

Validation and constrain of operational models in coastal areas is not straightforward. Challenges remain in model validation and data availability for ocean variables associated with strong variability. Mesoscale physics still requires additional measurement strategies, especially for currents. Measuring currents from moorings, oceanographic ships, drifting buoys or HF radars does not cover all the needs in terms of spatial and temporal coverage. In particular, the sub-surface currents and continuity between surface and deeper currents is hardly reached.

In order to fill the gap, the use of Autonomous Underwater Vehicles (AUVs) as platforms for Acoustic Doppler Current Profilers (ADCPs) provides a way to access the ocean current variability along radials in the first 100m of the water column with a vertical resolution of a few meters, which can be increased in sub-surface up to a few tens of centimeters.

Results from oceanographic campaigns (TURBIDENT, RHOMA-AUV, BATHYCORE1, upAUV) that used autonomous platforms to measure currents using ADCPs, such as a waveglider, a light coastal AUV and a bigger AUV dedicated to deeper areas, will be presented. The potential and limitations of these platforms and measurements will be assessed.

In future work, in addition to process studies, this methodology for observing ocean currents could be adapted to record current profiles along repeated transects in order to get additional data to constrain or validate operational coastal ocean model.