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Shrinking snowcaps and rising tides-The response of the Arabian sea ecosystem to climate change

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The recent trend of global warming has exerted a disproportionately strong influence on the Eurasian land surface causing a systematic decrease in snow persistence over the Indo-Tibetan Plateau region. 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 resulting from 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, chlorophyll a concentrations have been on the rise due to 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 wide spread throughout the northern Arabian Sea replacing diatoms as the dominant winter-time bloom forming phytoplankton. The appearance of *N. miliaris* in bloom proportions year after year, despite signs of weakening convective mixing during the NEM, raises the intriguing possibility that the Arabian Sea ecosystem is becoming more eutrophic. Such concerns are consistent with the idea that the Arabian Sea's permanent oxygen minimum zone may be intensifying as a result of the increase in organic matter export from the euphotic zone due to the large increase in phytoplankton biomass during the SWM. This presentation will highlight new results from a large Indo-US-Oman satellite-based effort to investigate the origins of *Noctiluca*, its ecophysiological characteristics and conditions that are promoting its appearance in bloom proportions year after year. Evidence will be provided to show that *Noctiluca* blooms may be causing a substantial loss of phytoplankton biodiversity, disrupting the traditional food chain of the Arabian Sea and effecting substantive shifts in carbon export.

Biography

Joaquim Goes got Monbusho Scholarship by the Ministry of Education, Japanese Govt. for Doctoral Studies also 1992 Japan Society for the Promotion of Science Postdoctoral Fellowship by the Ministry of Education, Japan and in 1997 Takeda Foundation Techno-Entrepreneurship Award, Japan, 2002.

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