

Variability of nitrate and phosphate

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Nitrate and phosphate are important elements of the biogeochemical system of an estuary. Observations carried out during the dry season April-May 2002, and March 2003 and wet season September 2002, show temporal and spatial variability of these two elements in the Mandovi and Zuari estuaries. During the month of September in the wet season nitrate concentration in the mid estuarine region of the Mandovi estuary increased from 4.4 μM in the upstream region to 6.0 μM . This increase could be due to the passage of the monsoonal runoff through mangroves which harbour sediments rich in nutrients, the mining activities on the banks of the rivers which use nitrogen containing explosives and the fertilizers used in agricultural coastal plains. Nitrates are found to decrease during the dry season possibly due to horizontal mixing of the shelf water, which contains less than 1 μM of nitrate or its utilization in biogeochemical processes. The evolution of nitrate during the dry season indicates that the biogeochemical processes play a significant role in the removal of nitrate during the dry season. The concentration of nitrate during March 2003 was much lower than that during April-May 2002 indicating significant interannual variability in nitrate concentration. The Zuari estuary also shows similar variability as that of Mandovi. Phosphate concentration did not show much variation and the river water concentration was not much different from that at the mouth of the estuaries. Though phosphate also play a role in the biogeochemical processes, pattern of its variability could not be conclusively obtained due to insufficient data available.