

# The Variation of Sea Salt Aerosol over the North Indian Ocean Including Bangladesh and Its Impact

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**Abstract:** Aerosols are the severe threats to human life as well as ecosystem. Highest amount of natural and anthropogenic aerosols are observed over the South Asian region. Among the natural aerosols, sea salt aerosols (SSAs) have significant concentrations which are analyzed using the Monitoring Atmospheric Composition & Climate (MACC) reanalysis data for 10 years from 2003 to 2012. Average SSA is found to be about 17% of the total aerosols over the North Indian Ocean (NIO). On the other hand, Bangladesh receives 9% SSAs which are mostly advected by the southerly wind from the Ocean. The annual variations of SSA are found to be significantly positive with an approximate value of 19% in the NIO and 28% in Bangladesh. Seasonal distributions of SSA provide a highest concentration of 0.13 during the monsoon season (June-September) and lowest value of 0.03 in winter (January-February). The average wind velocity over the NIO has displayed strong positive correlation with SSA ( $r = -0.93$ ), which plays the major role for the seasonal variability of SSA distribution. The monthly average precipitation and relative humidity at surface are positively correlated with SSA by the values of 0.83 and 0.70, respectively for the NIO.

**Keywords:** Sea Salt Aerosol, Aerosol Optical Depth, North Indian Ocean, Monsoon Season, Wind Velocity.