

NAME _____

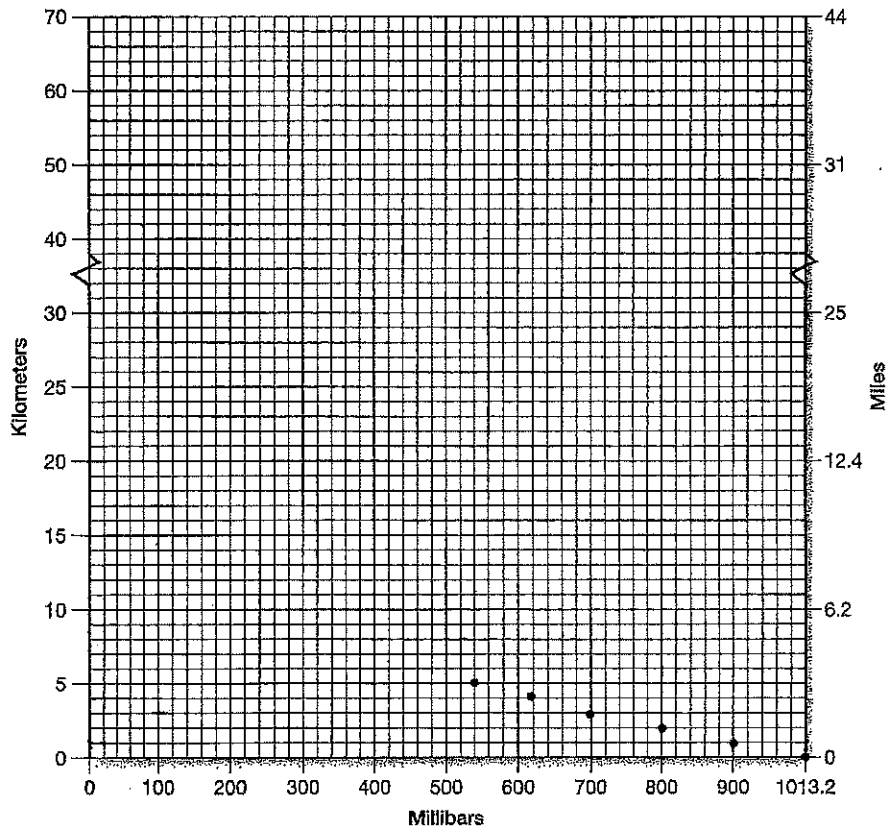
Section 1

To better understand the relationship between altitude and air pressure, you will create an atmospheric pressure profile graph.

- Using the information in Table 10.2, plot the appropriate altitude and pressure on the graph below. Then connect these points to create a curved line

Altitude (km)	Pressure (mb)	Altitude (km)	Pressure (mb)
0.00	1013.25	10.00	264.99
0.50	954.61	12.00	193.99
1.00	898.76	14.00	141.70
1.50	845.59	16.00	103.52
2.00	795.01	18.00	75.65
2.50	746.91	20.00	55.29
3.00	701.21	25.00	25.49
4.00	616.60	30.00	11.97
5.00	540.48	35.00	5.75
6.00	472.17	40.00	2.87
7.00	411.05	50.00	0.79
8.00	356.51	60.00	0.23
9.00	308.00	70.00	0.06

▲Table 10.2 Standard atmosphere for pressure and altitude



2. Using Table 10.2 calculate the difference in pressure for each intervals listed below. The first one has been completed for you.

1km interval difference in pressure:

0 and 1 km 114.49 mb

2 and 3 km _____mb

5 and 6 km _____mb

8 and 9 km _____mb

9 and 10 km _____mb

10 km interval difference in pressure:

0 and 10 km _____mb

10 and 20 km _____mb

20 and 30 km _____mb

40 and 50 km _____mb

60 and 70 km _____mb

3. Does this the pressure decrease at a constant rate? _____
4. How do you explain this?

Section 2: Air Pressure Maps

Two different global pressure maps have been provided: The map in Figure 7.2 represents global pressure during the month of January. The map in Figure 7.3 shows global pressure during the month of July (these maps can also be viewed in chapter 6 of your textbook). You are going to create a line graph based on the pressure at a specific LATITUDE as you pass through different longitudes (for both January and July) AND a line graph for pressure at a specific LONGITUDE as you pass through different latitudes (for both January and July). You will make a total of 4 graphs.

Here are the lines of latitude and longitude that you will use to plot pressure.

5. Graph 7.4a: January along the 50° N line of latitude
6. Graph 7.4b: January along the 90° W line of longitude
7. Graph 7.5a: July along the 40° N line of latitude
8. Graph 7.5b: July along the 60° E line of longitude

How to read the maps and plot the pressure:

The numbers on the right and left represent latitude, the lines at the top and the bottom represent longitude. The curvy lines on the map are isobars, of equal intervals (even though not every line is marked you can figure out their value by looking at the ones above and below it). To complete my first graph: Graph 7.4a (already done for you) here are the steps I used:

Step 1: drew a line from right to left at 50° N on map Figure 7.2.

Step 2: I then put a point at each longitude.

Step 3: I then deciphered what the pressure was at that point based on the what the isobars say.

Step 4: I then plotted those points onto graph 7.4a (some might be slightly off)

Step 5: I then connected the points to make a curved line.

Now complete the rest of the graphs and answer questions 10-14 on the next page.

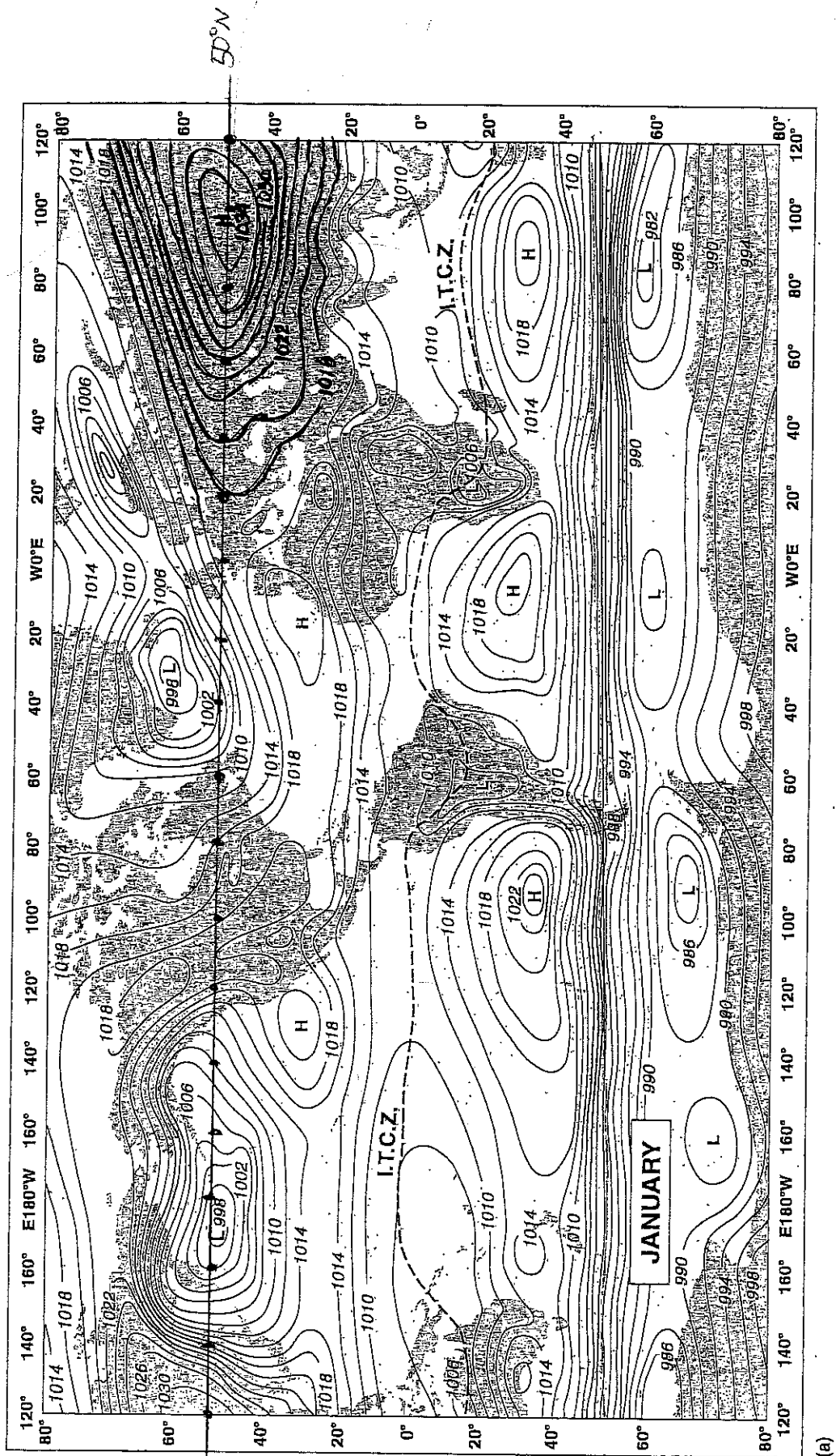


Figure 7.2
Global barometric pressure for January

(a)

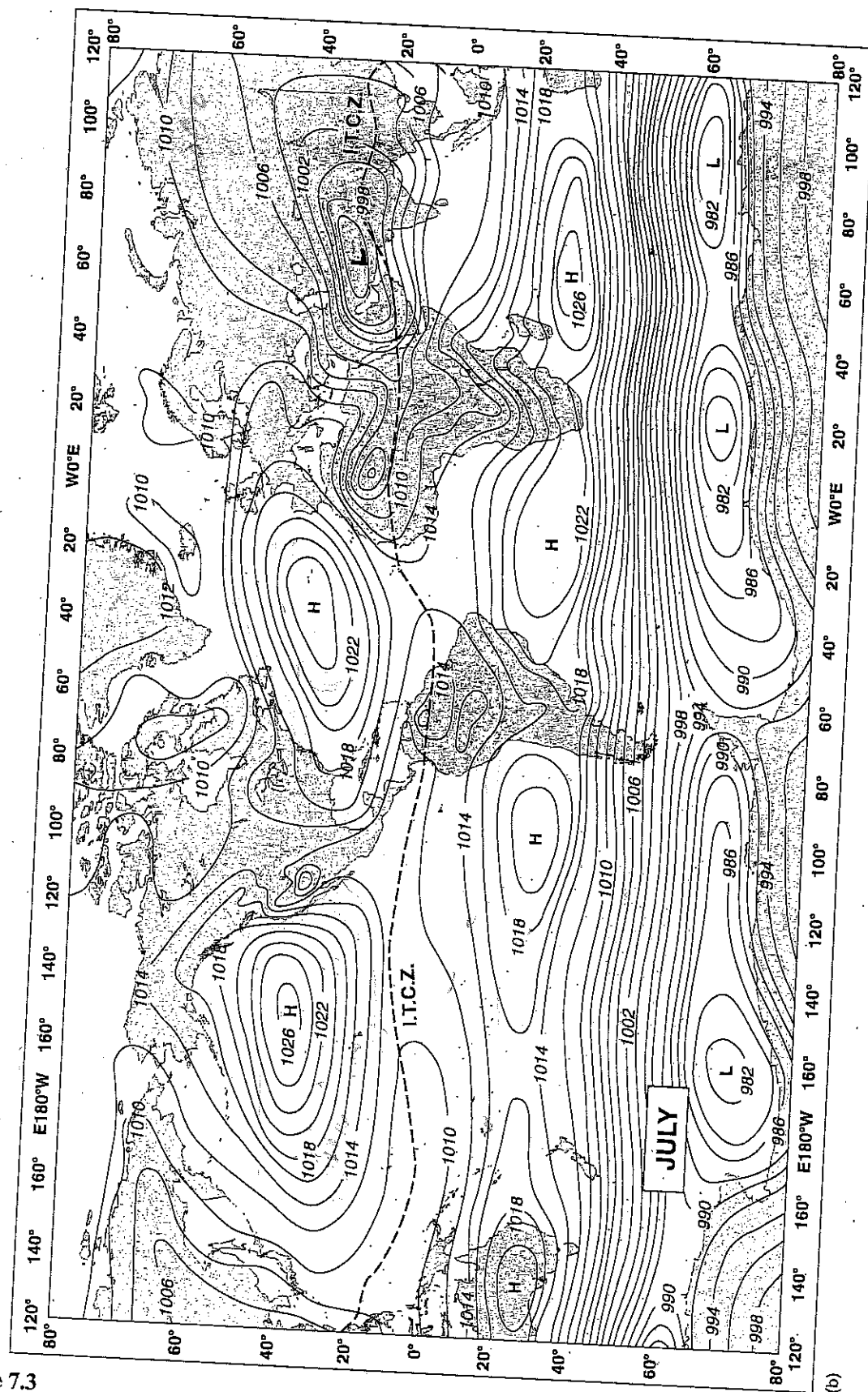


Figure 7.3
Global barometric pressure for July

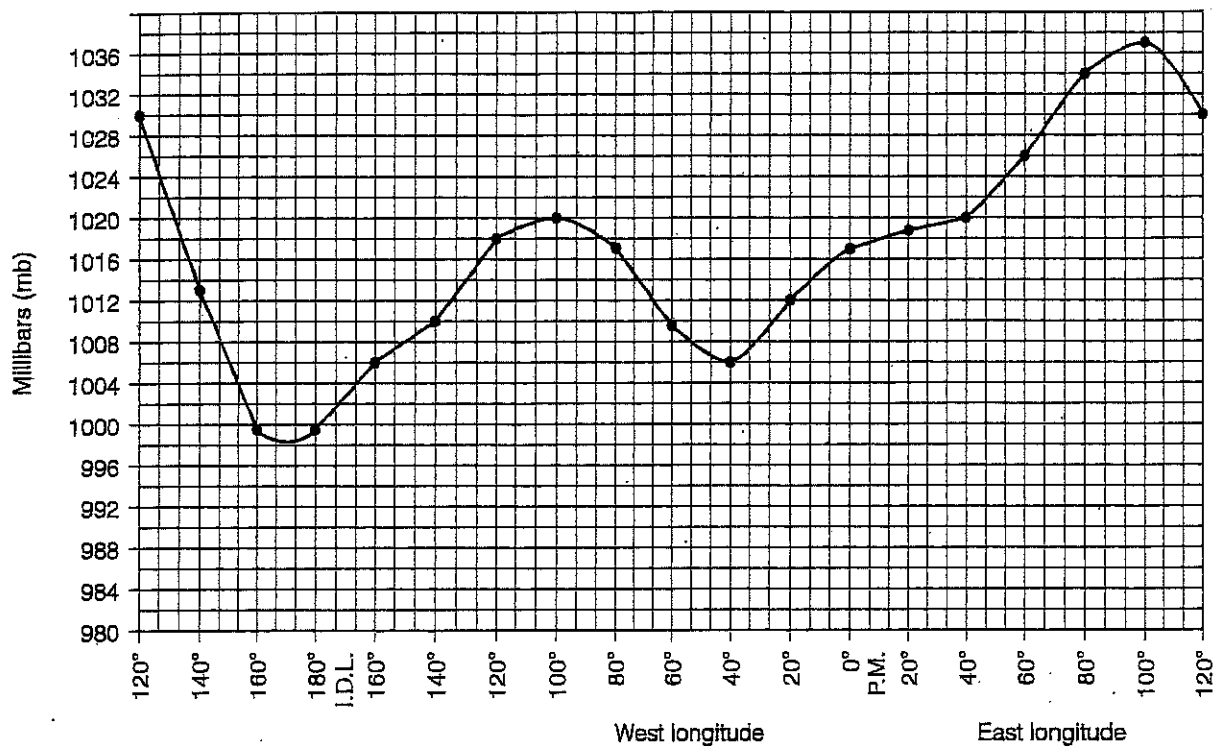


Figure 7.4a
(a) Plot of average air pressure along 50° N latitude for January.

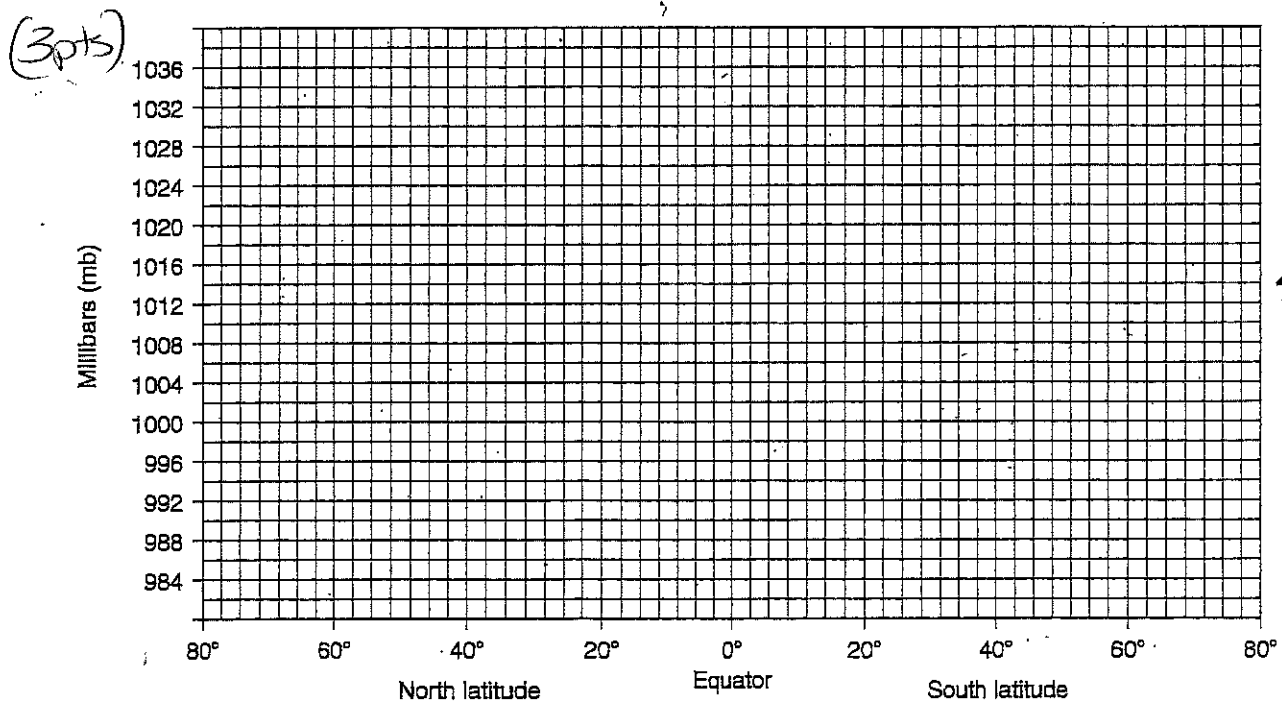


Figure 7.4b
(b) Plot of average air pressure along 90° W longitude for January.

3 pts

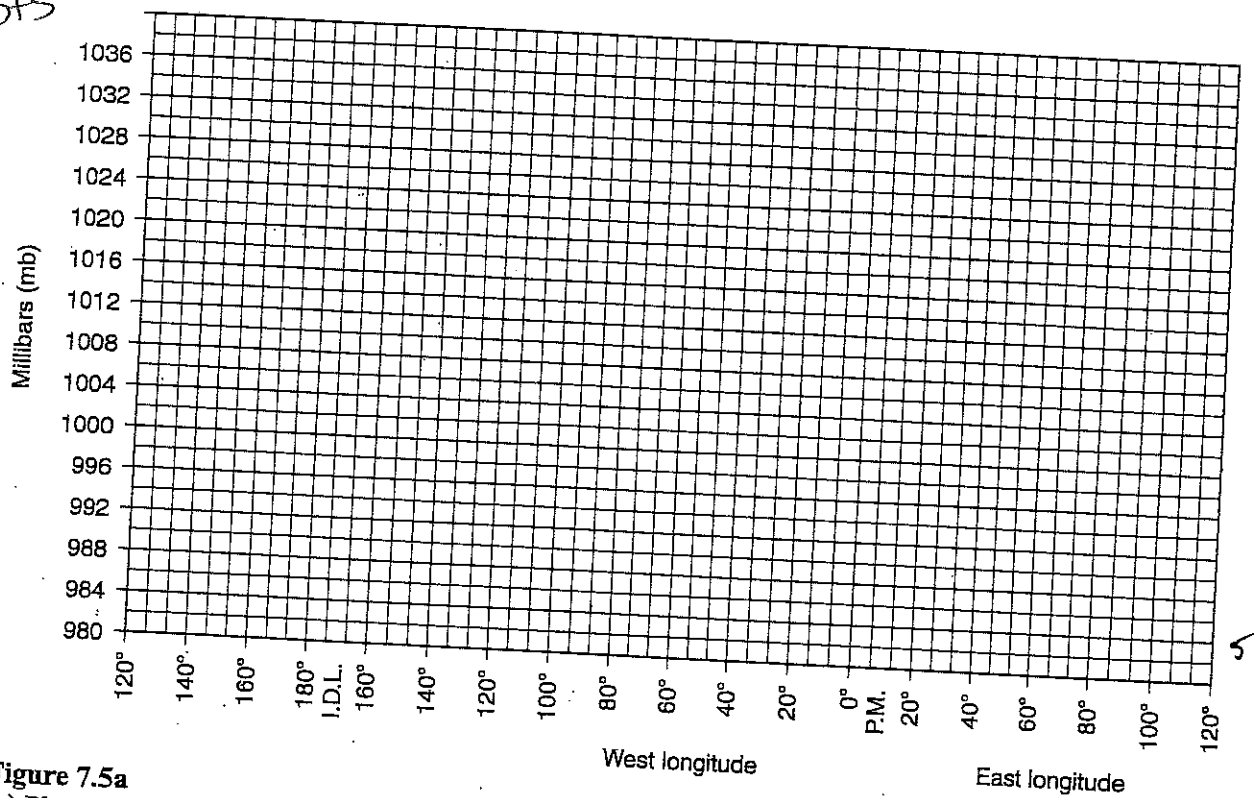


Figure 7.5a

(a) Plot of average air pressure along 40° N latitude for July.

(3 pts)

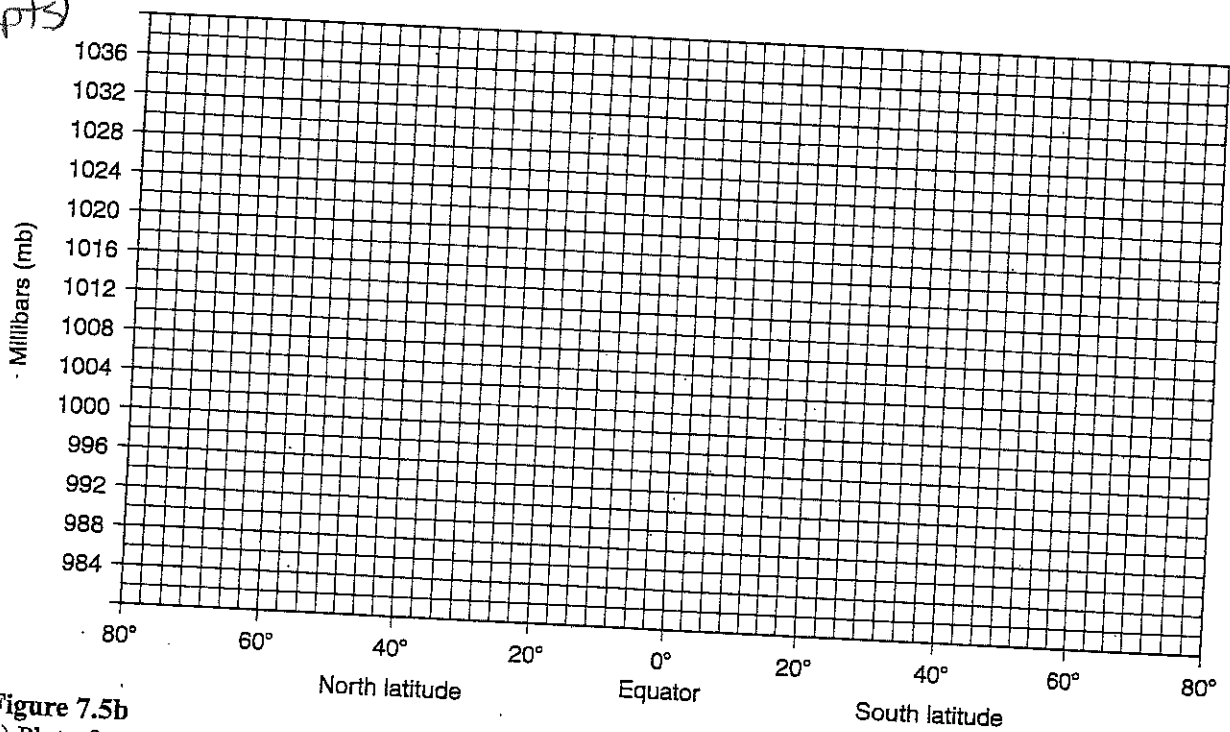


Figure 7.5b

b) Plot of average air pressure along 60° E longitude for July.

9. What is the interval of the isobars? (how many millibars of pressure are between each line?)

_____mb

10. In south and central Asia (around India; between 20°N-50°N & 60°E-120°E), describe pressure (high or low), the velocity (speed) and direction of airflow during both months between land and the Indian Ocean (meaning is air blowing inland from the ocean, or offshore from land).

January_____

July_____

11. What secondary form of air circulation accounts for the drastic change in pressure?

12. During the January in the Southern Hemisphere, describe the pressure gradient and wind speed around 50°S.

13. What is likely the main reason we don't see a similar pattern in the Northern Hemisphere at similar latitudes?
