



High Frequency Radar-derived surface currents: a powerful new data set for CMEMS

Anna Rubio (1), Julien Mader (1), Lorenzo Corgnati (2), Carlo Mantovani (2), Annalisa Griffa (2), Jose Luis Asensio (1), Emma Reyes (3), and Stéphane Tarot (4)

(1) AZTI, Marine Research Division, Pasaia, Spain (arubio@azti.es), (2) National Research Council of Italy, Institute of Marine Sciences, Lerici, Italy, (3) ICTS-SOCIB, Palma de Mallorca, Spain, (4) IFREMER, Plouzané, FRANCE

The accurate monitoring of surface transport, which depends on the details of the surface velocity field at several scales, is key for the effective integrated management of coastal areas, where many human activities concentrate. This has been the driver for the growth in the number of operational land-based High Frequency Radar (HFR) systems along the European ocean coasts (64 HFRs currently deployed, with 7 new HFRs installed per year since 2016). HFR systems provide operational measurements of coastal surface currents mapping (within 1-3 m depth) with high spatial (300 m-10 km) and temporal (≤ 1 hour) sampling resolutions. The inclusion of these data into the European Copernicus Marine Environment Monitoring Service (CMEMS) can be a step forward to the improved management of several related key issues as Maritime Safety, Marine Resources, Coastal and Marine Environment, Weather, Climate and Seasonal Forecast. The past CMEMS Service Evolution “INCREASE” project managed to prove the need of offering a real-time and coordinated European-wide access to HFR data and built the roadmap to integrate them in the future CMEMS In Situ Thematic Assemble Centre (INSTAC) catalog.

After the standardization of the data sets following the EU common data and metadata model for real-time surface current HFR data and the development of the required software tools, facilities and infrastructure, the next steps in the implementation of HFR data in the INSTAC catalog will be the operational delivery of HFR total (CMEMS v5 catalog in 2019) and radial (CMEMS v6 catalog in 2020) data, and to work on the reprocessing and the standardized delivery of historical total (CMEMS v6 catalog) and radial data (CMEMS v7 catalog in 2021). Additional CMEMS HFR-related projects have recently been approved, where HFR data products will be used to improve coastal altimetry and, in combination with drifters and model data, to optimize SAR (Search and Rescue) operations. The enhanced availability of HFR surface currents as an INSTAC product, and the consequent improvement on the operational and sustainable delivery of data and related products, will boost its use in different sectors inside CMEMS (MFCs for model validation and operational data assimilation) and among CMEMS data intermediate and end users. In addition, future work lines could be focused on the operational delivery of additional data derived from the advanced processing of the HFR backscatter signals, like wave data and maps of wind direction. These will offer further demonstration of the potential and capabilities of the technology, favoring the network expansion.