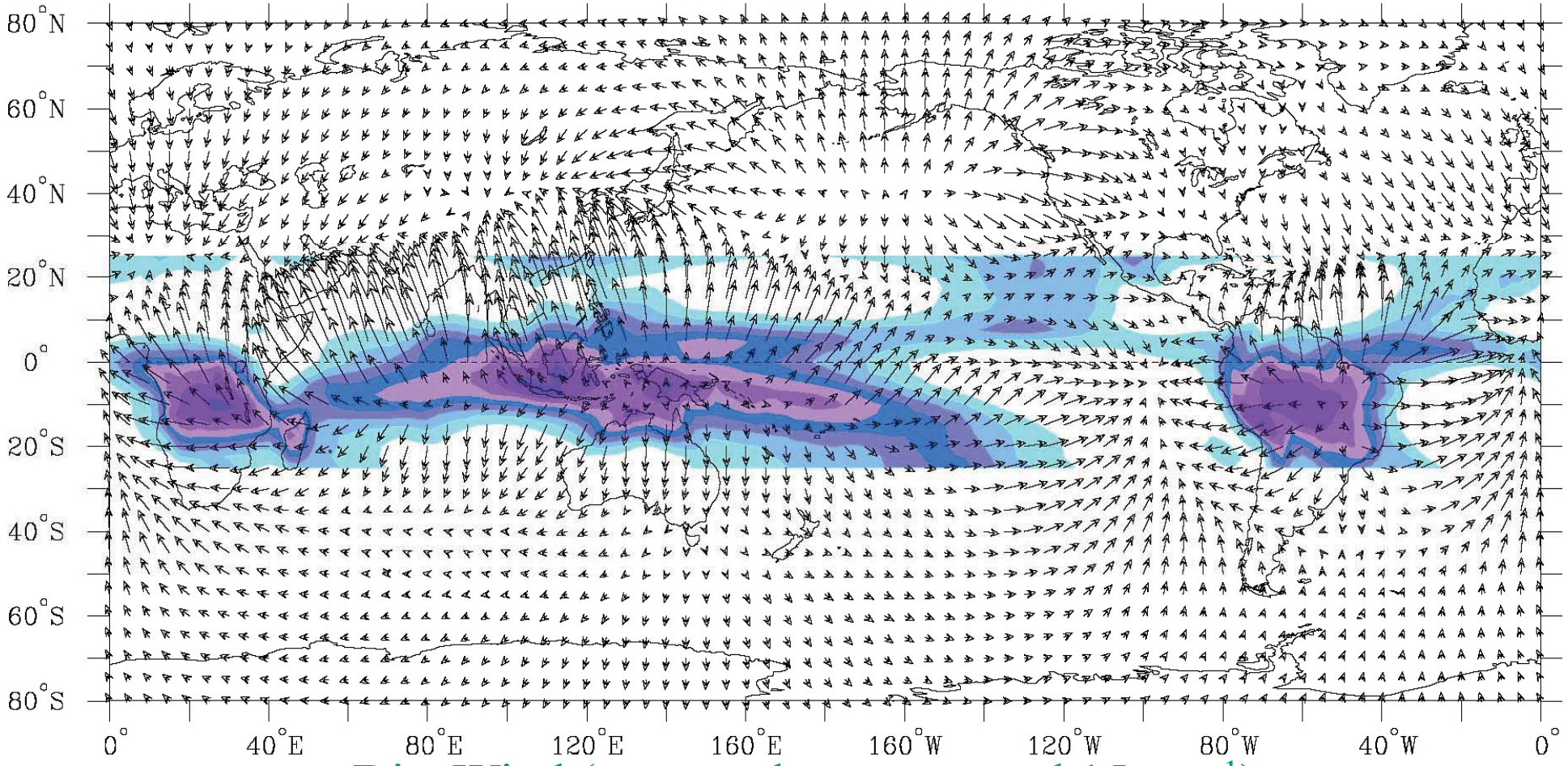
Monsoons

Mean January 200 hPa Divergent Wind,

Outgoing Longwave Radiation

1979-2001



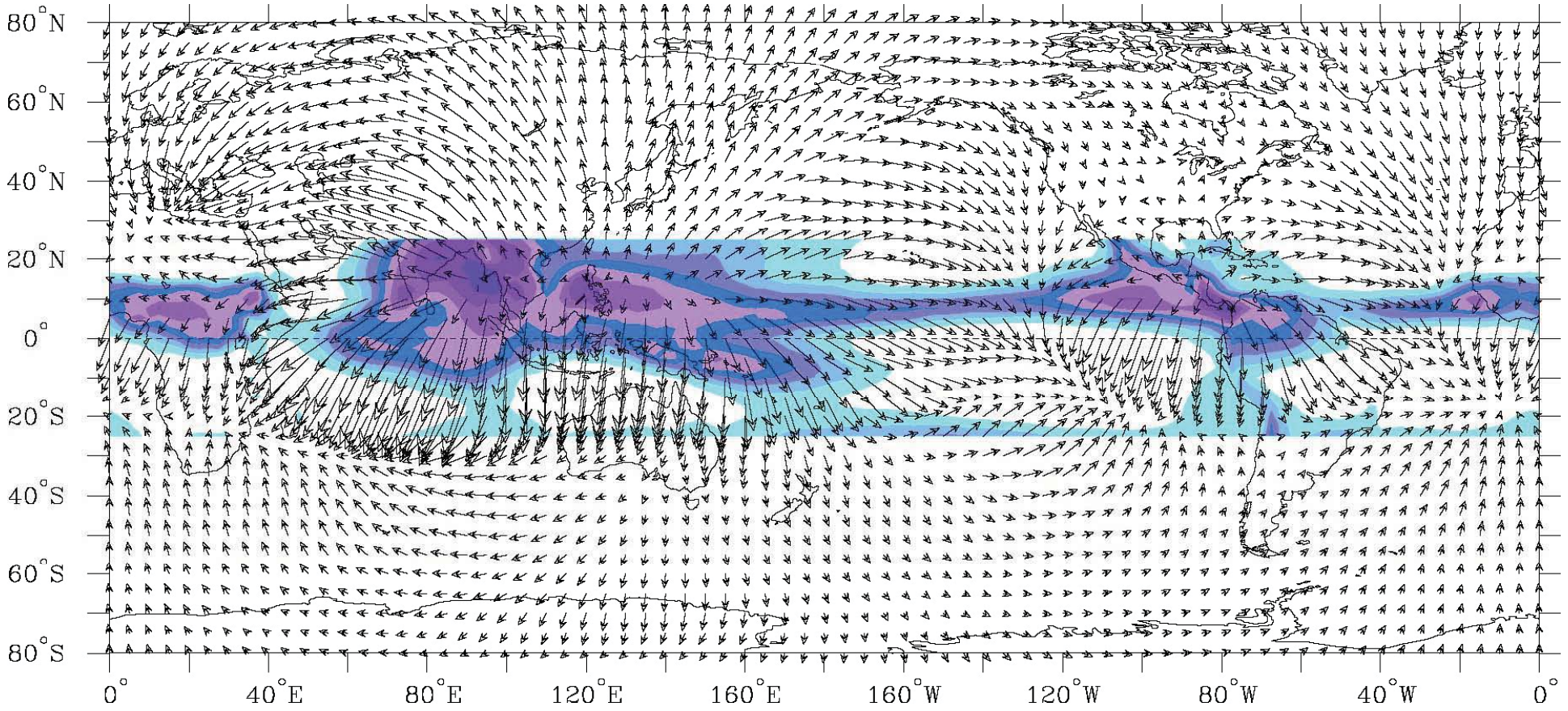
Div. Wind (vectors, largest around 15 m s^{-1})

OLR (shading at 10 W s^{-2} intervals)

Mean July 200 hPa Divergent Wind,

Outgoing Longwave Radiation

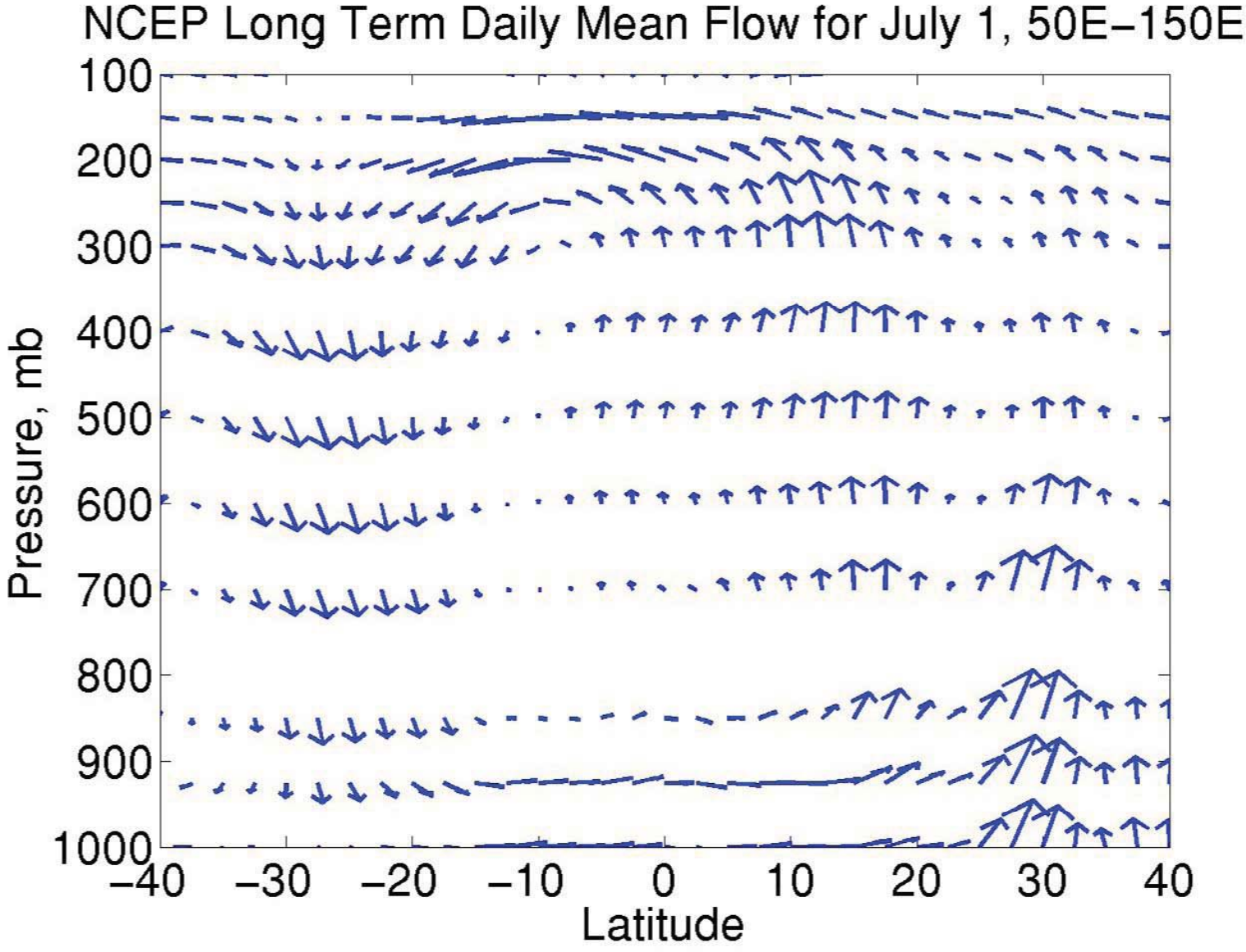
1979-2001

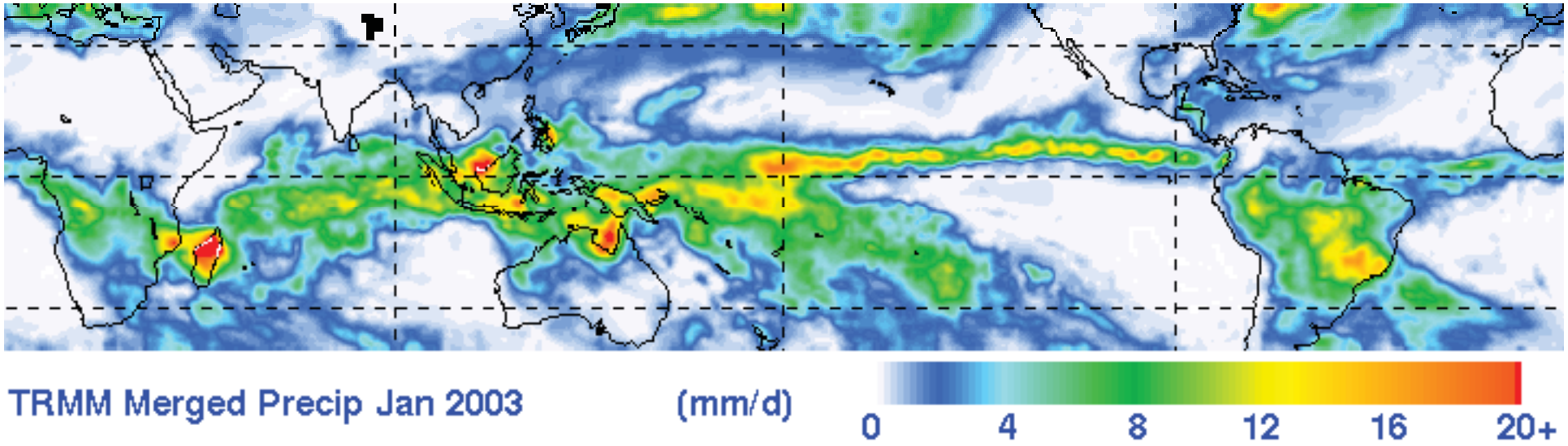


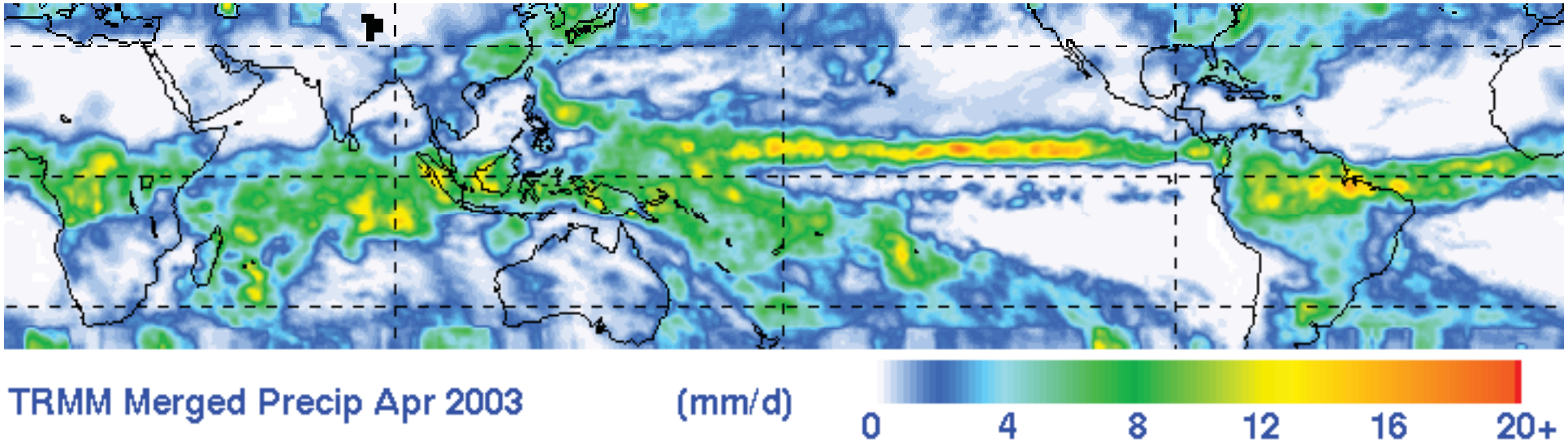
Div. Wind (vectors, largest around 15 m s^{-1})

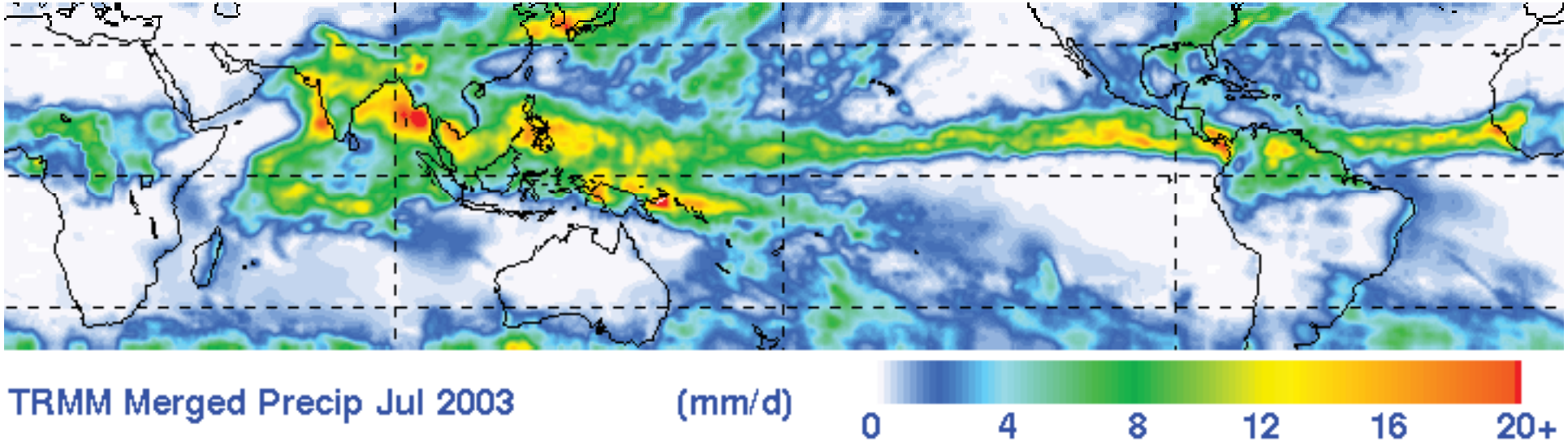
OLR (shading at 10 W s^{-2} intervals)

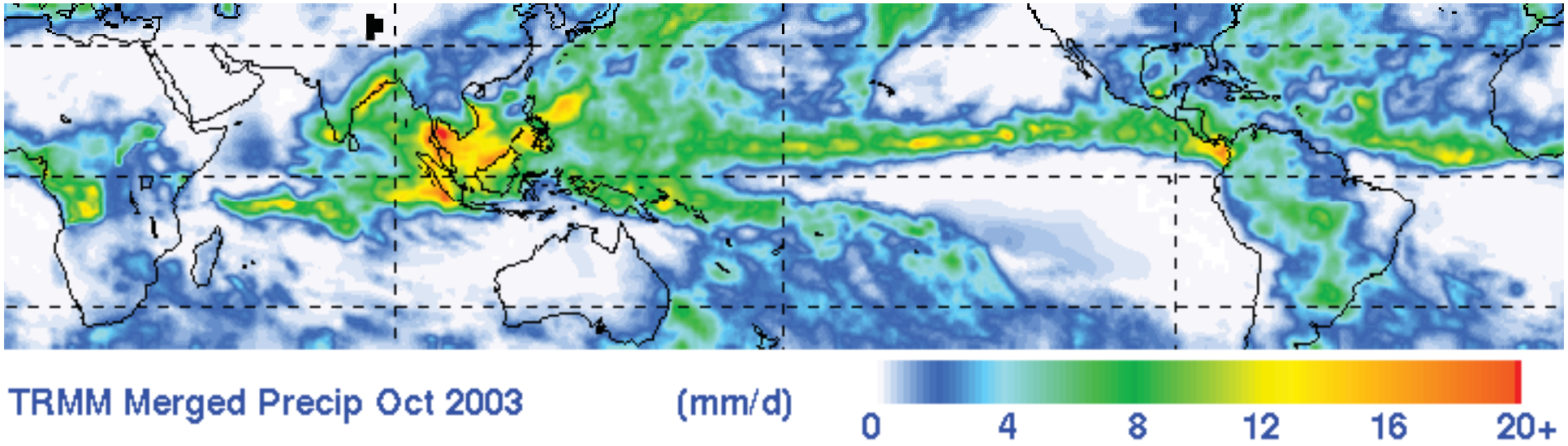
Observed Zonal Mean Monsoon Flow



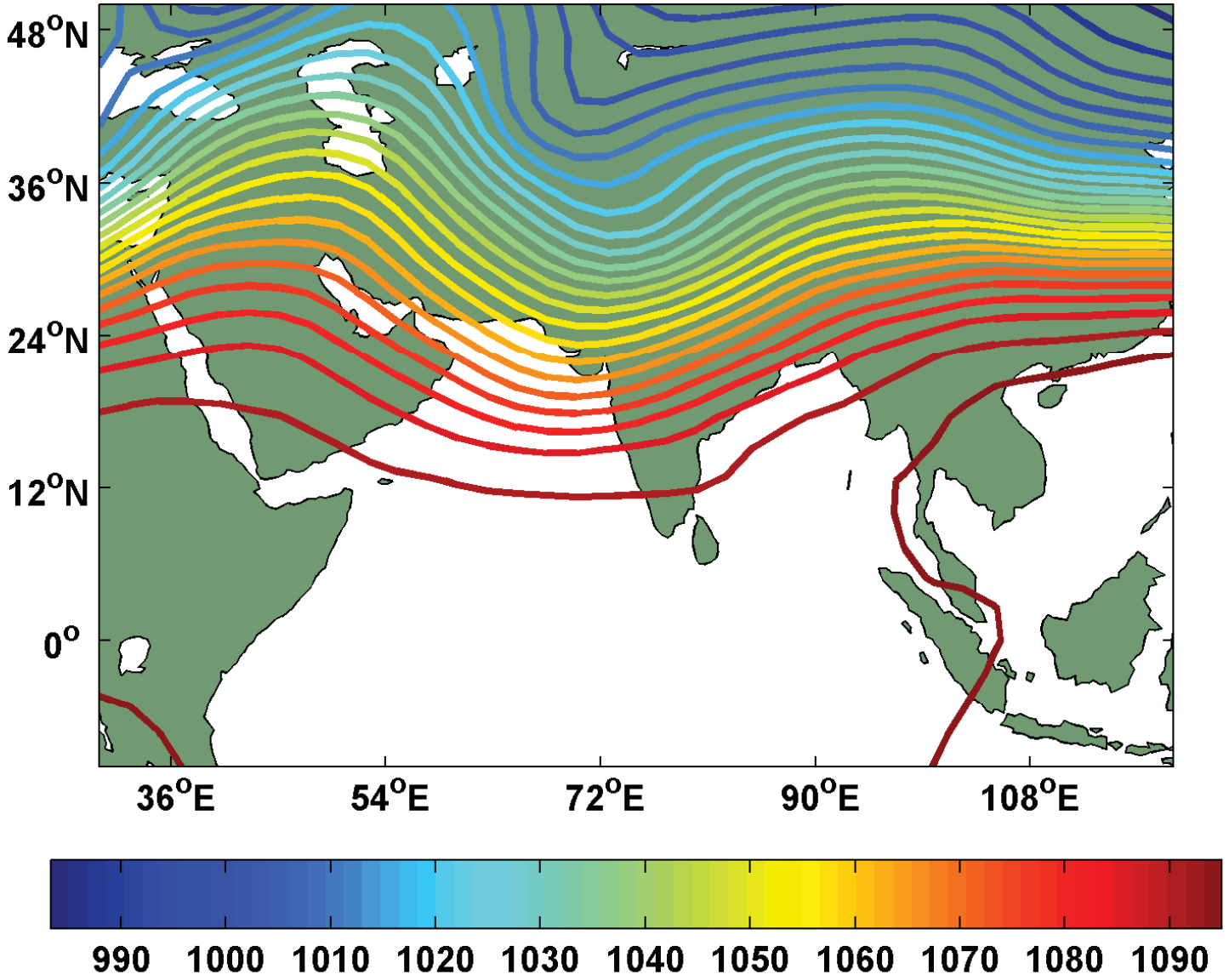

TRMM Merged Precip Jan 2003
(mm/d)
0
4
8
12
16
20+


TRMM Merged Precip Apr 2003
(mm/d)
0
4
8
12
16
20+

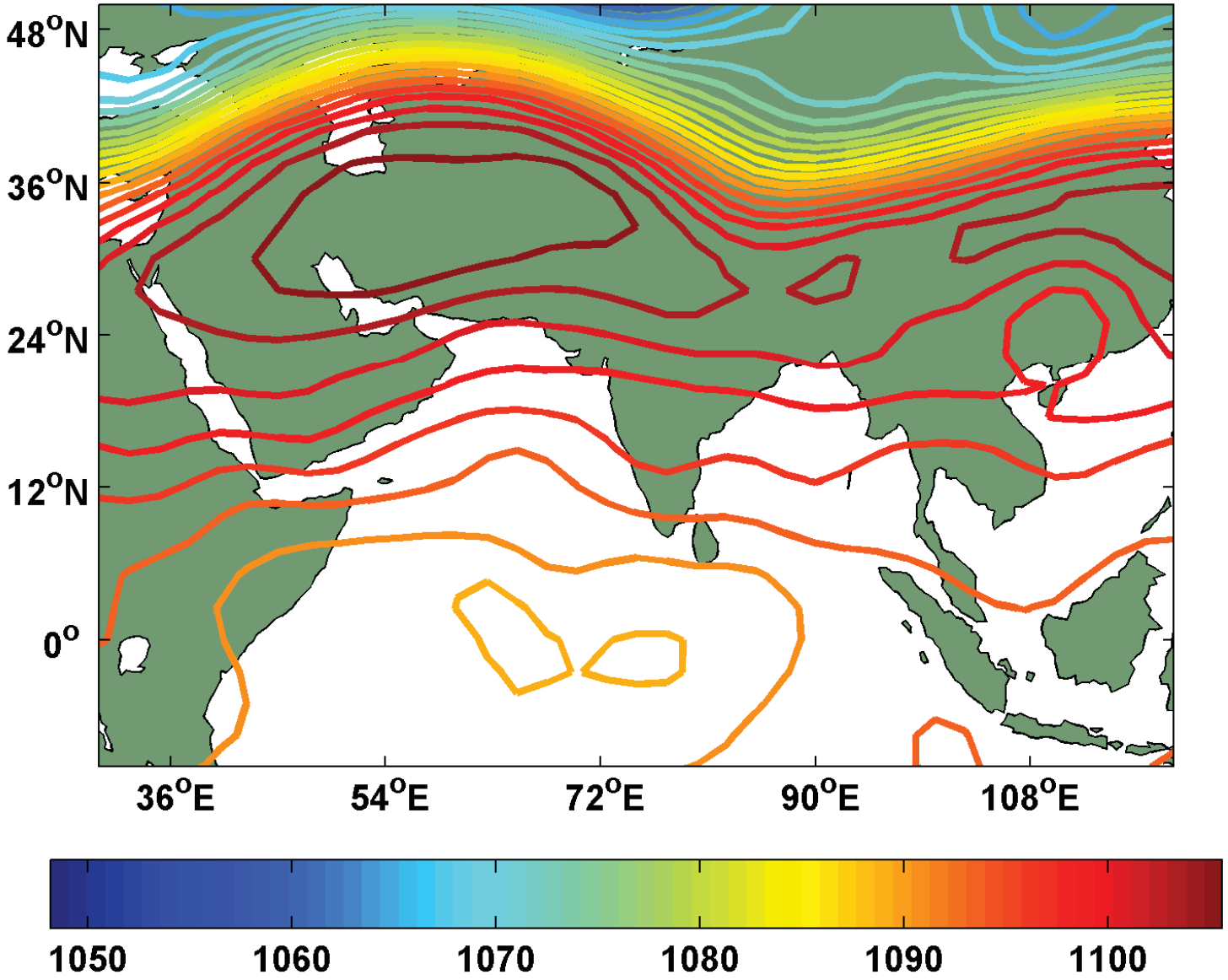

TRMM Merged Precip Jul 2003
(mm/d)
0
4
8
12
16
20+


TRMM Merged Precip Oct 2003
(mm/d)
0
4
8
12
16
20+

250 hPa heights, 15 January 1995



250 hPa heights, 15 July 1995



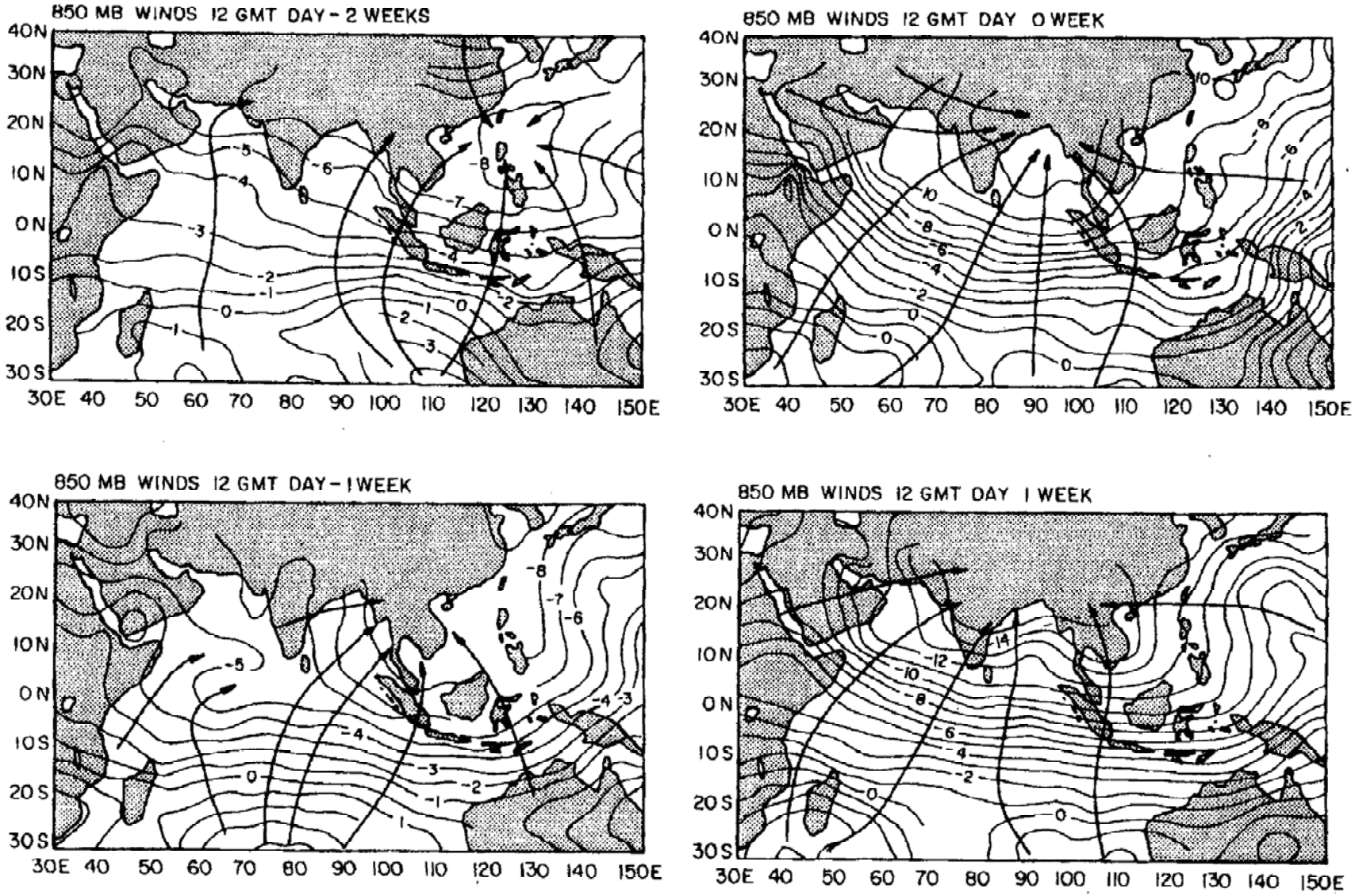
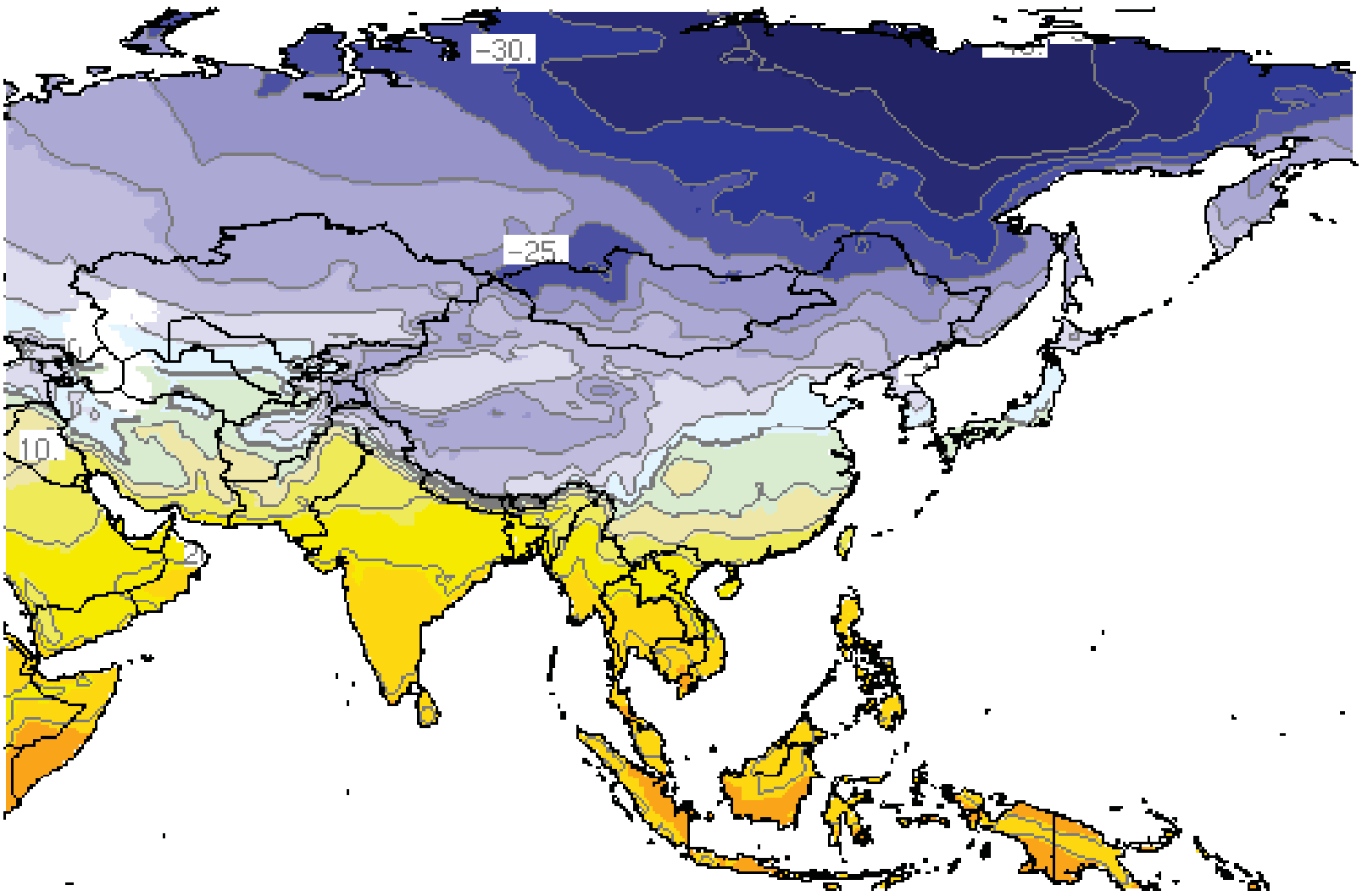


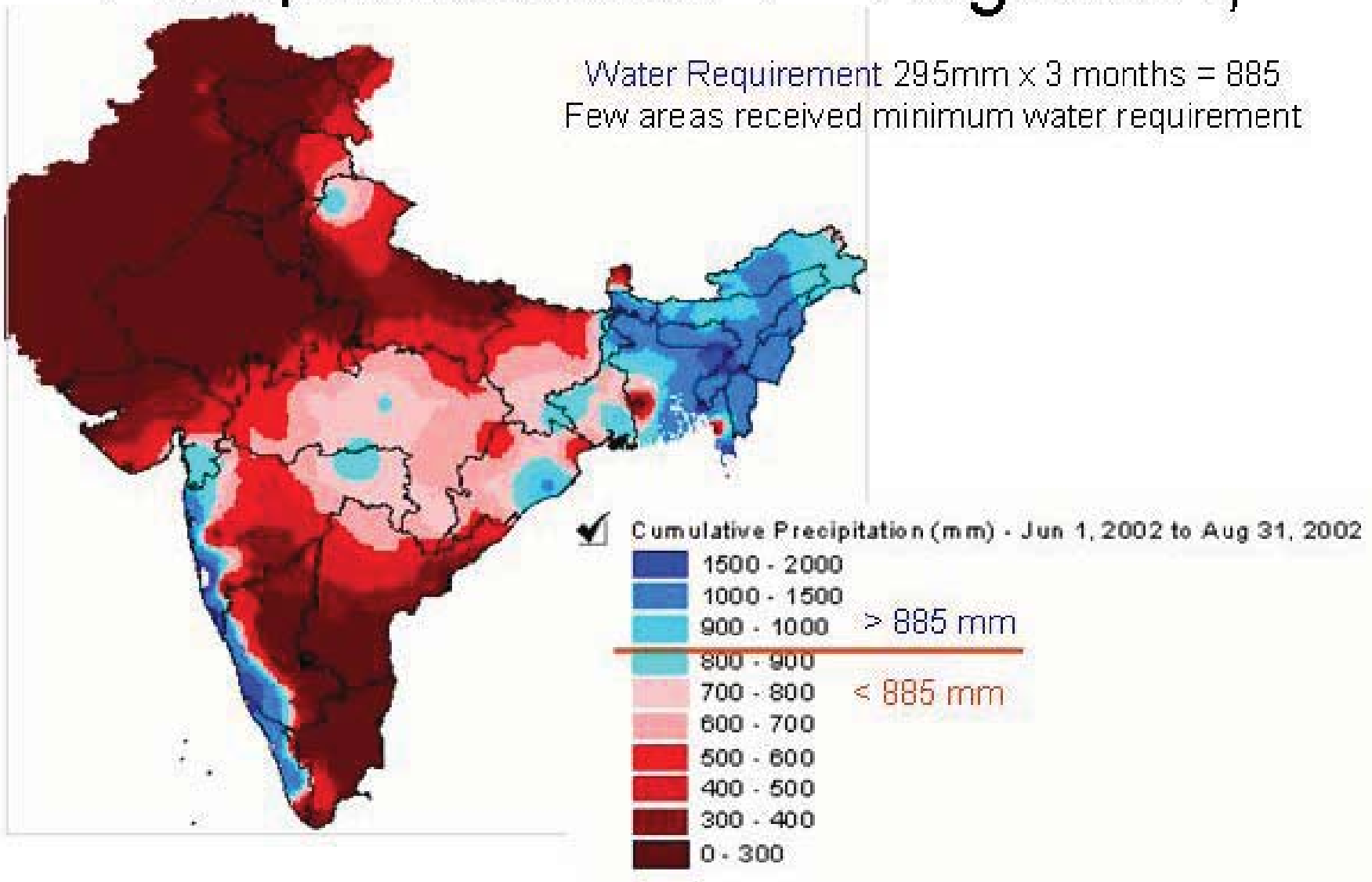
Fig. 1.5. The evolution of the velocity potential at 850 mb at two weeks prior to the onset, one week prior to the onset, the week of the onset, and one week after the onset. Selected intervals of 10^5 m^2 s^{-2} for streamlines of the divergent wind are shown by heavy lines.

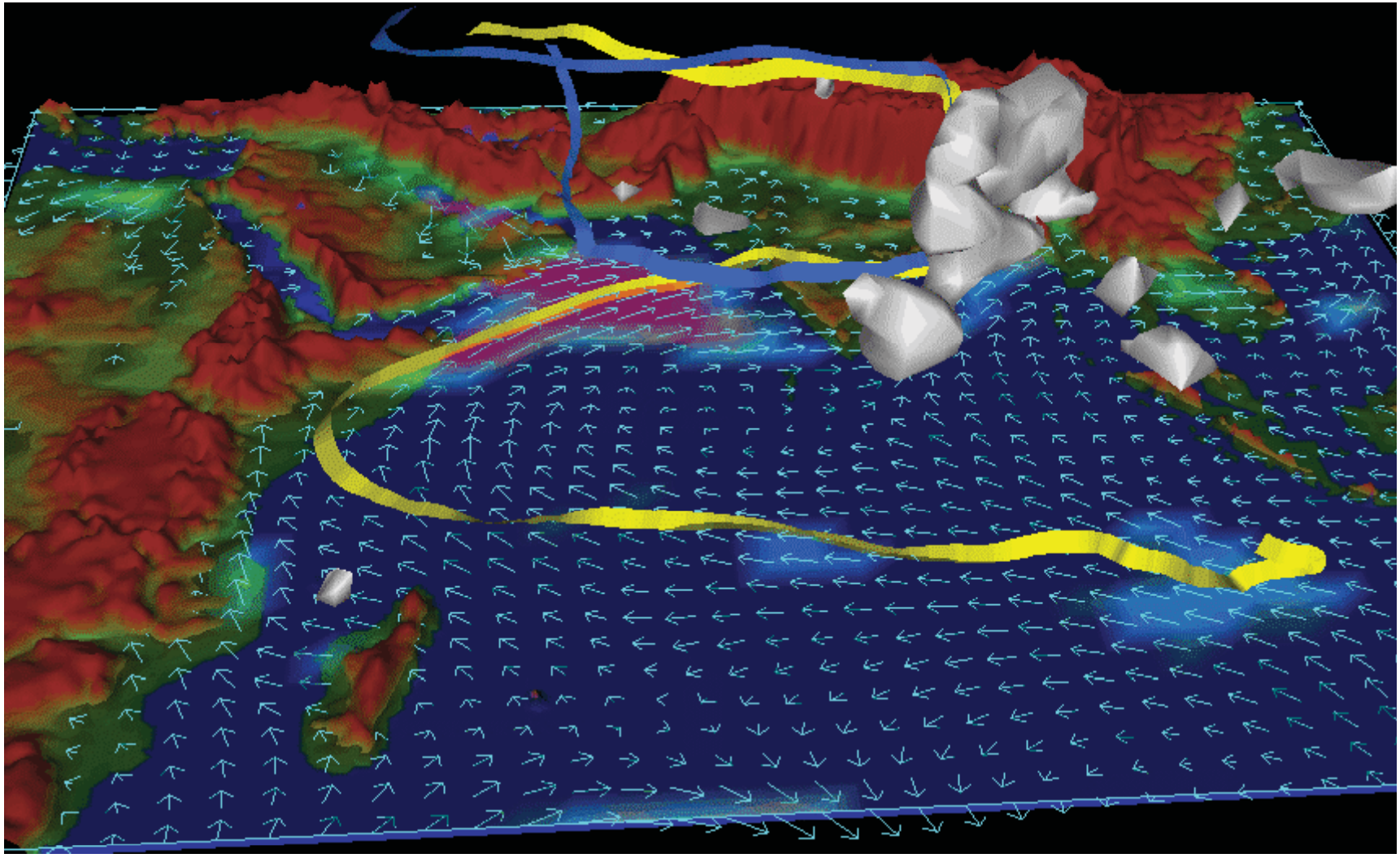


Jan

India Monsoon Cumulative Precipitation June 1 – August 31,

Water Requirement 295mm x 3 months = 885
Few areas received minimum water requirement





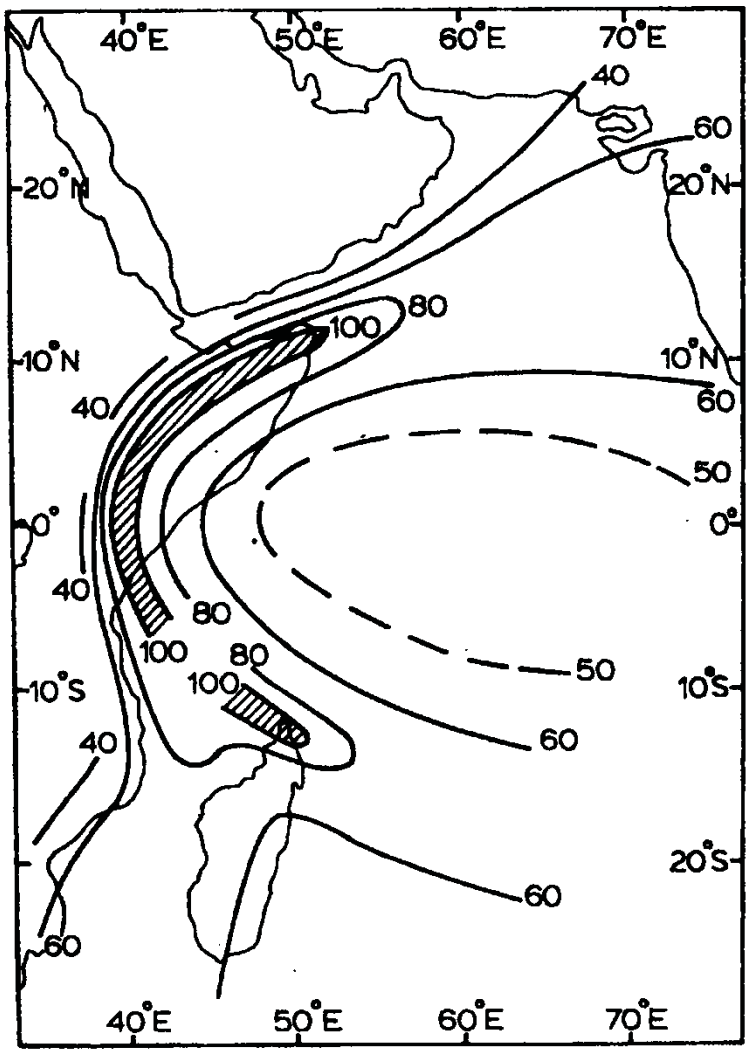


Figure 3
Smoothed isopleths of maximum wind speed (in knots) for the layer 2000–8000 ft (600–2400 m) above MSL during the period of the northern summer monsoon. 1 kt = 0.5148 ms^{-1}.

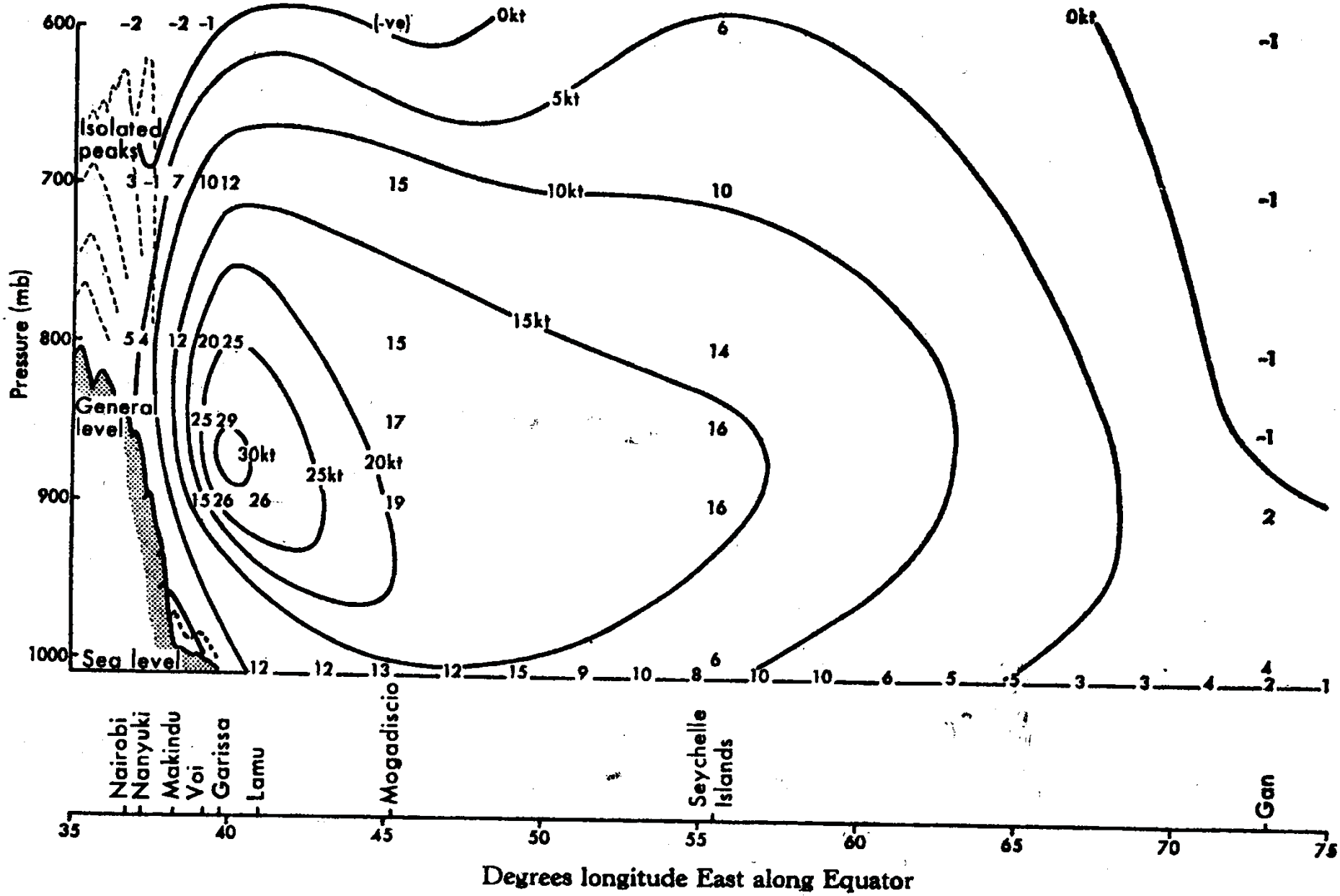


Fig. 4.1 Mean meridional flow at the Equator in July. (Findlater, 1969).

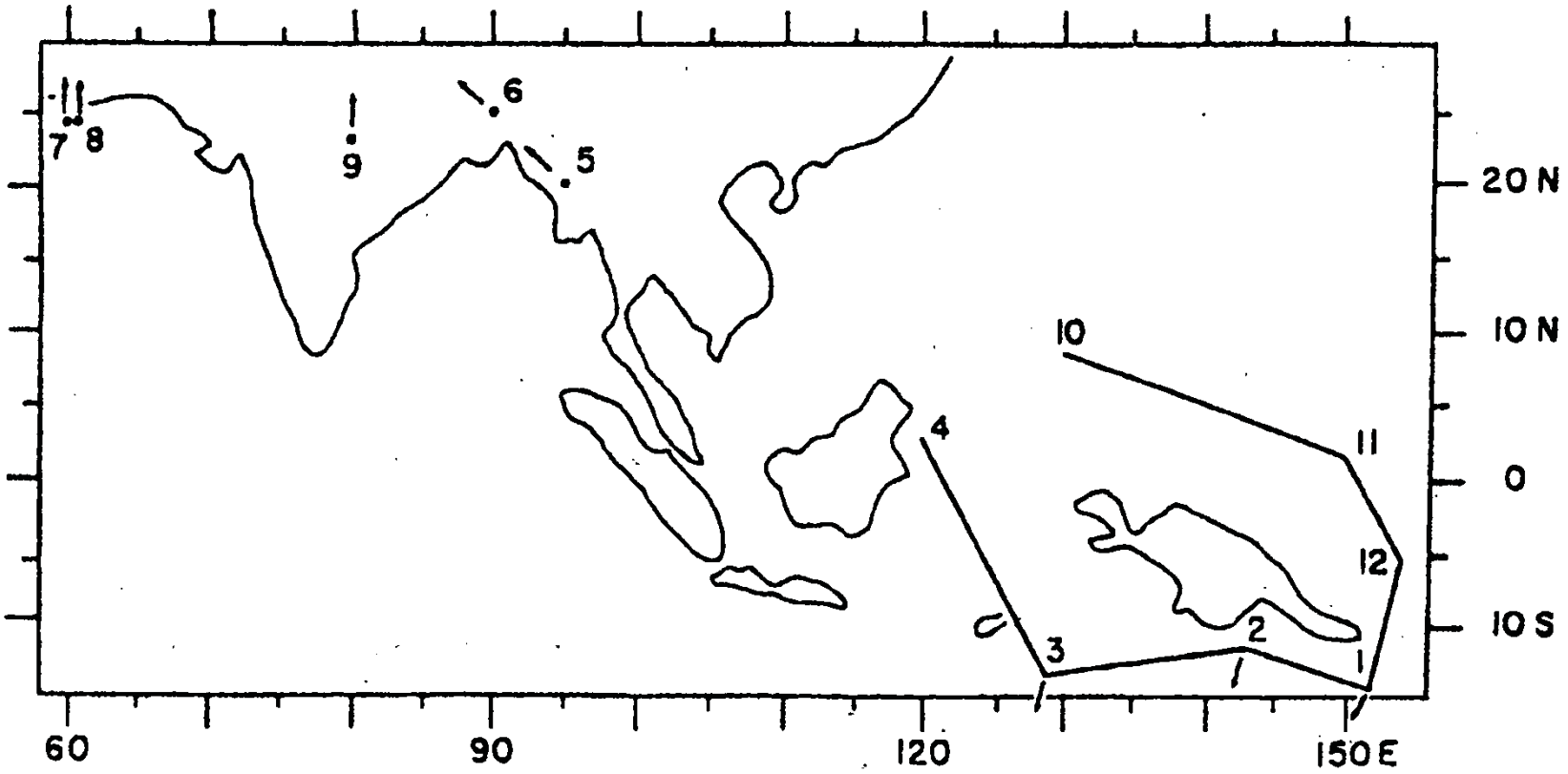


Fig. 6.8.1:2. Annual variation in the latitude and longitude position of low pressure center in the area of Indonesia and the Indian Ocean. The numbers 1 through 12 denote the calendar months. Arrows mean that the lowest pressure is found over land in indicated direction from plotted coordinates. Source: U.S. Navy (1976, 1977, 1979).

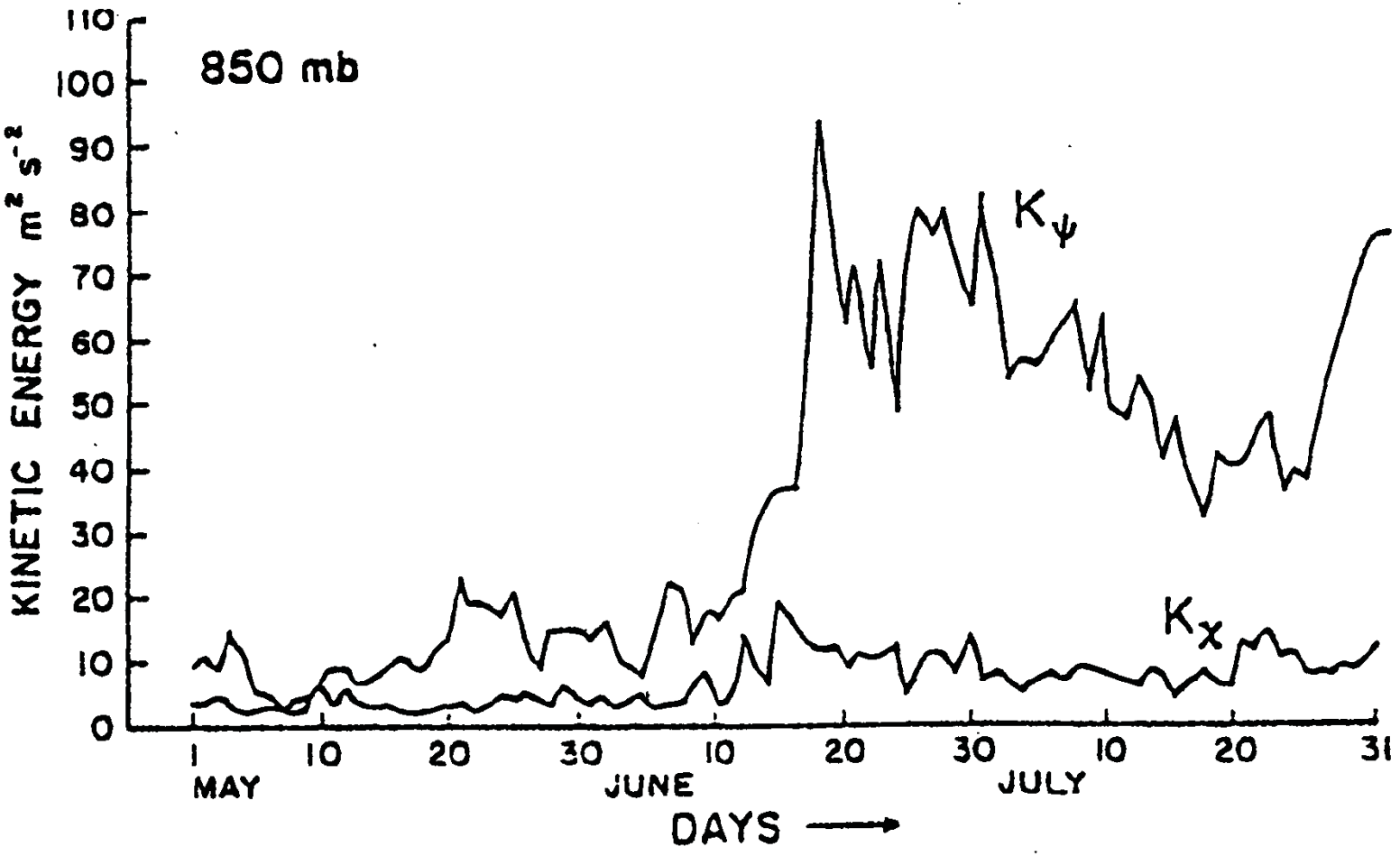


Figure 15.10. The explosive increase of winds over the Arabian Sea during the onset is seen in the time evolution of the rotational (ψ) and the divergent (χ) kinetic energy at 1.5 km above the sea level or the 850-mb level from May through June 1979. It is interesting and worth noting that the total kinetic energy (sum of K_ψ and K_χ) started to increase rapidly around June 11 over the Arabian Sea while the rainfall over central India commenced around June 18.

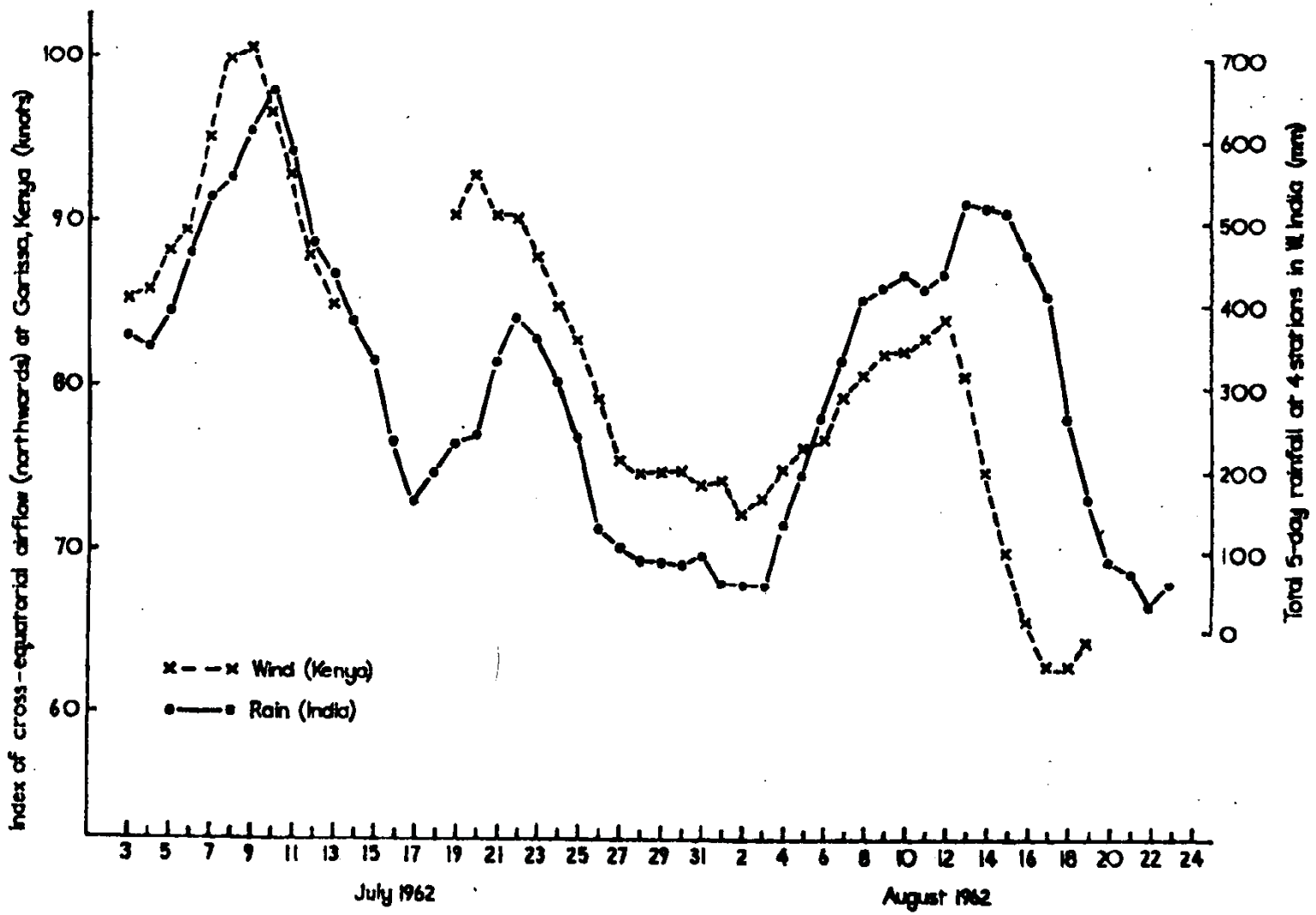
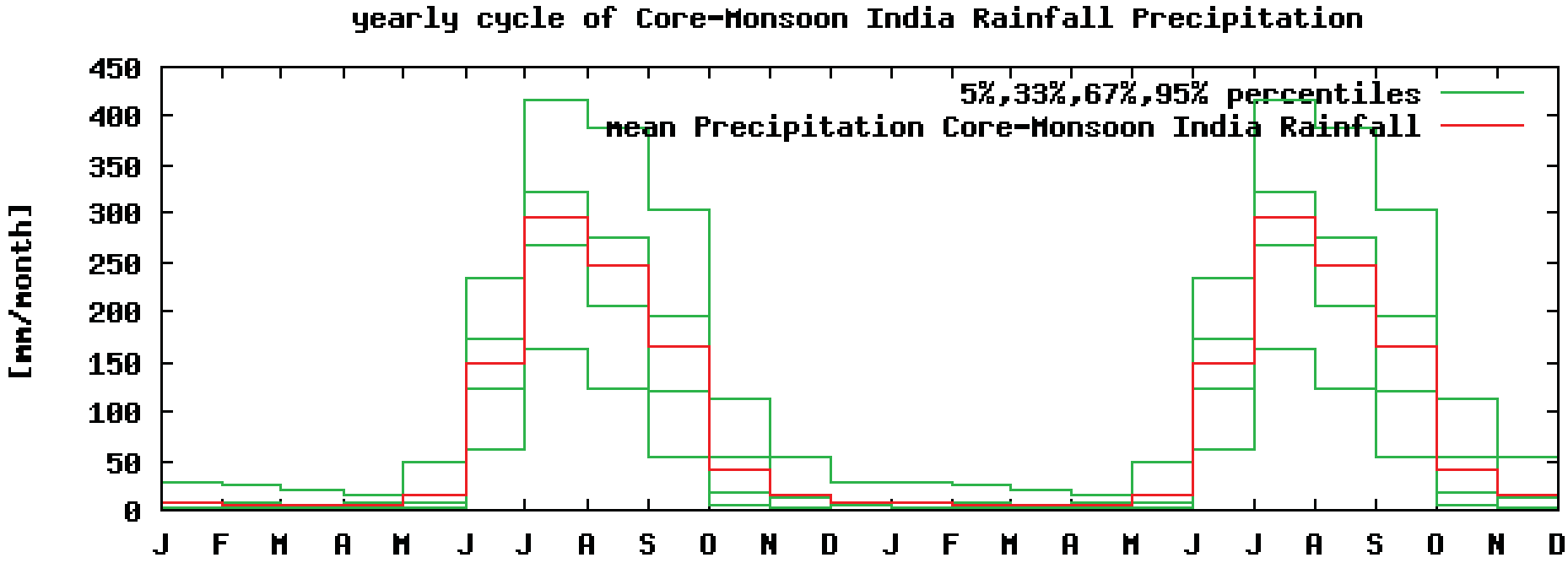
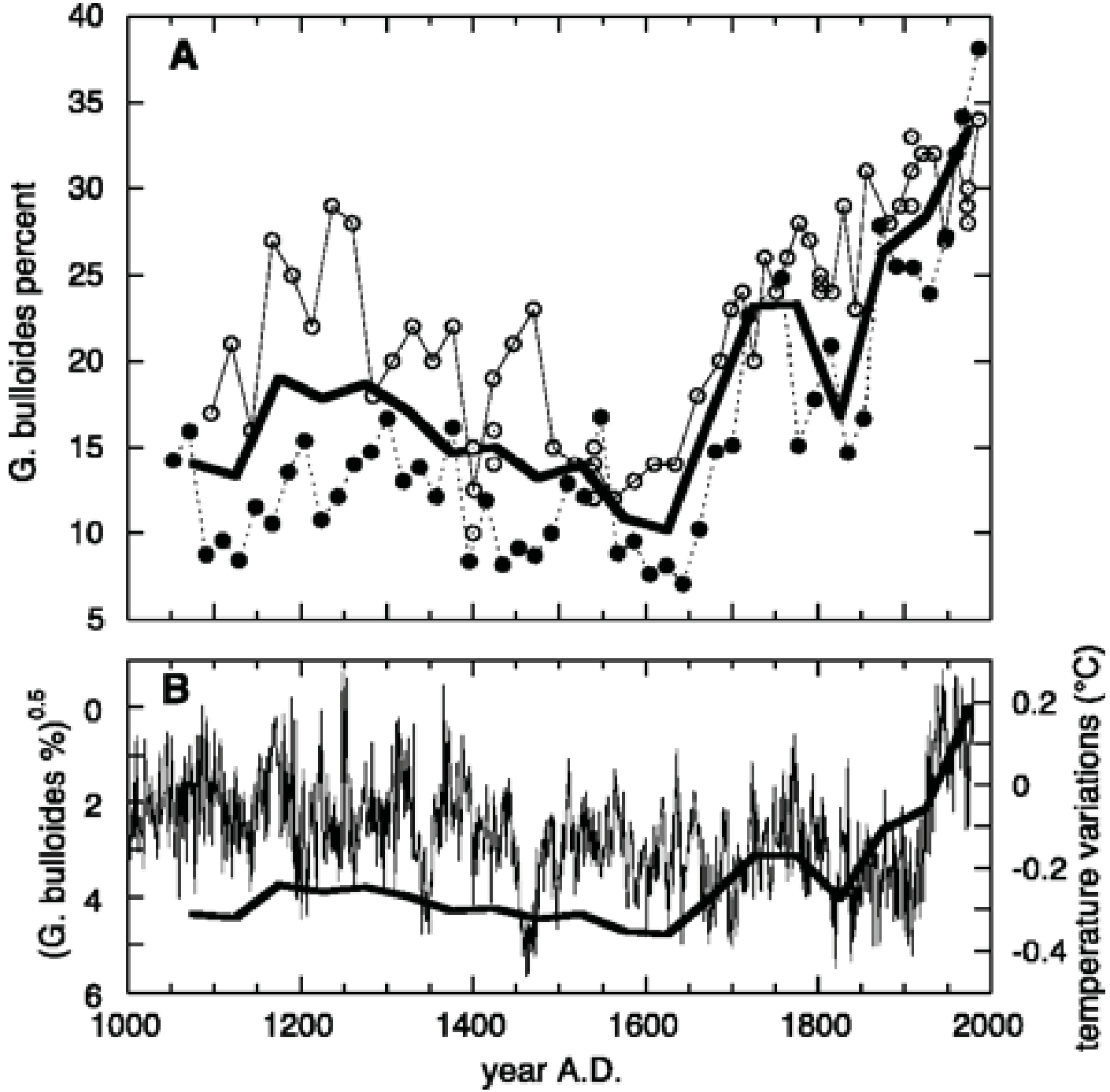


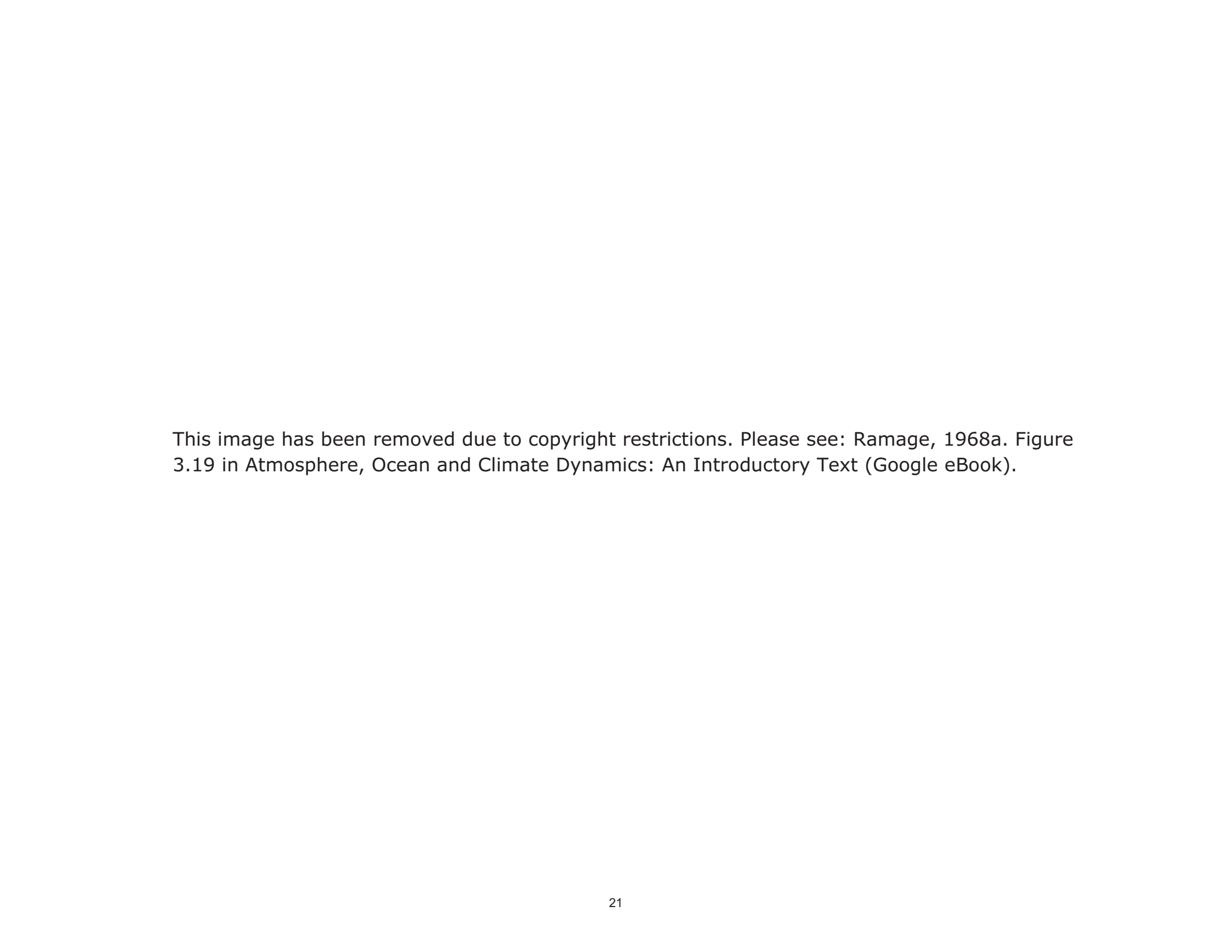
Figure 11

Cross equatorial airflow at Garissa, Kenya in relation to rainfall at four stations in western India. (FINDLATER, 1969.)


yearly cycle of Core-Monsoon India Rainfall Precipitation
5%,33%,67%,95% percentiles
mean Precipitation Core-Monsoon India Rainfall
[mm/month]
450
400
350
300
250
200
150
100
50
0
J F M A M J J A S O N D J F M A M J J A S O N D


A
B
G. bulloides percent
(G. bulloides %)^0.5
temperature variations (°C)
year A.D.
40
35
30
25
20
15
10
5
0
2
4
6
0.2
0
-0.2
-0.4
1000
1200
1400
1600
1800
2000

Monsoon Depressions


This image has been removed due to copyright restrictions. Please see: Ramage, 1968a. Figure 3.19 in Atmosphere, Ocean and Climate Dynamics: An Introductory Text (Google eBook).

12.811 Tropical Meteorology

Spring 2011