

**Mean sea level pressure and wind climatology over the North Indian Ocean:
quality control, validation and biases**

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As a responsible member country of the World Meteorological Organization (WMO), India Meteorological Department has been collecting and archiving marine meteorological data of Indian Ocean north of 15° S. Using the archived data of 1961-2000, climatological charts of mean sea level pressure, and wind speed were prepared and validated.

Observations obtained from the meteorological logbooks of the VOF were scrutinized to eliminate instrumental, positional & coding errors. These data together with those received from other WMO members were examined & the corrected data were injected into the data bank for the further processing. As per the WMO guidelines, the data were subjected to further quality control like duplicate observations, internal consistency, highest and lowest values etc. More than 3.5 million records of marine data were used to prepare the climatology of north Indian Ocean.

The area of responsibility is divided into boxes with constant grid spacing of 2.5° each in latitude and longitude. All available quality controlled observations are averaged in each box for each month during the 40-year period. The monthly mean fields were then objectively analyzed to filter out spatial noise. The objective analysis scheme used to filter out the spatial noise is an iterative difference-correction scheme with a Barnes weight function.

The monthly mean climatology of Mean sea level pressure, wind speed (10 metre) and wave height are analyzed and compared with the NCEP/NCAR reanalysis data. It has been found that the differences between the reanalysis mean pressure (mean for the same period, 1961-2000) and marine climatological pressure were of the order of 0.5 hPa. However, there were no systematic biases between the two data sets. For the wind speed, both the climatologies agree with each other except over south Bay of Bengal. Over this region, NCEP/NCAR reanalysis data over estimates the wind speed. This difference was found to be a systematic bias in the reanalysis data. The absolute differences over other parts of the region are less than 1 metre per second.

Quality control, uncertainty etc. are discussed in detail in the paper. The results of inter-annual variability of pressure and wind speed and its relationship with El Nino/Southern Oscillation are also discussed.