**Mitigating socio-economic losses from massive *Noctiluca* blooms along the coast of Oman using ocean color and coupled physical-biogeochemical modeling**

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**Abstract**

Over the past decade, the western Arabian Sea has witnessed a nearly three-fold increase in summer-time phytoplankton biomass due to intensification of the southwest monsoon (SWM) winds and wind-driven coastal upwelling as a result of Eurasian warming and the decline in snow cover extent over southwest Asia and the Himalayan-Tibetan Plateau region. The impacts of the warming trend have not been confined to the SWM alone. During the northeast monsoon (NEM) also, the Arabian Sea has been experiencing unprecedented blooms of a mixotrophic dinoflagellate, *Noctiluca scintillans.* First seen in smaller numbers off the coast of Oman, *Noctiluca* blooms have now become more pervasive and widespread throughout the northern Arabian Sea replacing diatoms as the dominant winter-time bloom forming phytoplankton. We show that these large annual blooms of *Noctiluca* blooms are being fuelled by the spread of hypoxia and are disrupting the traditional food chain of the Arabian Sea. This presentation will highlight new results from a Indo-US-Oman satellite and coupled physical biological modeling effort aimed at 1) investigating the origins of *Noctiluca* and its unique ecophysiological characteristics and, 2) developing based decision support tools specifically geared towards mitigating large socio-economic losses being caused by massive *Noctiluca* blooms along the coast of the Sultanate of Oman.