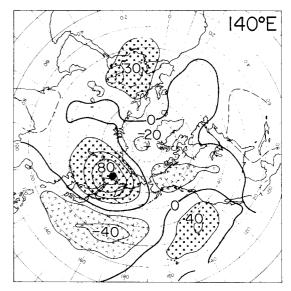


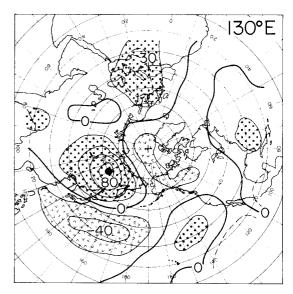


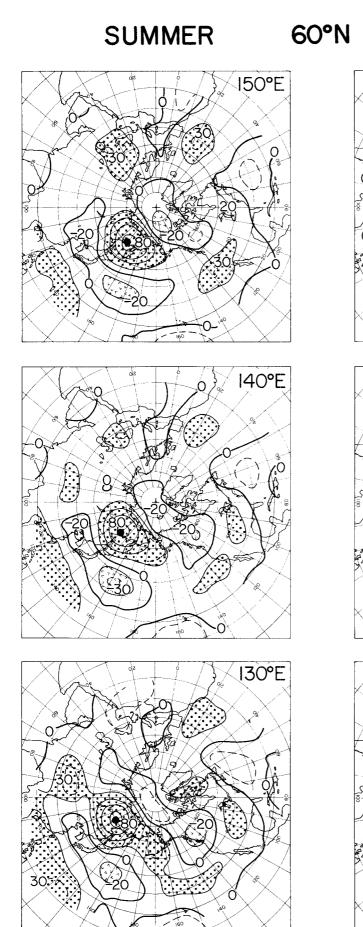


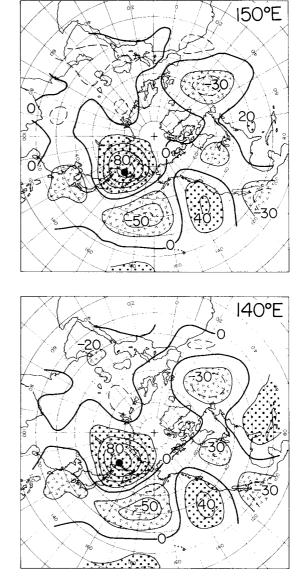






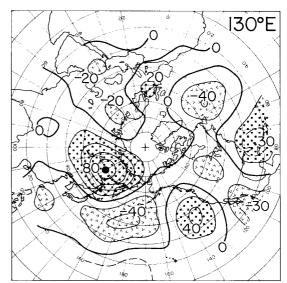






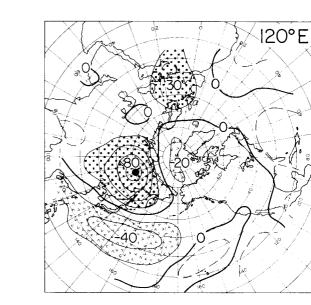
FALL

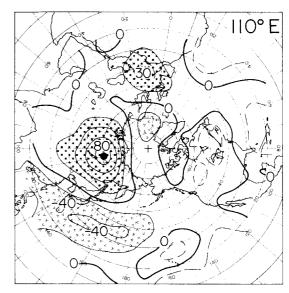
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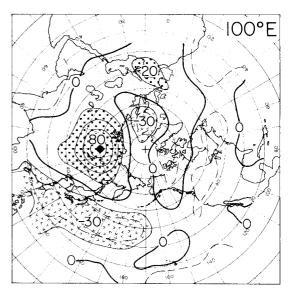


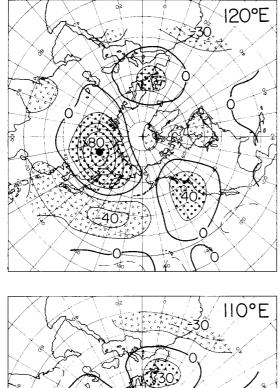
60°N

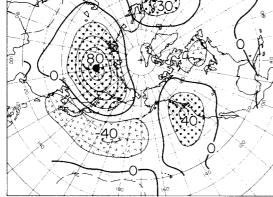
SPRING

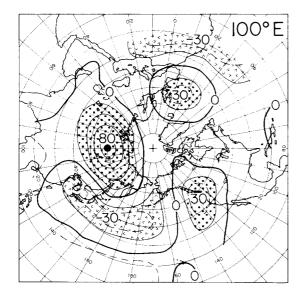


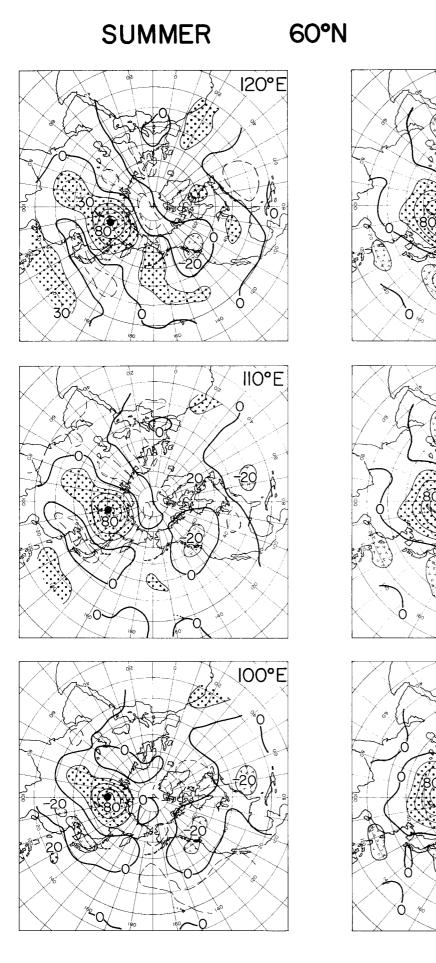


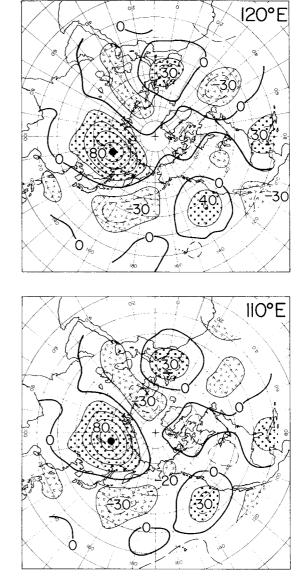




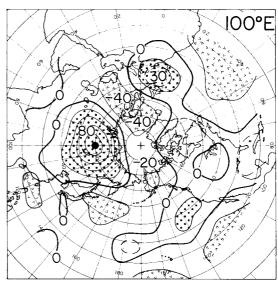




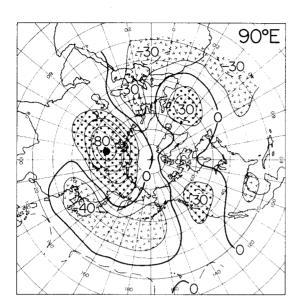


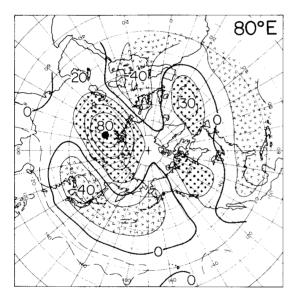


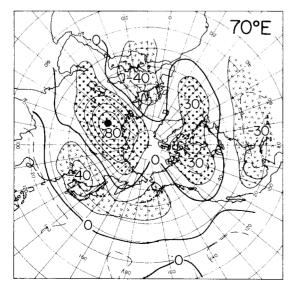
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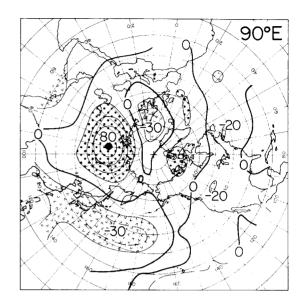


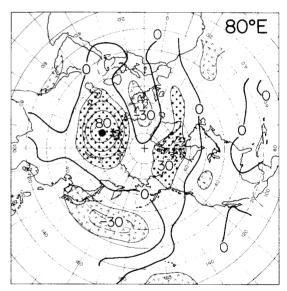


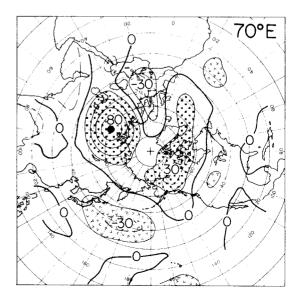


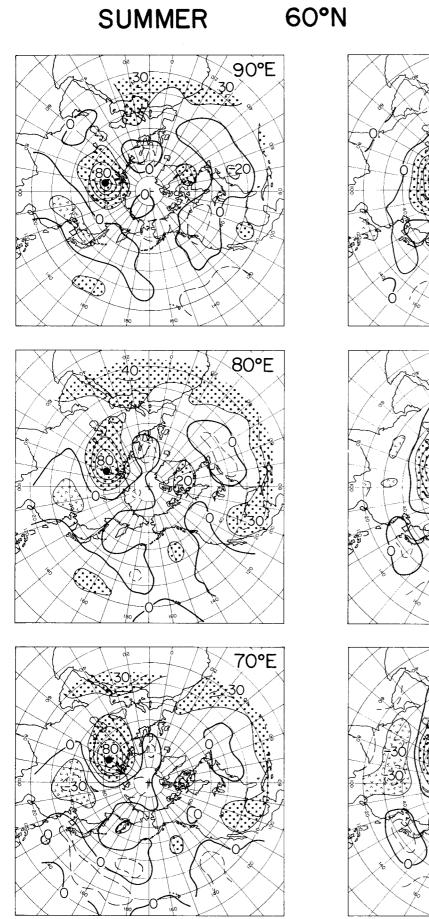


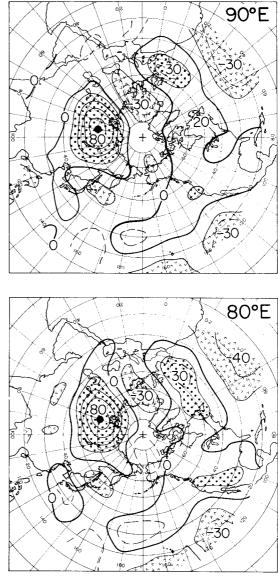


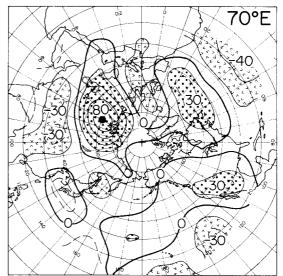




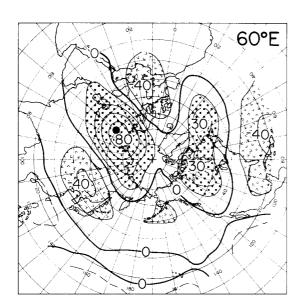


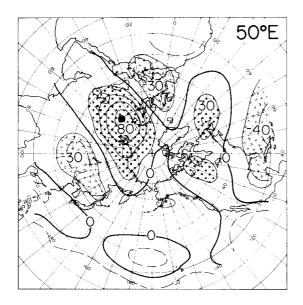


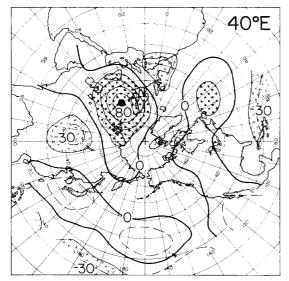


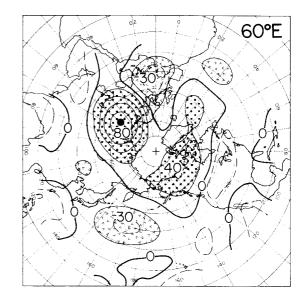


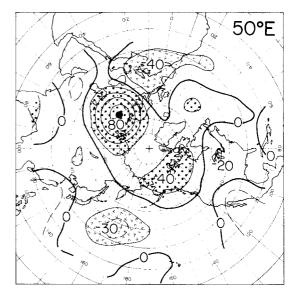


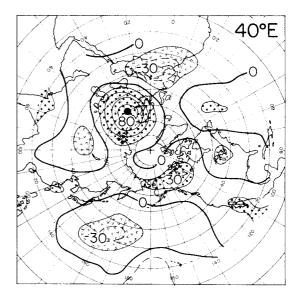


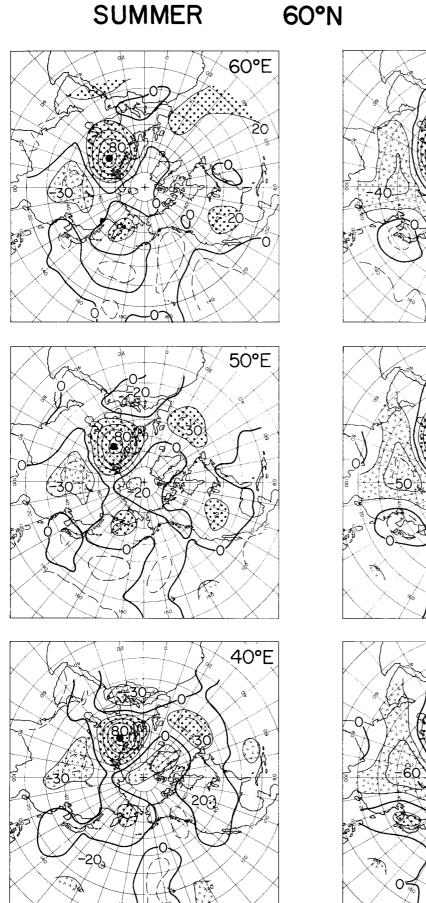


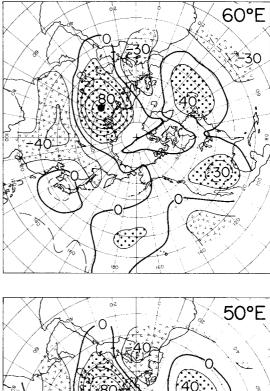


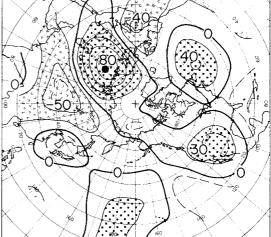


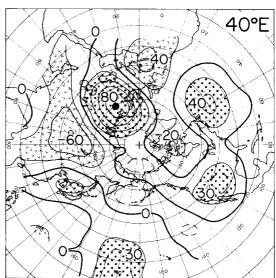




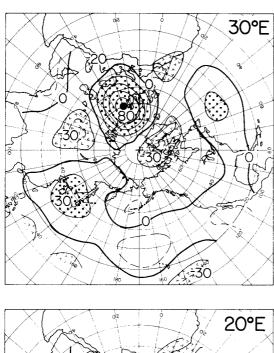


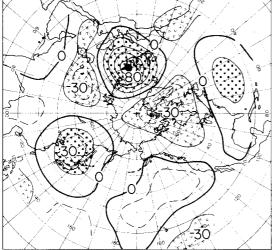


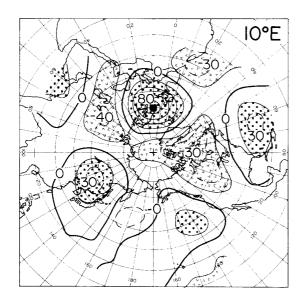


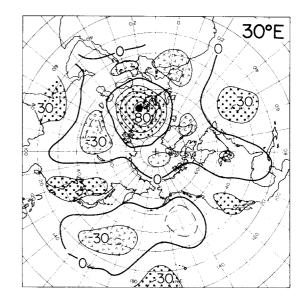


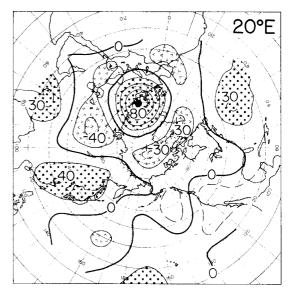


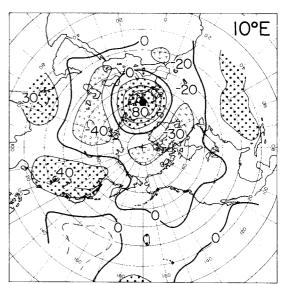




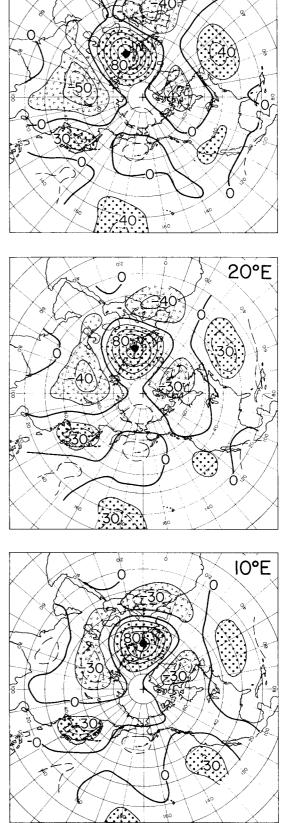








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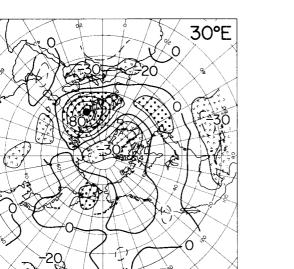


FALL

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60°N

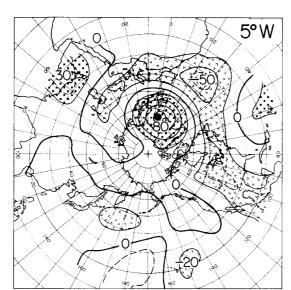


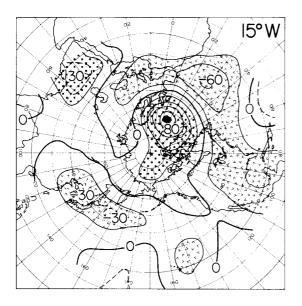
SUMMER

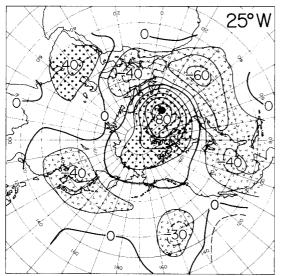
30°€

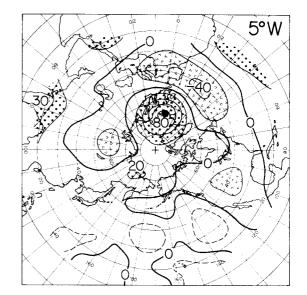
WINTER 65°N

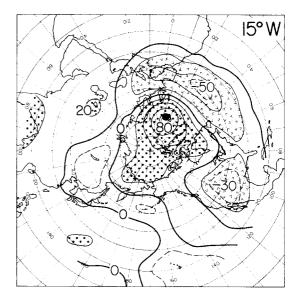


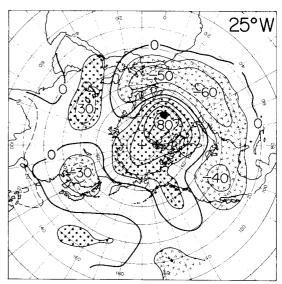


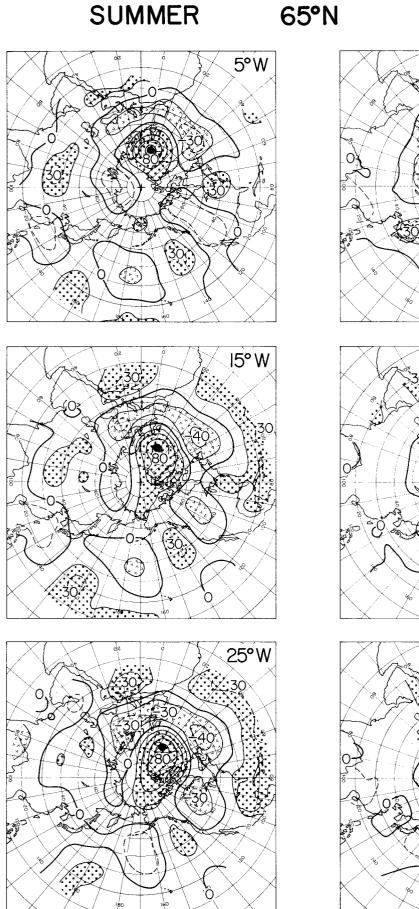


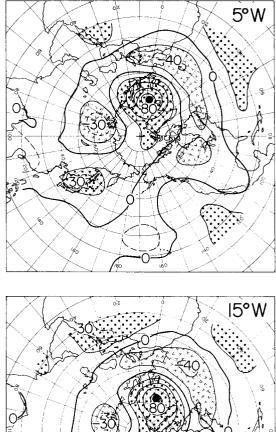


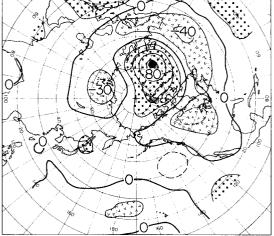


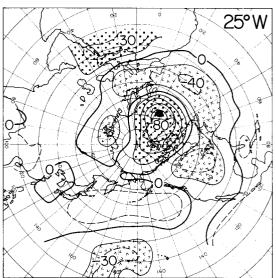






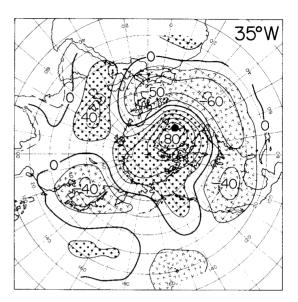


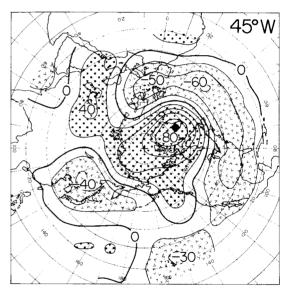


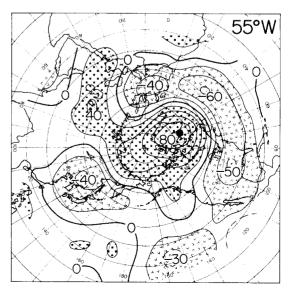


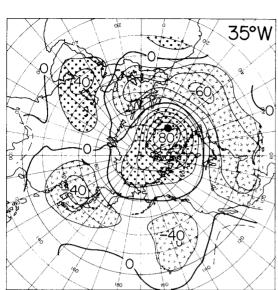


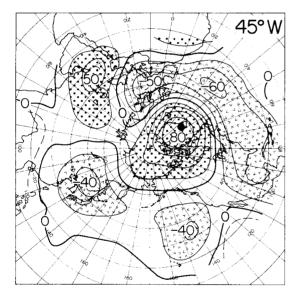


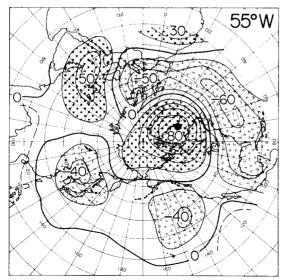


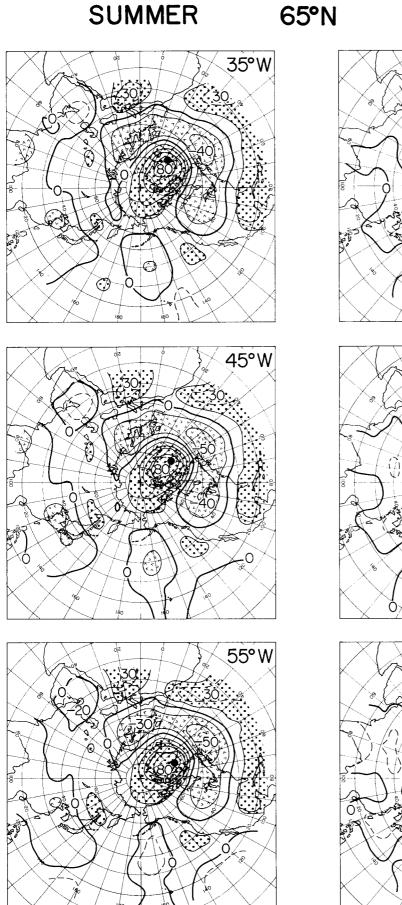


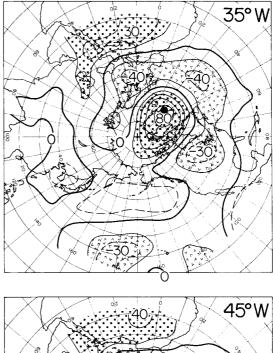


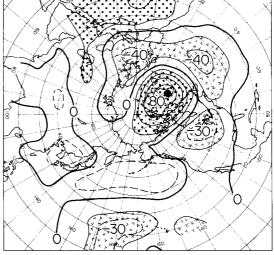


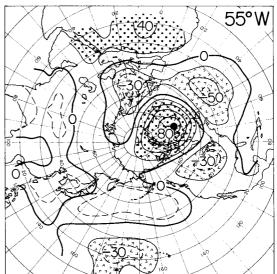








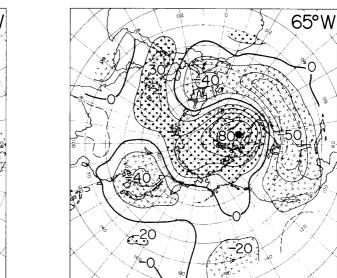


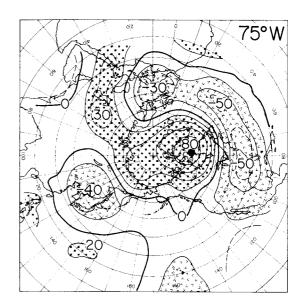


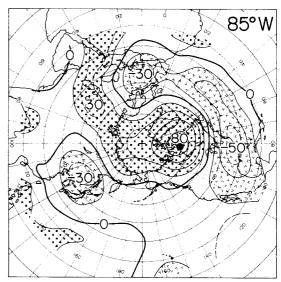
65°N

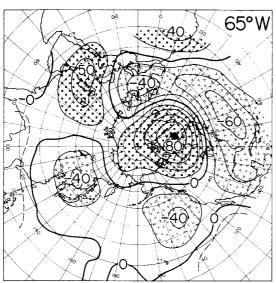


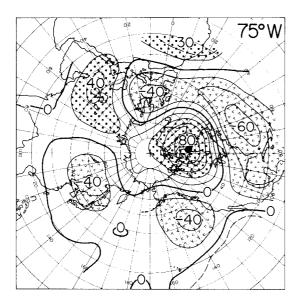
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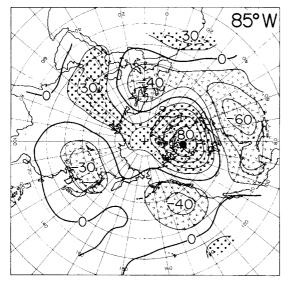


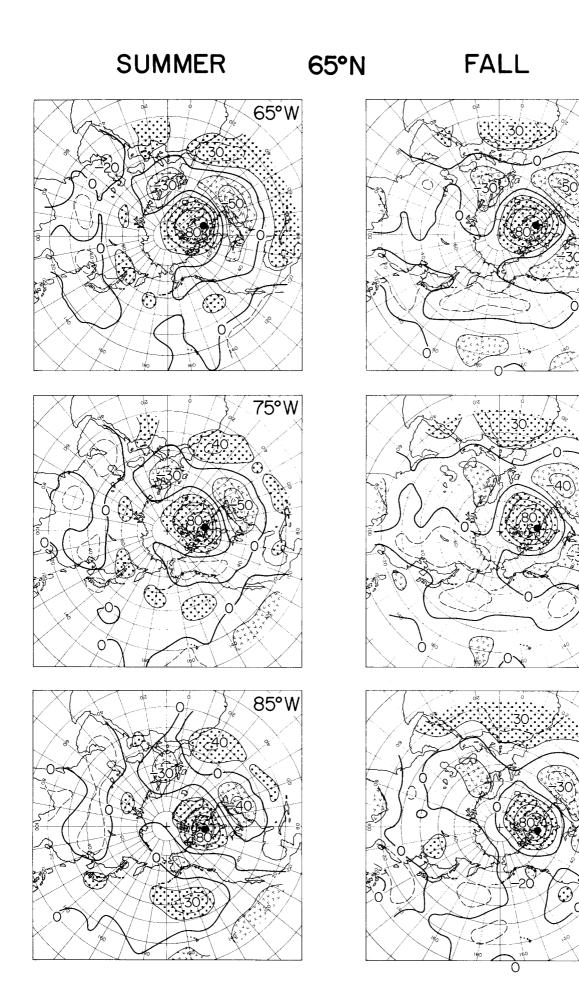












65°W

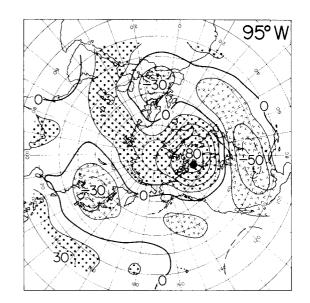
75°W

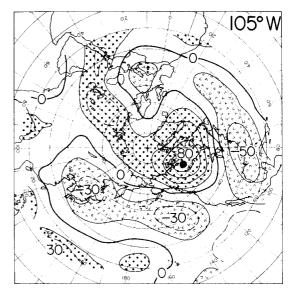
85°W

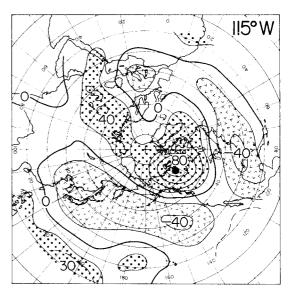
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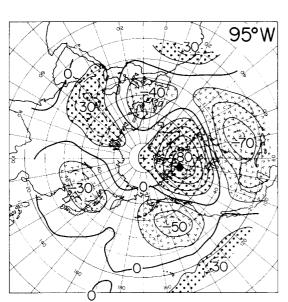
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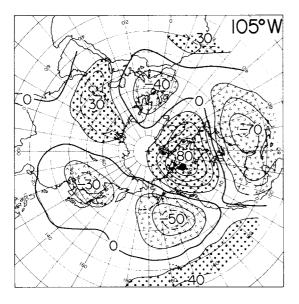


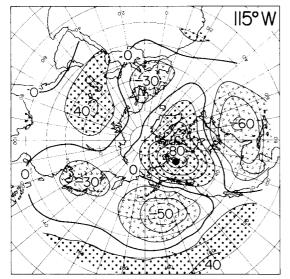


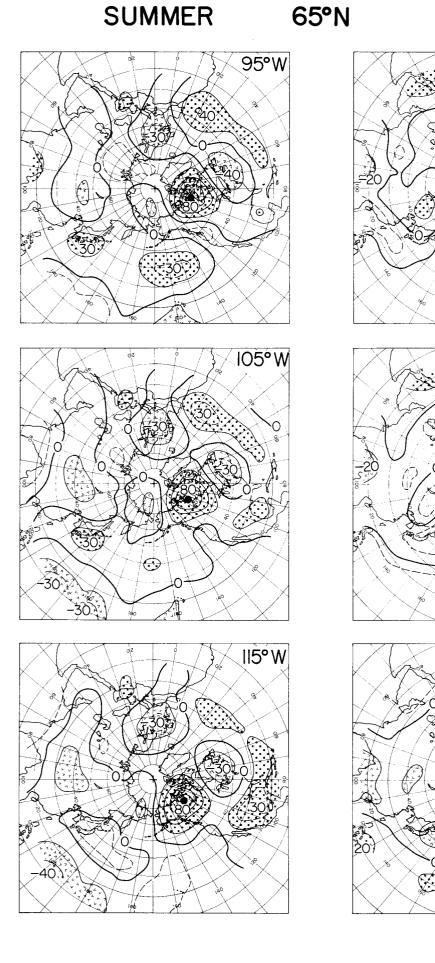


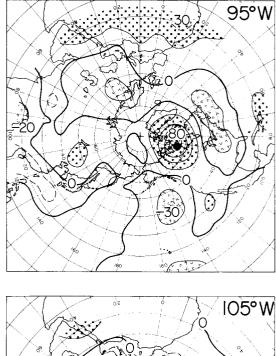


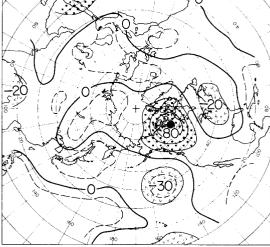


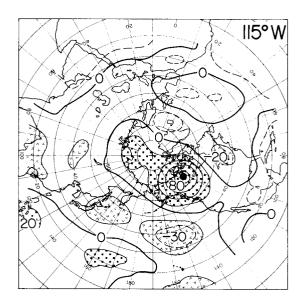




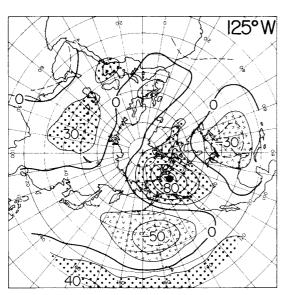


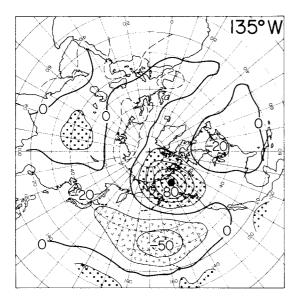


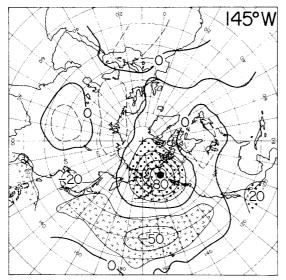


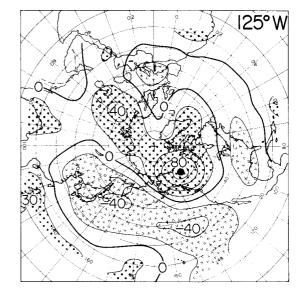


WINTER 65°N

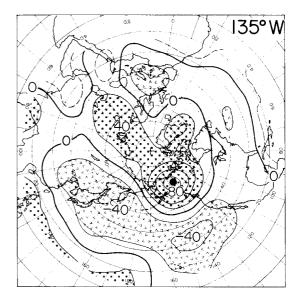


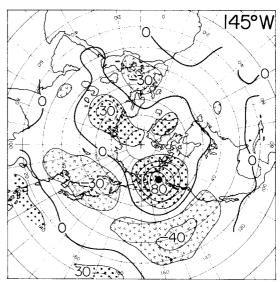


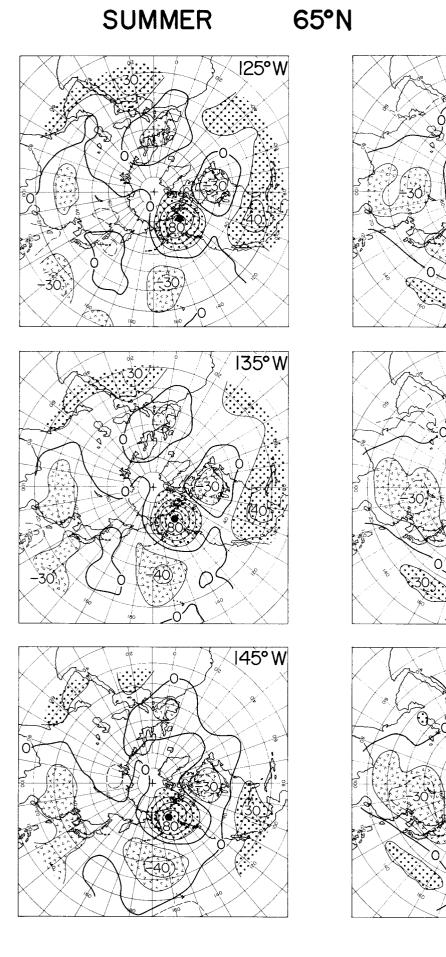


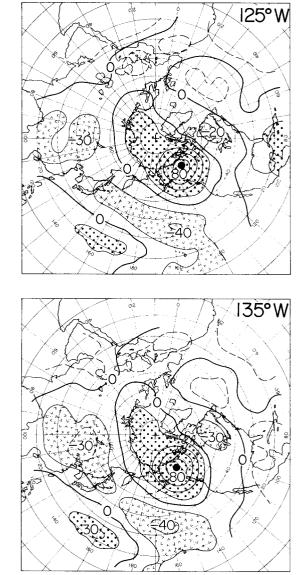


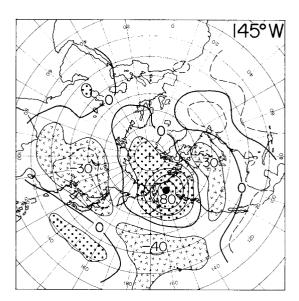
SPRING





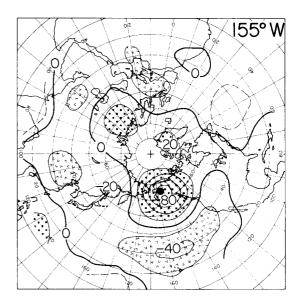


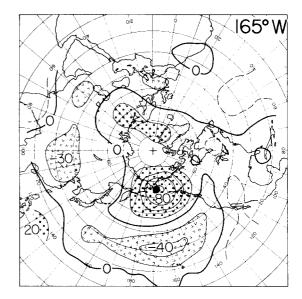


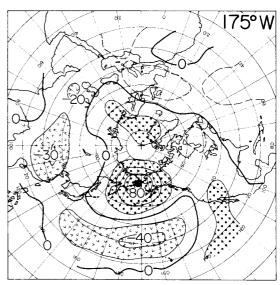


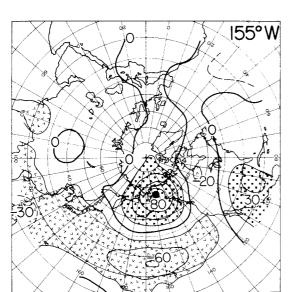
WINTER 65°N

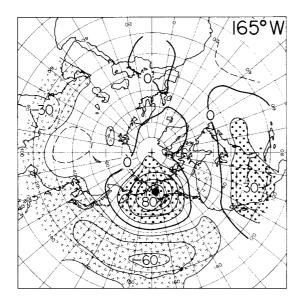


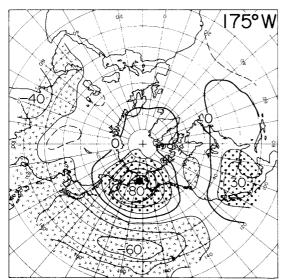


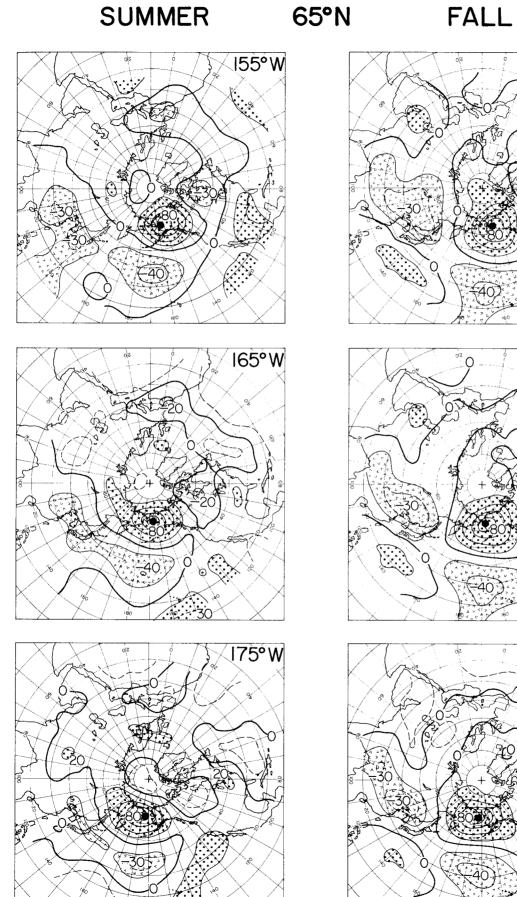


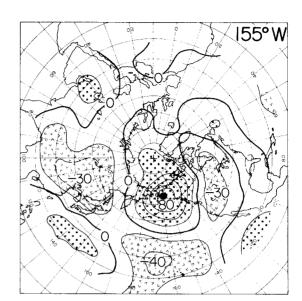


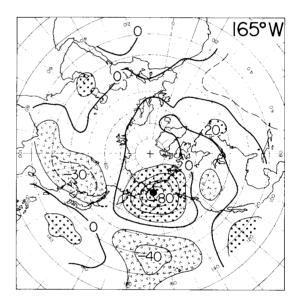


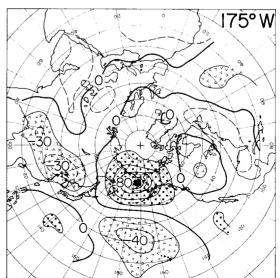






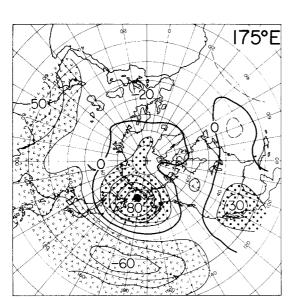


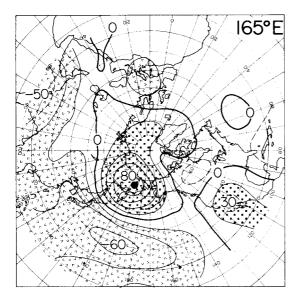


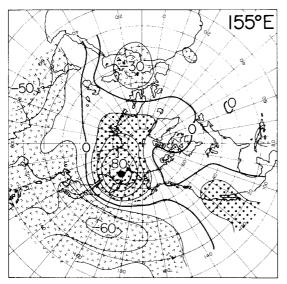


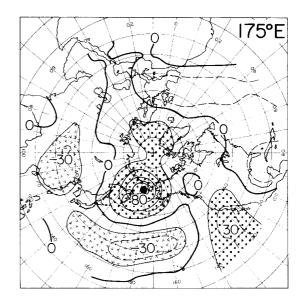
65°N

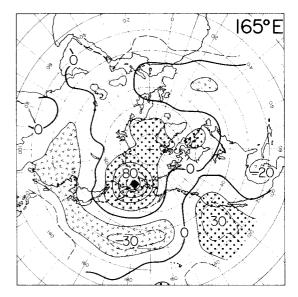
SPRING

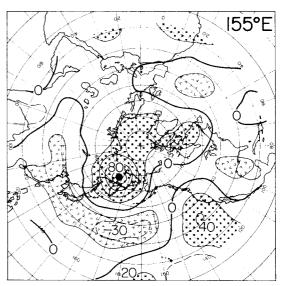


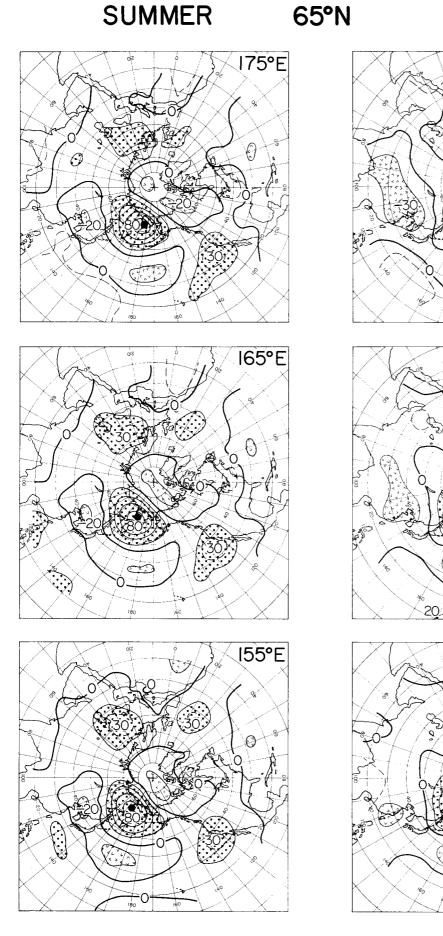


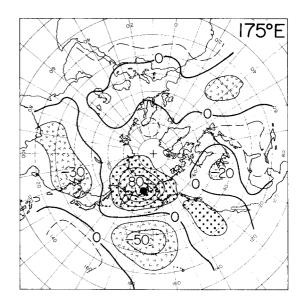


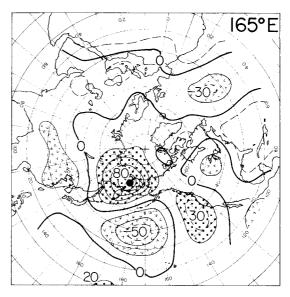


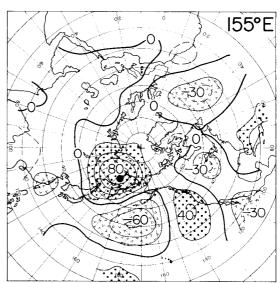




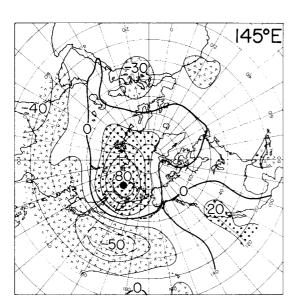


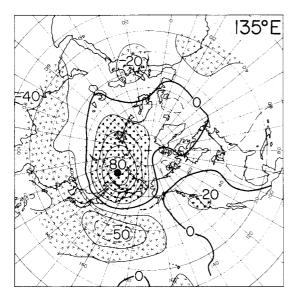


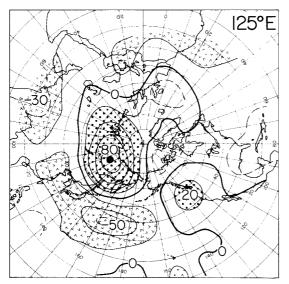


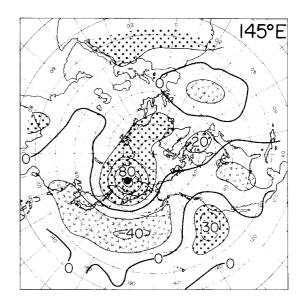


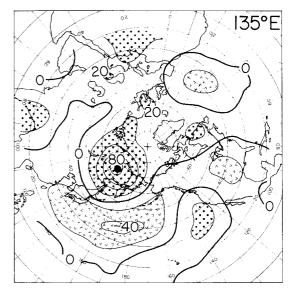


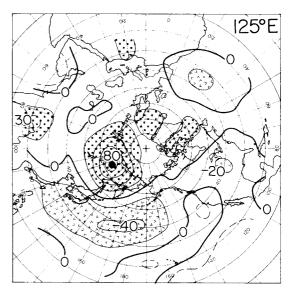




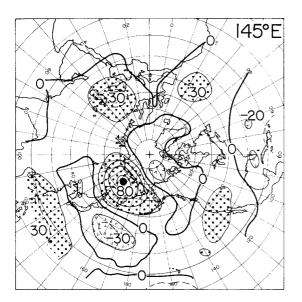


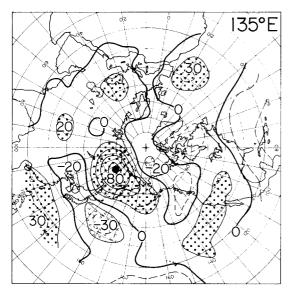


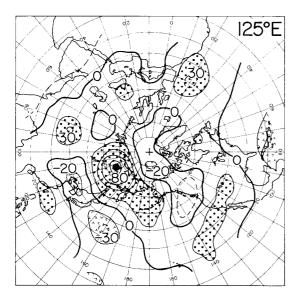


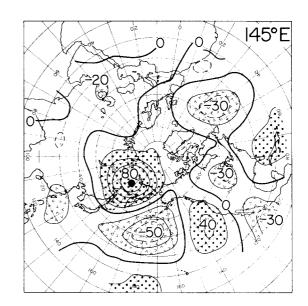


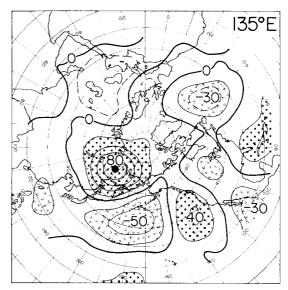
SUMMER 65°N

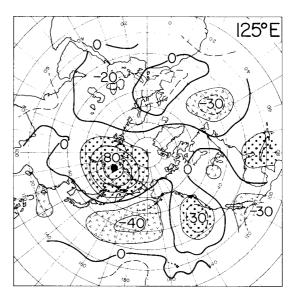




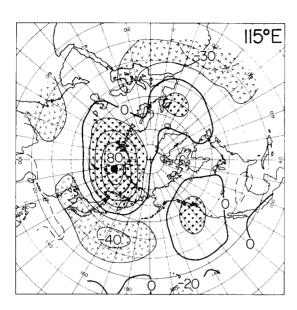


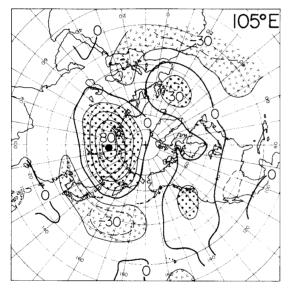


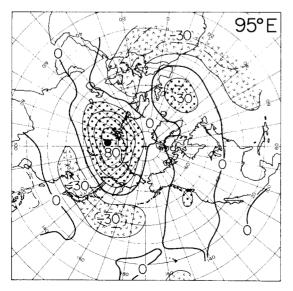


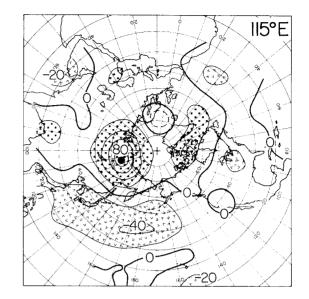


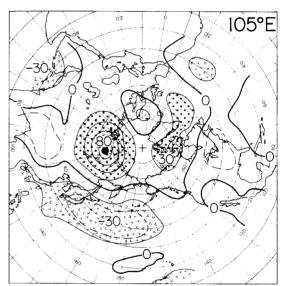


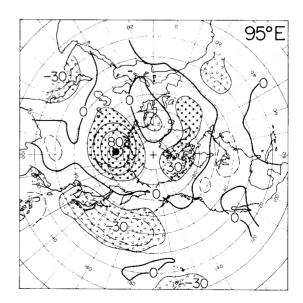


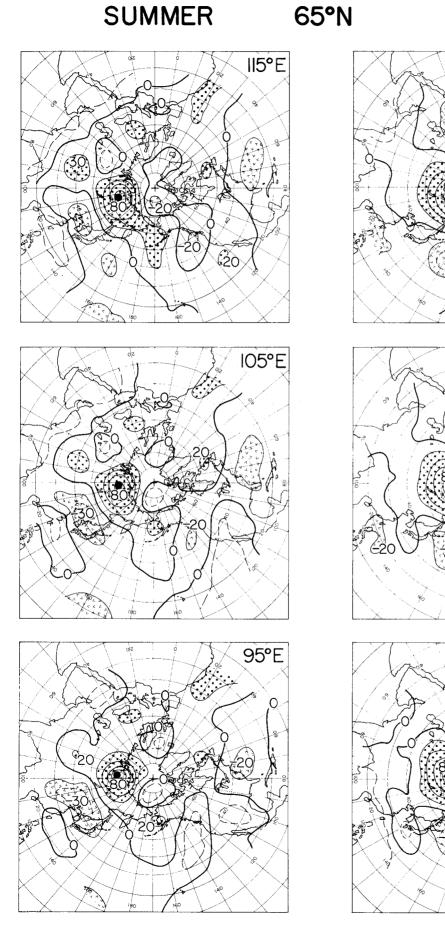


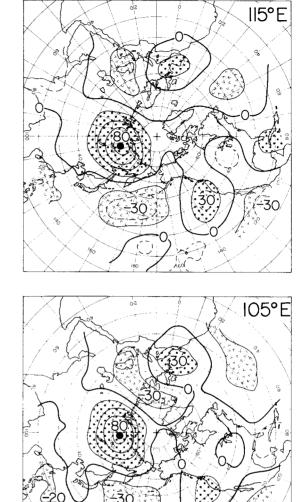


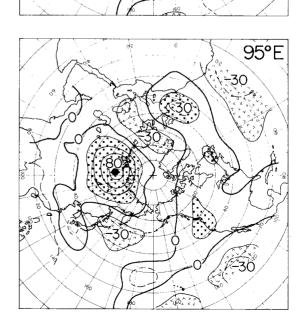




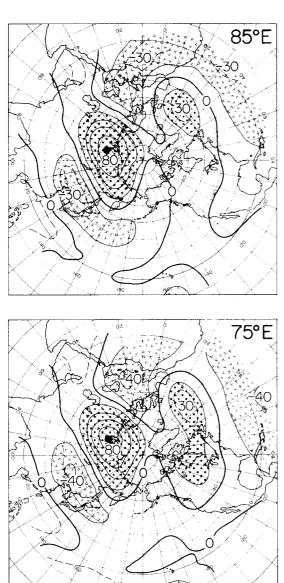


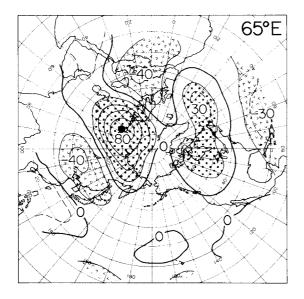


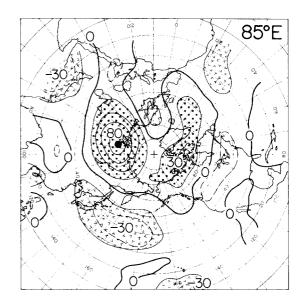


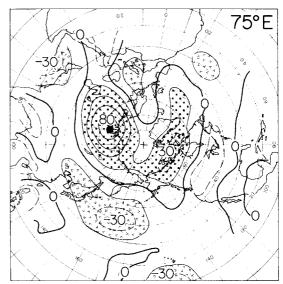


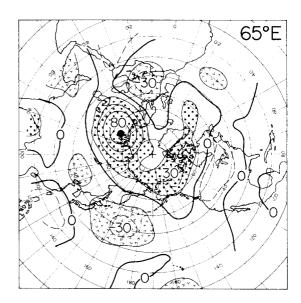


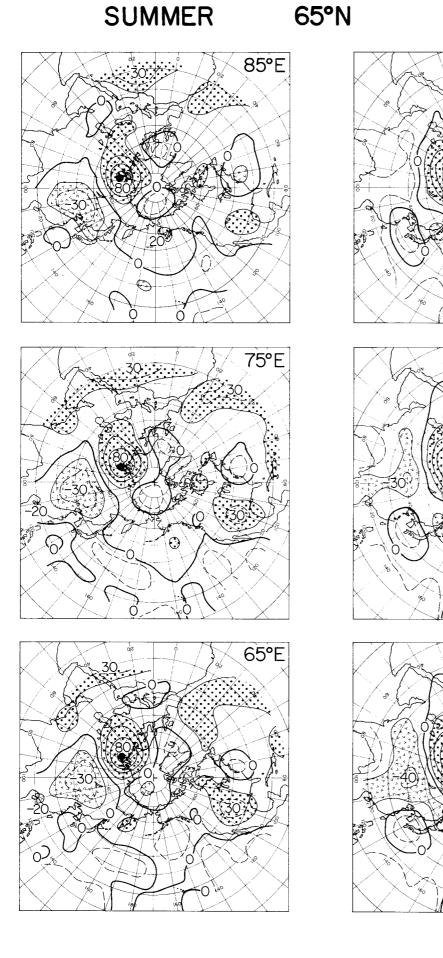


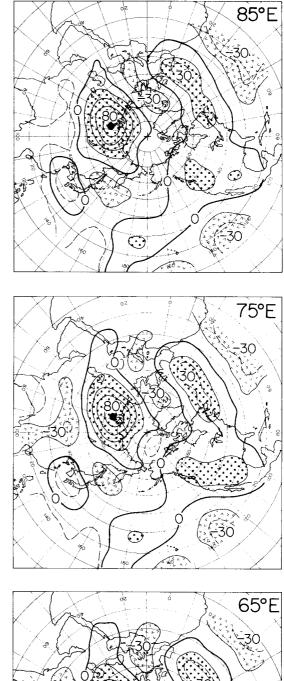


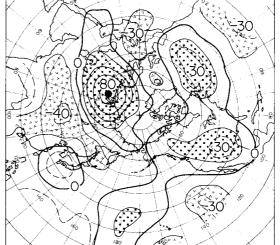




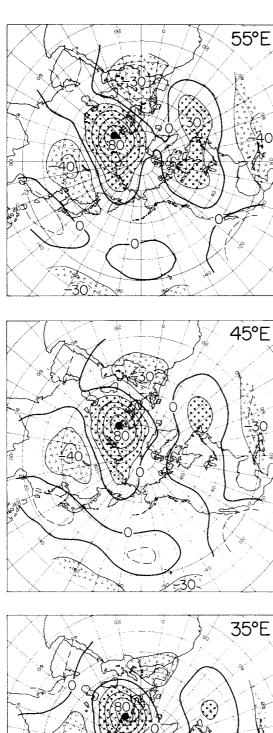








65°N



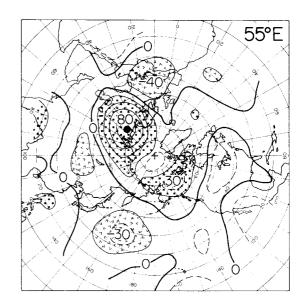
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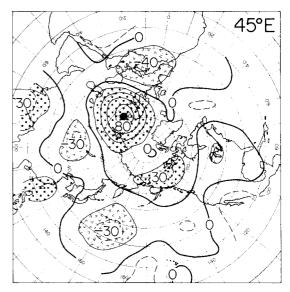
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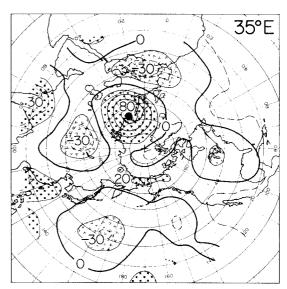
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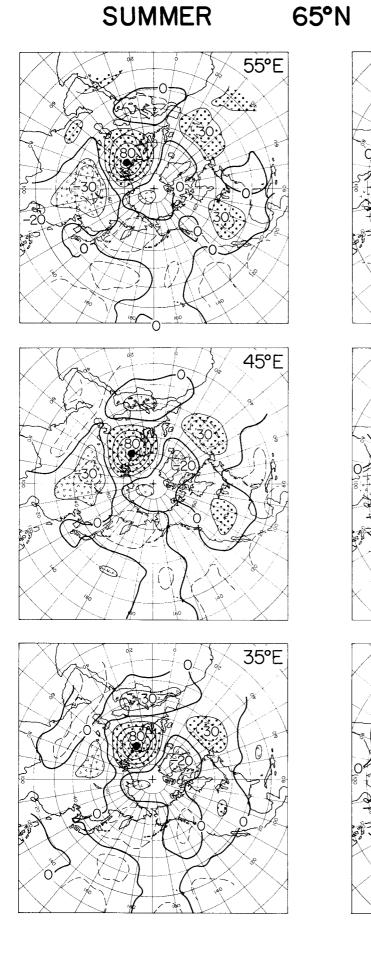
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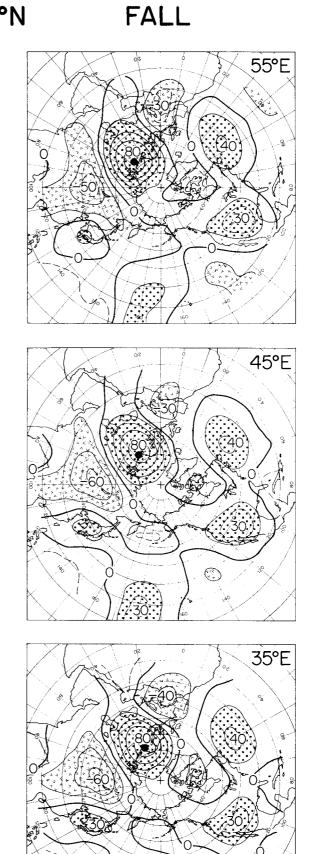
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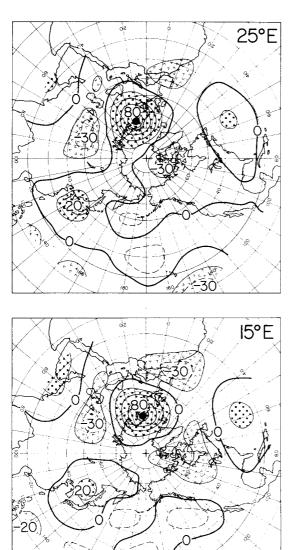


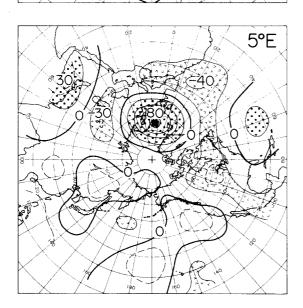


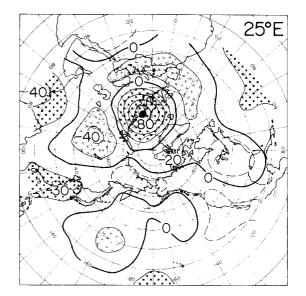


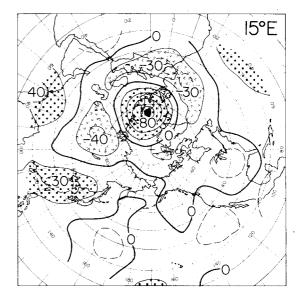


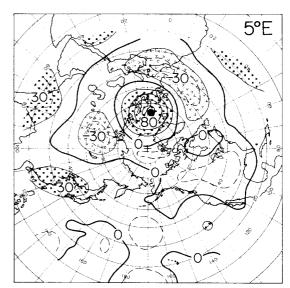


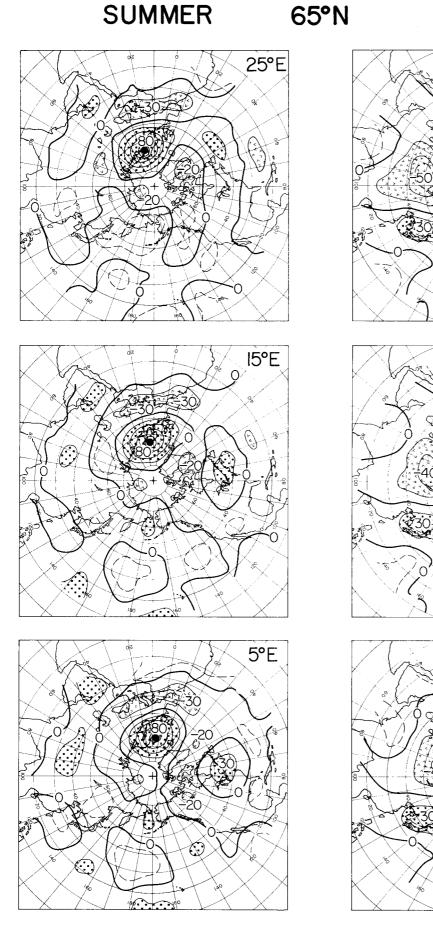


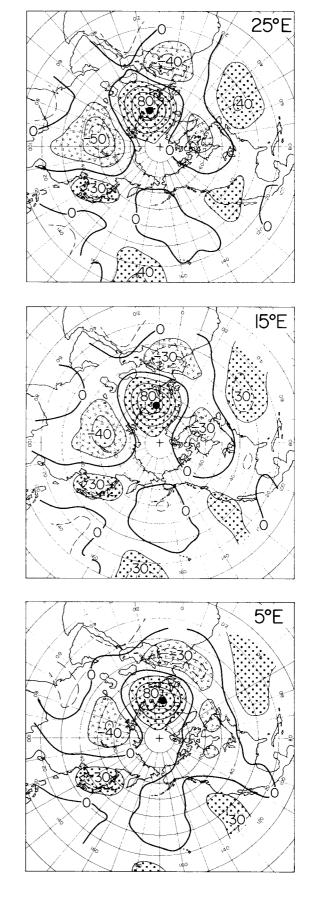




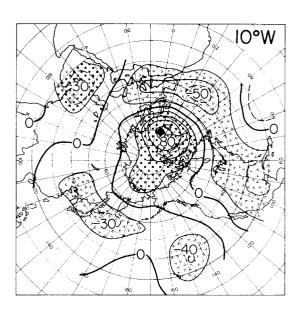


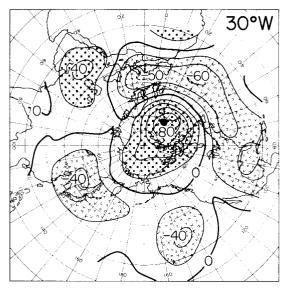


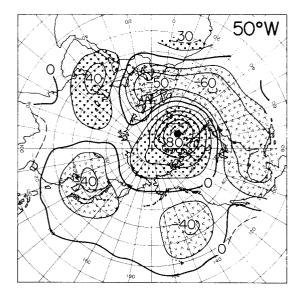


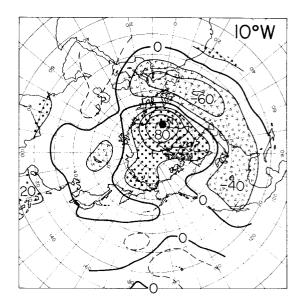


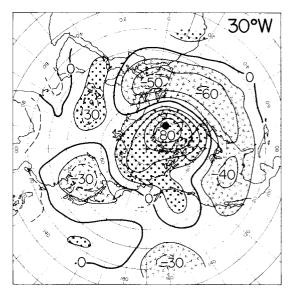


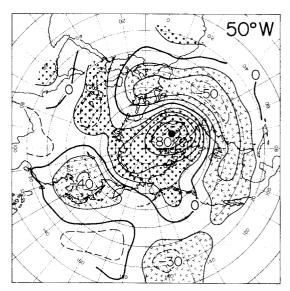


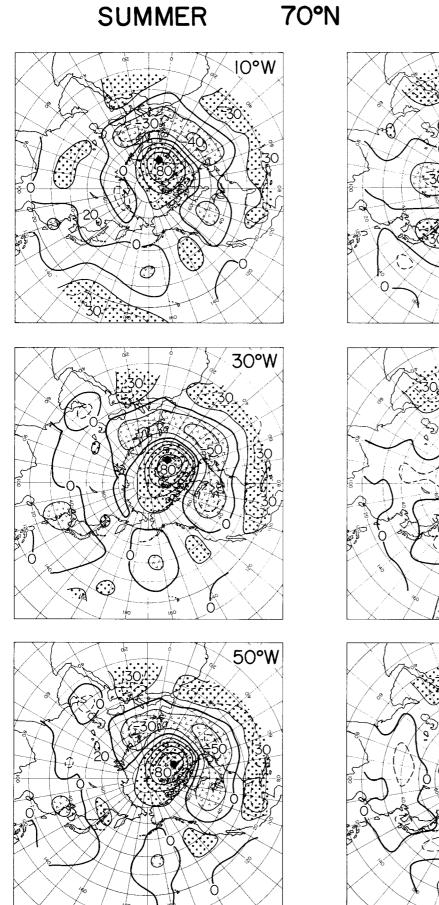


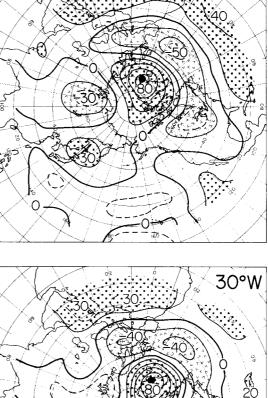






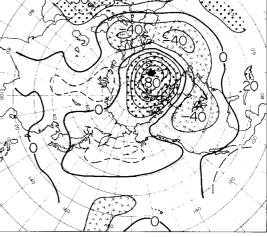


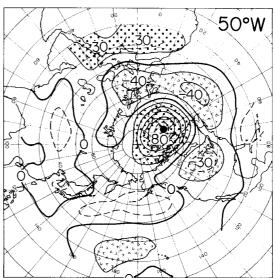




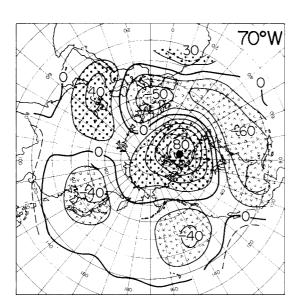
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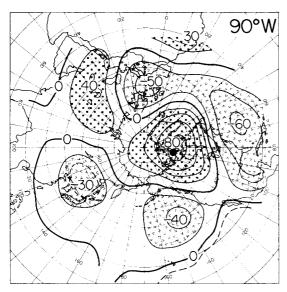
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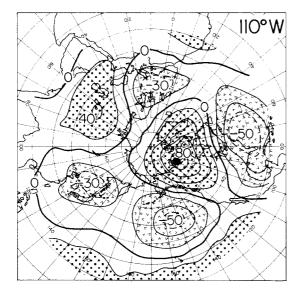


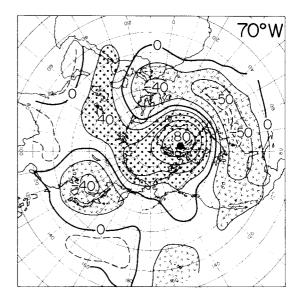


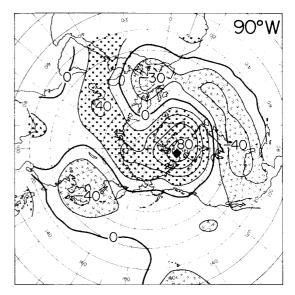


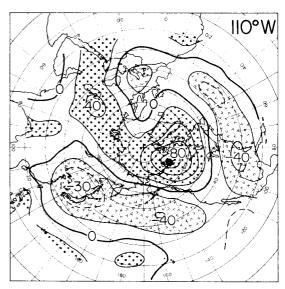


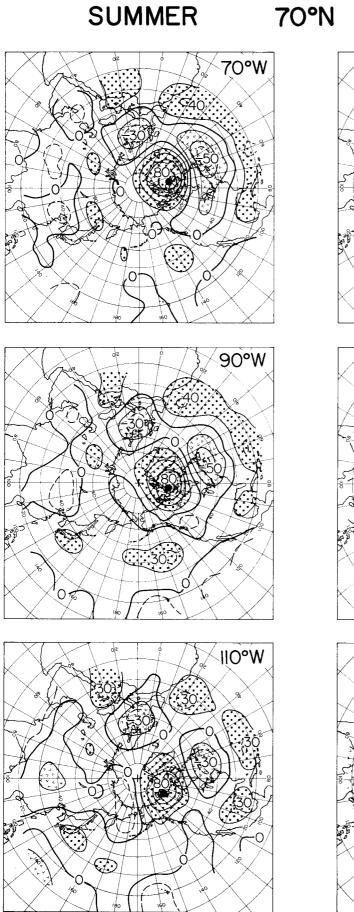


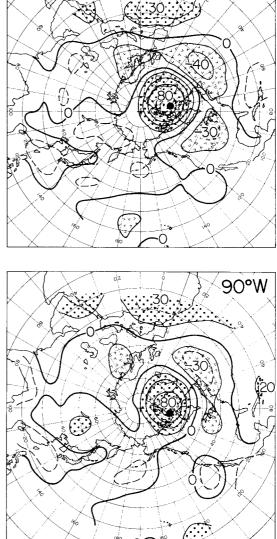


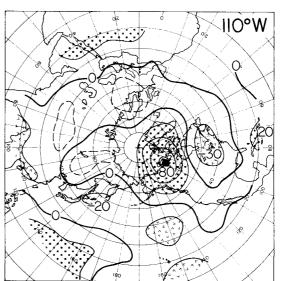








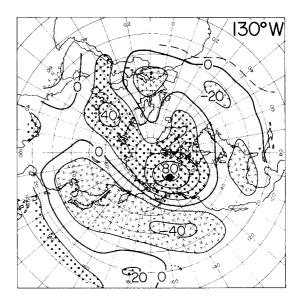


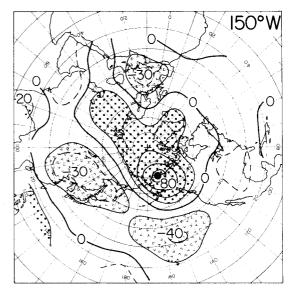


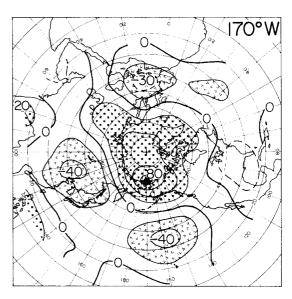
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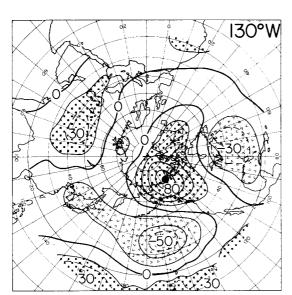
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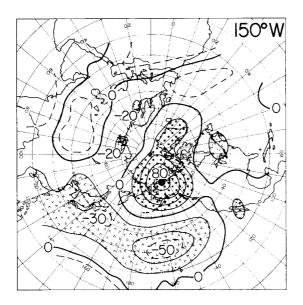


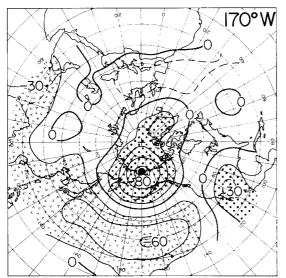


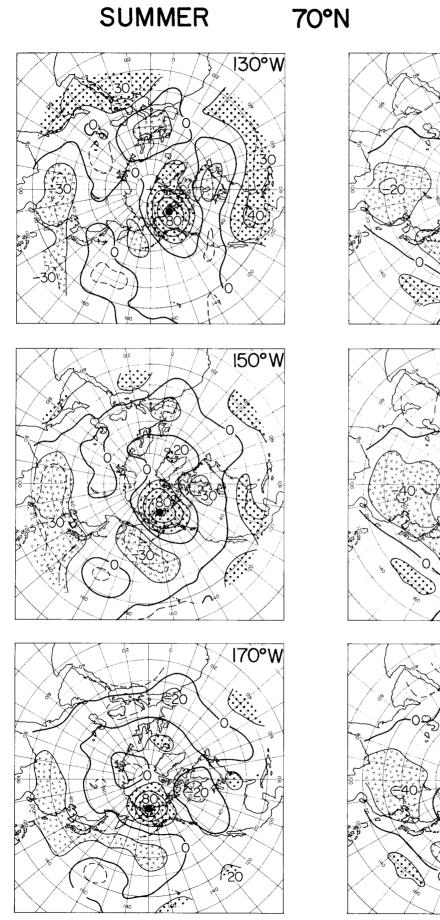


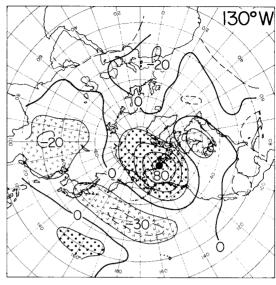


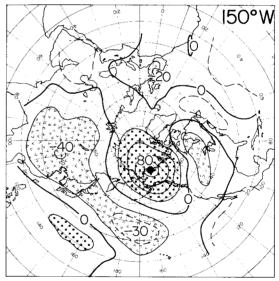


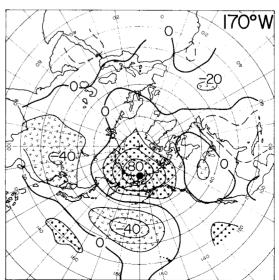






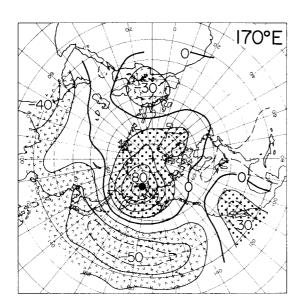


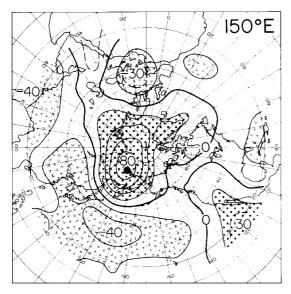


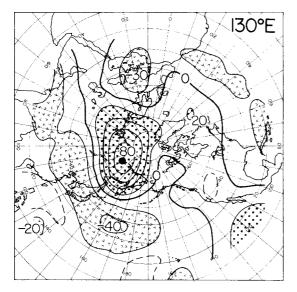


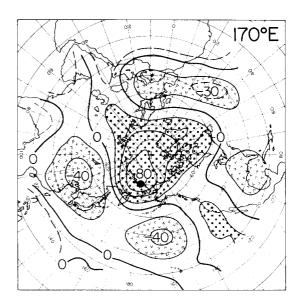
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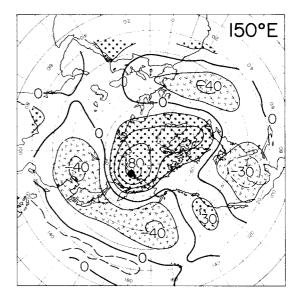


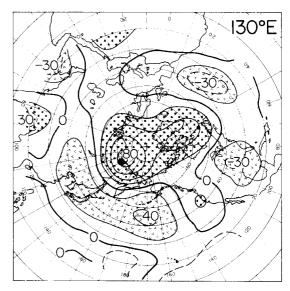




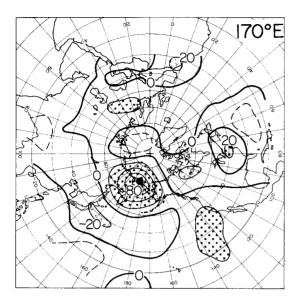


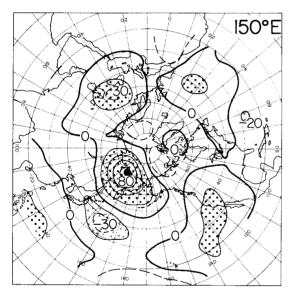


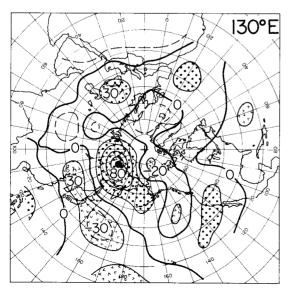


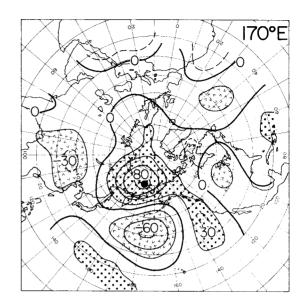


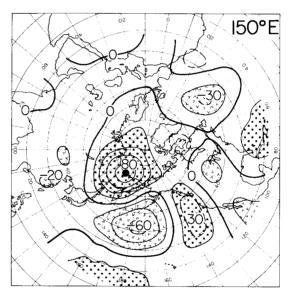
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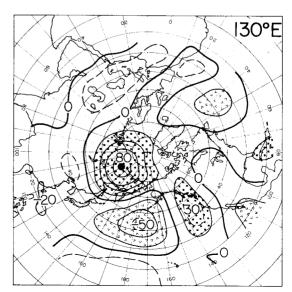






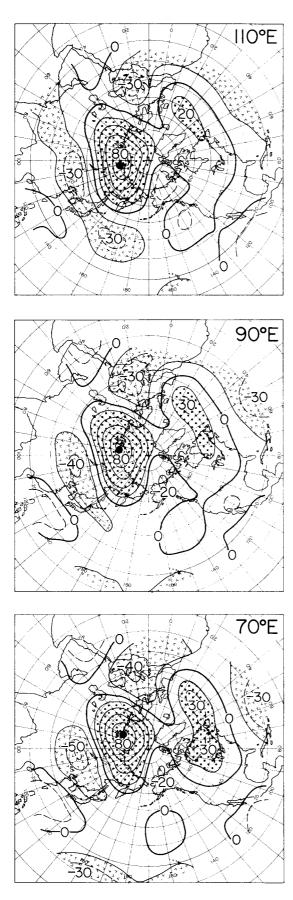


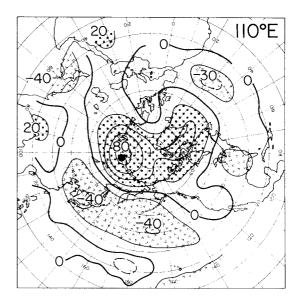


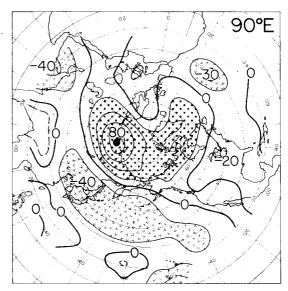


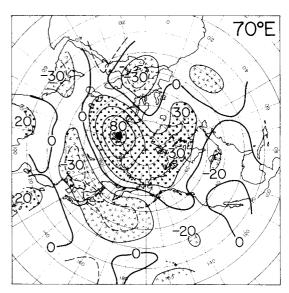
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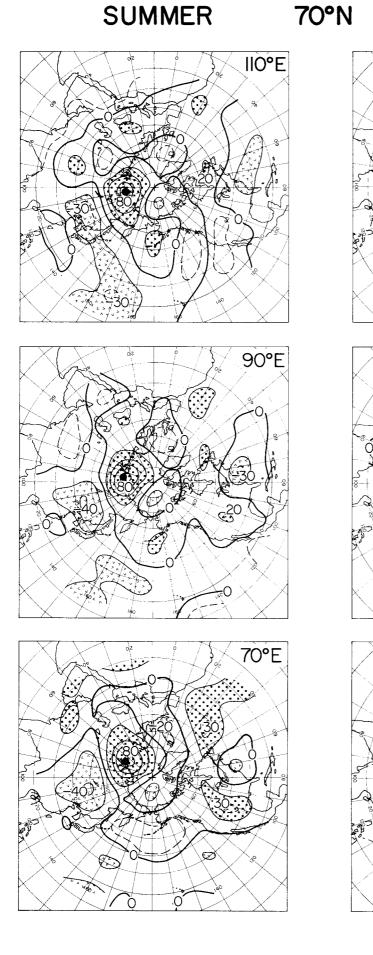
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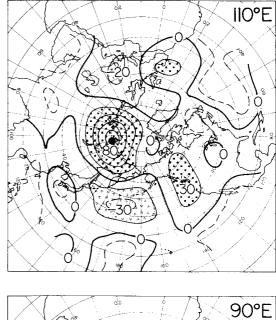


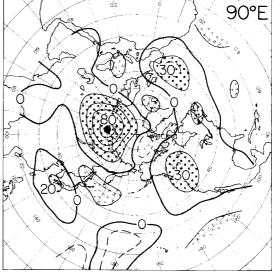


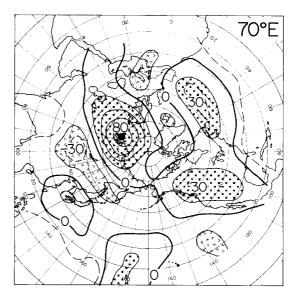






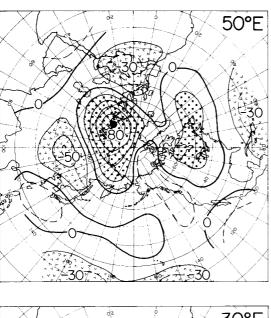


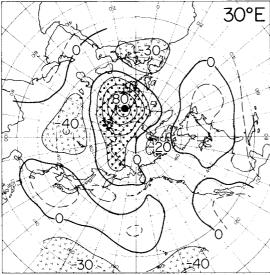


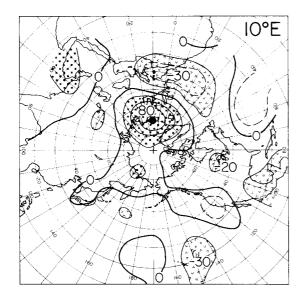


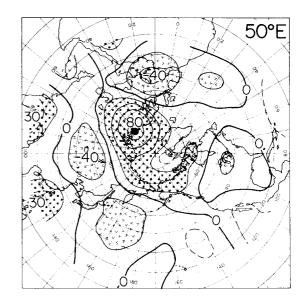
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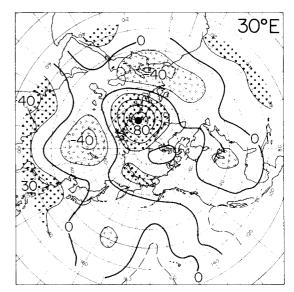


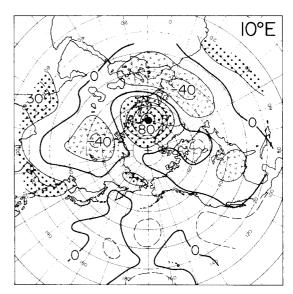








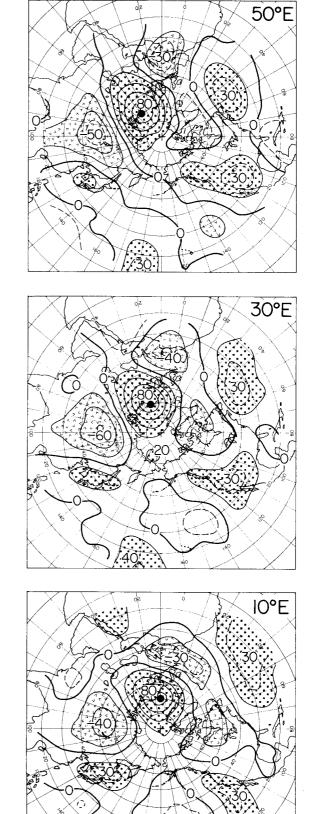




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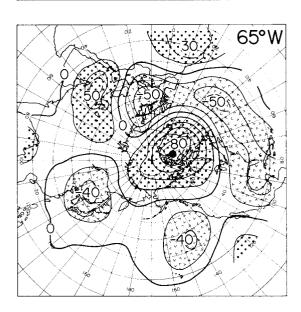


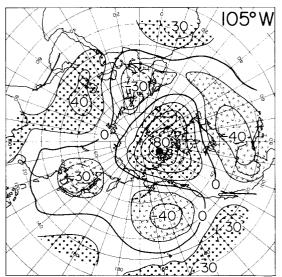
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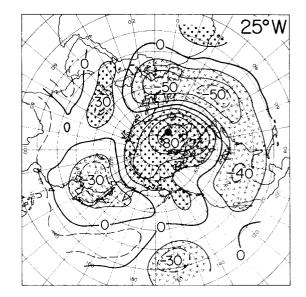
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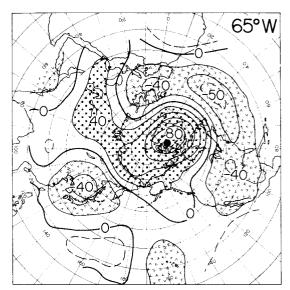


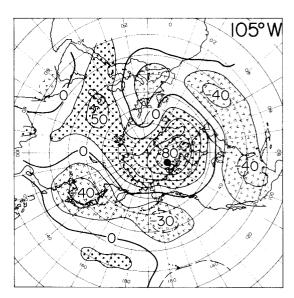
25°W



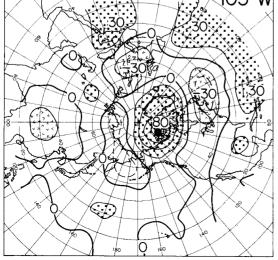


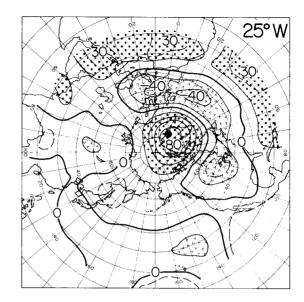


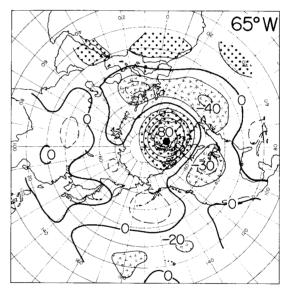


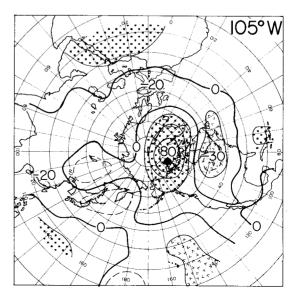


SUMMER 75°N 25° W 0 Ì ò 30 65°W Ò 105°W

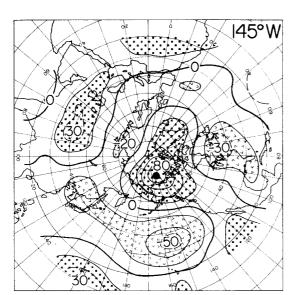


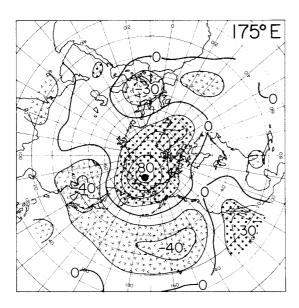


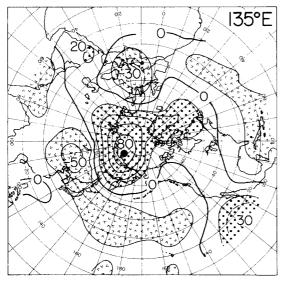


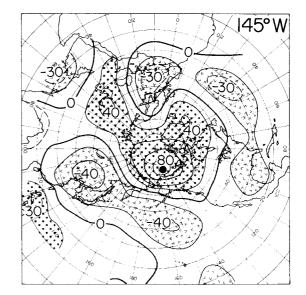


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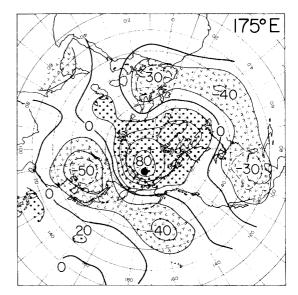


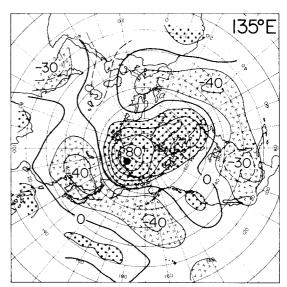


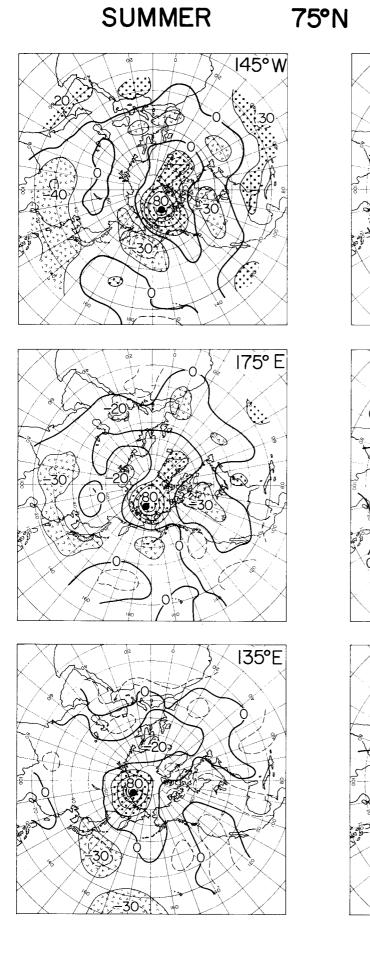


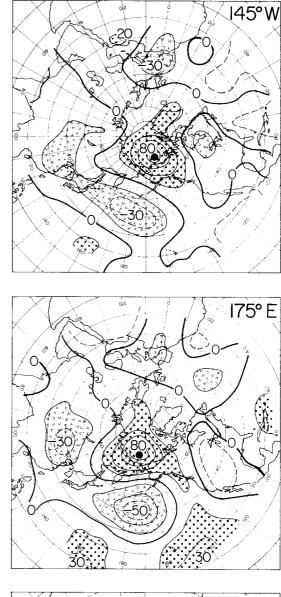


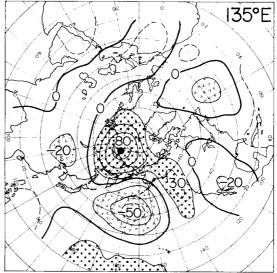
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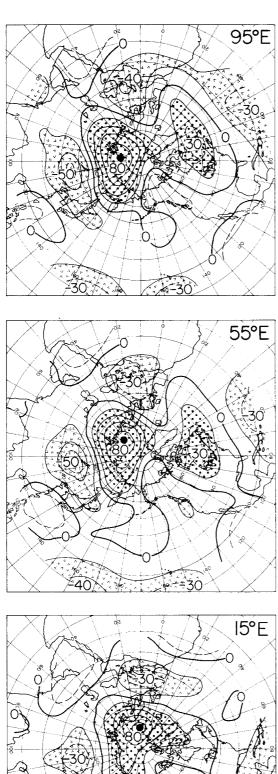




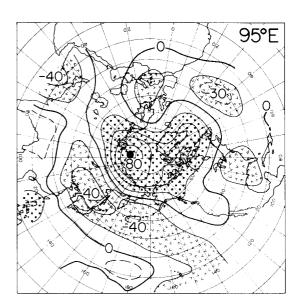


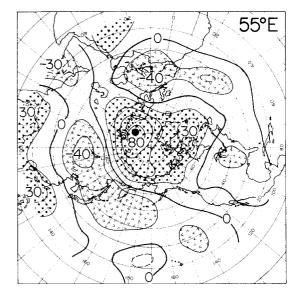
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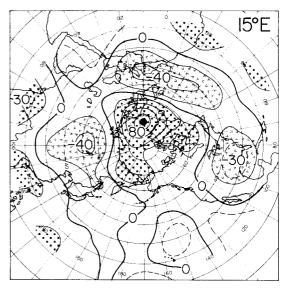
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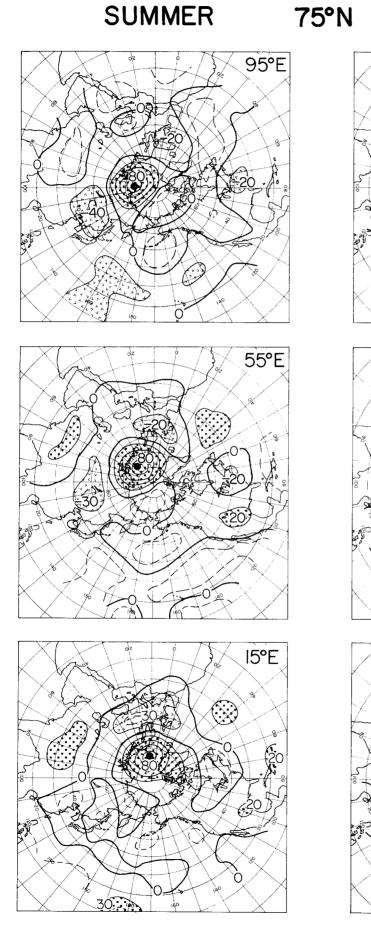


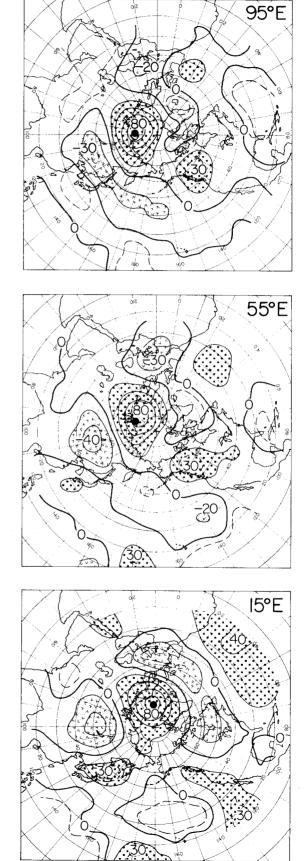
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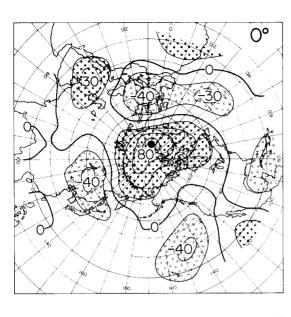


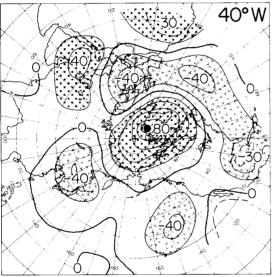


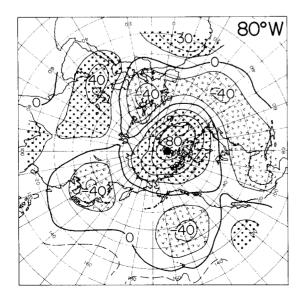


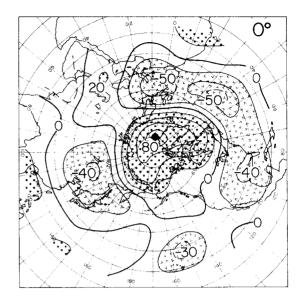


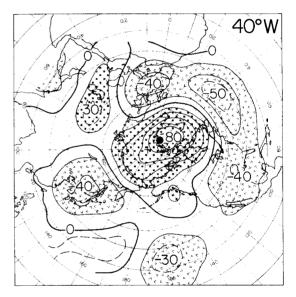
80°N

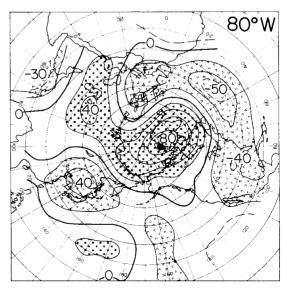




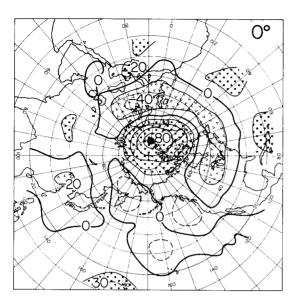


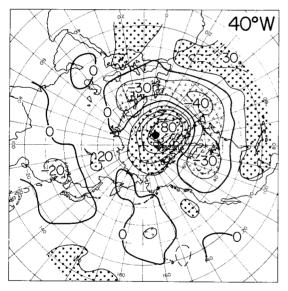


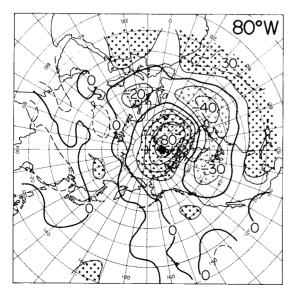


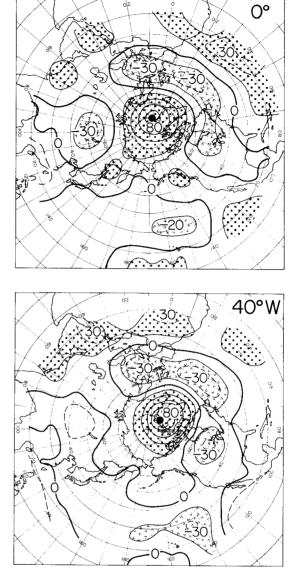


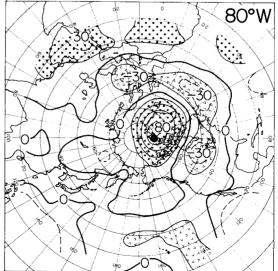
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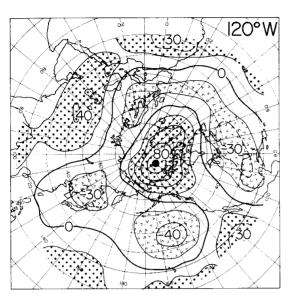


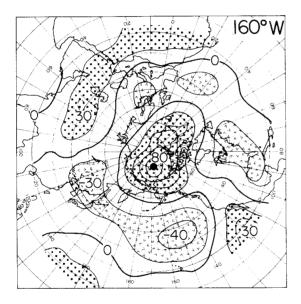


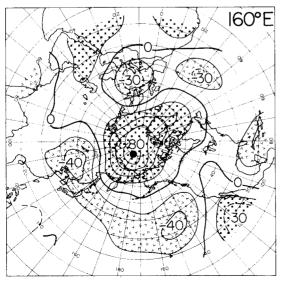


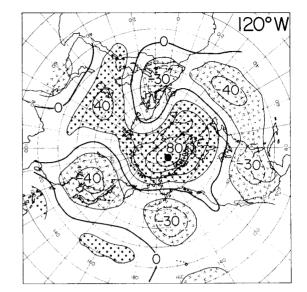


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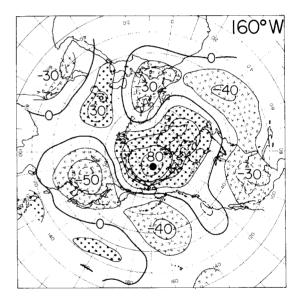


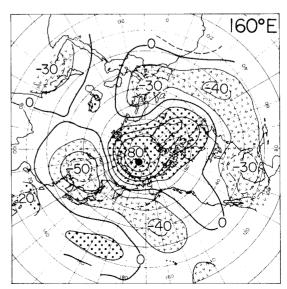




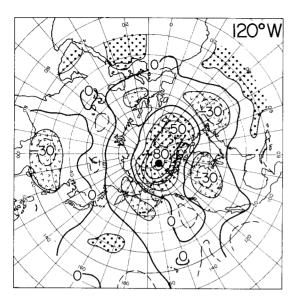


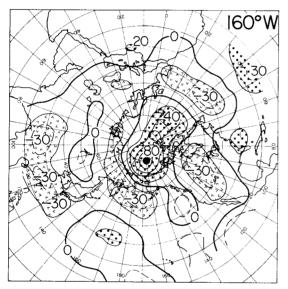
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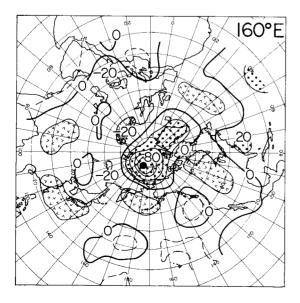


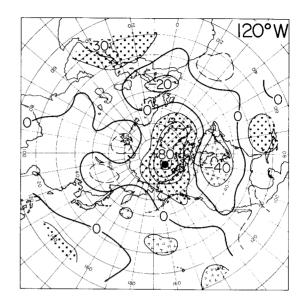


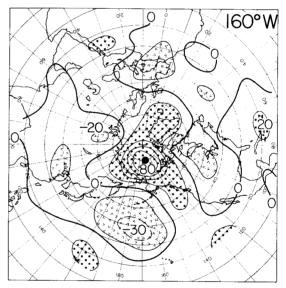
SUMMER 80°N

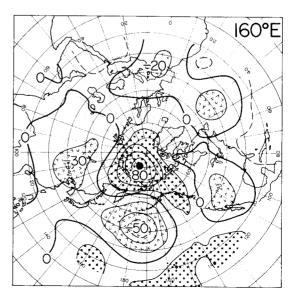








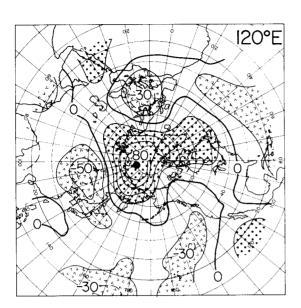


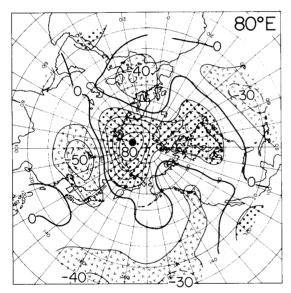


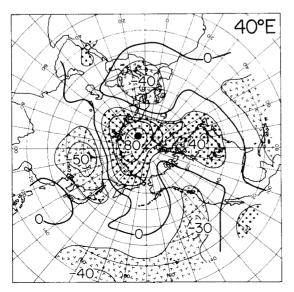
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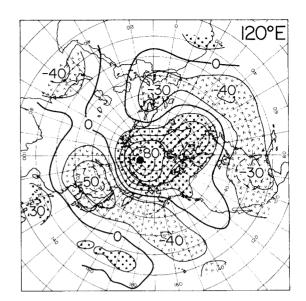
80°N

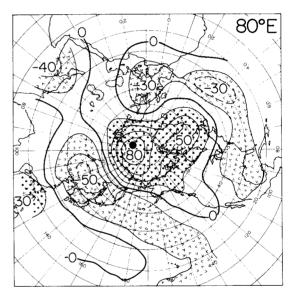


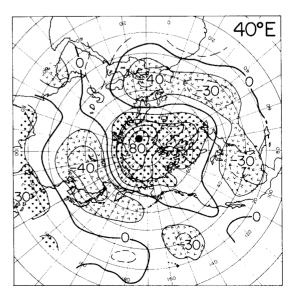








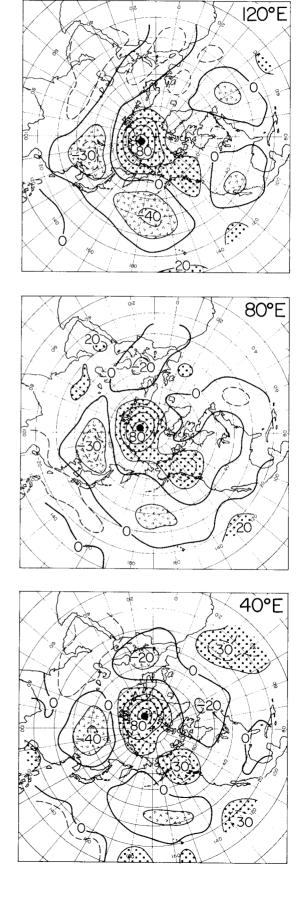


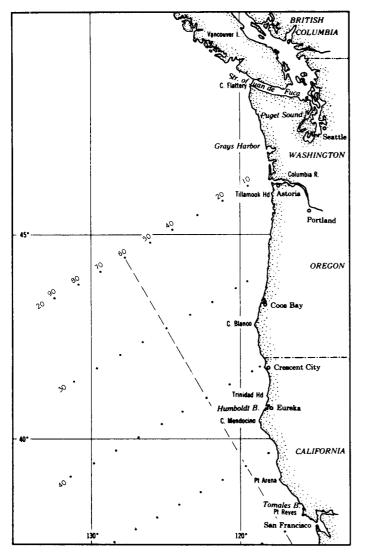


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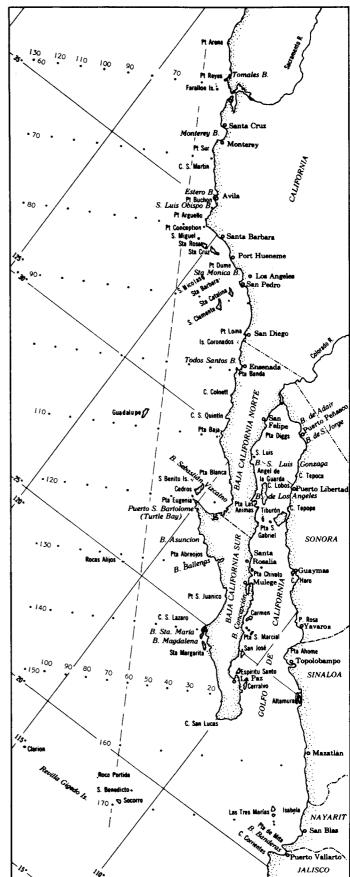
80°N





These maps are designed to show essential details of the area most intensively studied by the California Cooperative Oceanic Fisheries Investigations. This is approximately the same area as is shown in color on the front cover. Geographical place names are those most commonly used in the various publications emerging from the research. The cardinal station lines extending southwestward from the coast are shown. They are 120 miles apart. Additional lines are utilized as needed and can be as closely spaced as 12 miles apart and still have individual numbers. The stations along the lines are numbered with respect to the station 60 line, the numbers increasing to the west and decreasing to the east. Most of them are 40 miles apart, and are numbered in groups of 10. This permits adding stations as close as 4 miles apart as needed. An example of the usual identification is 120.65. This station is on line 120, 20 nautical miles southwest of station 60.

The projection of the front cover is Lambert's Azimuthal Equal Area Projection. The detail maps are a Mercator projection.



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Jerome Namias

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