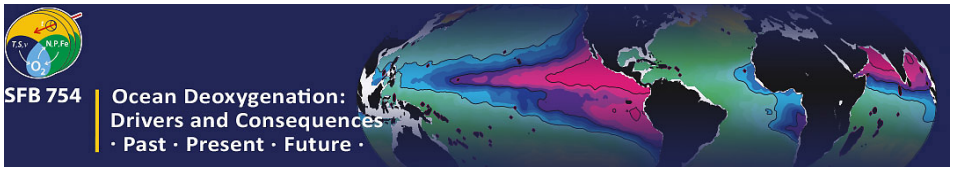

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Spatial and Temporal variability of Physico-biochemical Status of Seawater around the Saint Martin's Island, Bangladesh

Saint Martin's island is one of the unique coral islands in Bangladesh. It's marine biodiversity is actually enrich due to its favorable environmental condition but its marine environment is facing threats day by day due to natural calamities, various types of pollution, and other anthropogenic activities. So it is very important to know the present physico-biochemical status of seawater of the Saint Martin's island for the basement study. Seawater samples were collected by two systematic ways. Firstly, coastal seawater samples were collected from 24 sites of the around of Saint Martin's Island and Secondly, sea surface water and 5 m in depth seawater samples were collected from 18 sites of the almost 1 km far from the Saint Martin's Island (offshore) by niskin water sampler from 26 February 2018 to 02 March 2018 and 08 to 09 April 2018. Seven physico-chemical parameters were measured directly in-situ position while the biological parameters are awaiting for lab experiment in next 6 months. The surface water (0-20 cm) physico-chemical parameters including temperature, salinity, dissolved oxygen (DO), pH, total dissolved solids (TDS), conductivity & resistivity and the biological parameters include measurement of Chlorophyll-a & nutrients (nitrate, nitrite, phosphate and silicate). The ranges for the physico-chemical parameters of coastal seawater were 25 to 30℃ for temperature, 30.8 to 33.4 ppt for salinity, 4.50 to 6.90 mg/L for DO, 8.05 to 8.38 for pH, 29575 to 31980 mg/L for TDS, 48966 to 55235 µS/cm for conductivity and 18.08 to 20.43 Ω-cm for resistivity where the ranges for the physico-chemical parameters of surface water of the offshore were 25 to 27℃ for temperature, 32 to 32.88 ppt for salinity, 4.6 to 5.84 mg/L for DO, 7.9 to 8.14 for pH, 31055 to 31980 mg/L for TDS, 48893 to 57089 µS/cm for conductivity and 19.34 to 20.04 Ω-cm for resistivity. The temperature, salinity, pH, DO and conductivity of coastal water were higher than offshore seawater. The highest and lowest salinity was found at the south and north of the Saint Martin's Island respectively. The salinity and pH of 5m deep seawater are higher than surface seawater but temperature of surface seawater is higher than 5m deep seawater. The highest DO was found almost three sides especially eastern side of the Saint Martin's Island but lowest DO was found at the west-southern side which connect to the open ocean. It indicates hypoxia may present in the open ocean.

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