

## PRESSURE DISTRIBUTION IN A CYCLONE FIELD

Tropical cyclones form and move over the oceans. It is rare to get detailed observations from a cyclone field as ships try to avoid them because of the dangers involved for life and property. After the documented set of data by Arakawa and Suda (1953) over Pacific Ocean, Mukherjee and Sivaramakrishnan (1977) reported the wind and wave distribution over a cyclone field in Arabian Sea. Vorticity and divergence have also been computed by Sivaramakrishnan (1983).

Gopnath cyclone of May-June 1976 passed over Bombay High area off Bombay harbour. Three rigs *Haken Magnus*, *Sagar Samrat* and *Shenon Deah* stationed for off shore oil explorations recorded pressure using barometers which had been standardised by India Meteorological Department. Pressure is one of the essential parameters in cyclone meteorology. The pressure data recorded every hour by these rigs during the cyclone were collected. The cyclone attained hurricane strength after 21 GMT of 1 June and the strength was maintained throughout 2 June. The pressure data from 23 GMT of 1 June and for the whole of 2 June were considered. Knowing the centre of the storm and the orientations of the observation points (rigs) composite of pressure values was prepared.

The map of the observation points (rigs) along with the track of the storm is shown in Fig. 1. It is observed that the pressure distribution in the field of this cyclone was highly unsymmetrical with respect to its centre. The isobars were elongated along the axis of the direction of motion of the system and compressed in a perpendicular direction. The pressure gradient was very much shallow to the front and back sectors while it was much to the left and right sides of this system.

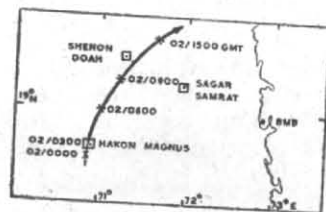


Fig. 1. Track of storm with observation rigs on 2 June 1976

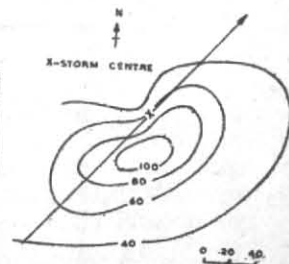


Fig. 2. Wind speed composite (in kt)

The symmetry is not expected in the pressure pattern because of the well known asymmetrical nature of the wind distribution. The wind speed composite of this system is presented in Fig. 2. The strongest winds were found in the right rear quadrant and the wind distribution is asymmetric with respect to the centre. However, the observations by forming the composite help to get an idea of the actual picture of pressure distribution in this cyclone which could, perhaps, be representative for the Arabian Sea.

### References

- Arakawa, H. and Suda, K., 1953, *Mon. Weath. Rev.*, **81**, p. 31.  
 Mukherjee, A.K. and Sivaramakrishnan, T.R., 1977, *Nature*, **267**, p. 236.  
 Sivaramakrishnan, T.R., 1983, *Australian Jet. Mag.*, **31**, p. 199.

T. R. SIVARAMAKRISHNAN

*Meteorological Office,  
 Mohanbari 786012*

3 October 1985