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Data circulation and services of the RON data buoy network

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This paper reviews the services of the Italian data buoy network (RON, Rete Ondametrica Nazionale). The RON run 15 directional moored buoys, real-time transmitting, uniformly distributed along the Italian coasts. Data have been collected since 1989 at 8 measurement stations; in 1999 two other stations were added and the remaining five buoys were moored in 2001. From 2010 all stations are equipped with meteorological instruments. Buoys collect the main physical parameters useful in defining the sea state such as significant and maximum wave height, peak and mean period, wave direction, sea surface temperature, air temperature, wind speed and direction, atmospheric pressure, relative humidity.
The RON provides real-time of wave and meteorological parameters every 30 minutes. Buoys transmit data to shore stations within 15 NM and a small dataset via Inmarsat-D+. All shore stations are connected to the control centre based in Rome, using 2 Mbps xDSL channels, implementing a virtual private network.
Very deeply procedures have been implemented in order to validate date: L1 and L2 algorithms have been applied in order to make data compliant with international standards.
Data are monthly analysed and published in the Wave National Bulletin.
Further investigations have been implemented, including statistical analysis, in order to define wave climate, extreme events, sea storms, storm surges, and related meteorological information.
This kind of data is very useful for all tasks and scientific activities of national interest for the protection, enhancement and improvement for the marine environment. The technical and scientific support contributes to the better environmental governance, providing a wide range of information in several key areas such as: collection, processing, management and diffusion of marine data; protection of water resources and of marine and coastal areas; monitoring of marine environmental quality; prevention and mitigation of impacts of polluted marine and coastal sites; climate change; sustainable use of inland and marine waters; study and evaluation of physical and human factors influencing marine conditions.