



The RITMARE coastal radar network and applications to monitor marine transport infrastructures

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Coastal radars provide information on the environmental state of oceans, namely maps of surface currents at time intervals of the order of one hour with spatial coverage of the order of several km, depending on the transmission frequency. The observations are of crucial importance for monitoring ports and ship tracks close to the coast, providing support for safe navigation in densely operated areas and fast response in case of accidents at sea, such as oil spill or search and rescue. Besides these applications, coastal radar observations provide fundamental support in MPAs surveillance, connectivity and marine population circulation.

In the framework of the Italian RITMARE flagship project coordinated by CNR (Consiglio Nazionale delle Ricerche), a coastal radar network has been designed and implemented with a number of innovative characteristics. The network includes both HF and X-band radars, allowing coverage of wide areas with different spatial and temporal resolutions. HF radars cover up to 80 km with a spatial resolution ranging between 1 and 5 km, while X-band radars provide 5 km coverage with a spatial resolution of 10 m. Joining these two capabilities, the RITMARE coastal radar network enables both a highly effective coverage of wide coastal areas and integrated monitoring of different phenomena, thus allowing the collection of current and wave parameters and detection of bathymetries of both open sea and coastal areas.

A dedicated action to foster interoperability among data providers has been undertaken within RITMARE; an IT framework is under development to provide software tools for data collection and data sharing. It suggests standard, data format definitions, Quality Control strategies, data management and dissemination policies. In particular, the implementation of tools exploits both standards of OGC (Open Geospatial Consortium) and web services offered to manage, access and deliver geospatial data. Radar data produced in RITMARE by the coastal radar network represent a challenge to the nowadays definition of OGC web services: the network will suggest and test solutions.