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Dimethyl Sulphide emissions from the Bay of Bengal

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Dimethyl sulphide (DMS) was measured in seawater in the Bay of Bengal during 4 cruises as part of two different programmes; Bay of Bengal Monsoon Experiment (BOBMEX; SK138C, SK147A & SK147B) under Indian Climate Research Programme and Bay of Bengal Process Studies (BOBPS; SK166). SK138C was carried out during the fall inter-monsoon (FIM) of 1998 whereas SK147A&B and SK166 were carried out during the southwest monsoon (SWM) of 1999 and 2001 respectively. During the FIM of 1998 the sea state was calm in comparison to SWM of 1999 during which there was a deep depression in the Bay. Similar conditions were also observed during the SWM of 2001 where the winds were above normal. Surface DMS concentration during the FIM of 1998 and SWM of 1999 averaged to ~3 nM while during the southwest monsoon of 2001 the DMS concentrations averaged around 1.7 nM. High wind speeds during the SWM resulted in high DMS flux in comparison to low DMS flux because of lower wind speeds during the FIM. Average DMS flux of 12.8 μmol m^{-2} d^{-1} (with the highest value of 41 μmol m^{-2} d^{-1} in SK147A) during the SWM of 1999 was 8 times higher than found during the FIM (1.6 μmol m^{-2} d^{-1}). However the lower DMS flux of 4.8 μmol m^{-2} d^{-1} observed during the SWM of 2001 can be attributed to lower average surface DMS. Thus areas such as the Bay of Bengal where frequent low-pressure systems develop, despite being small, can be potential natural sources of DMS-sulfur to the atmosphere.