

Bloom and flood events on a wide continental shelf : Gliders and fixed platforms observations.

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In the frame of the TUCPA (Coastal Turbidity and Autonomous Platforms) project, a cruise was carried out in the vicinity of the Rhône River mouth in February 2014. Flooding conditions ($Q > 5000 \text{ m}^3/\text{s}$) enhanced the development of a coastal plume on the major part of shelf. Surface suspended sediment concentrations decrease from 50 mg.L^{-1} at the mouth to 5 mg.L^{-1} 30km offshore. An original instrumental package was used in a profiling frame deployed from a ship. A LISST type B (1.25-250 μm) and a LISST-HOLO (20-2000 μm) were used to characterize hydrological features and particles characteristics in a gradient from the mouth to the shelf edge. LISSTs package permitted us to determine the particle size from 1.25 to 2000 μm . The use of holographic camera LISST-HOLO allowed us to determine nature and form of large *in situ* particles and aggregates. A coastal SLOCUM glider, equipped with CTD and FLNTU sensors, was deployed to characterize the Rhône river plume with a high spatial resolution. The resultant spectral slope of coastal waters determined from glider derived optical data was then compared to the slope of the Junge-type distribution determined with in-situ data. General description of particles size shows a higher proportion of large aggregates (>250 μm) in the inner-shelf waters. The link between the plume and the creation of the bottom nepheloid layer was clearly visible. Offshore, large aggregates of clay sediment are present through the water column.