

Interpretation of Daily Weather Report

The weather map shows the weather conditions as recorded at 08.30 hours IST on Saturday 6th July 1985. The weather experienced on this day shows the typical conditions of the South West Monsoon season.

Pressure Conditions:

Location of Bar High: A belt of relatively high pressure is recorded over the southern part of the Arabian Sea, Andaman Sea and the Indian Ocean. It is demarcated by 1010 mb. The broad latitudinal orientation of this belt over the oceanic part is typical of this season.

Location of Bar low: There are two distinct low pressure cells. The low pressure located over northwestern Pakistan is bounded by 992 mb while the low pressure cell located over Bihar and Jharkhand is bounded by the 998 mb.

Trend of Isobars:

The orientation of the isobars reflects not only the thermal conditions but also the factors of prevailing air mass circulation pattern. The following trends have been identified.

- a) The isobars generally trend west to east over the Peninsular India.
- b) Over the northern part of Bay of Bengal, Orissa, South West Bengal and Bangladesh the isobars trend from south west to north east.
- c) Over Assam, Meghalaya, Sikkim the isobars trend north to south.
- d) Over Uttar Pradesh, Punjab, Haryana and Rajasthan the isobars trend from west to north in a circular pattern.
- e) Along the Indo-Gangetic plain there is a trough of low pressure.

Pressure Gradient:

In general pressure decreases from south to north over the Arabian Sea and Bay of Bengal. The pressure decreases from south east to north west over the Indo Gangetic plain. The magnitude of the pressure gradient depends on the spacing of the isobars. The closer the isobars are the steeper is the gradient while the further apart the isobars are the lower is the pressure gradient. It can be seen that the pressure gradient is steepest along the Arabian Sea from south to north but gentle over the Bay of Bengal. The pressure gradient is moderate over the landmass of India. A pressure gradient has been drawn from Quetta in North West Pakistan to Rangoon in Myanmar. It can be seen that the lowest pressure is seen in the NW part with a steep pressure gradient. The gradient gently rises over the Indo Gangetic plain. There is a secondary low pressure cell over Bihar and then the pressure gradient rises sharply to 1008 mb at Rangoon.

WIND CONDITIONS

Wind Direction: Normally winds blow from high pressure to low pressure. The direction of surface winds is influenced by the pressure gradient force, Coriolis force and surface features. It can be seen that 15 stations recorded calm conditions. The greatest number of stations recorded westerly and south westerly winds being 29 and 26 respectively. The remaining stations recorded mostly local winds blowing either from the north, east, southeast, north east and north west. The effect of the Arabian Sea branch of

the monsoons and the Bay of Bengal branch of the monsoons can be seen.

WIND VELOCITY:

The velocity of winds depends on the pressure gradient force. It is also influenced by the geostrophic conditions, the prevailing wind systems and occurrence of cyclonic components if any. In the season of southwest monsoon the wind velocity is mainly due to flow of the equatorial monsoon air mass. The wind speed varies from less than 5 knots per hour to over 20 knots per hour. Most of the stations on the land area have wind speeds of less than 10 knots per hour. The highest velocity of 20 knots per hour has been recorded over the Arabian Sea, Indian Ocean and the Andaman and Nicobar Islands. Near Kerala, and south eastern Tamil Nadu wind speeds of over 15 knots have been recorded.

SKY CONDITIONS

This is a season of south westerly monsoon and the NLM or Northern Limit of the Monsoon passes over Maharashtra, Madhya Pradesh and Uttar Pradesh. The sky is totally overcast in about 25 stations indicating there is a high probability of rain. The remaining stations were covered with low clouds from $\frac{7}{8}$ to $\frac{4}{8}$ or $\frac{1}{2}$. Clear skies were seen over 4 stations mainly in the North Western part of India and Pakistan. Clear skies were also observed over the sea near Manipalnam.

PRECIPITATION:

During the past twenty four hours, rainfall has been widespread over the North Eastern Hill States. The highest rainfall of 30 cm. was recorded in the extreme north of Assam, while Meghalaya recorded 7 cm. Sukkein and other

parts of Assam also recorded 7 cm of rainfall. Raipur in Chhattisgarh recorded 8 cm of rainfall.

SEA CONDITIONS.

Due to the presence of strong winds over the sea the sea conditions are generally high particularly near Vishakhapatnam. Moderate sea conditions are seen off the coast of Kerala. Elsewhere the sea is calm.

OTHER WEATHER PHENOMENA -

During this season the Northern limit of the monsoon can be seen. Amongst seen Maharashtra, Madhya Pradesh and Uttar Pradesh. This indicates the portion upto which the monsoon winds have progressed. High is seen over North Western India.

TEMPERATURE DEPARTURES

The departure of maximum temperatures from normal indicate higher than normal temperatures over North Western India.

The highest departure of +6 is seen where there is a low pressure cell. On the contrary over the rest of India where the monsoon has advanced the temperatures are normal or about 2°C less than normal. The departure

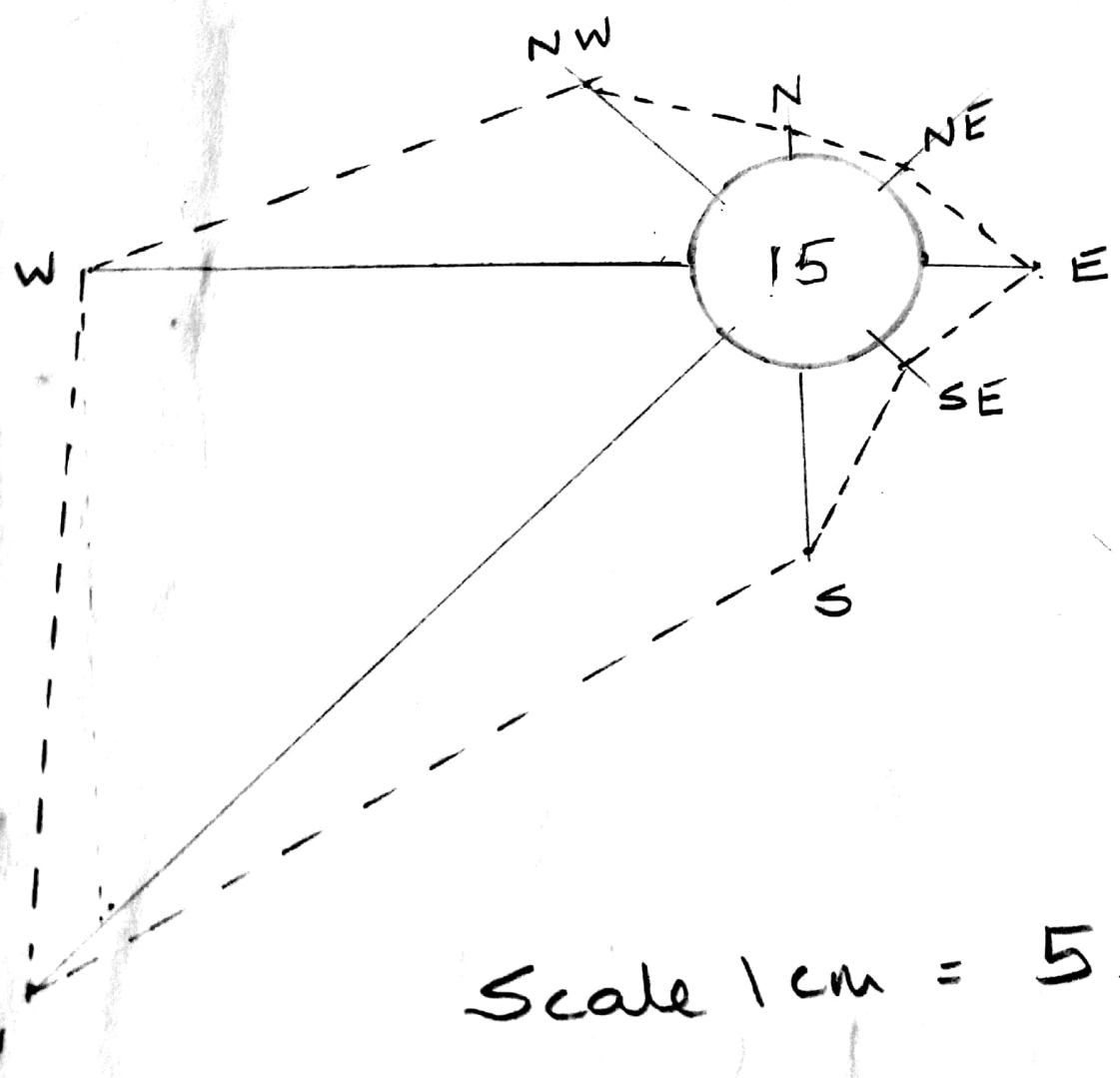
of minimum temperature from normal shows the same trend with +4°C over North Western India and Pakistan and 0 to -2°C over south, central and eastern India.

CORRELATION BETWEEN THE WEATHER ELEMENTS.

The low pressure over the north western part of the subcontinent is thermal in nature. The high temperatures lead to very low pressures. This low pressure attracts the winds from the high pressure zones over the Arabian Sea, Bay of Bengal and Indian Ocean. The two branches of the South West monsoon can be clearly identified. The places where the

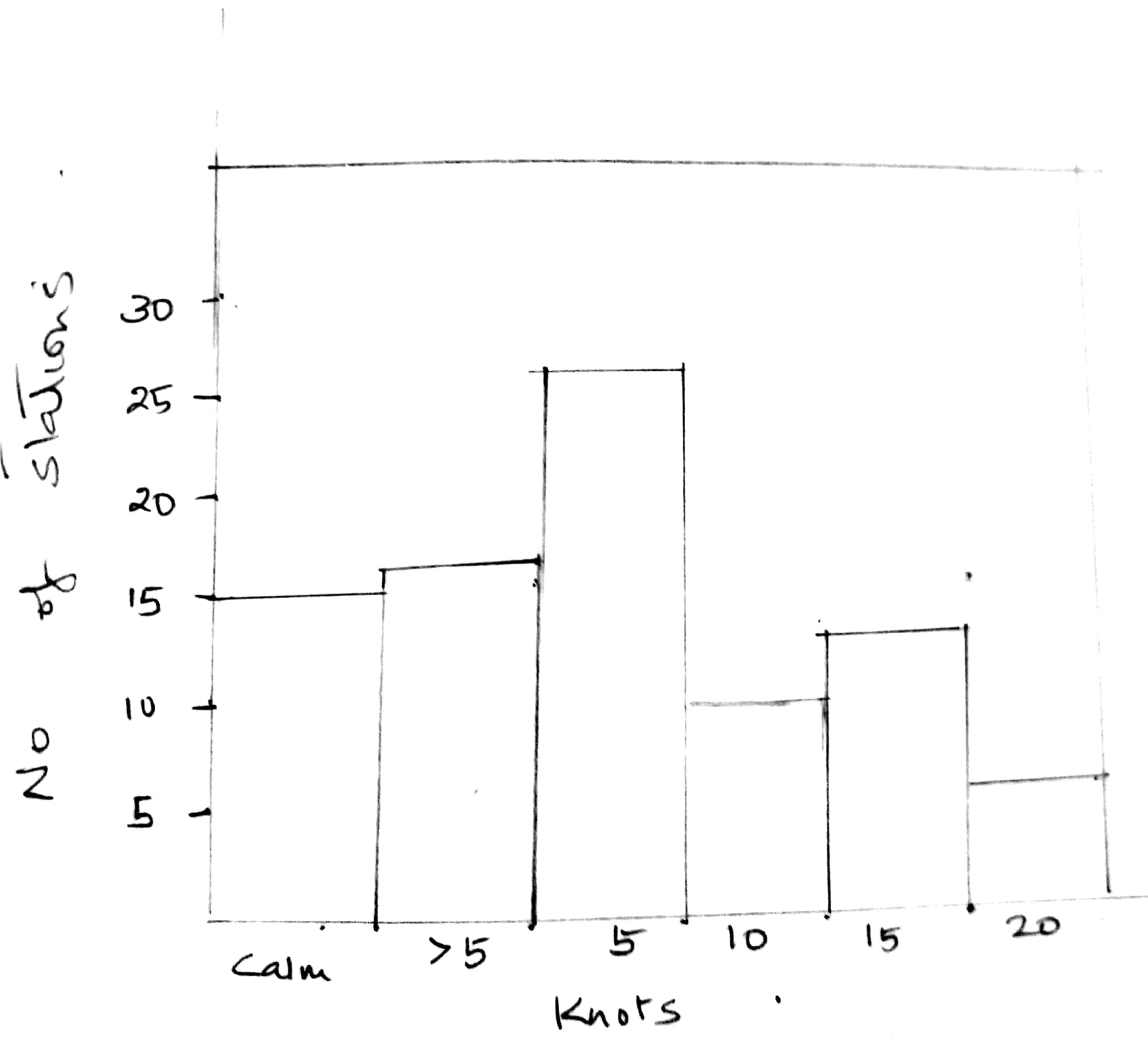
monsoon winds have advanced are characterized by overcast skies. There has been occurrences of heavy rainfall over North East India and South ~~Western~~ Central India. The rest of India have occurrences of haze particularly over north west India. This weather map represents the general weather conditions prevalent in the rainy season.

WIND ROSE



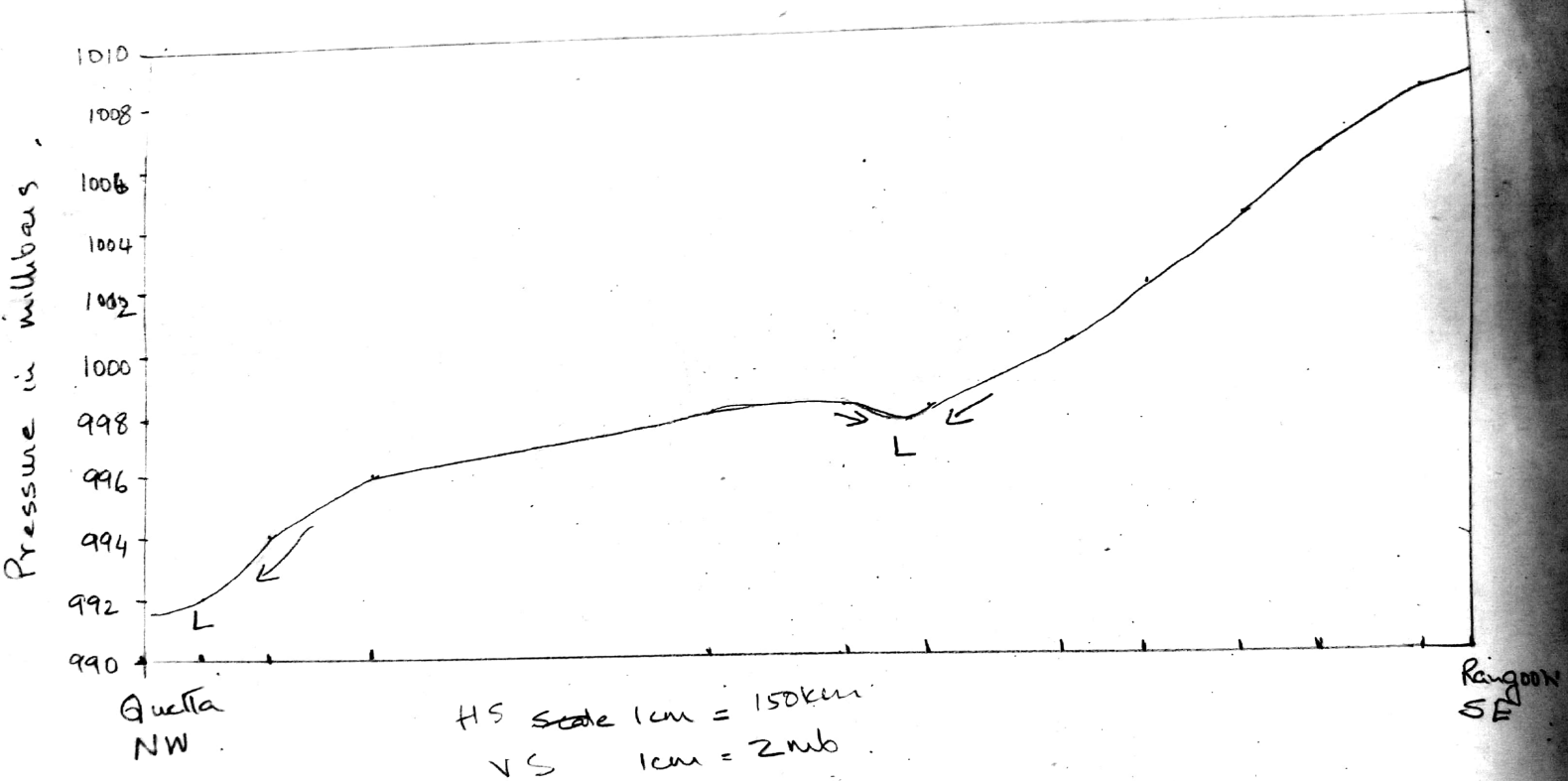
Scale 1 cm = 5 stations

WIND VELOCITY



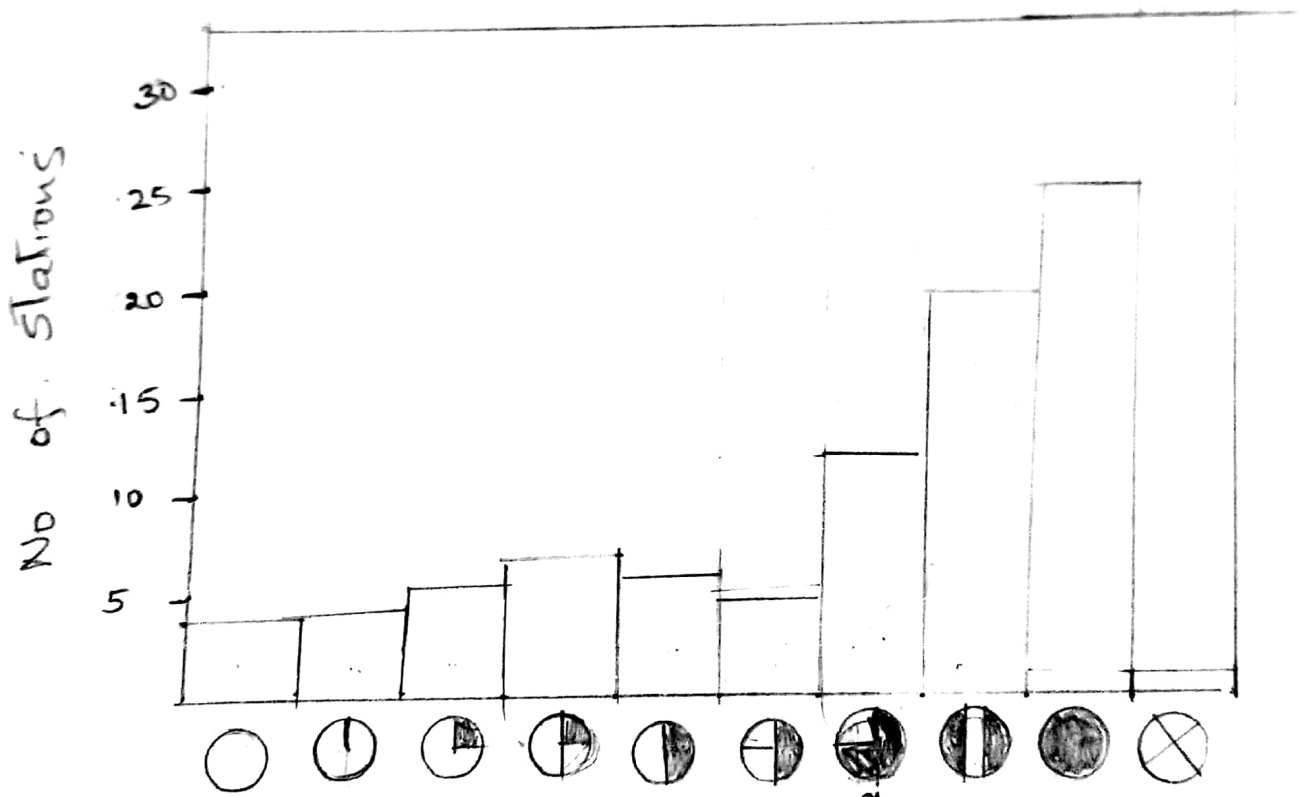
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CROSS SECTION SHOWING PRESSURE GRADIENT



SKY CONDITION

(F)



VS = 1 cm = 5 stations

HS = 1 cm = Type of sky