



Studying suspended sediment dynamics in shallow water using glider mounted ADCP

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The transfer of sediment from land-to-sea are largely influenced by brief and violent meteorological events such as flood and storms. Ships, moorings and buoys based measurements are not sufficient to estimate the high spatio-temporal variability of hydro-sedimentary processes at the scale of the continental margin. We implemented an acoustic Doppler current profiler (ADCP) on a glider to demonstrate the ability of such method to investigate the high variability of the sediment dynamics on the continental shelf of the Gulf of Lions (NW Mediterranean sea). First deployments were successfully done in the region of freshwater influence of the Rhône river between 30 and 200 m depth during the MATUGLI experiments in November 2016 and February 2017. Preliminary results showed that both acoustic and optical sensors gave different information about the characteristics of suspended particles. We observed different turbid structures depending on the measurement method (i.e. optical vs. acoustic), which will be compared against in situ measurements and model outputs.

Additionally, ADCP measurements were used to estimate water velocity over the shelf. Bottom track measurements were used as reference to obtain corrected velocity when the glider was close to the bottom and determine relative water velocities in the whole water column. Good agreement was found with current velocity and direction estimated from the glider drift in barotropic conditions. Further investigations should be done to estimate detailed water motion and suspended sediment fluxes in baroclinic conditions.