

Gibraltar Project

"SeaSonde HF Radar up in the air monitoring the surface circulation in the Strait of Gibraltar"

CODAR SeaSonde HF Radar is a unique technology to monitor, in real time, 2D surface currents and waves in coastal areas. The Strait of Gibraltar, in particular, is a region with unmatched confluence of important commerce, security, and oceanographic processes. The geographic scale of the Strait also are well matched to the remote sensing capabilities of a network of shorebased HF radar systems.



"The new technological infrastructure will help the oceanographers to ascertain some of these key topics":

The relationship between persistent eastern wind events (Levante) and coastal upwelling in the African and the Spanish Coast.

The mechanisms behind "sudden stop" events of the Atlantic jet heading into the Mediterranean Sea and the formation of the Alboran gyres.

The relationship between strong wind episodes and water residence time in the Algeciras Bay.

The processes of coastal eddy formation induced by tidal residual currents.

The divergence and convergence processes in the surface layers in the central area of the Strait of Gibraltar.

The relationship between the existence or absence and the strength of the first Western Alboran Gyre (WAG) with the intensity and directional variability of the incoming Atlantic Jet into the Mediterranean.

Initiated in the framework of the research project entitled "**Analysis of the surface currents regime in the Strait of Gibraltar using a coastal-based HF radar system**" funded by the Regional Government of Andalucia under the '2009 Research Excellence Program' and now integrated into the PUERTOS DEL ESTADO operational ocean observing HF Radar Network, **two HF Radar stations have been deployed by the engineering company QUALITAS Remos to monitor the circulation of the eastern area of the Strait of Gibraltar.** One station has been installed at Punta Carnero Lighthouse, at the southern entrance of the Bay of Algeciras in Europe, and the second station in the Ceuta Harbour at the southern side of the Strait of Gibraltar in Africa. **It is planned to add a third station that shall be located in Tarifa Point during 2012.**

The area of the Strait of Gibraltar is in fact one of the most important oceanographic sites of the world ocean. A wealth of oceanographic processes co-exist in the region, including strong internal tides and submesoscale eddy activity. **The surface current mapping data from the currently started HF radar network represents a unique view of these dynamic processes in the area.** The data will also be used to calibrate and validate existing numerical models in the area, and to calibrate the water exchange between Atlantic Ocean and the Mediterranean Sea.

