



The European High Frequency Radar Node

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High Frequency Radar (HFR) is the unique land-based remote sensing technology that allows the mapping of ocean surface currents over wide areas with high spatial and temporal resolution. HFR products are applied in many sectors such as research in coastal oceanography and marine environment, safety, coastal management, fishery, navigation and renewable energy. Furthermore, it is expected that HFR data will be systematically ingested in Data Assimilation processes necessary for predictive model adjustment.

HFR technology is rapidly expanding in Europe (at a rate of 7 new systems per year since 2016), with over 62 HFR sites currently operating and a number in the planning stage.

The coordinated development of coastal HFR technology and its products is essential to ensure that the potential of HFRs is fully exploited in the development of the European operational oceanography. The EuroGOOS HFR Task Team is leading, with the support of the European Marine Observation and Data Network (EMODnet), many ongoing initiatives aiming at promoting the HFR technology in Europe. These efforts brought to the inclusion of HFR data into the major European platforms for marine data distribution, which are: Copernicus Marine Environment Monitoring Service In Situ Thematic Assembly Center (CMEMS-INSTAC), SeaDataCloud (SDC) and EMODnet Physics. Building on these achievements, the European HFR Node was established as the infrastructure to drive the needed steps to reach the added-value of a coordinated network like: central archiving, homogenized protocols for data distribution, development of standards for quality assurance, control and data structures.

The European platforms for marine data distribution operate through a decentralized architecture based on National Oceanographic Data Centers (NODC), Production Units (PUs) organized by region for the global ocean and the six European seas and a Global Distribution Unit (DU). The European HFR Node acts as the focal point for the European HFR data providers toward this decentralized structure, since it implements the HFR data stream from the data providers to the distribution platforms.

The European HFR Node is founded on a simple and very effective rule: if the data provider can set up the data flow according to the defined standards, the node only checks and includes the new catalogue and data stream. If the data centre cannot setup the data flow, the HFR Node harvests the raw data from the provider, harmonizes, quality-controls and formats these data and makes them available.

The strength and flexibility of this solution reside in the architecture of the European HFR node, that is based on a centralized database, fed both by the operators via a webform and by the software routines running on the node, containing updated metadata of the HFR networks and the needed information for processing/archiving the data. A set of shared software tools uses all those information for processing native HFR data for QC and converting them to the standard format for distribution.

The European HFR Node is pre-operational since November 2018 and will be fully operational in April 2019 for CMEMS-INSTAC, EMODnet Physics and SDN/SDC data delivery.