

BOBMEX Observations of Bay of Bengal River Plume

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As a part of the Bay of Bengal Monsoon Experiment (BOBMEX) time series of temperature and salinity in the upper ocean were measured in the northern Bay of Bengal at 17.5°N, 89°E. These observations captured an event of upper layer freshening caused by the Ekman advection of river discharge and rainfall received in the head bay region. As a result of this freshening, the sea surface salinity decreased by about 4 psu and the mixed layer depth decreased from 30m to 10m. Hydrographic observations were also taken along two coastal sections and one open ocean section. The coastal section in the northwestern Bay of Bengal which was occupied twice captured a freshwater plume in its two stages: first the plume was restricted to the coastal region, although it was separated from the coast, and then the plume spread offshore. Below the freshwater layer there were indications of an undercurrent. The coastal section in the southern Bay of Bengal was marked by intense coastal upwelling in a 50 km wide band. In the open ocean, low salinity water was restricted to the north of 16°N latitude. In regions under the influence of the river plume the upper layer was insulated from the thermocline by a strong stably stratified barrier layer. Surface circulation calculated as the sum of geostrophic and Ekman drift show that the ocean circulation plays an important role in the spatial distribution of the low salinity dominated regimes in the Bay of Bengal.