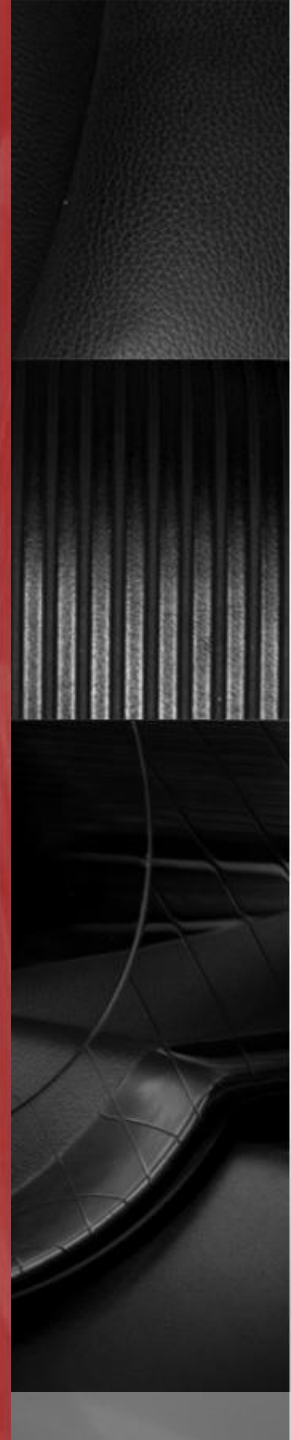
ATMS 8400 Supplement

A picture is worth 1000 words!

Картина стоит тысячу слов!



NCAR/CAS/95-08

The Mean State of the Troposphere

Chapter 1: *Meteorology of the Southern Hemisphere*

David Karoly and Dayton Vincent, Editors

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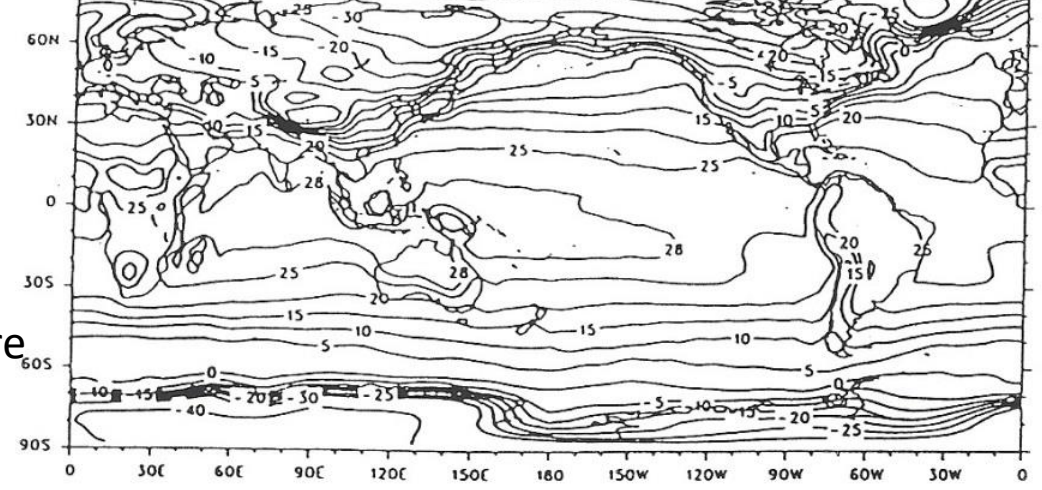
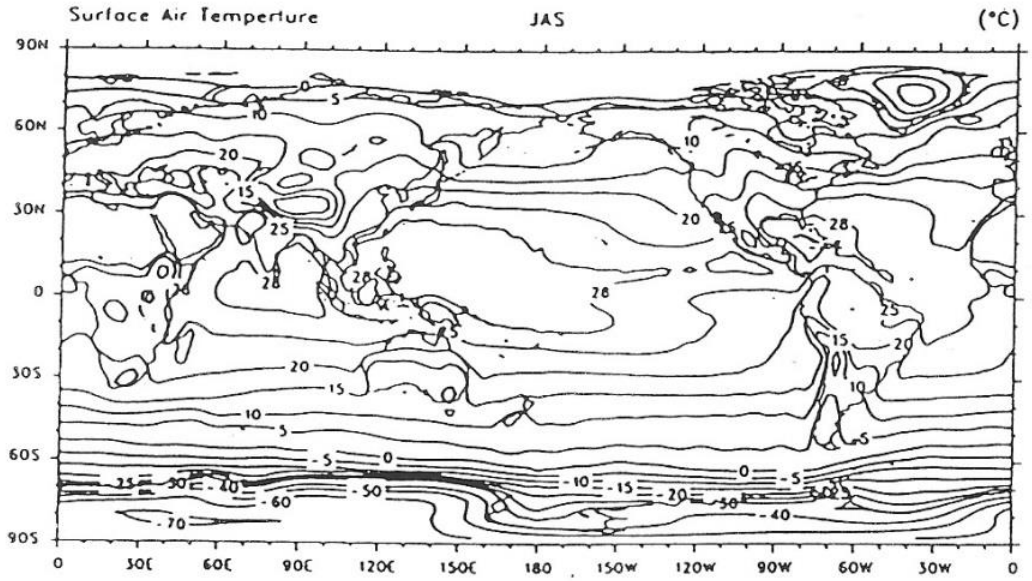
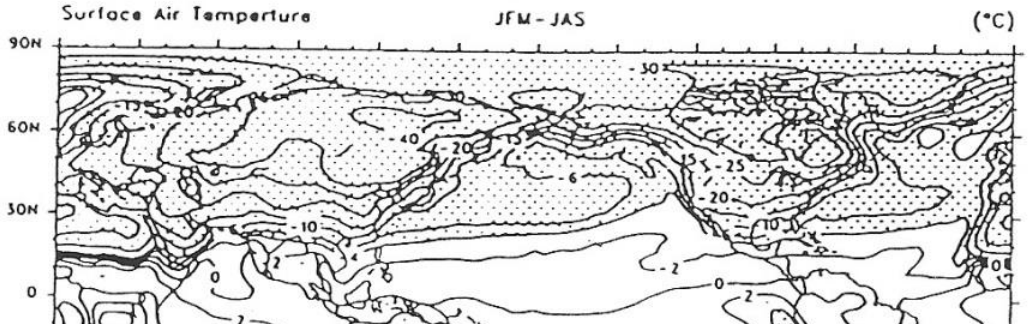
Atmospheric Temperature
Figs 1 – 8

температура воздуха
Рис. 1-8







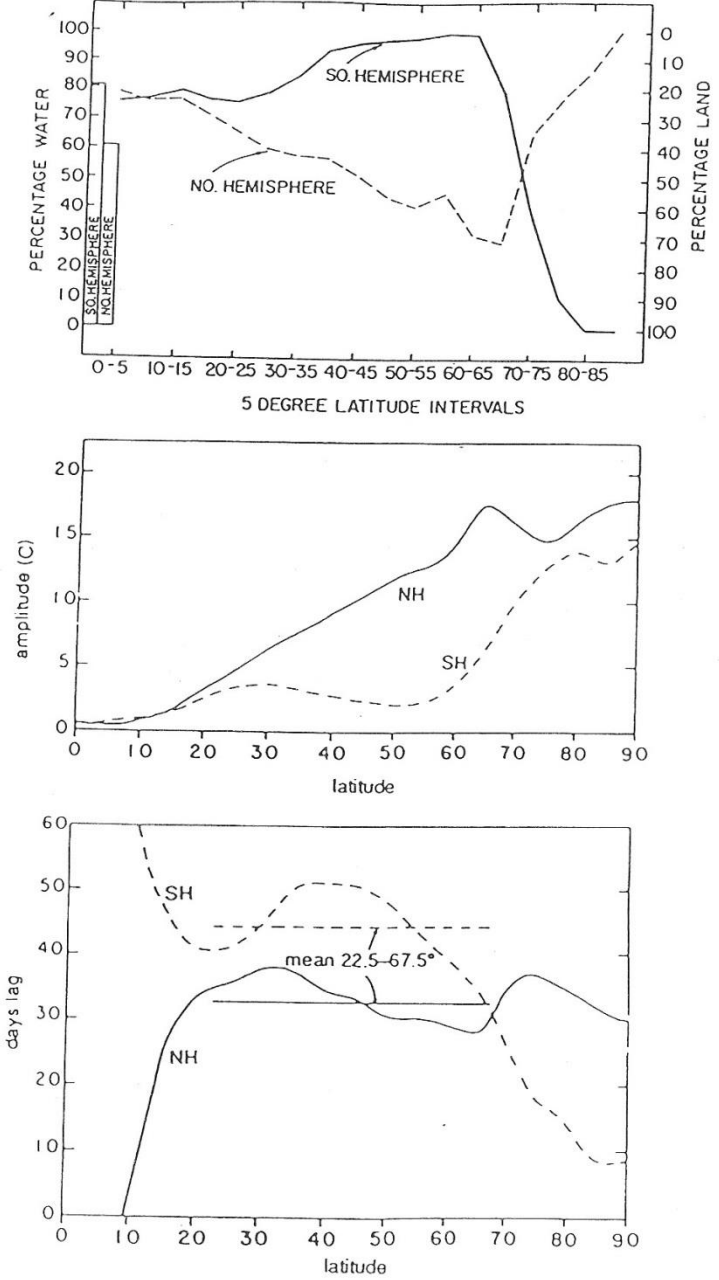


Fig. 1.2 Zonal averages for each hemisphere of percentage of land and water around each latitude circle (top), amplitude of the 12-month annual cycle harmonic of surface temperature in °C (middle), and phase of the 12-month harmonic of surface

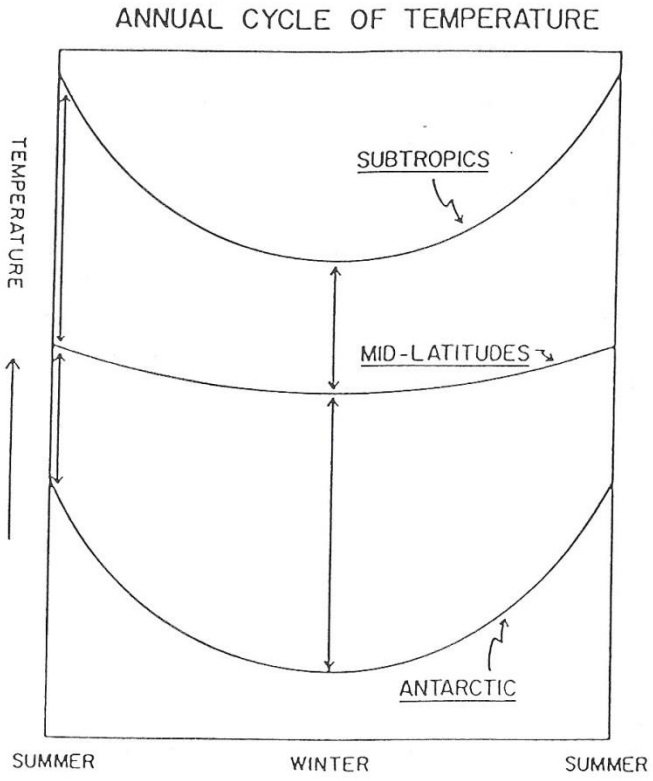
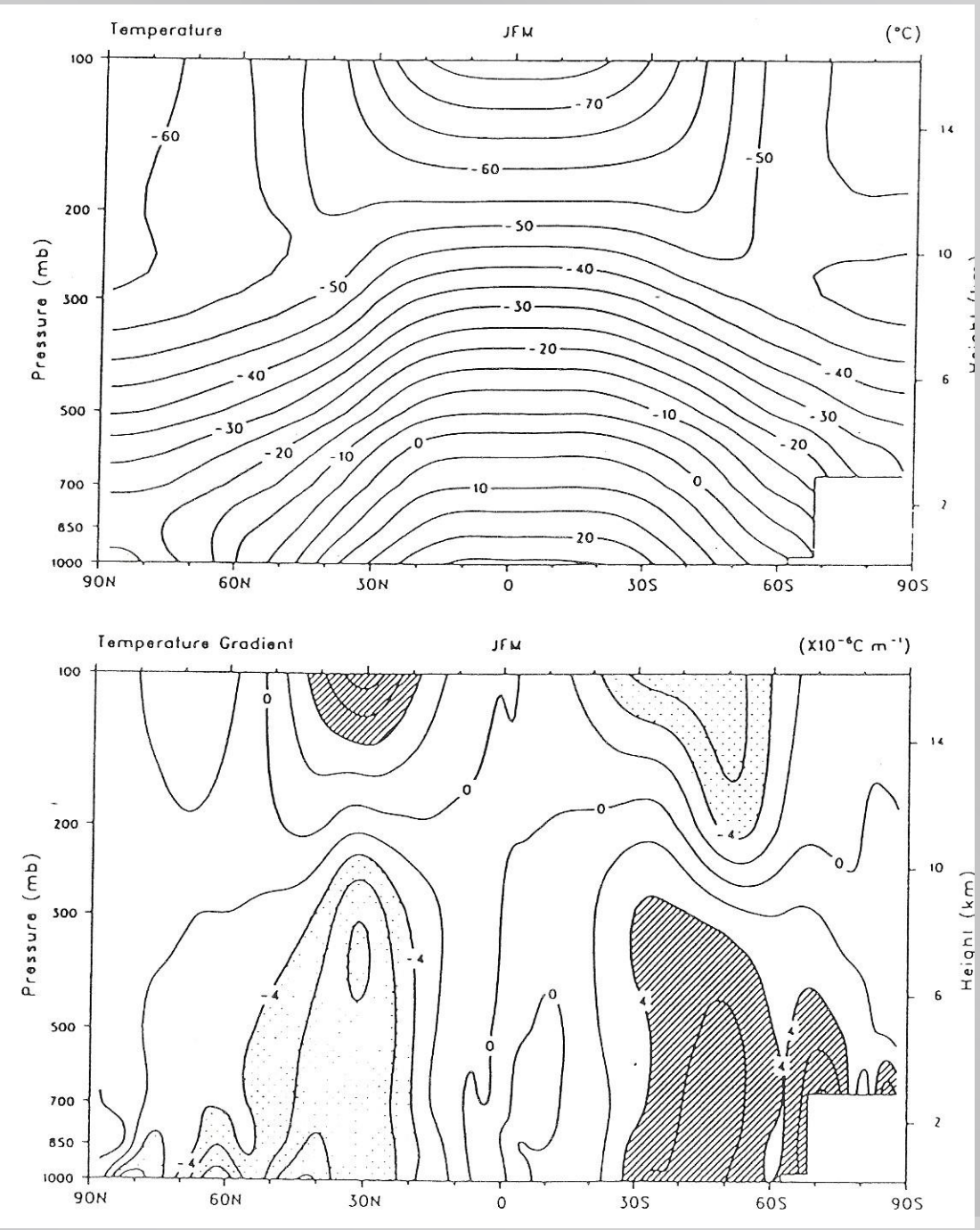


Fig. 1.3 Schematic diagram of the annual cycle of the air temperature in the Southern Hemisphere subtropics, middle latitudes, and the Antarctic. The vertical arrows show the meridional temperature contrasts in summer and winter between the latitude belts.


Temperature
JFM
(°C)
Pressure (mb)
100
200
300
500
700
850
1000
-70
-60
-50
-40
-30
-20
-10
0
10
20
90N
60N
30N
0
30S
60S
90S
Temperature Gradient
JFM
(X10⁻⁶C m⁻¹)
Pressure (mb)
Height (km)
-4
0
4

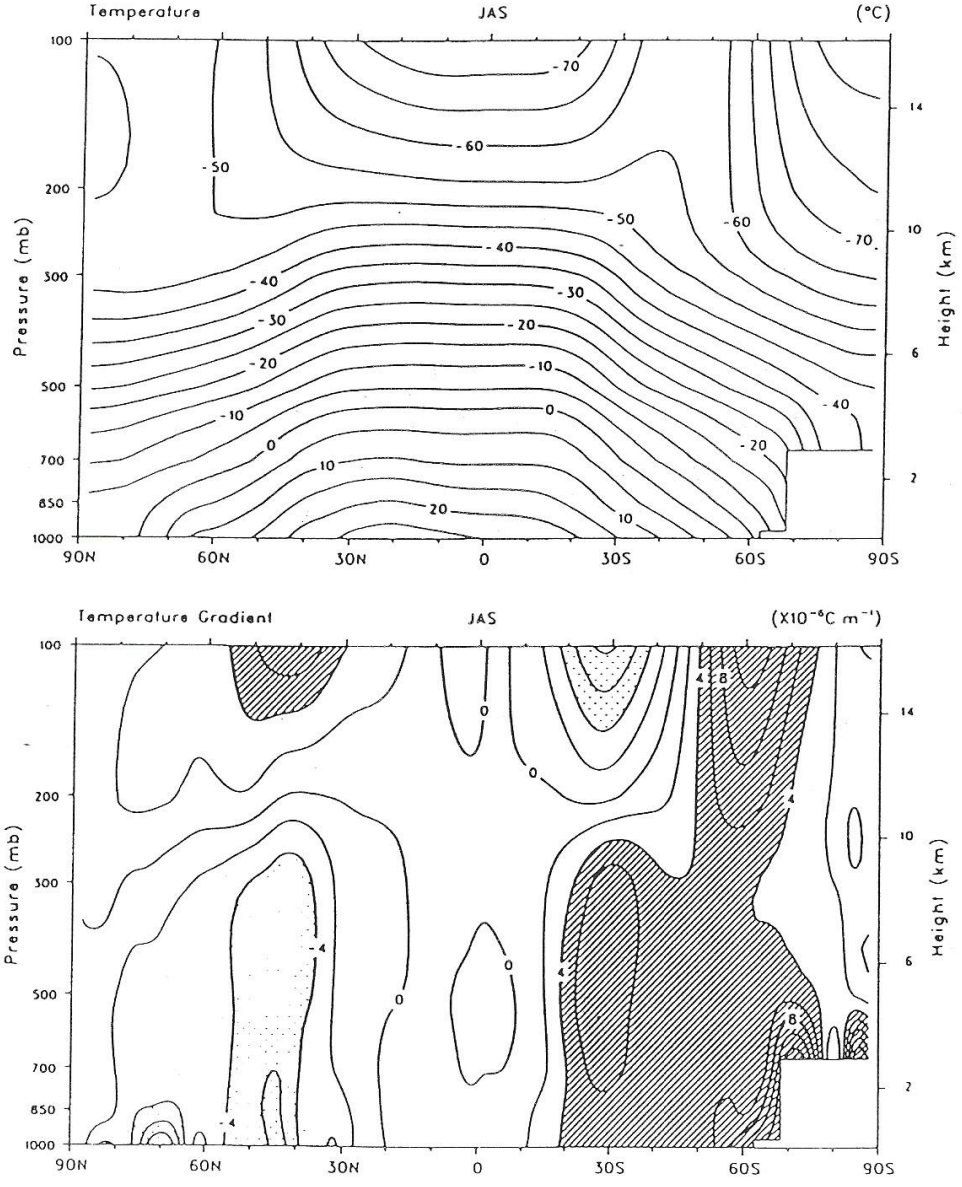


Fig. 1.4 Zonally-averaged mean temperature (°C) and mean meridional temperature gradients (10^{-6}°C m^{-1}) for JFM (top two panels) and JAS (bottom two panels)

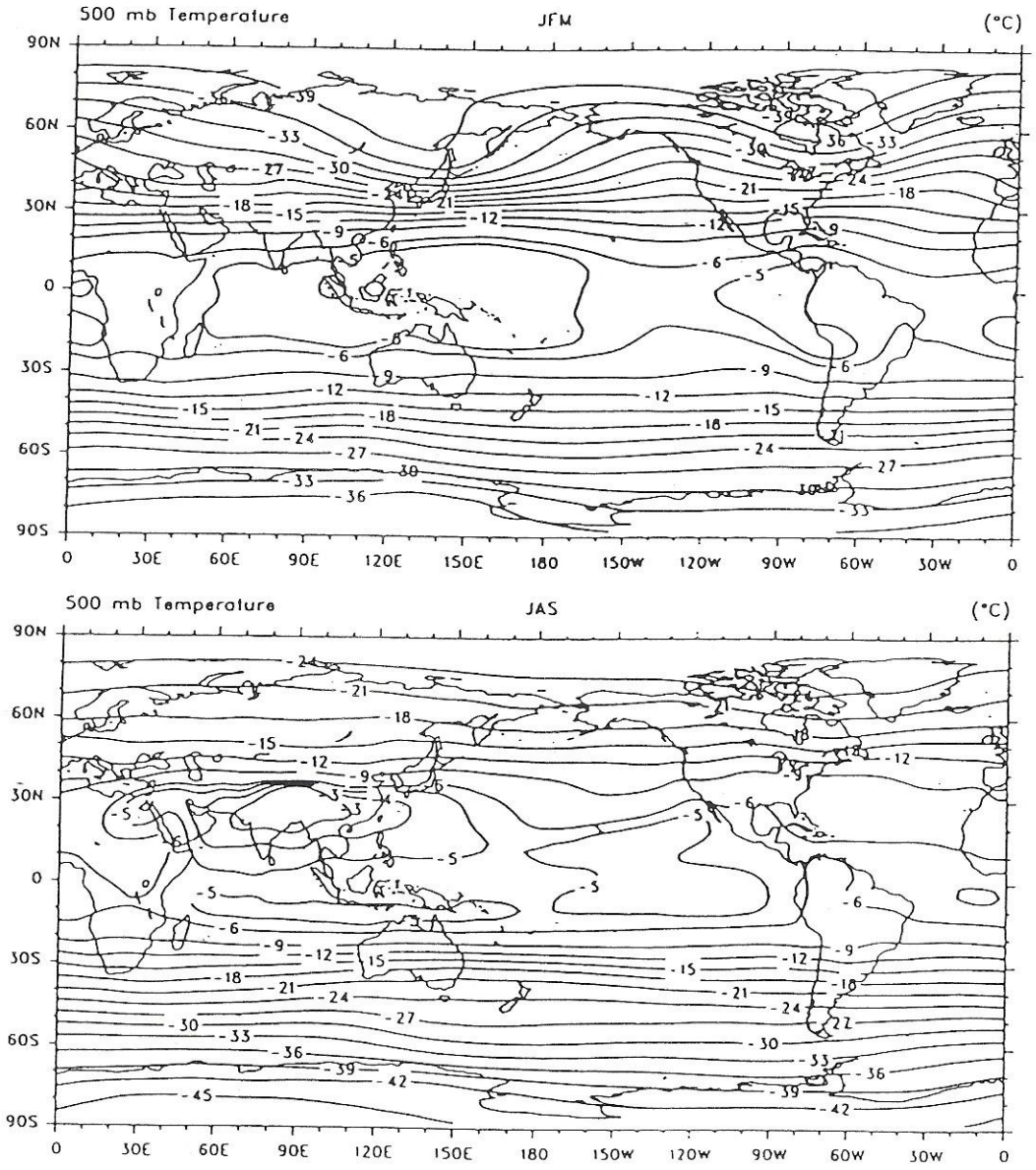


Fig. 1.5 Mean 500 mb temperatures from ECMWF (1979–1993) for JFM (top) and JAS (bottom) in °C.

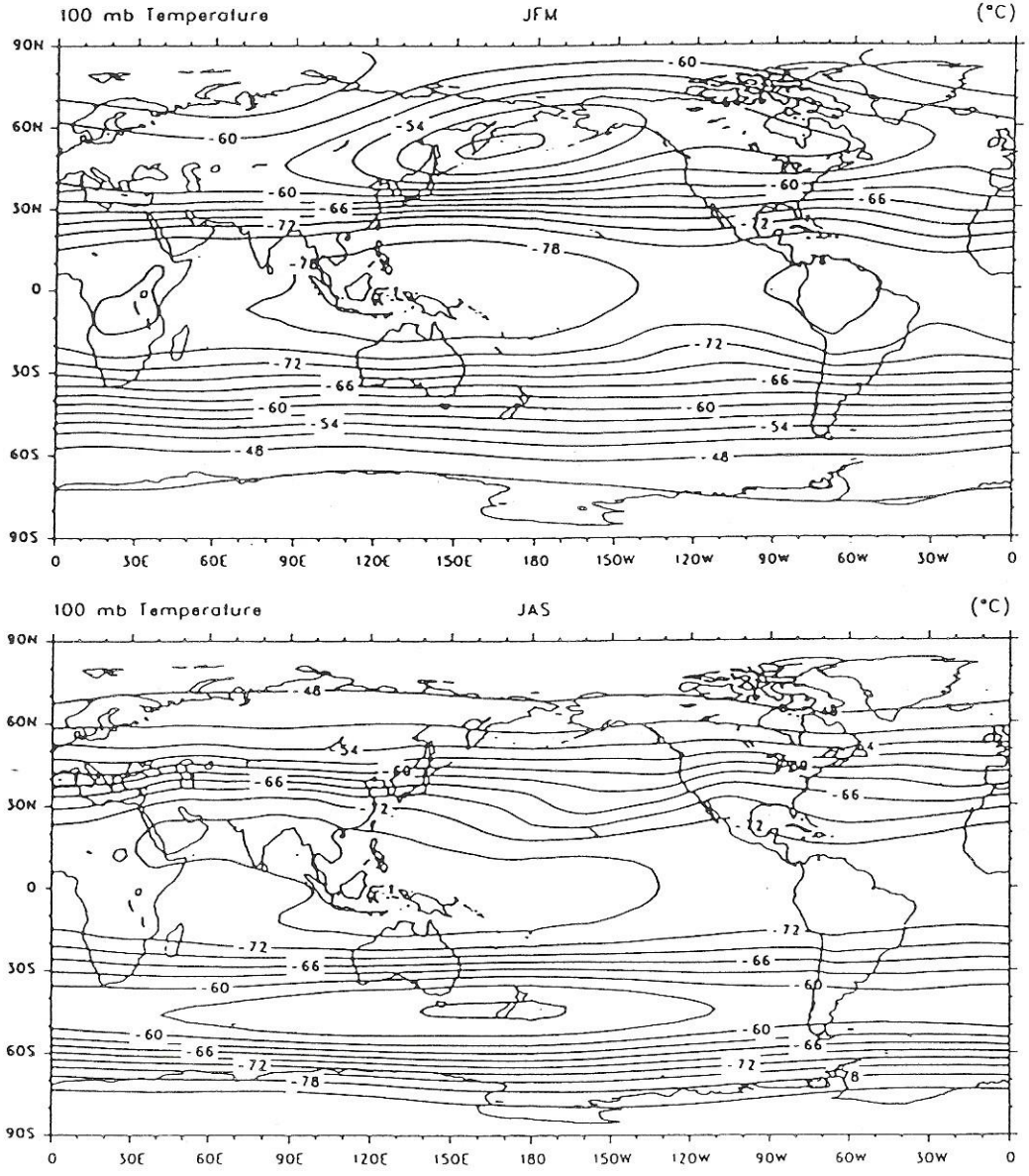
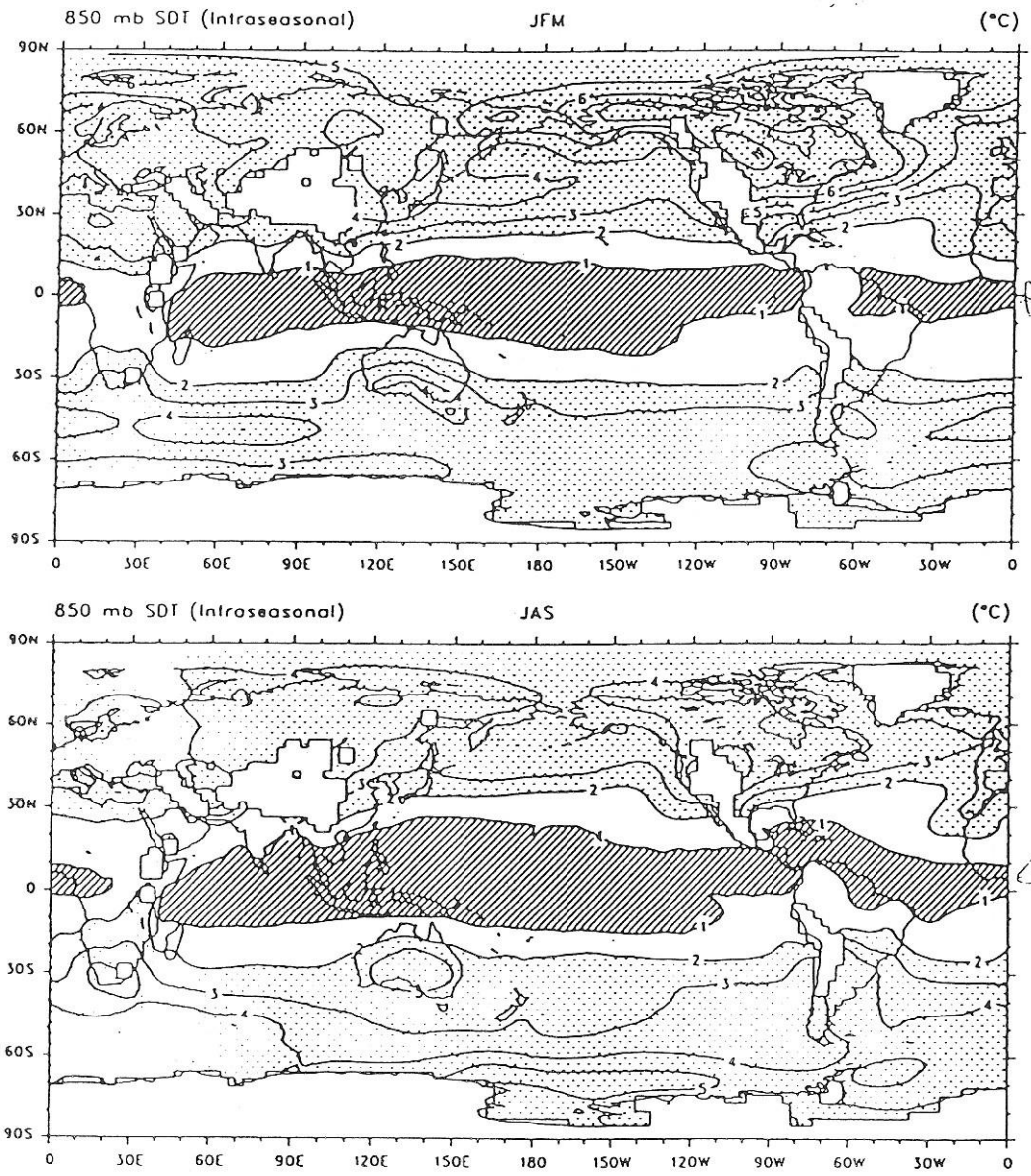


Fig. 1.6 As in Fig. 1.5, but for mean 100 mb temperatures.



.7 Mean intraseasonal variability of 850 mb temperatures from ECMWF (1979–1993) for JFM (top) and JAS (bottom) in °C. Values less than 1°C are hatched and values greater than 2°C are stippled.

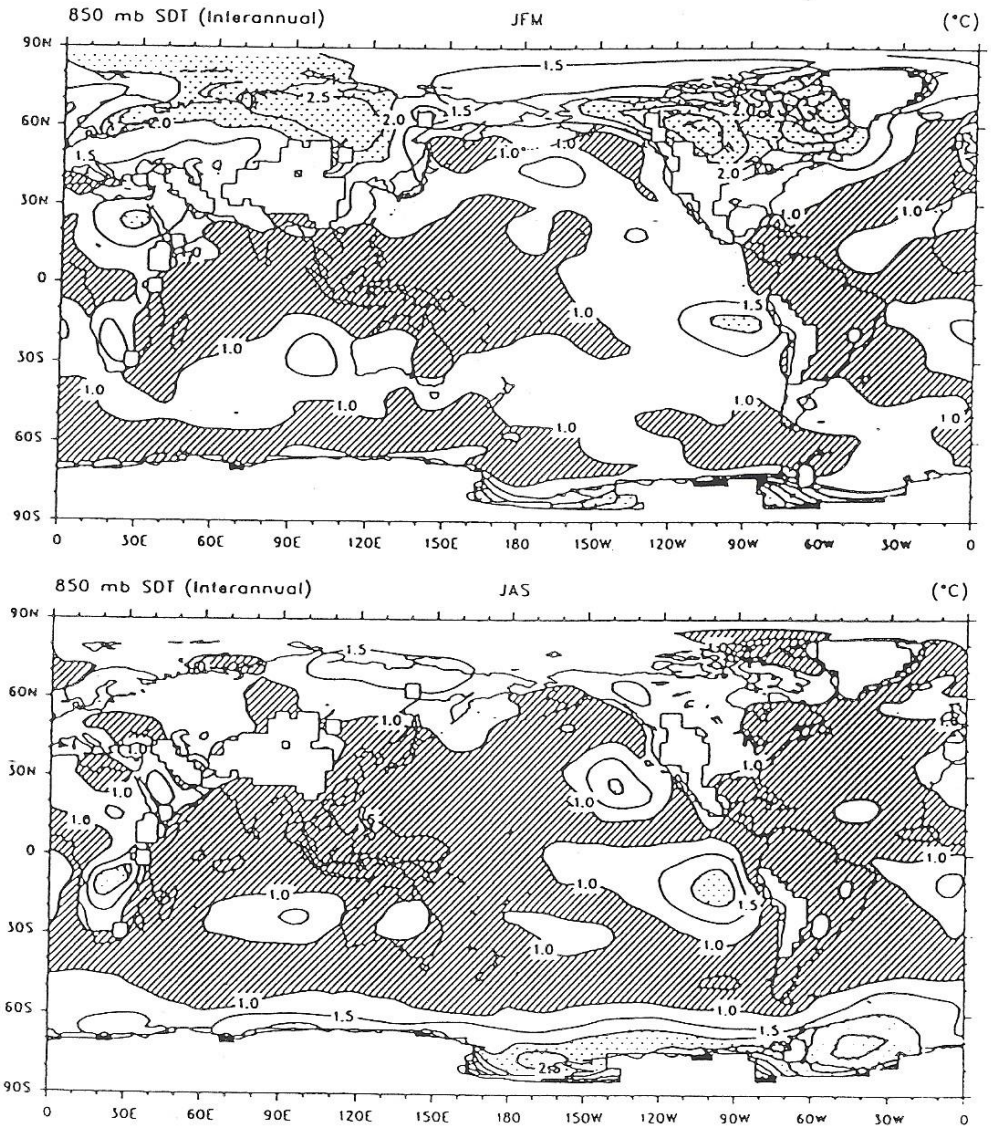
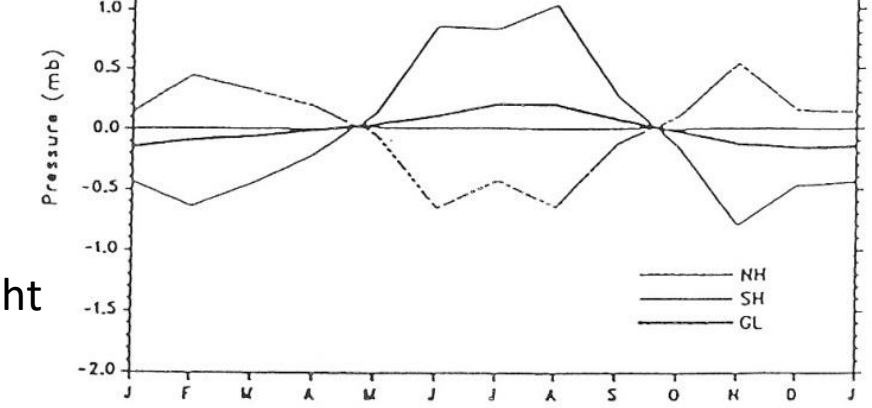
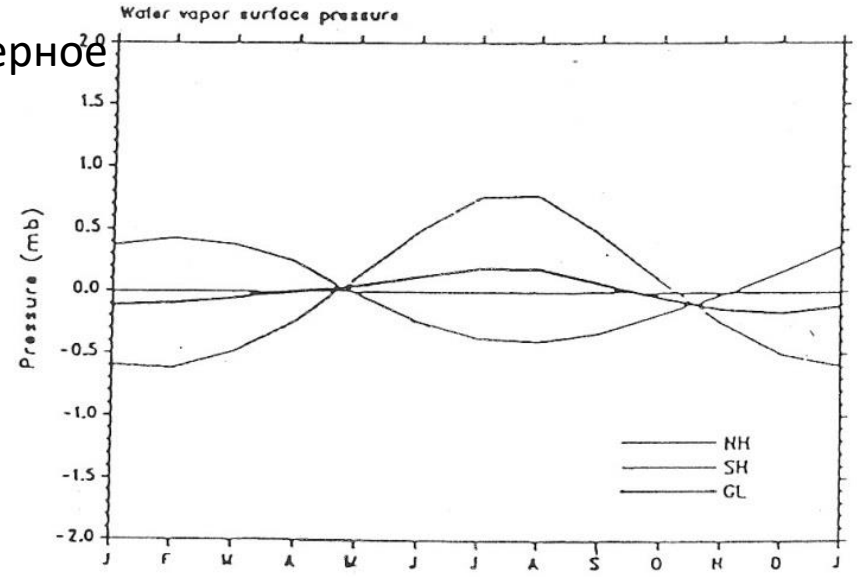


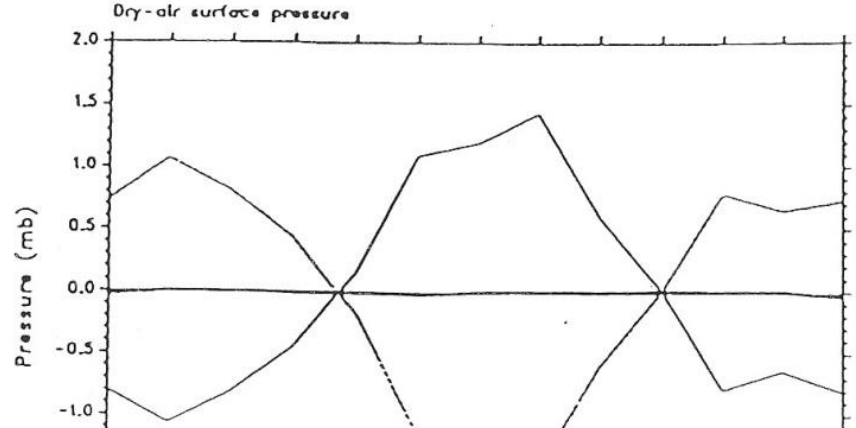
Fig. 1.8 Interannual variability of JFM (top) and JAS (bottom) 850 mb temperatures from ECMWF (1979–1993) in °C. Values less than 1°C are hatched and values greater

Atmospheric Pressure / height
Figs 9 – 21

давление / высота атмосферное
рис. 9 -21







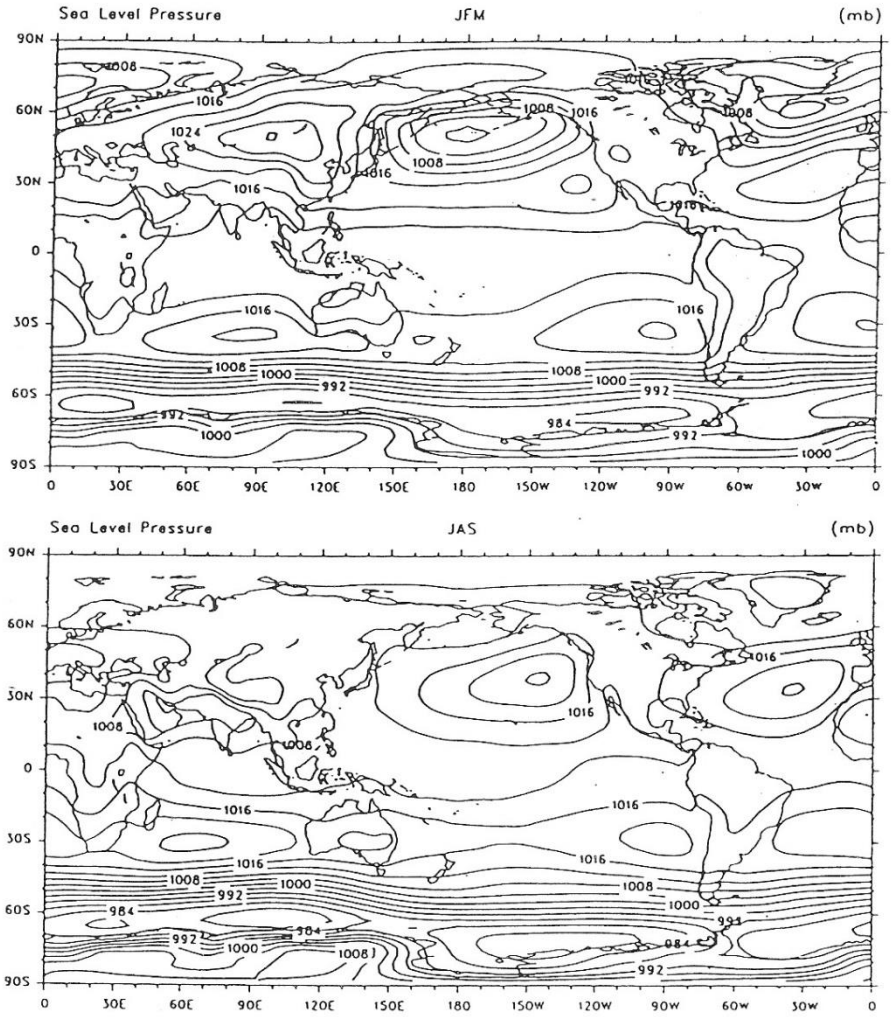


Fig. 1.10 Mean sea level pressure from ECMWF (1979–1993) for JFM (top) and JAS (bottom) in mb.

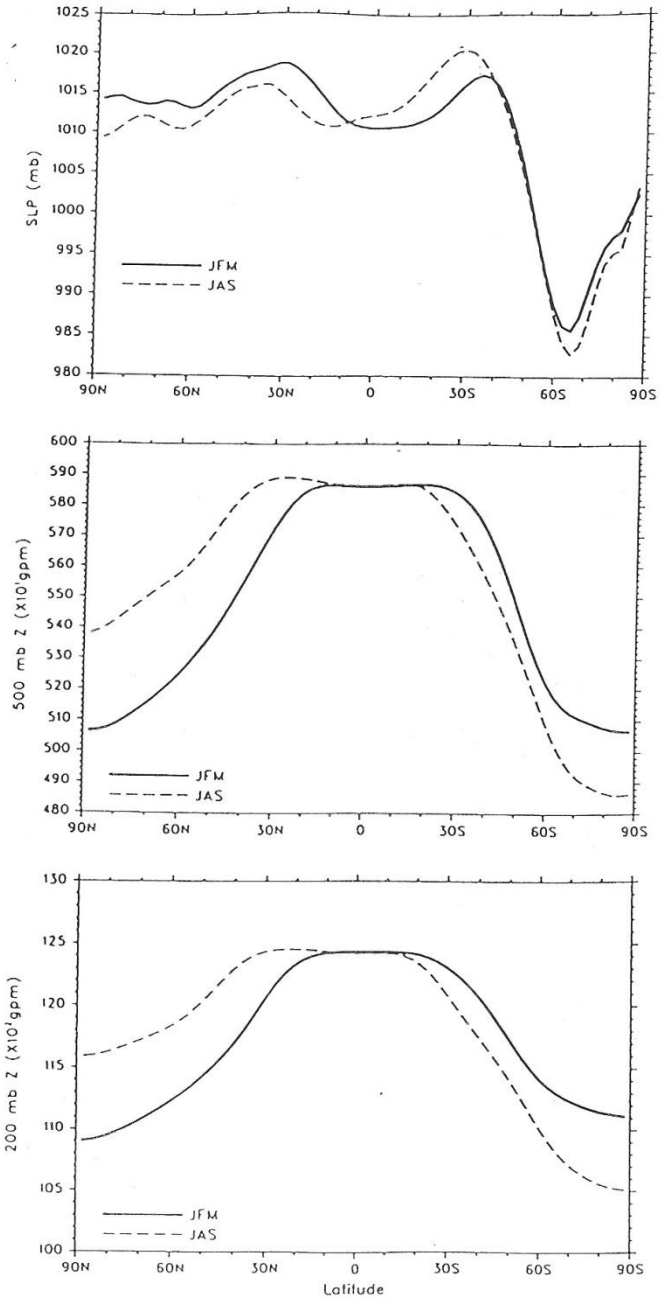
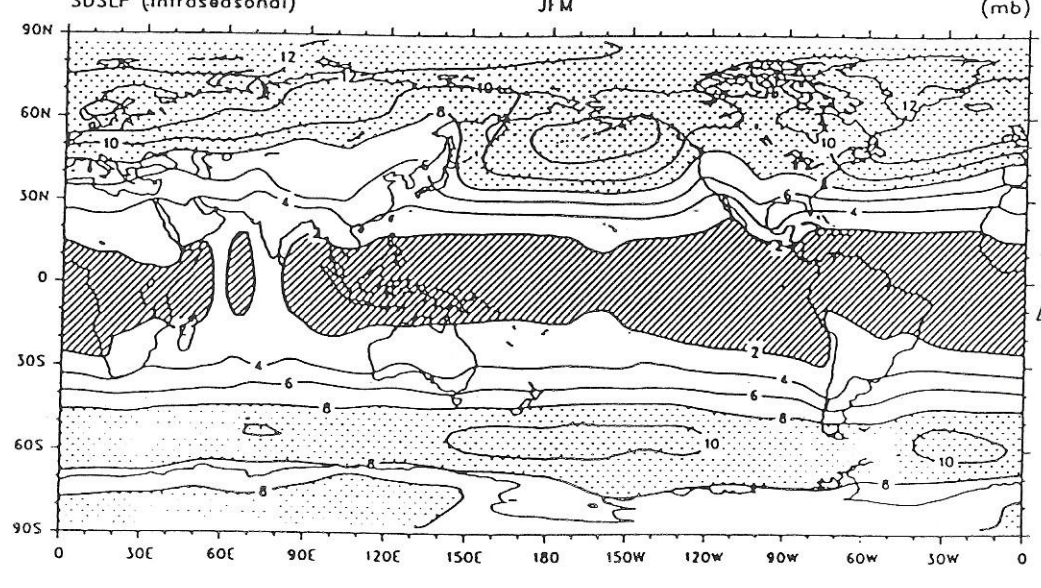


Fig. 1.11 Zonally-averaged mean sea level pressure in mb (top), 500 mb geopotential height in 10^1gpm (middle), and 200 mb geopotential height in 10^2gpm (bottom) for JFM



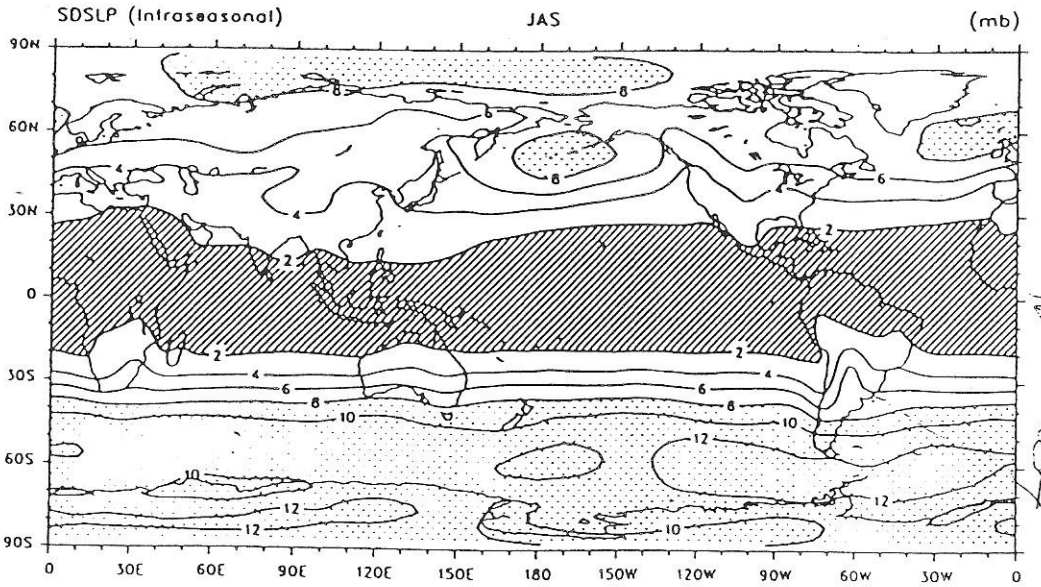


Fig. 1.12 Mean intraseasonal variability of sea level pressure from ECMWF (1979–1993) for JFM (top) and JAS (bottom) in mb. Values less than 2 mb are hatched and values greater than 8 mb are stippled.

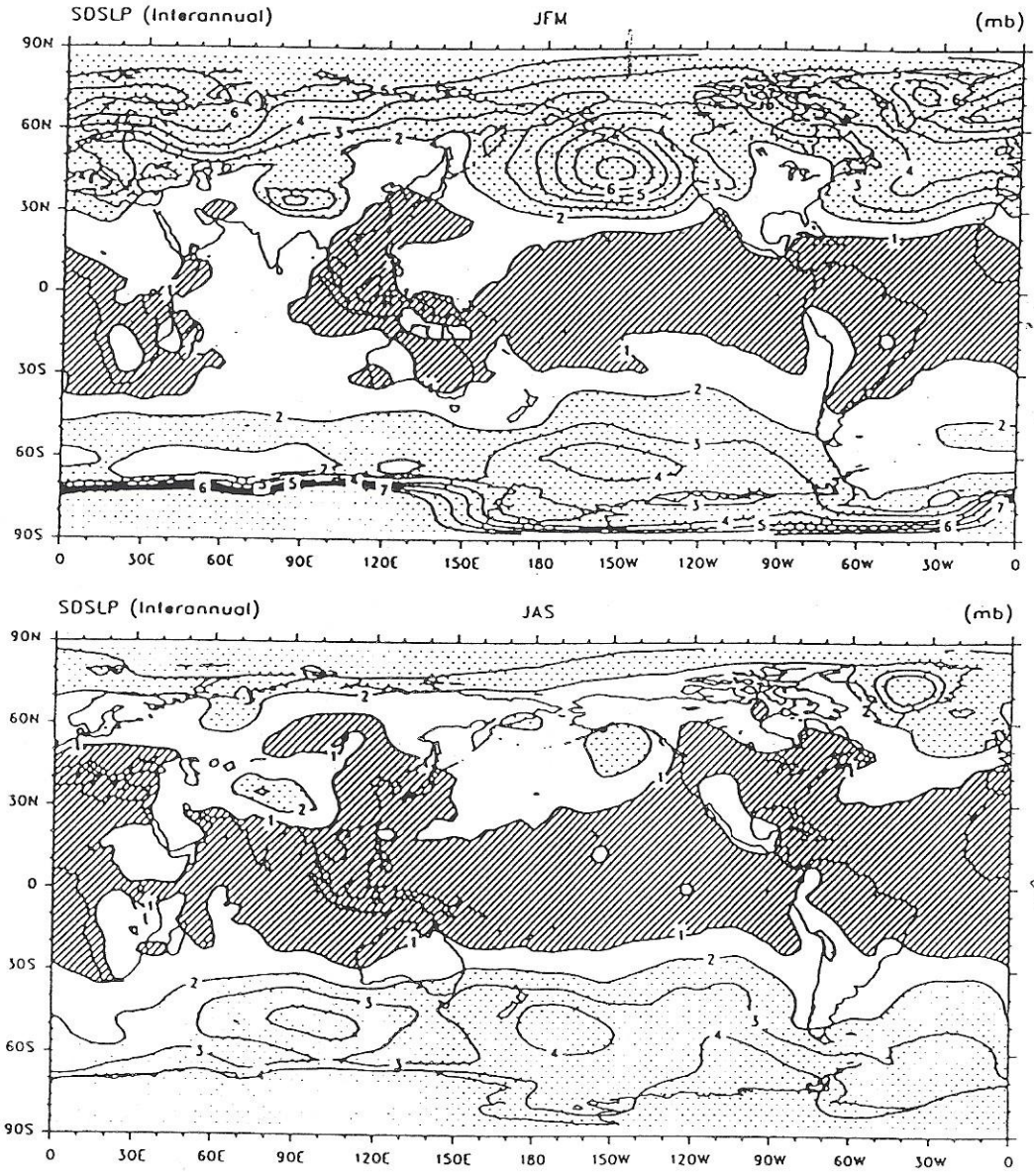
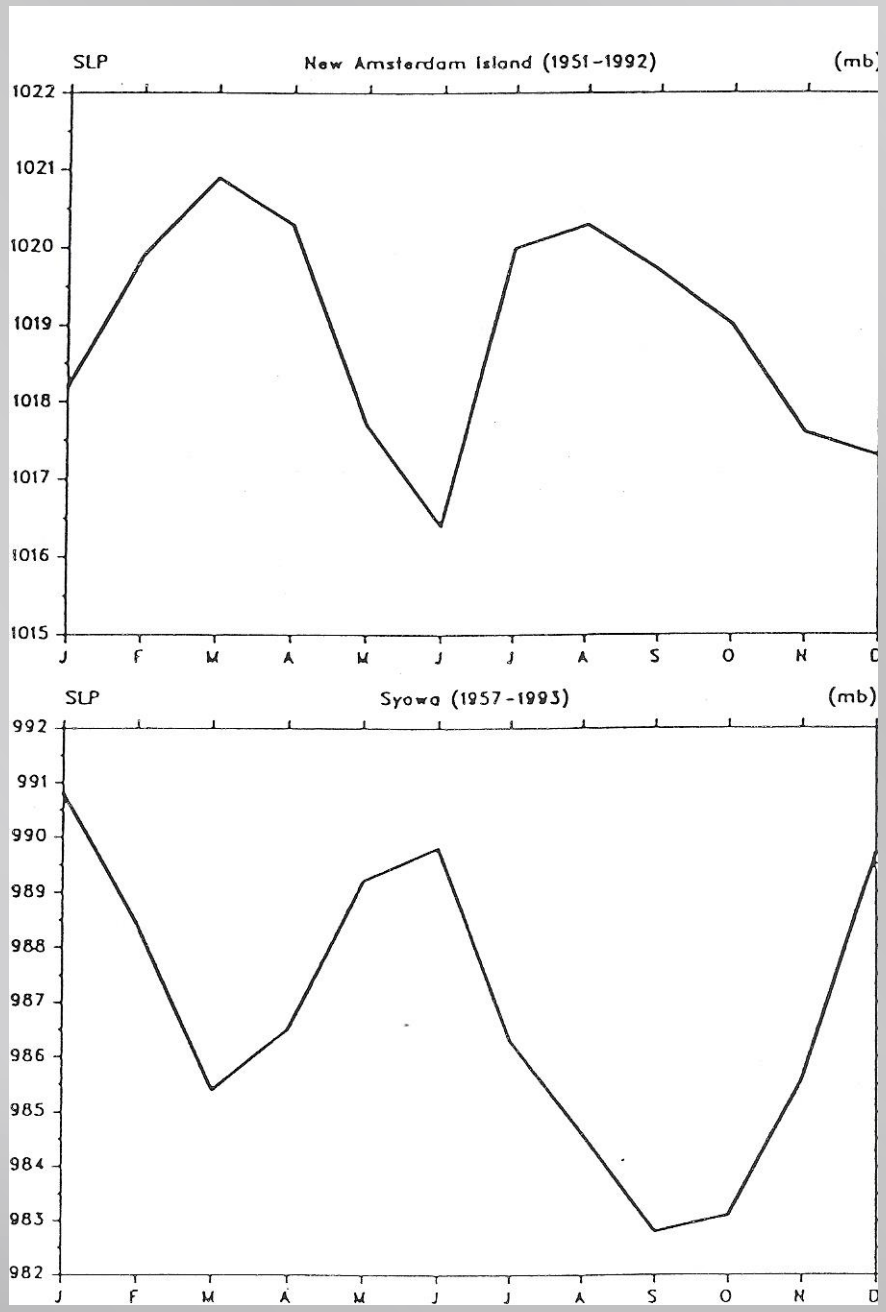
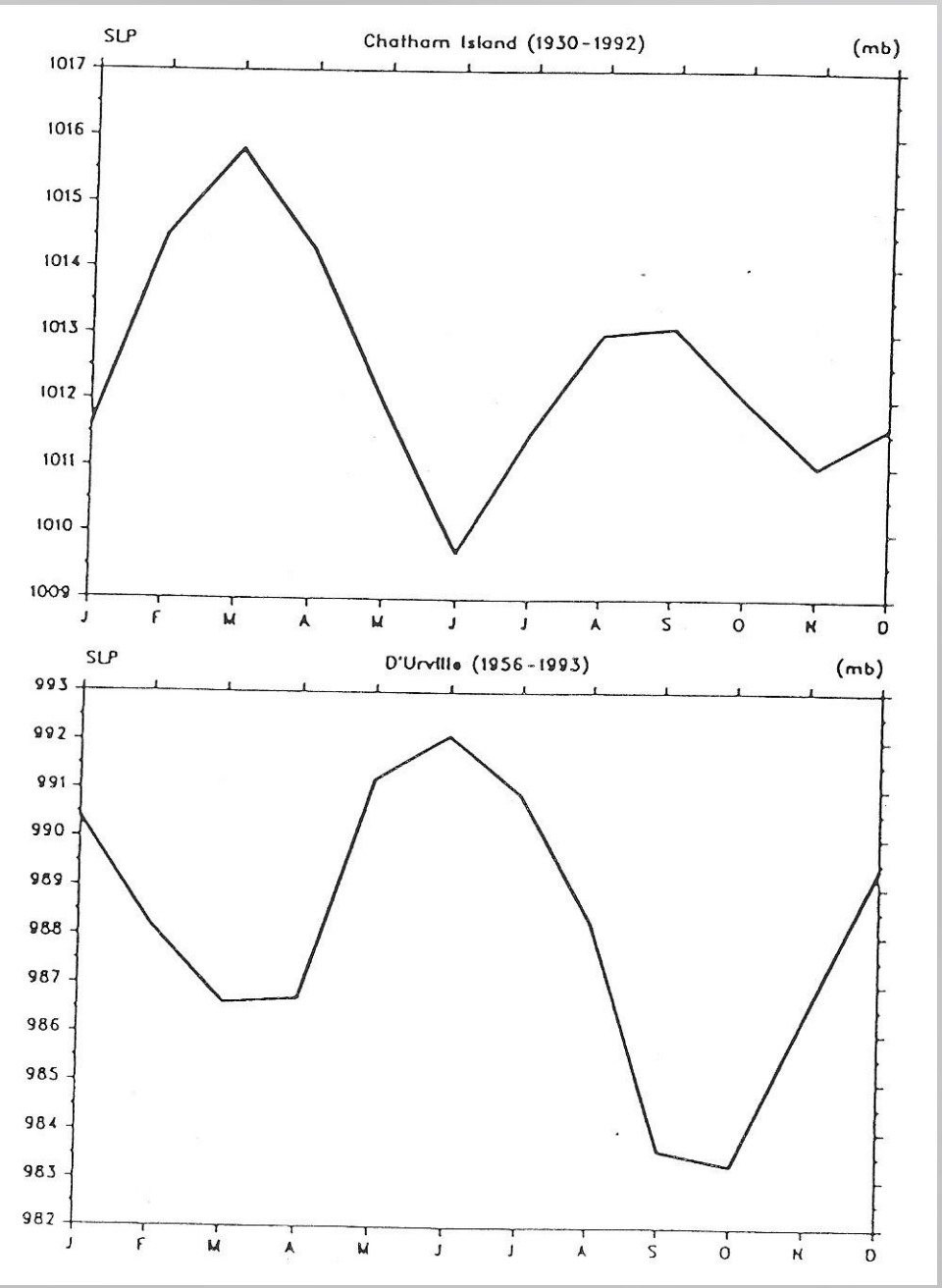
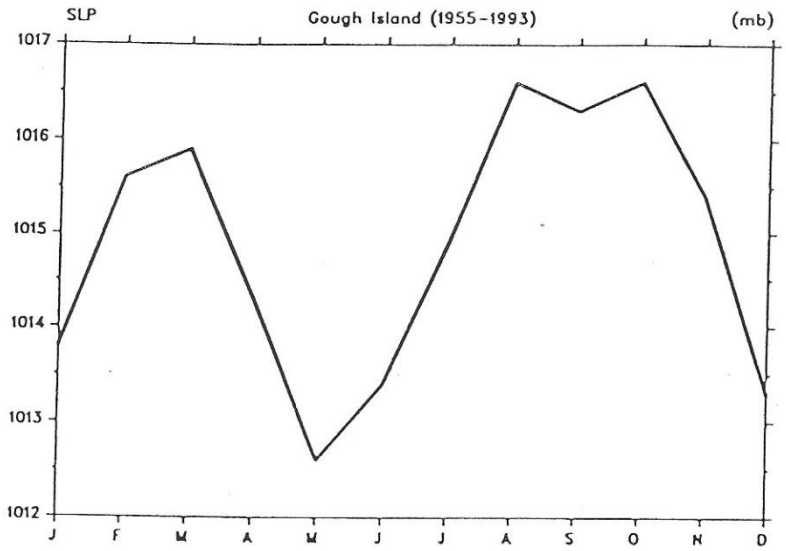
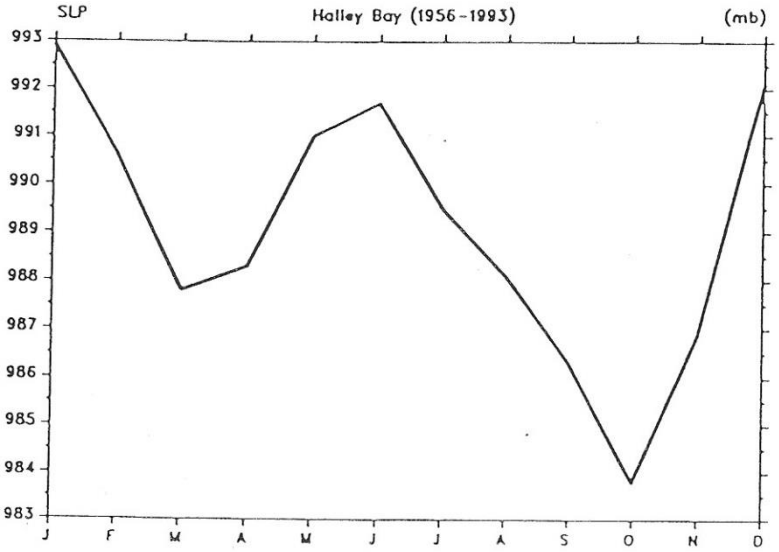


Fig. 1.13 Interannual variability of JFM (top) and JAS (bottom) sea level pressure from ECMWF (1979–1993) in mb. Values less than 1 mb are hatched and values greater than 2 mb are stippled.


SLP
New Amsterdam Island (1951-1992)
(mb)
1022
1021
1020
1019
1018
1017
1016
1015
J F M A M J J A S O N D
SLP
Syowa (1957-1993)
(mb)
992
991
990
989
988
987
986
985
984
983
982
J F M A M J J A S O N D


SLP
Chatham Island (1930-1992)
(mb)
1017
1016
1015
1014
1013
1012
1011
1010
1009
J F M A M J J A S O N D
SLP
D'Urville (1956-1993)
(mb)
993
992
991
990
989
988
987
986
985
984
983
982
J F M A M J J A S O N D





.14 Annual cycle of sea level pressure at New Amsterdam Island (37.8°S,77.6°E), Syowa (69.0°S,39.6°E), Chatham Island (44.0°S,176.6°W), D'Urville (66.7°S,140.0°E), Gough Island (40.3°S,9.9°W), and Halley Bay (75.5°S,26.6°W).

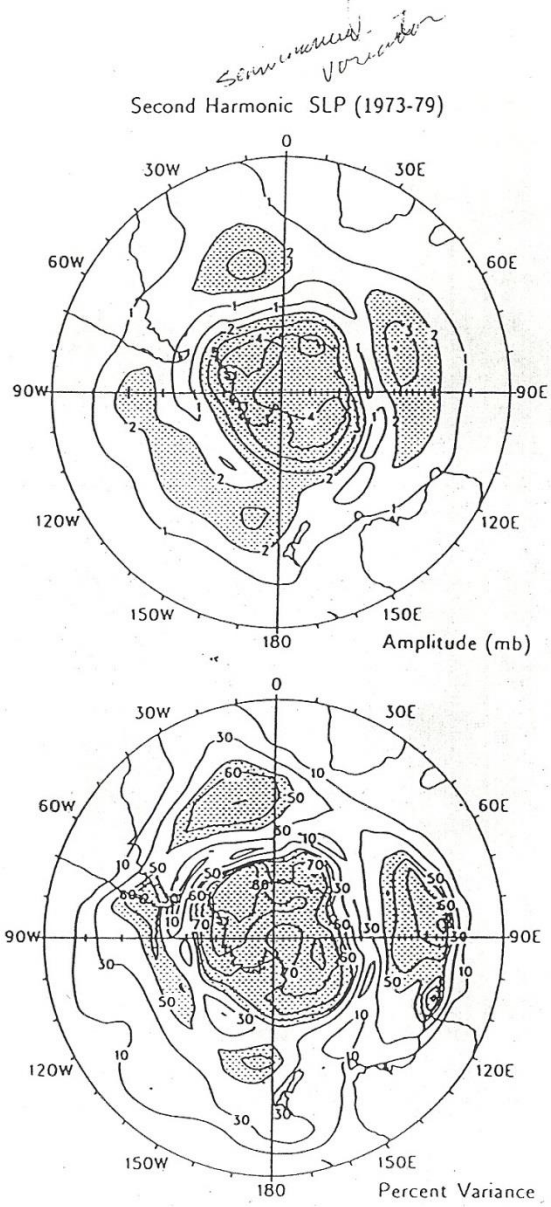


Fig. 1.15 Amplitude (top) and percent variance explained (bottom) of the second harmonic of sea level pressure averaged from 1973–1979 from the Australian Bureau of Meteorology analyses. Amplitudes greater than 2 mb are stippled and percent variance explained greater than 50% is hatched.

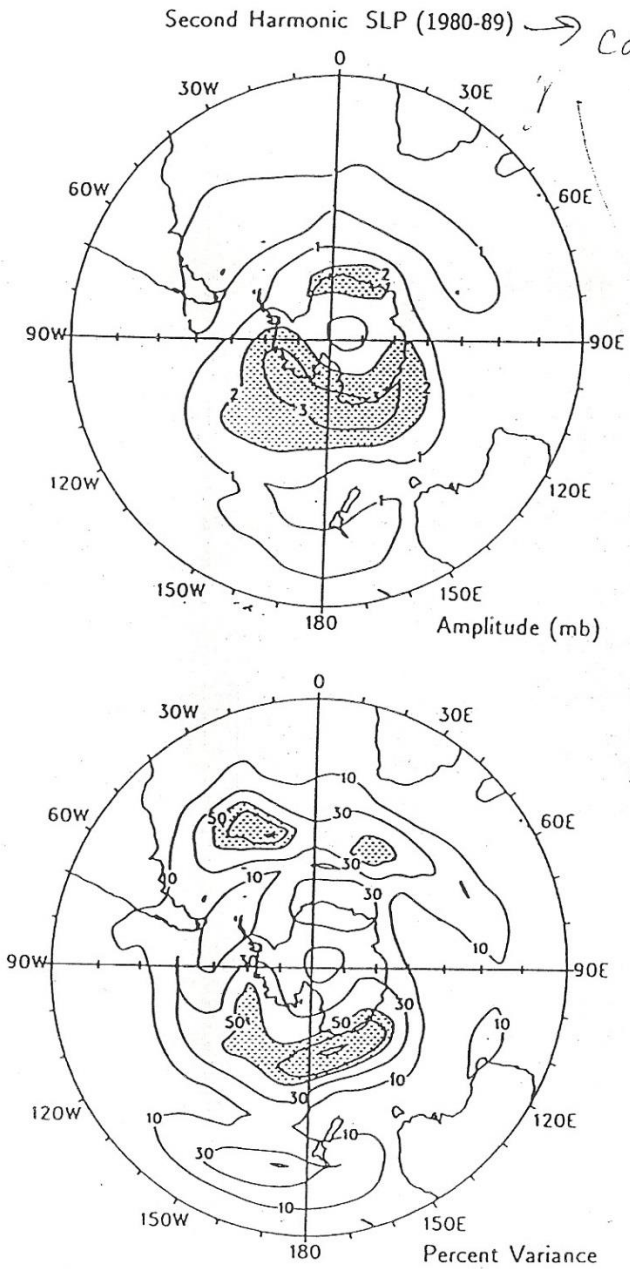
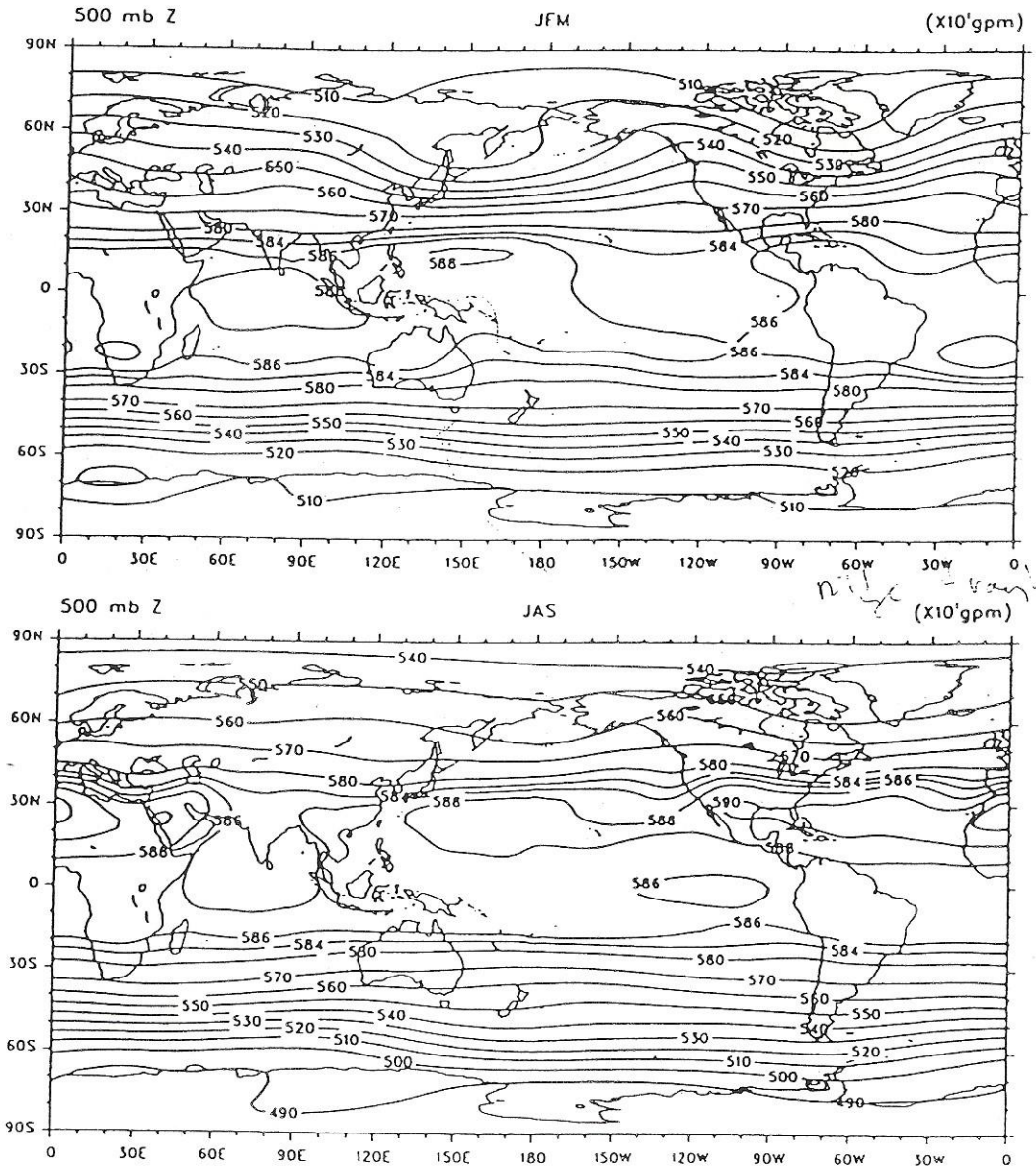


Fig. 1.16 As in Fig. 1.15, but for the period 1980–1989.



7 Mean 500 mb geopotential height (10^1gpm) from ECMWF (1979–1993) for JFM (top) and JAS (bottom).

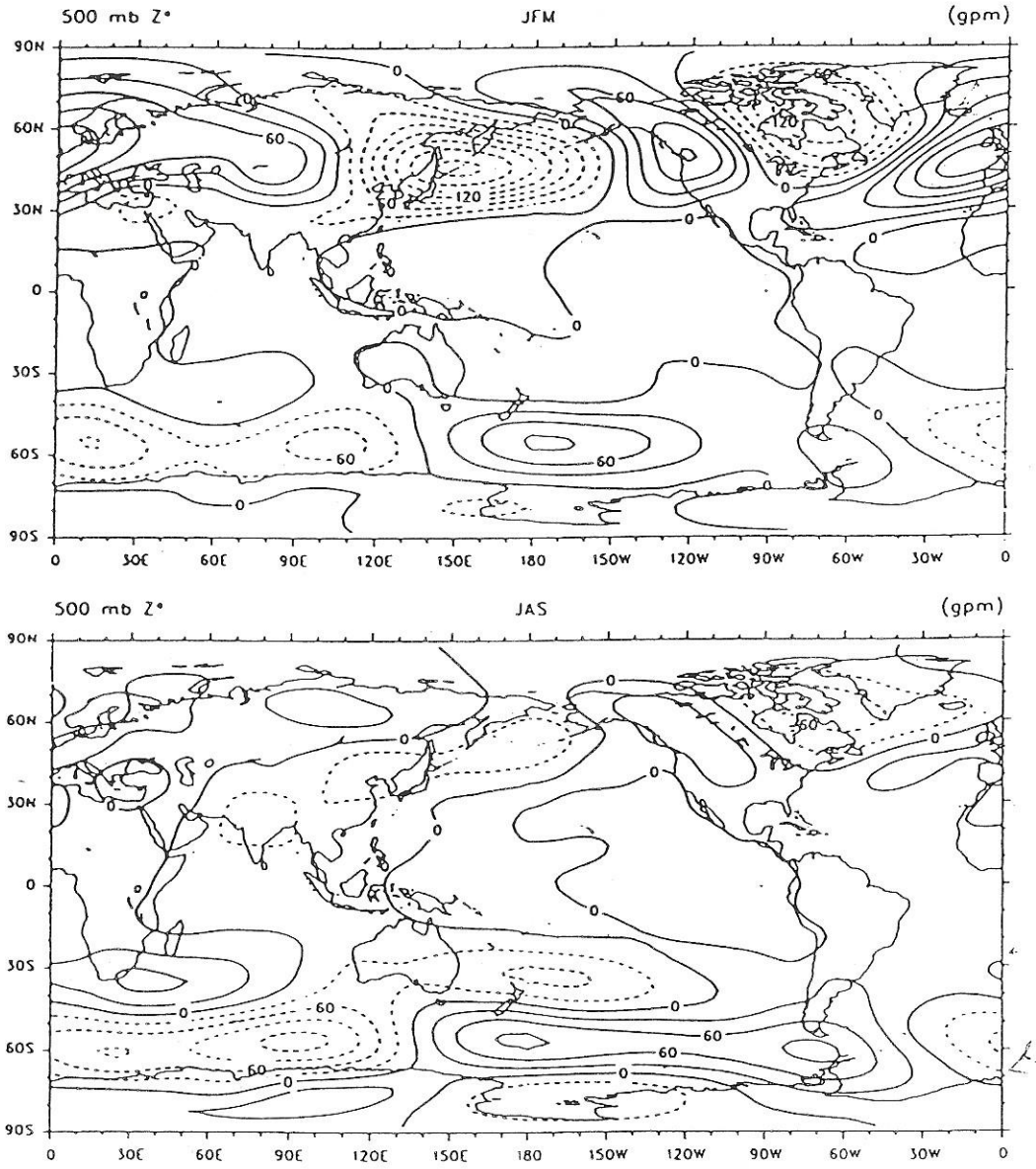


Fig. 1.18 Departures from zonally-averaged mean 500 mb geopotential height (gpm) from ECMWF (1979–1993) for JFM (top) and JAS (bottom).

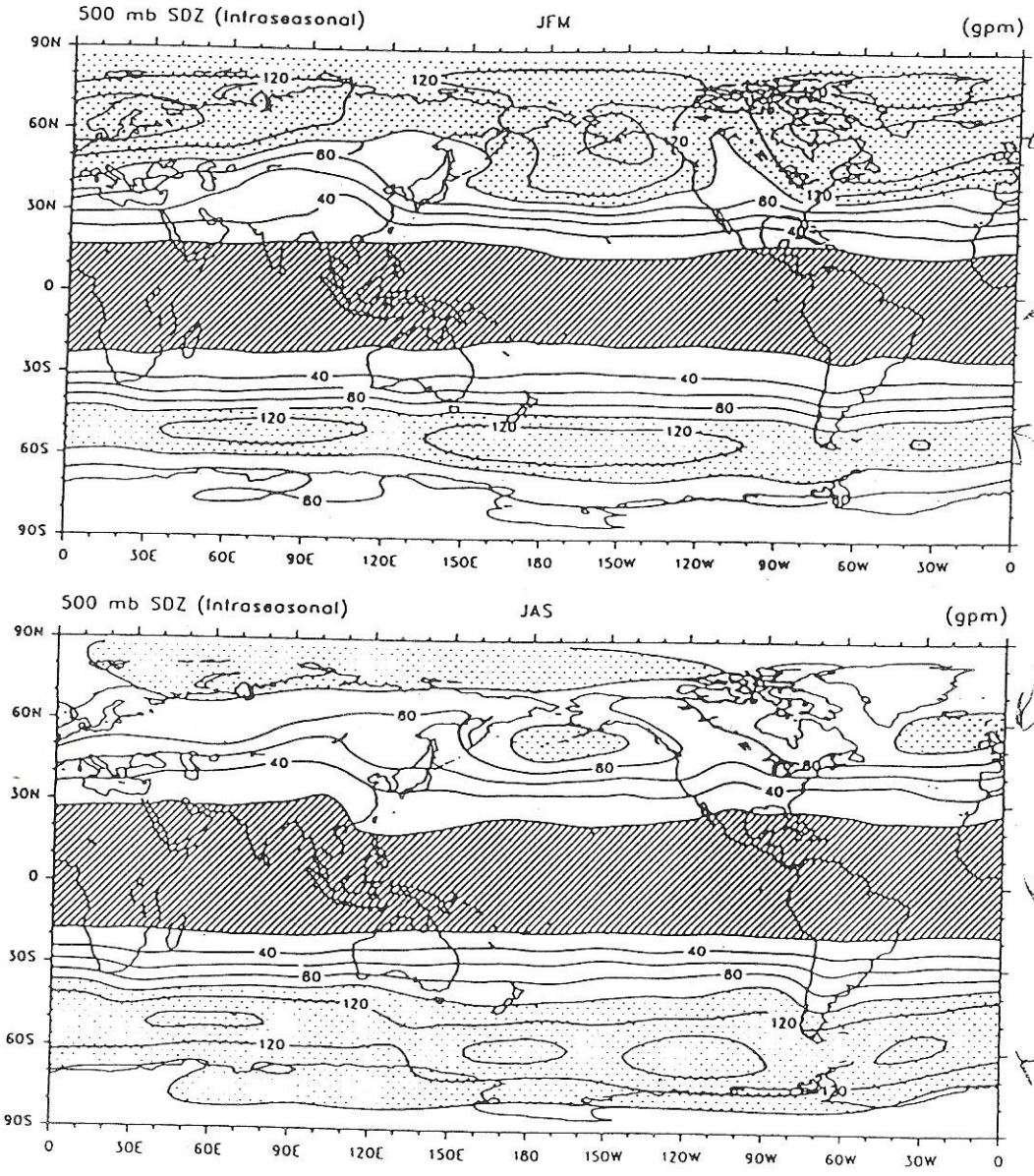


Fig. 1.19 Mean intraseasonal variability of 500 mb geopotential height (gpm) from ECMWF (1979–1993) for JFM (top) and JAS (bottom). Values less than 20 gpm are hatched and values greater than 100 gpm are stippled.

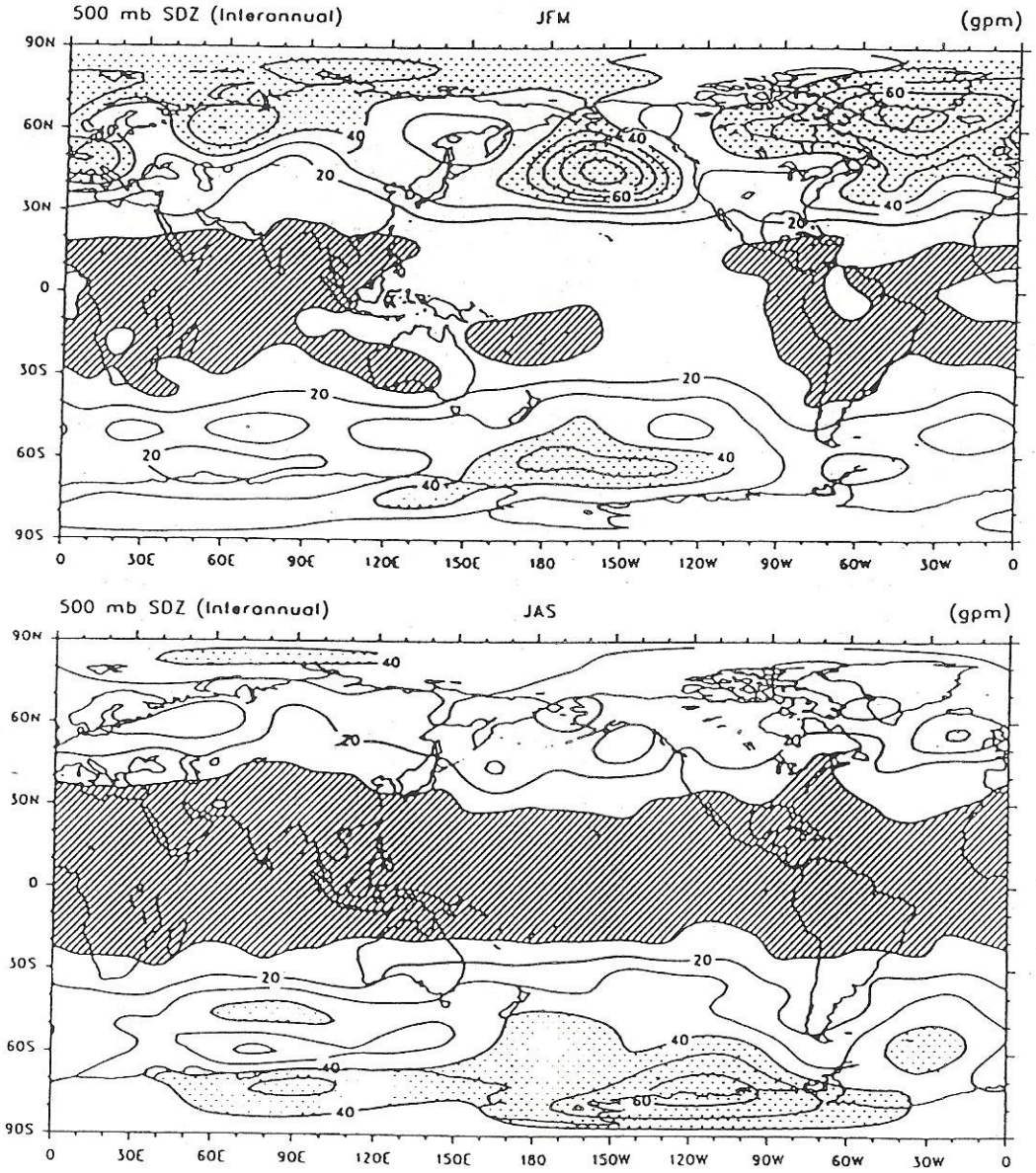


Fig. 1.20 Interannual variability of JFM (top) and JAS (bottom) 500 mb geopotential height (gpm) from ECMWF (1979–1993). Values less than 10 gpm are hatched and values greater than 40 gpm are stippled.

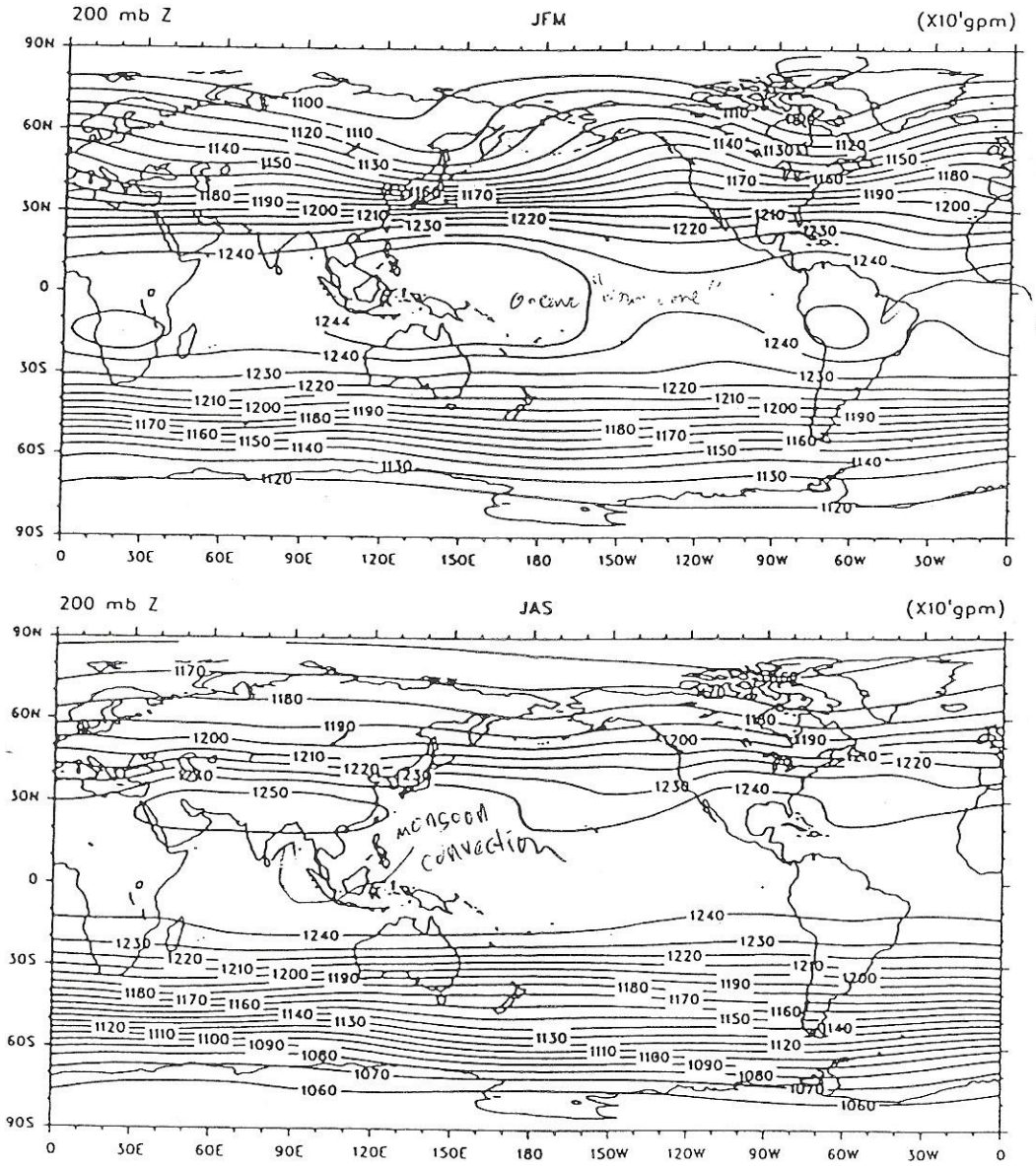


Fig. 1.21 Mean 200 mb geopotential height (10^1gpm) from ECMWF (1979–1993) for JFM (top) and JAS (bottom).

Atmospheric Winds
Fig. 22 – 37

атмосферные ветры
Рис. 22 -37

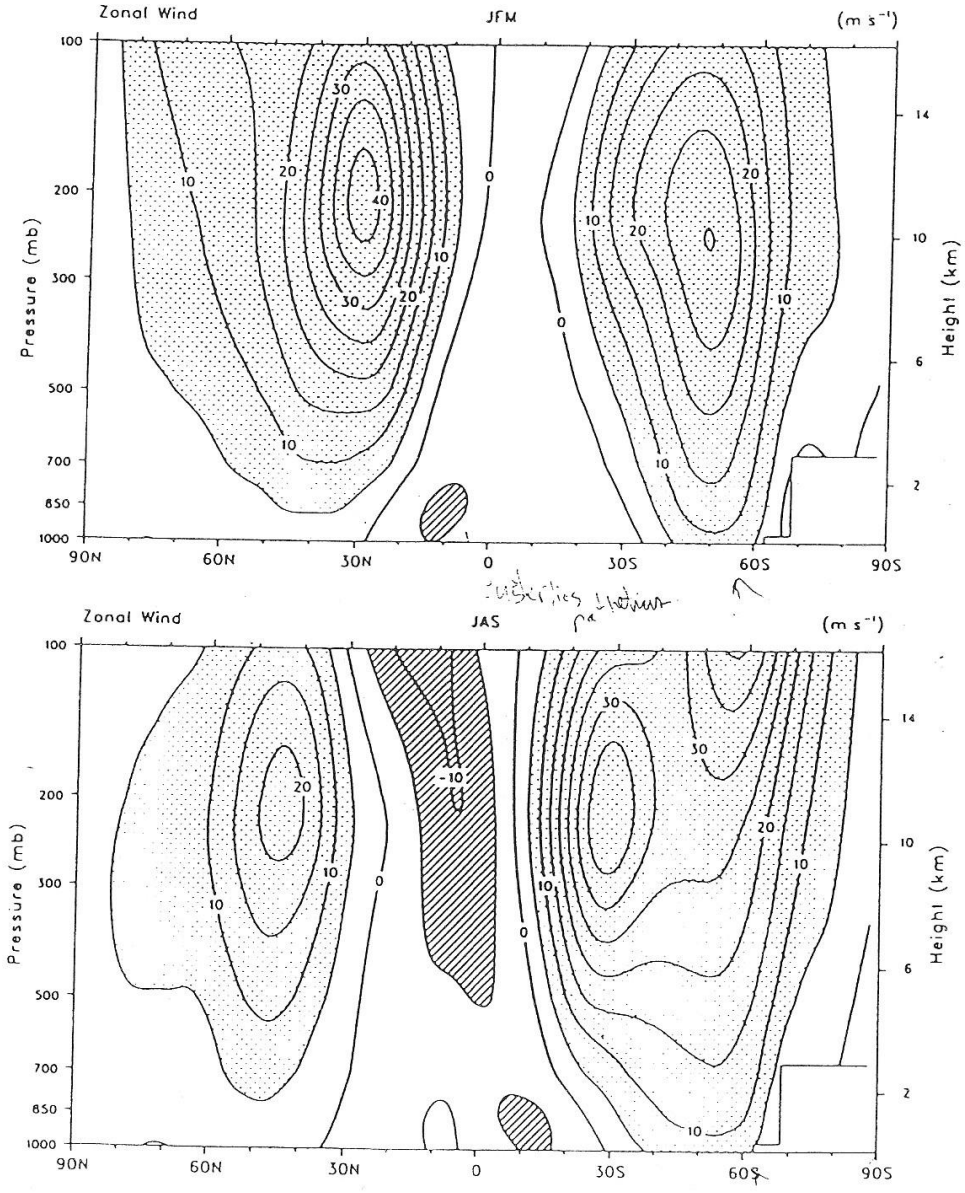


Fig. 1.22 Zonally-averaged mean zonal wind (m s^{-1}) for JFM (top) and JAS (bottom) over the years 1979–1993 from ECMWF. Values greater than 5 m s^{-1} are stippled and values less than −5 m s^{-1} are hatched.

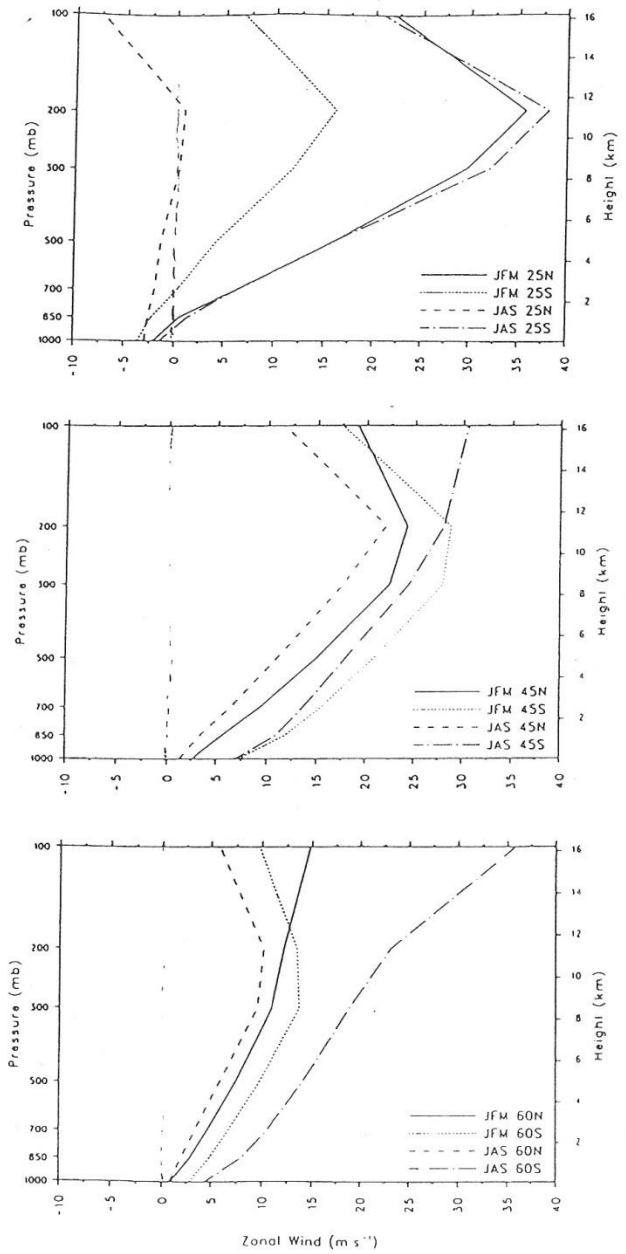


Fig. 1.23 Vertical profiles of the zonally-averaged mean zonal wind (m s^{-1}) for JFM and JAS at 25° latitude (top), 45° latitude (middle) and 60° latitude (bottom).

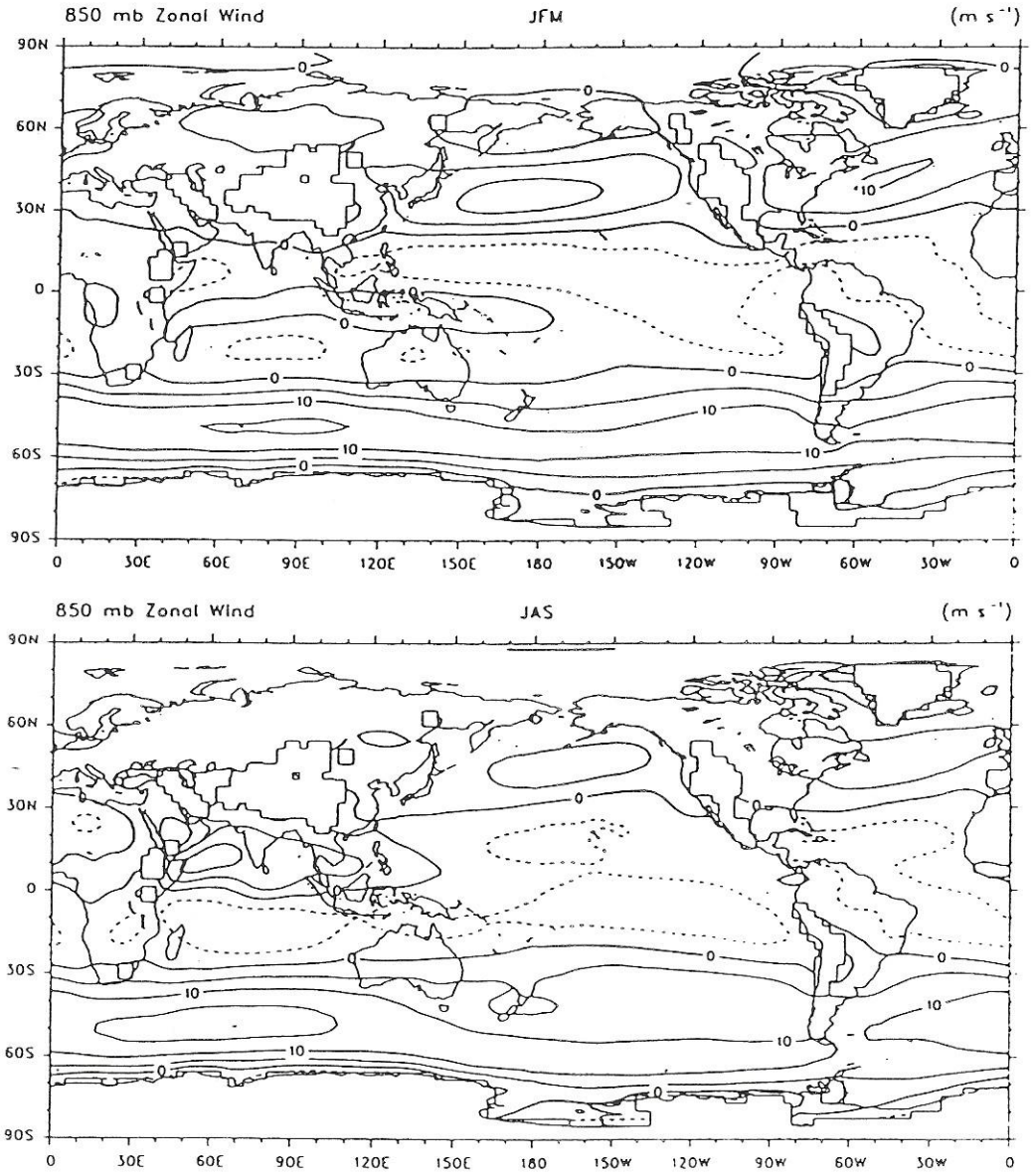


Fig. 1.24 Mean 850 mb zonal wind (m s^{-1}) from ECMWF (1979–1993) for JFM (top) and JAS (bottom). Negative values are dashed.

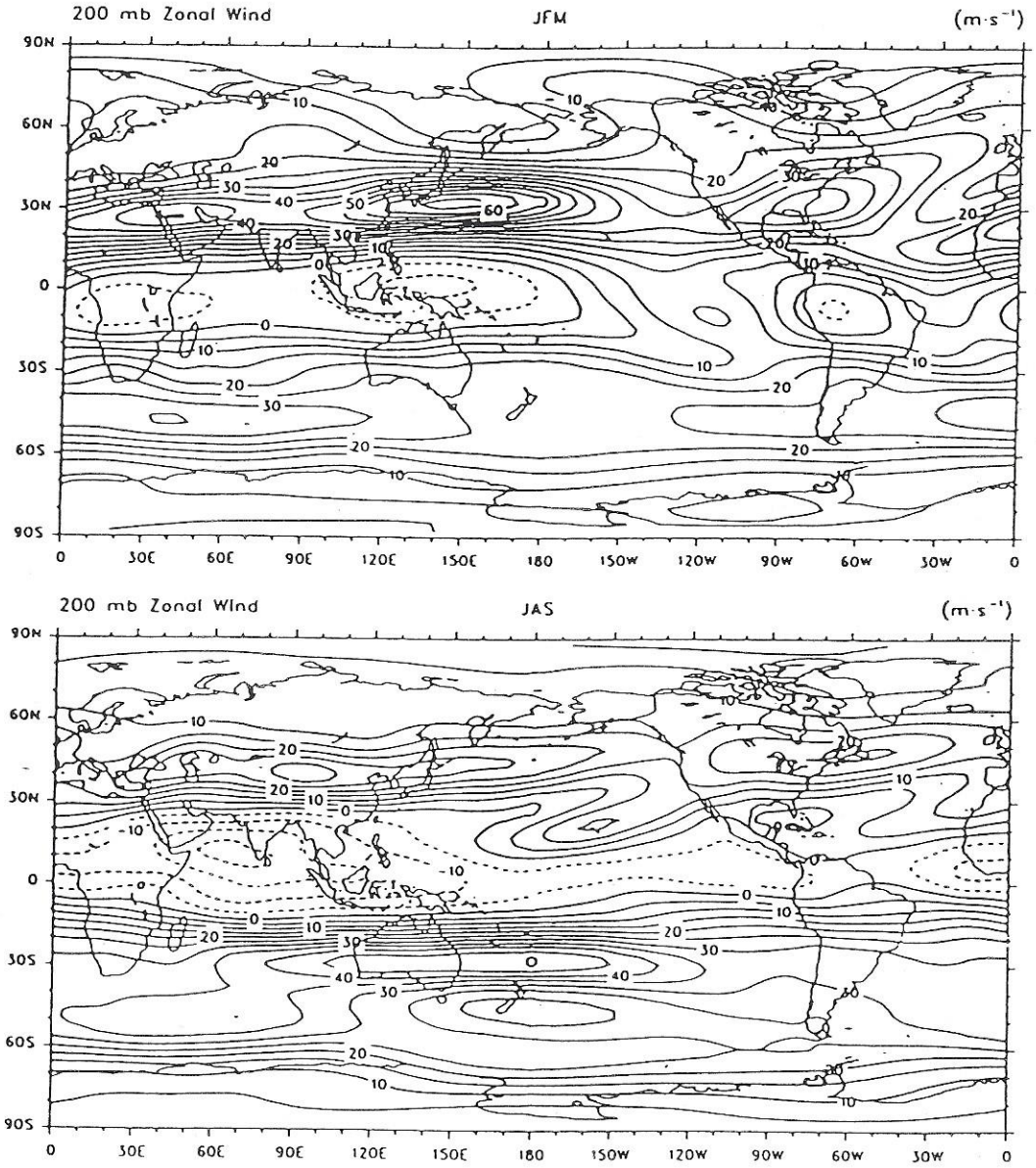


Fig. 1.25 As in Fig. 1.24, but for 200 mb zonal winds.

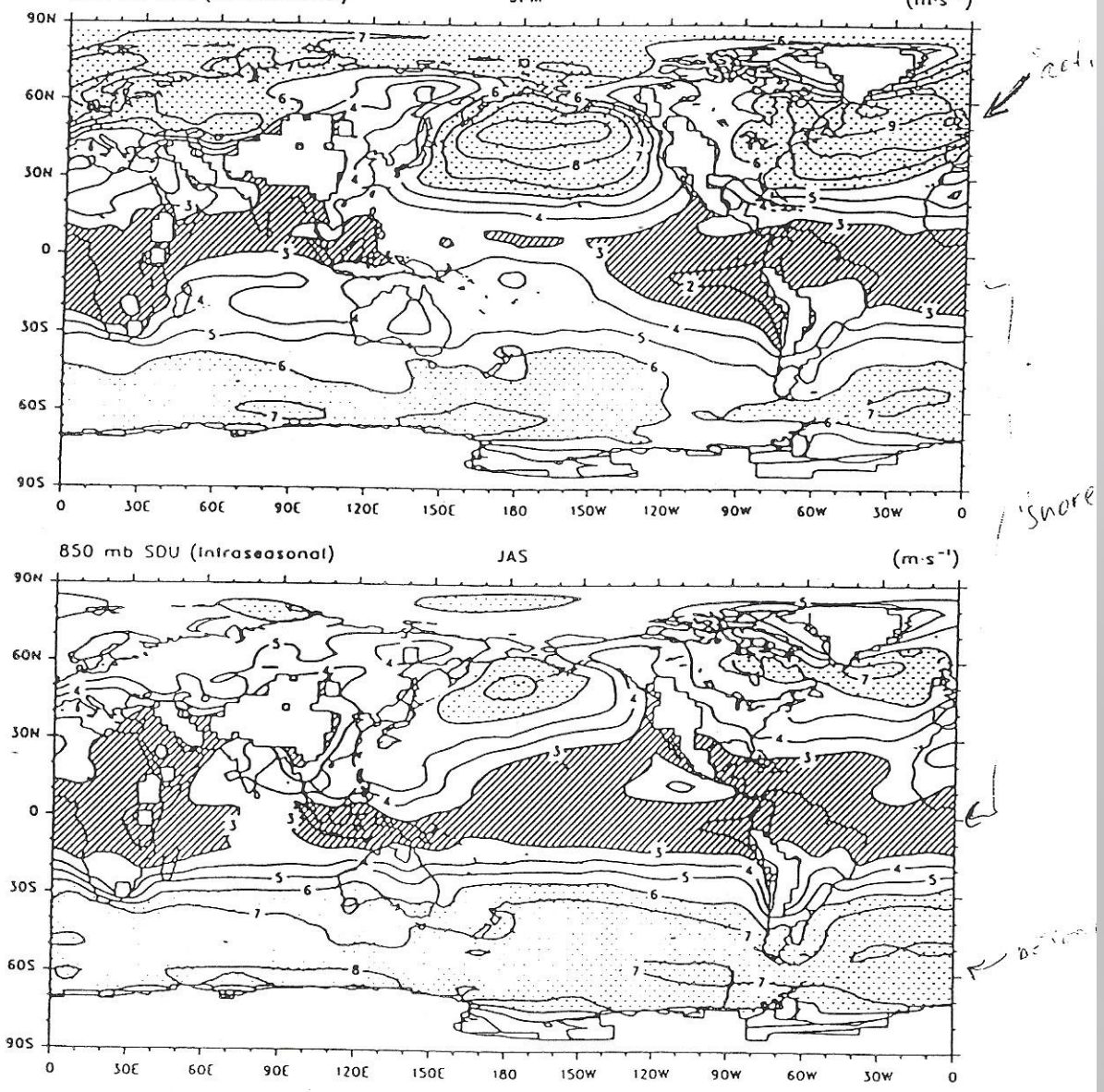


Fig. 1.26 Mean intraseasonal variability of 850 mb zonal wind (m s^{-1}) from ECMWF (1979–1993) for JFM (top) and JAS (bottom). Values less than 3 m s^{-1} are hatched and values greater than 6 m s^{-1} are stippled.

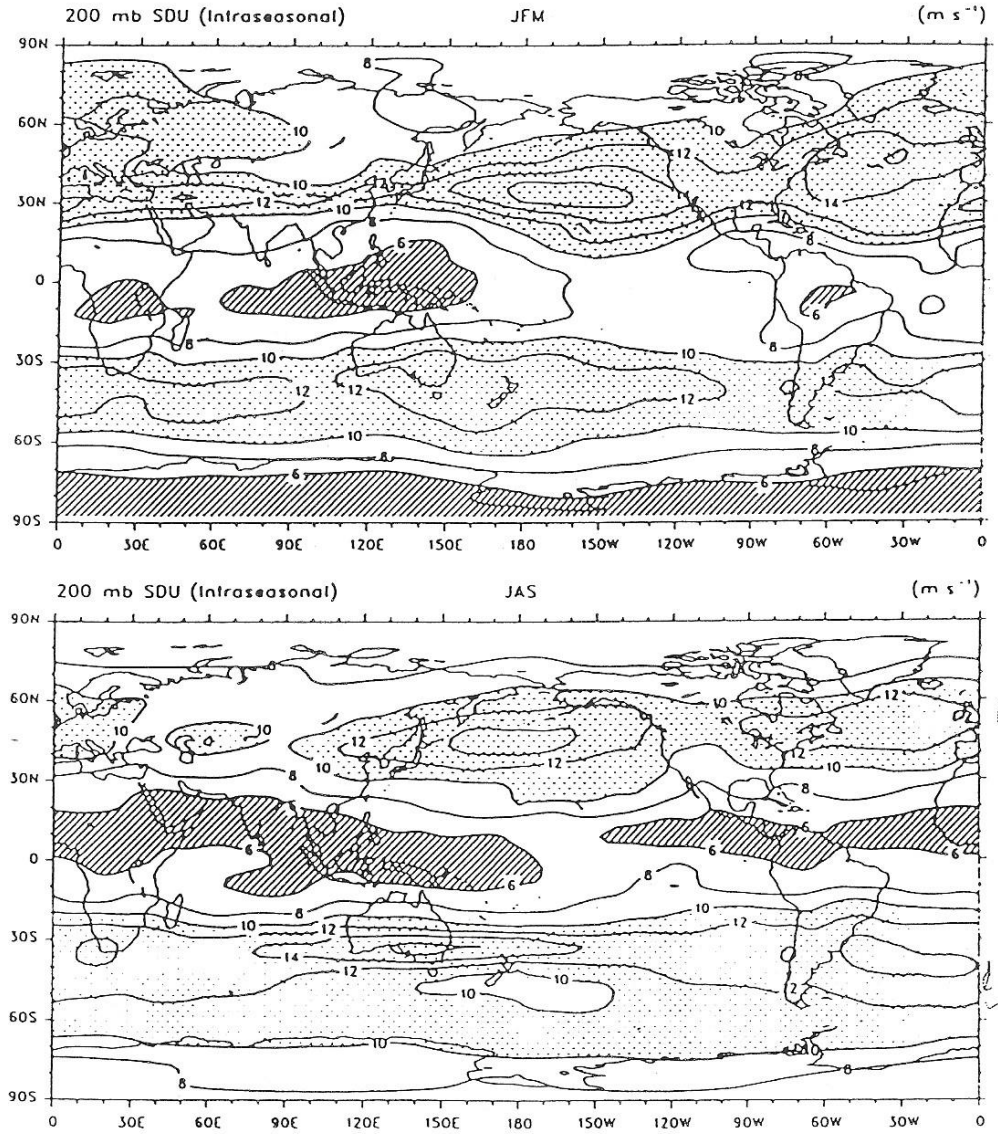


Fig. 1.28 Mean intraseasonal variability of 200 mb zonal wind (m s^{-1}) from ECMWF (1979–1993) for JFM (top) and JAS (bottom). Values less than 6 m s^{-1} are hatched and values greater than 10 m s^{-1} are stippled.

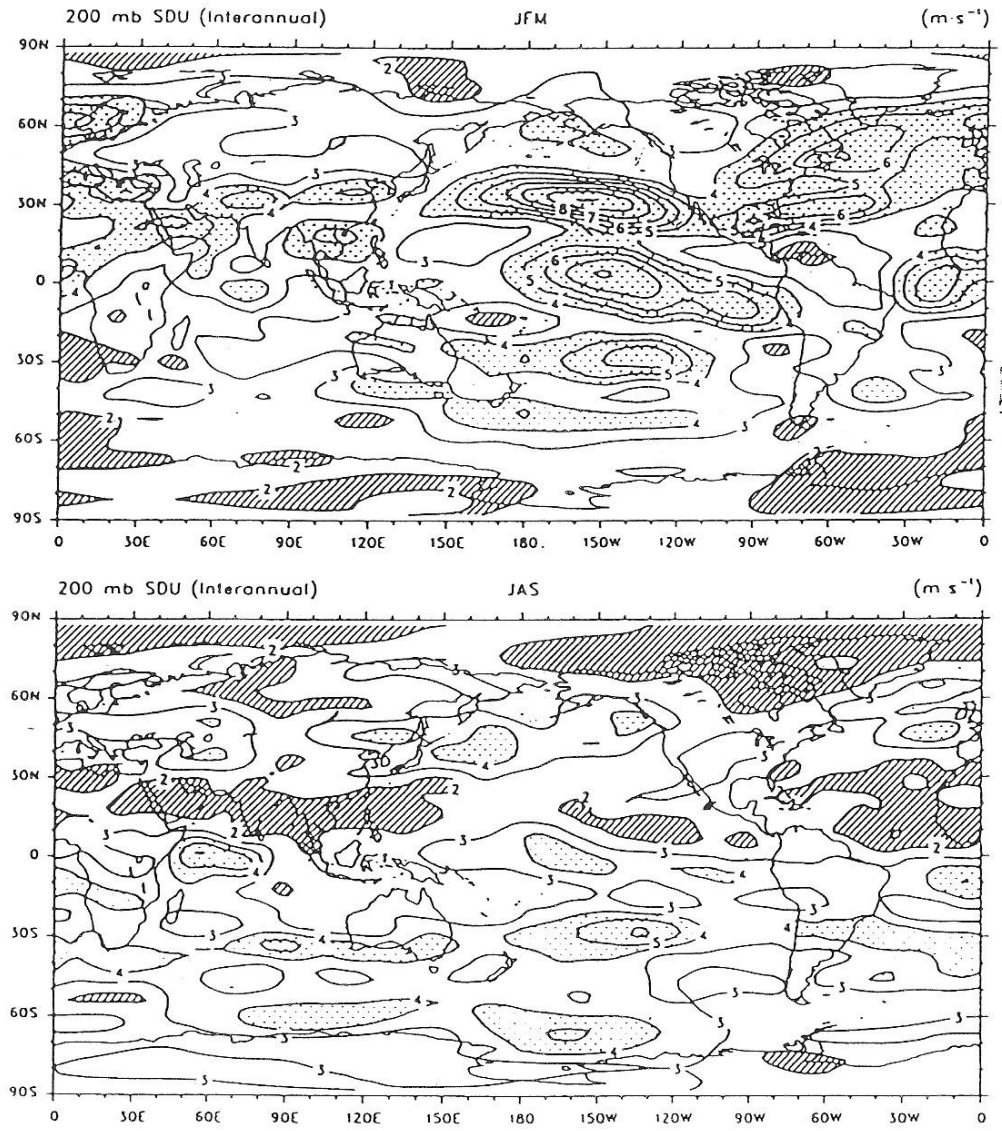


Fig. 1.29 Interannual variability of JFM (top) and JAS (bottom) 200 mb zonal wind (m s^{-1}) from ECMWF (1979–1993). Values less than 2 m s^{-1} are hatched and values greater than 4 m s^{-1} are stippled.

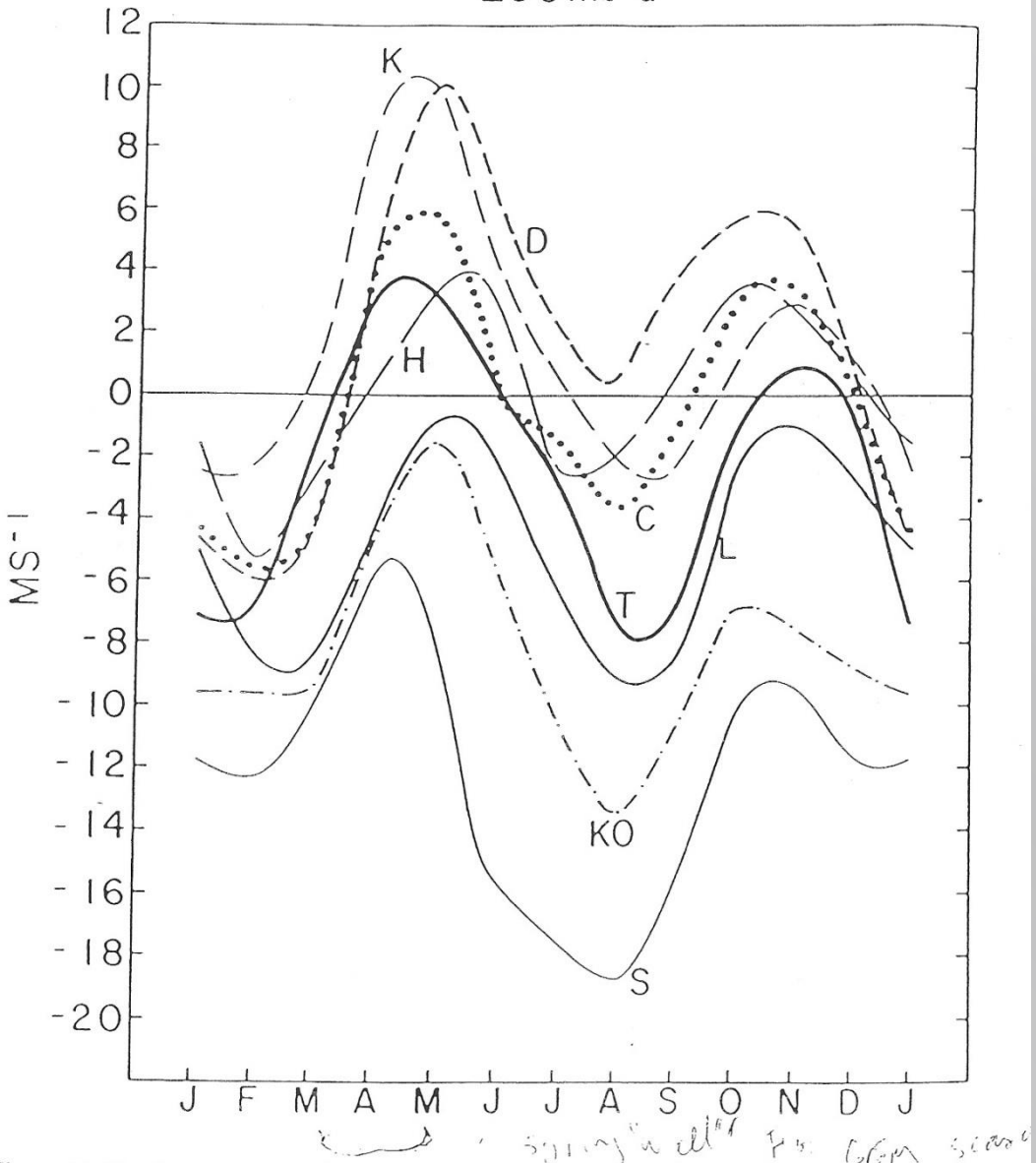


Fig. 1.30 The long-term zonal component of the wind (m s^{-1}) at 200 mb at: K, Kwajalein (6.1°N, 167.4°E); D, Darwin (12.4°S, 130.9°E); H, Honiara (9.2°S, 159.8°E); C, Cocos Island (12.0°S, 97.0°E); L, Lae (6.4°S, 147.0°E); T, Tarawa (1.2°N, 172.6°E); KO, Koror (7.2°N, 134.3°E); S, Singapore (1.2°N, 103.6°E).

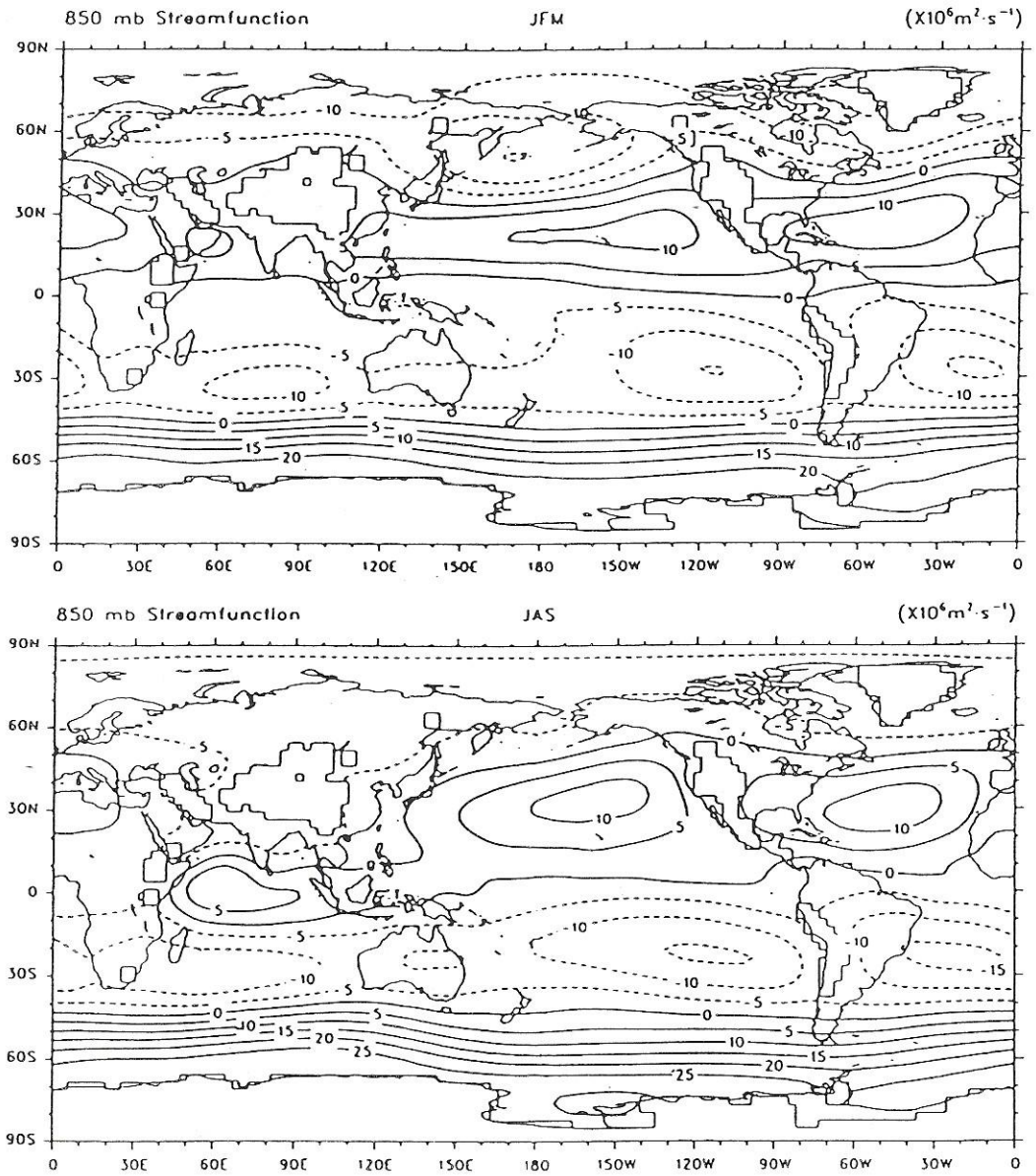


Fig. 1.31 Mean 850 mb streamfunction ($10^6 m^2\ s^{-1}$) from ECMWF (1979–1993) for JFM (top) and JAS (bottom). Negative values are dashed.

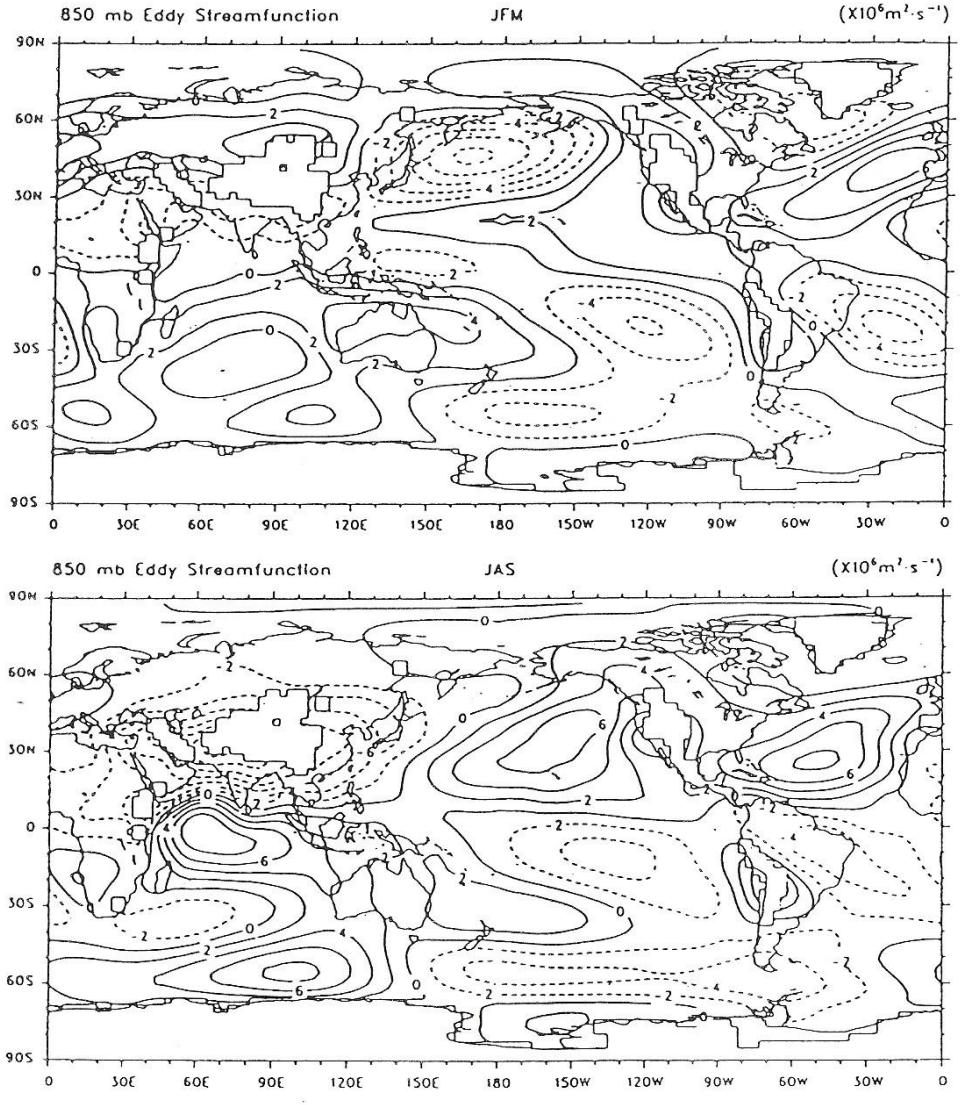


Fig. 1.32 Departures from zonally-averaged mean 850 mb streamfunction ($10^6 m^2\ s^{-1}$) from ECMWF (1979–1993) for JFM (top) and JAS (bottom). Negative values are dashed.

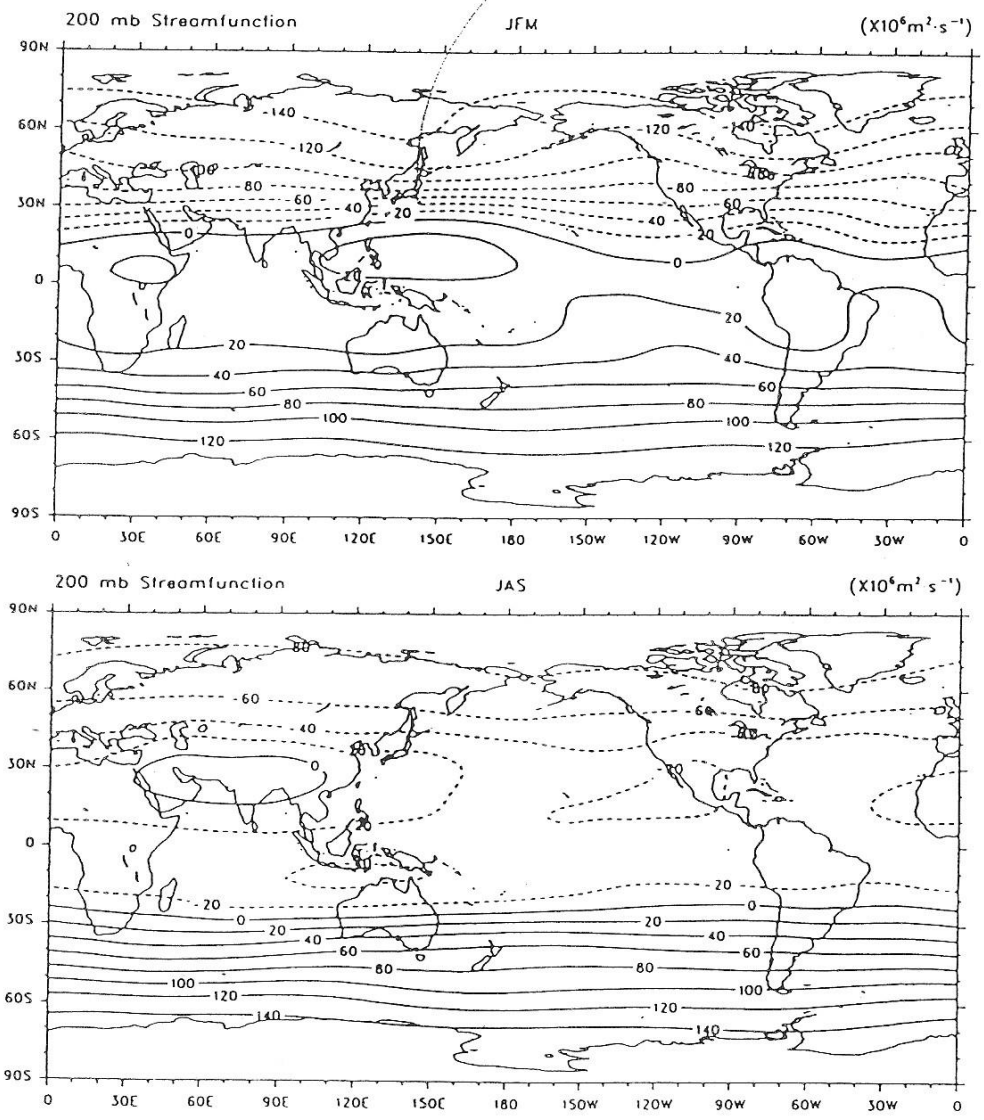


Fig. 1.33 As in Fig. 1.31, but for 200 mb streamfunction.

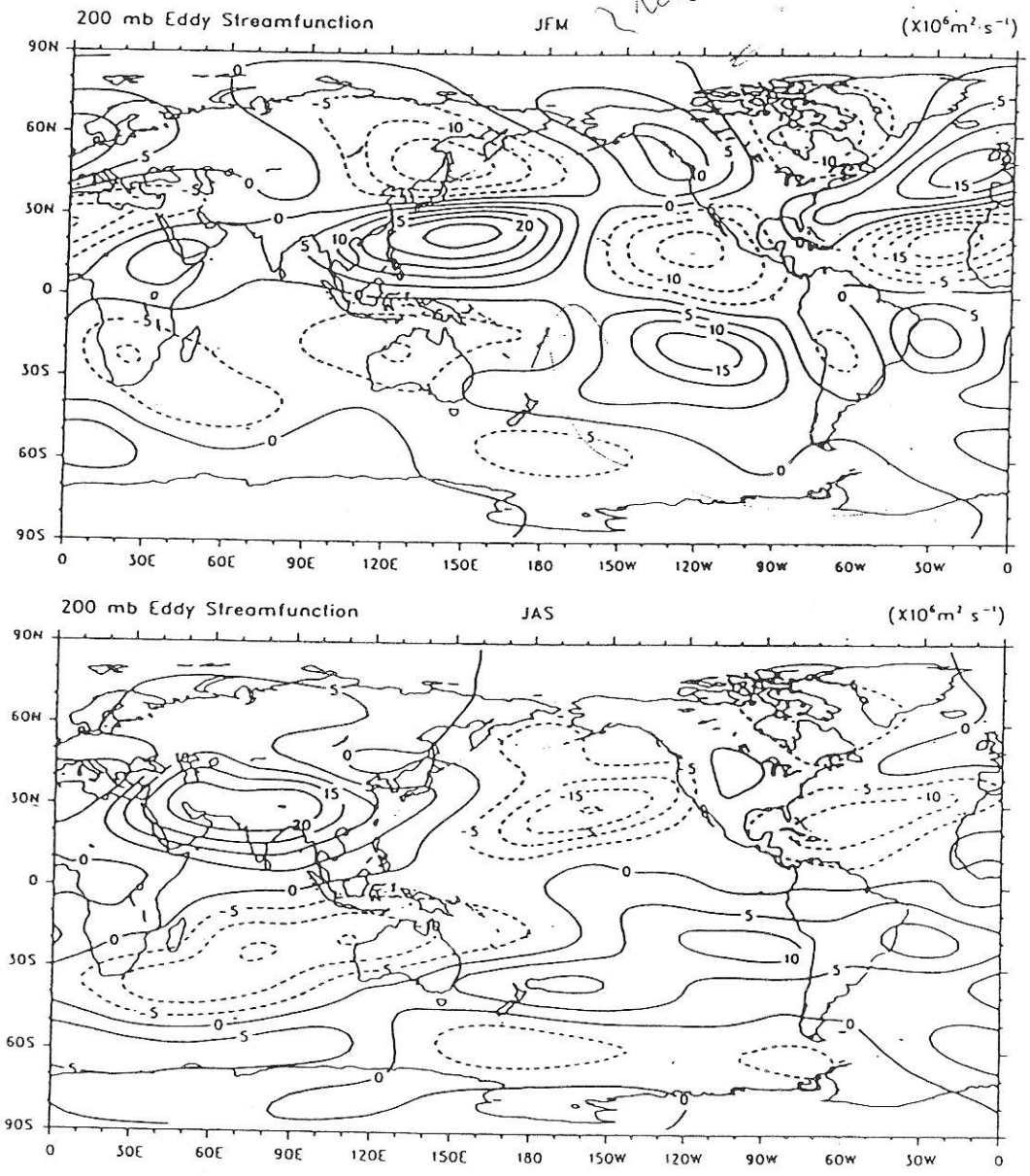


Fig. 1.34 As in Fig. 1.32, but for 200 mb streamfunction.

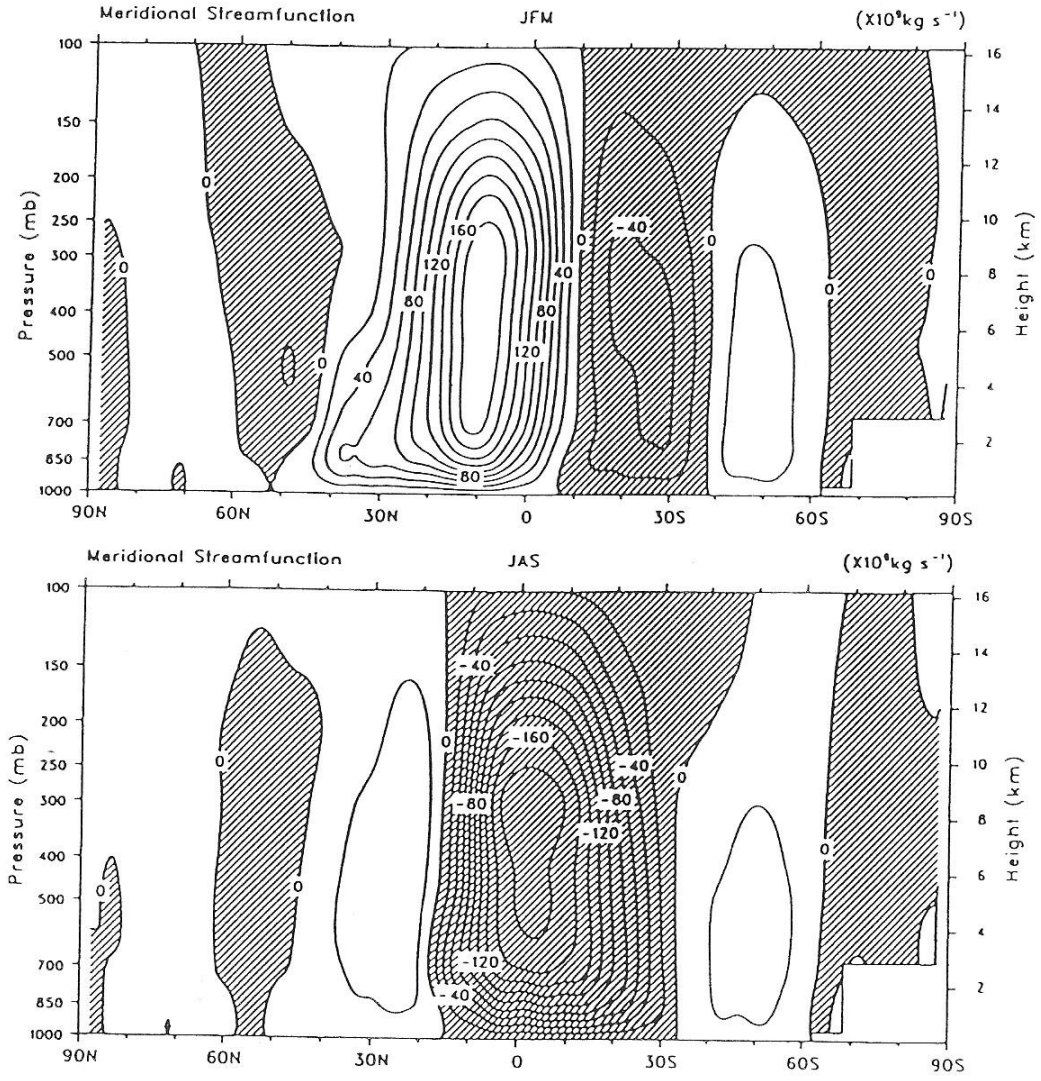


Fig. 1.35 Mean meridional streamfunction (10^9kg s^{-1}) for JFM (top) and JAS (bottom). Negative values are hatched. ECMWF data from 1987–1989 (1986–1988) were used to construct the JFM (JAS) climatology.

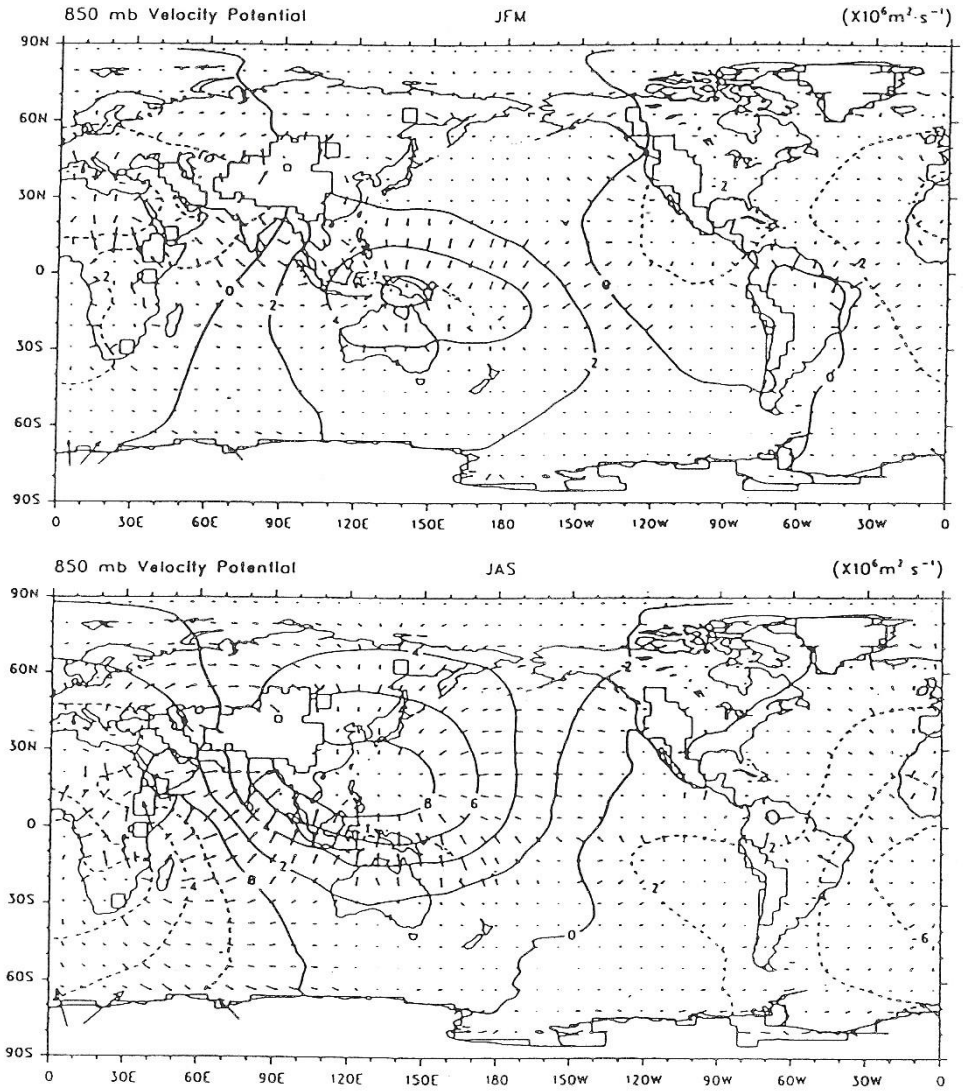


Fig. 1.36 Mean velocity potential ($10^6 m^2\ s^{-1}$) and vector divergent wind at 850 mb for JFM (top) and JAS (bottom). Negative values of the velocity potential are dashed, and the largest vector corresponds to 8 m s^{-1}. ECMWF data from 1987–1989 (1986–1988) were used to construct the JFM (JAS) climatology.

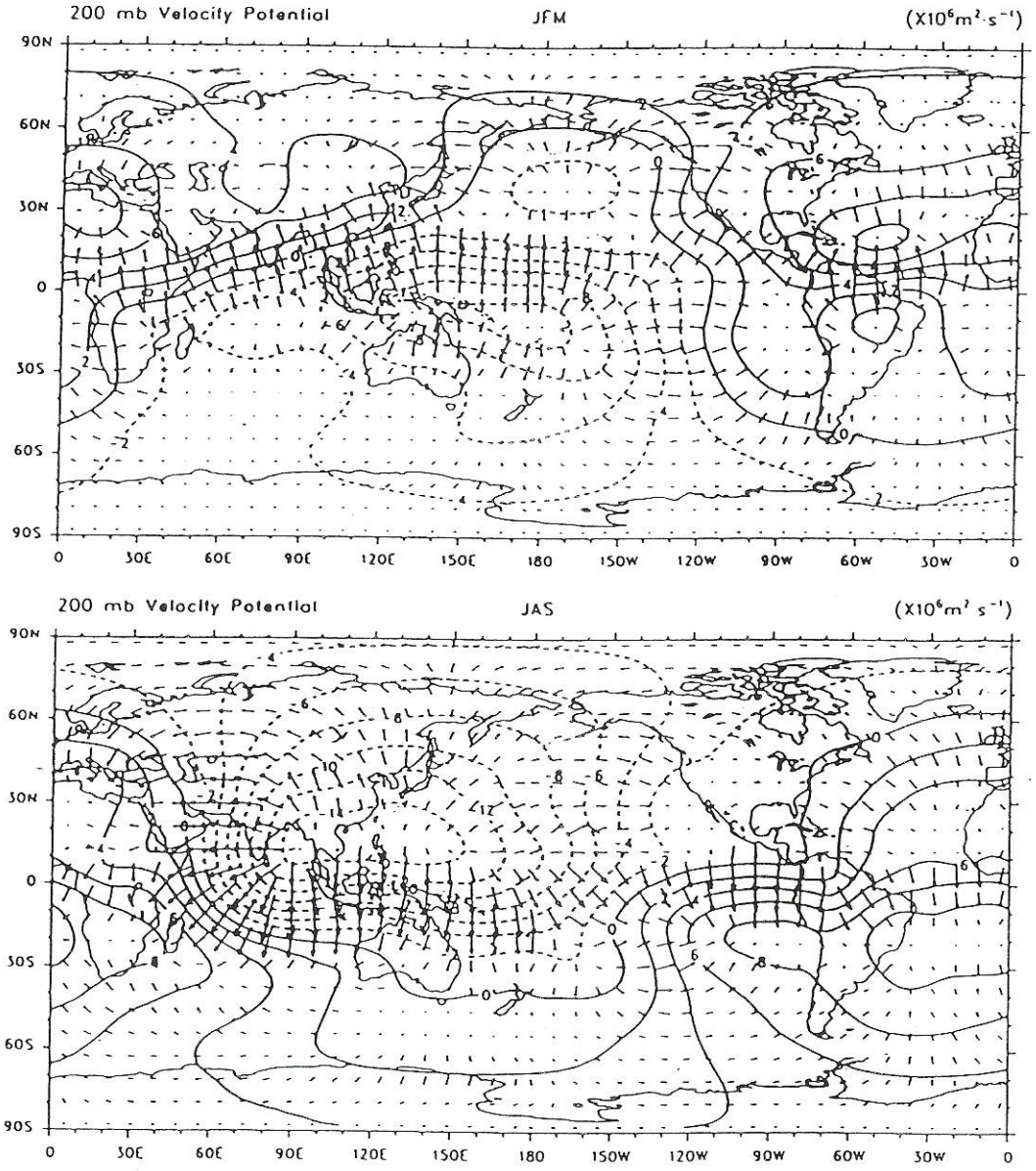


Fig. 1.37 As in Fig. 1.36, but for 200 mb velocity potential and vector divergent wind.

Atmospheric water vapor / Moisture Figs. 38 – 45.

влаги / водяной пар атмосферное рис. 38 - 45

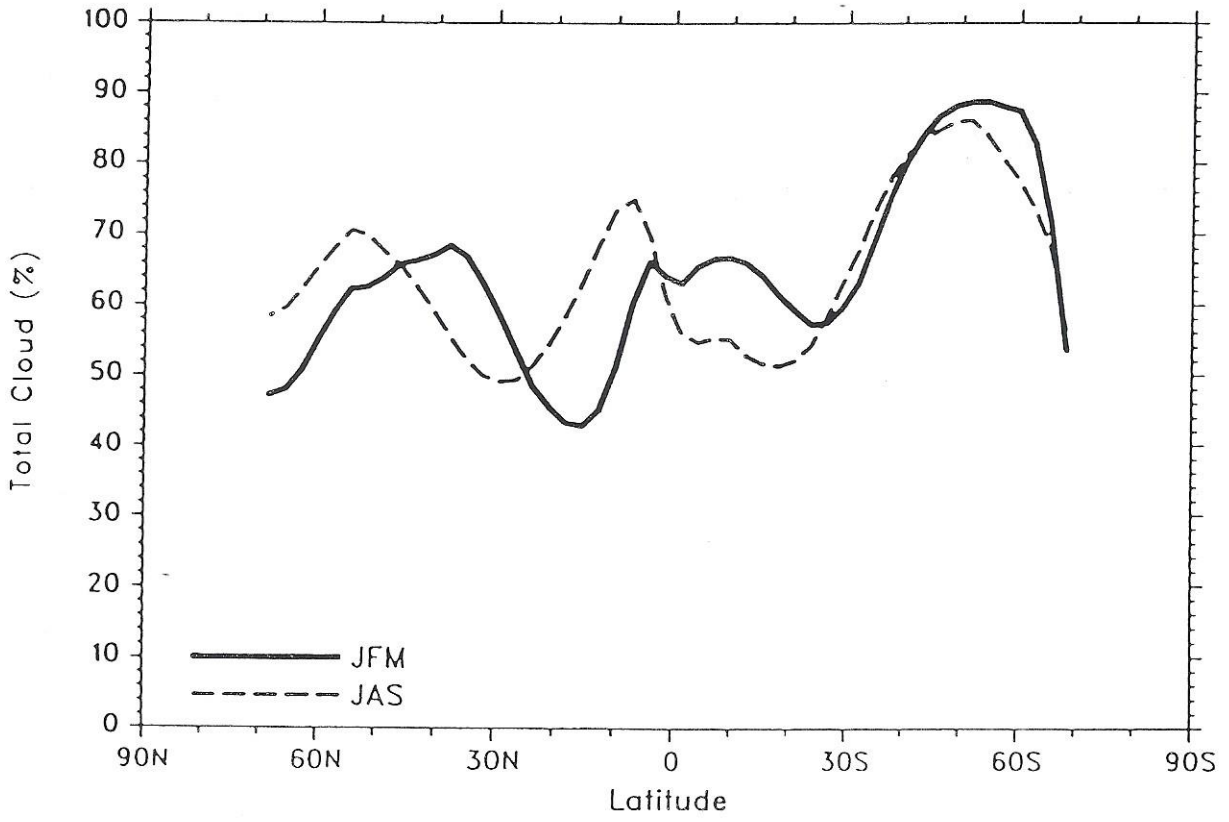


Fig. 1.38 Zonally-averaged mean total cloudiness (%) from ISCCP for JFM (solid) and JAS (dash). Data over the period 1984–1991 (1983–1990) were used in the JFM (JAS) climatology.

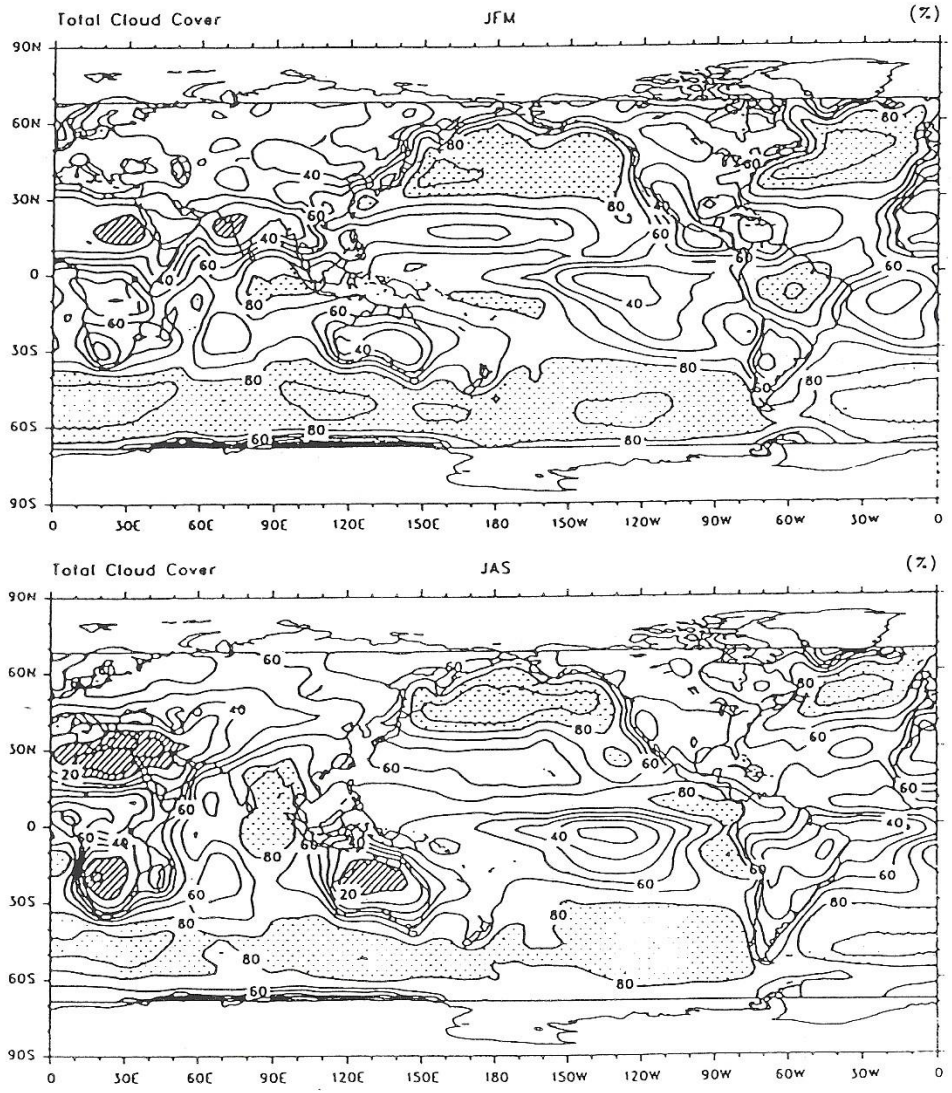


Fig. 1.39 Mean total cloudiness (%) from ISCCP for JFM (top) and JAS (bottom). Cloud coverage greater than 80% is indicated by stippling, and coverage less than 20% by hatching. Data over the period 1984–1991 (1983–1990) were used to construct the JFM (JAS) climatology.

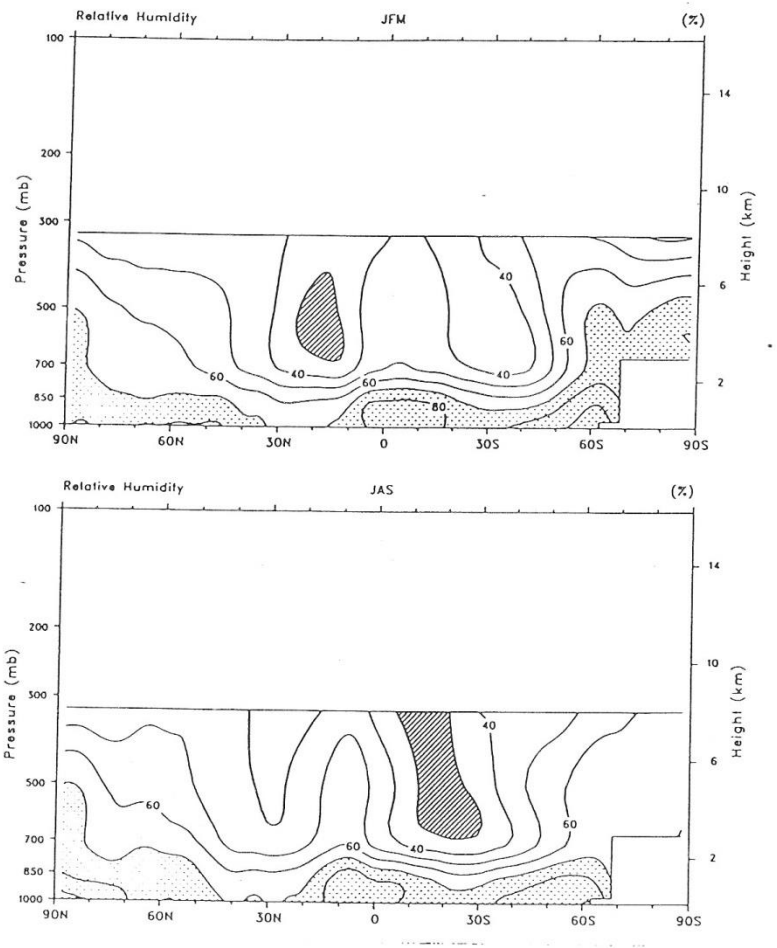


Fig. 1.40 Zonally-averaged mean relative humidity (%) for JFM (top) and JAS (bottom) from ECMWF. Values greater than 70% are stippled and values less than 30% are hatched. Data from 1987–1989 (1986–1988) were used to construct the JFM (JAS) climatology.

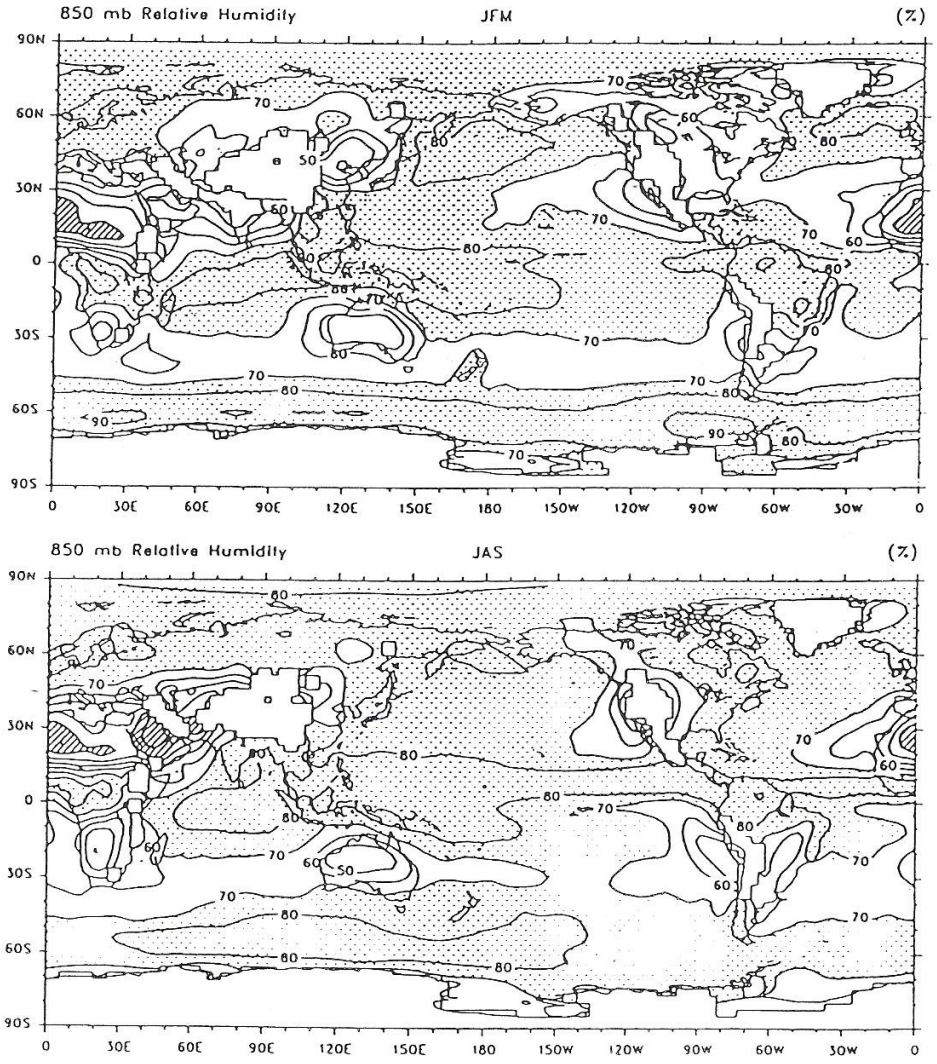


Fig. 1.41 Mean relative humidity (%) at 850 mb for JFM (top) and JAS (bottom). Values greater than 70% are stippled and values less than 30% are hatched. Data from 1987–1989 (1986–1988) were used to construct the JFM (JAS) climatology.

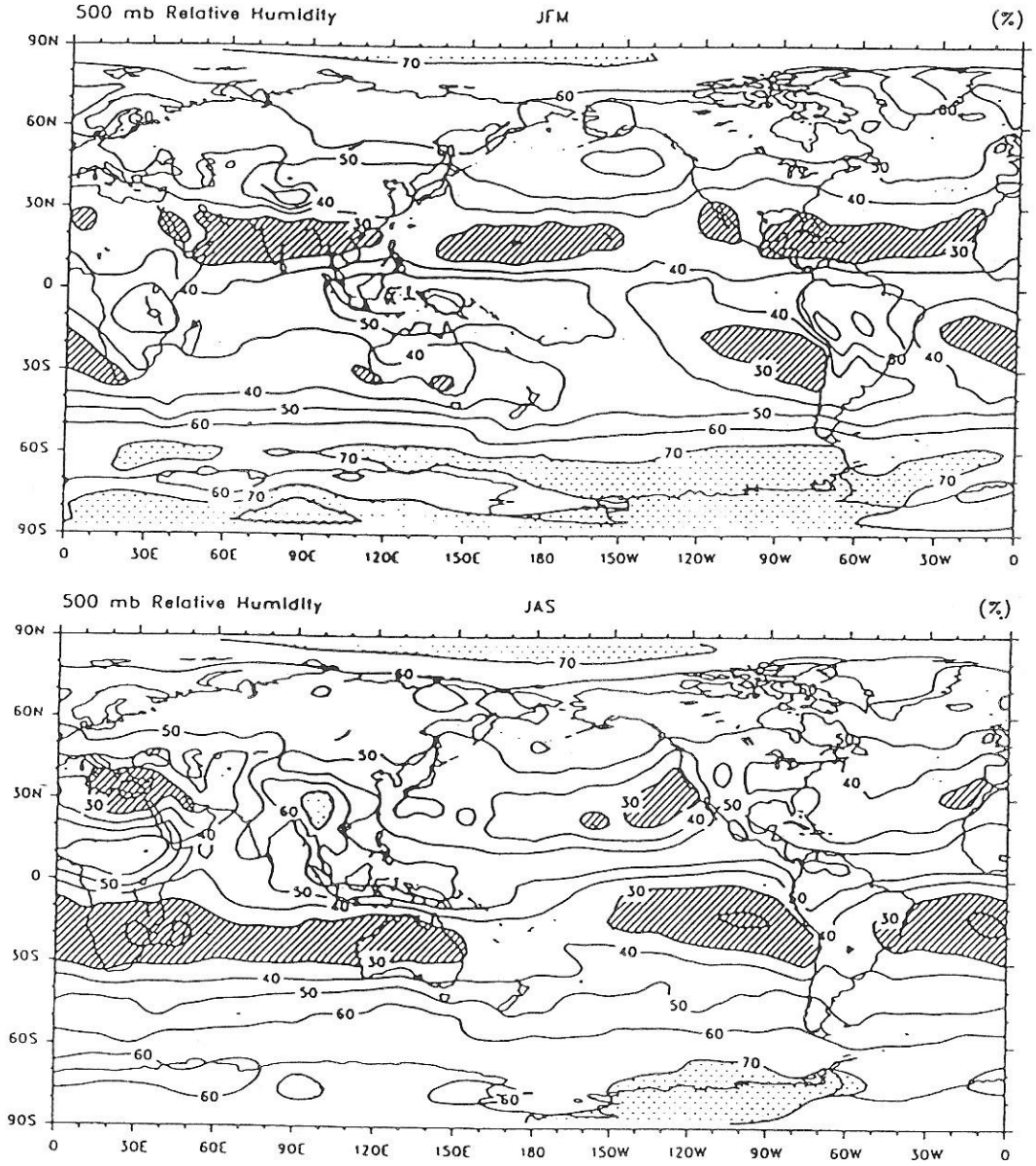
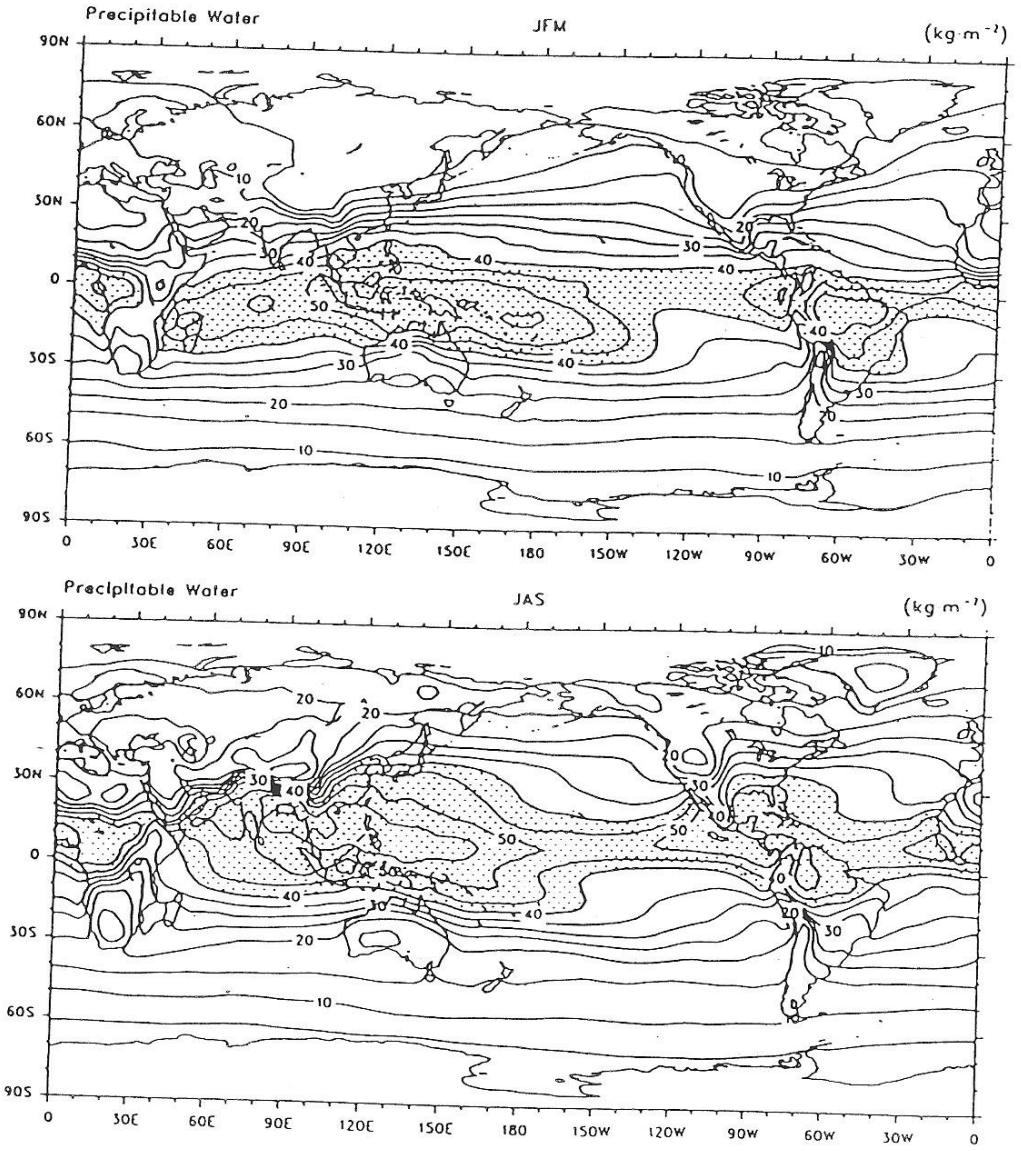


Fig. 1.42 As in Fig. 1.41, but for 500 mb relative humidity.



3 Mean precipitable water (kg m^{-2}) for JFM (top) and JAS (bottom) from ECMWF. Values greater than 40 kg m^{-2} are stippled. Data from 1987–1989 (1986–1988) were used to construct the JFM (JAS) climatology.

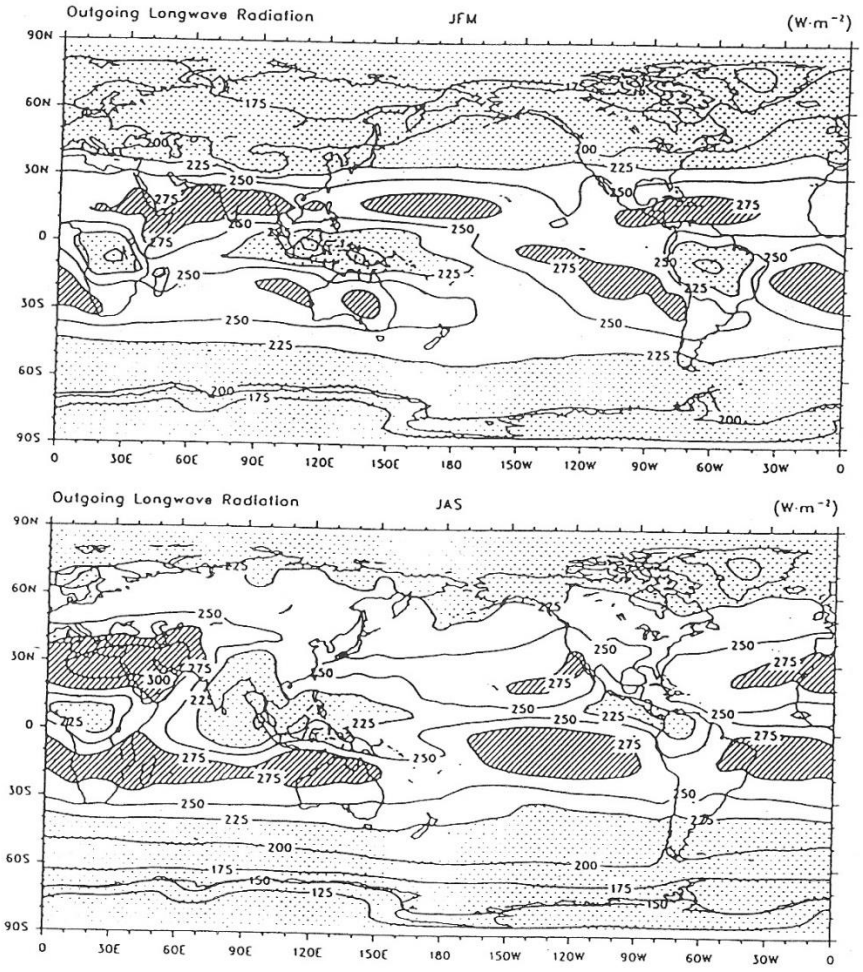


Fig. 1.44 Mean outgoing longwave radiation (W m^{-2}) from ERBE for JFM (top) and JAS (bottom). Values greater than 275 W m^{-2} are hatched, and values less than 225 W m^{-2} are stippled. Data over the period 1986–1989 (1985–1988) were used to construct the JFM (JAS) climatology.

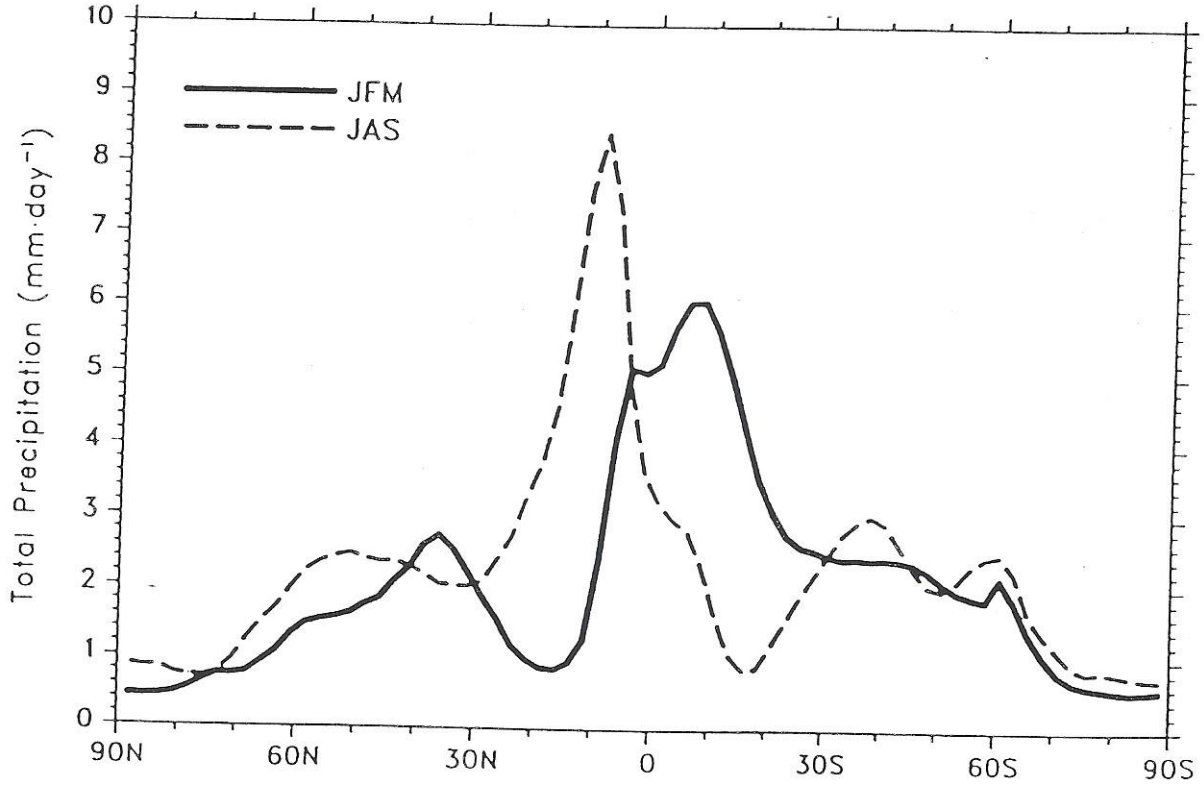


Fig. 1.45 Zonally-averaged mean total precipitation (mm day^{-1}) for JFM (solid) and JAS (dash) from the data of Xie and Arkin (1996). The JFM (JAS) climatology was constructed over the period 1988–1995 (1987–1994).

The End!

Questions?

Comments?

Criticisms?

Конец!

Вопросы?

Комментарии

критику?