

Fine-scale temporal variation of chlorophyll-a in the Kuroshio waters revealed from the Advanced Himawari Imager onboard the meteorological satellite Himawari-8

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The Kuroshio western boundary current originates from the subtropics in the Western Pacific, and carries a vast thermal energy and oceanic water mass towards the north, including the south coasts and offshore islands of Japan. In spite of the oligotrophy of the origin water, the Kuroshio water is known for spawning and feeding grounds of commercial/non-commercial fish larvae, explaining a higher fisheries production in the region. Thus, it puzzles a link(s) among nutrient fields, standing stock and productivity of lower trophic organisms (e.g. plankton) and of higher trophic organisms (e.g. fish), in terms of a trophic energy transfer within the Kuroshio ecosystems. In order to understand the complex Kuroshio ecosystems, a bottom-up process in the Kuroshio ecosystems, namely phytoplankton dynamics, is investigated for different temporal scales (diurnal, daily, weekly and seasonal variability), using remote sensing. The new meteorological satellite instrument, Advanced Himawari Imager (AHI) onboard Himawari-8, which provides the consecutive ocean colour observation every 2.5/10 minutes around the Kuroshio, exhibits a fine temporal variability of phytoplankton pigment, chlorophyll-a, with 1 km spatial resolution. In this presentation, an analysis of short scale variabilities (< 1 month) of chlorophyll-a concentration of the Kuroshio water is presented to show that a dominant mode of the variability (i.e. the largest variability) within the temporal scales considered results from not only advective waters, but also local oceanographical events.

Keywords: Kuroshio, Chlorophyll, Ocean Color, Remote Sensing, Himawari