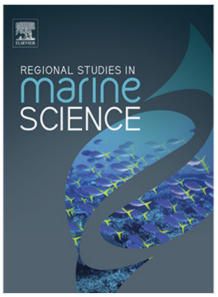
Accepted Manuscript



Differential environmental responses of tropical phytoplankton community in the southwest coast of India

Madhu N.V., Martin G.D., Haridevi C.K., Nair M., Balachandran K.K., Ullas N.

PII: S2352-4855(17)30019-1
DOI: http://dx.doi.org/10.1016/j.rsma.2017.07.004
Reference: RSMA 263

To appear in: *Regional Studies in Marine Science*

Received date : 18 January 2017
Revised date : 17 July 2017
Accepted date : 18 July 2017

Please cite this article as: Madhu N.V, Madhu N.V., Martin G.D, Martin G.D., Haridevi C.K, Haridevi C.K., Nair M, Nair M., Balachandran K.K, Balachandran K.K., Ullas N, Ullas N., Differential environmental responses of tropical phytoplankton community in the southwest coast of India. *Regional Studies in Marine Science* (2017), http://dx.doi.org/10.1016/j.rsma.2017.07.004

Differential environmental responses of tropical phytoplankton community in the southwest coast of India

Madhu. N.V[a]*, Martin. G. D[a], Haridevi. C. K[b], Nair. M[a], Balachandran. K. K[a], Ullas. N[a]

[a]CSIR-National Institute of Oceanography, Regional Centre, Kochi - 682018, India

[b]CSIR-National Institute of Oceanography, Regional Centre, Mumbai - 400053, India

Abstract

Phytoplankton characteristics (biomass, primary productivity, species composition and community structure) were studied in a tropical estuary (Cochin estuary) and adjacent coastal marine region for understanding the factors controlling their productivity patterns and community dynamics. The Cochin estuary (CE) sustained a high level of inorganic nutrients supporting very high phytoplankton biomass, productivity, and abundance. Though the CE exhibited a 2-3 fold increase in the annual mean of chlorophyll *a* (14.6±8.5mg m^{-3}) and primary production (1288±999 mgC $m^{-3}d^{-1}$) than the coastal waters, both regions sustained with a substantial dominance of small-sized phytoplankton, in particular nanoplankton (2-20µm), which apparently contributed >70% of total chlorophyll *a* and primary production. Diatoms were the dominant phytoplankton functional group (>75% of total abundance) prevailed over both sampling locations almost throughout the year, however, the sporadic dominance of certain species of dinoflagellates (during premonsoon) and green and blue-green algae (during monsoon) were also encountered in the estuary. The SIMPER analysis, based on phytoplankton species abundance data, revealed the presence of certain *characterizing species* exclusive for both estuary and coastal waters, and most