Study of chlorophyll-a concentration evolution from satellite images for ICAM monitoring: case of Antsiranana Bay (North-East of Madagascar)

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Mode of presentation: oral

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Harmful algal blooms (HAB) leads to a negative impact of the environment that imply massive mortality of fish and marine mammals, men as well as a great economic loss due to reduced tourism and fishing. The study consists of a retrospective view of the ICAM incident that occurred in northeastern Antsiranana in December 2017 using in-situ coupled satellite data retrieved during this period. The variables studied are the chlorophyll concentration obtained from the MODIS Aqua products for the monthly climatological analyzes from 2017 to 2018 and the daily variability of the parameters of the ICAM event in Antsiranana for a shorter period. The goal is to detect the areas and periods that are presumed to be favorable for the emergence of HAB. The results showed that ICAM occurred at 35 days after plankton bloom conditions were met. This makes it possible to consider setting up routine surveillance and establishing an early warning system. Nevertheless, several studies including improved spatial resolution of chlorophyll-a concentration as well as various studies on physical and biological interactions need to be taken into account in order to fully meet the goal of monitoring blooms from space.

Keywords: HAB; ICAM; Chlorophyll-a concentration; MODIS Aqua