Building a reliable and standardized long-term data set of surface coastal ocean currents from the European HF radars

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HF radar (HFR) is recognized as a cost-effective solution to provide high spatio-temporal resolution maps of ocean surface currents over wide coastal areas, suitable for many applications for coastal management. While the value of NRT data has been highlighted on many occasions for monitoring and predicting the surface drift of floating objects, long-term data series are key for the study of coastal ocean processes, their interplay, air sea interactions and connectivity between marine areas. To enhance the data use for these applications, the availability of reliable and standardized data sets of surface currents is crucial. Here we present the recent efforts made by the community, in the framework of different projects and under the umbrella of the EuroGOOS HFR Task Team, to build the first historical European HFR data set.

The data quality control and processing methodology consists in five steps: (i) harvesting standardized data from the EU HFR Node NRT catalogue and complementary non standardized (raw) data from HFR data providers; (ii) standardizing raw data through the EU HFR Node software tools; (iii) applying advanced Quality Control (QC) by producing and analyzing plots of temporal series and maps of the current velocity , reporting number of valid data, basic QC flags and the spatio-temporal coverage 80/80 metric; (iv) disseminating the advanced QC outcomes through an open access repository and (v) reprocessing data in collaboration with each HFR data provider.

Following this protocol, data form 17 networks and 30 radial stations have been processed. Long-term HFR surface current data sets from EU and US are already available in the Copernicus Marine Service portfolio. Future work will consolidate these efforts by optimizing the tools for advanced QC and data processing, expanding the available data series, and adding new systems.