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Codar's HF Radar System helps Spanish Authorities Monitor their Coastlines

OSIL Application Note

In 2002, Spain witnessed the Prestige oil tanker sink off its north-west coast and it acted as a wake up call highlighting the importance of preparing for such a crisis. It led to Spain's government prioritising the improvement of maritime protection and coastal management proceedings.

Puertos del Estado is part of the Spanish Ministry of Public Works and as well as supporting the development of technologies, they operate various oceanographic monitoring networks for measurement and prediction of physical variables such as waves, sea levels and point currents. One of their primary functions involves finding new technology which could help increase the safety of navigation and the efficient management of Spain's harbours.

The HF Radar is identified worldwide as an essential component for improving the monitoring of coasts and, as Codar Ocean Sensors' SeaSonde currently accounts for 80% of the worlds operational HF Radar systems it is an obvious place for anyone interested in monitoring waves and current to start.

A Codar HF Radar System

An agreement was signed in April 2005 by the Spanish Ministry of Public Works, which has responsibility in Maritime Security and Pollution in the sea, to install two Codar HF Radar current and wave monitoring

The Silleiro Site In Galicia

systems in the Galician Rias Baixas coast.

Codar's SeaSonde combines state of the art technology with reliability and convenience, providing it's customers with the only solution for their ocean observation needs. It is the only system that can offer ranges of up to 200km with a proven track record, and will provide years of real-time data over large coverage areas. It is able to provide surface current and wave maps and will deliver quality data, while being easy to maintain due to positioning on land. Codar can provide between two and fifty stations for a system based around a central site.

The purpose of the two systems in Galicia was to:

- Validate the reliability and flexibility of the radar technology for real applications.
- Validate the quality of the data in hard topographic and environmental surroundings.
- Run trajectory spill models with radar data input.

The locations of the two systems are the lighthouses in Finisterre and Silleiro, making a distance of 92km between the radar systems. The Finisterre site is well suited to such a system because of the SeaSonde's flexibility and Finisterre's existing buildings. It is important to Codar to have as little influence on the surrounding environment as possible and as Finisterre is a tourist site is was a main priority. At the site it was possible to position the transmission antenna inside the lighthouse's fenced area, laying the cables through

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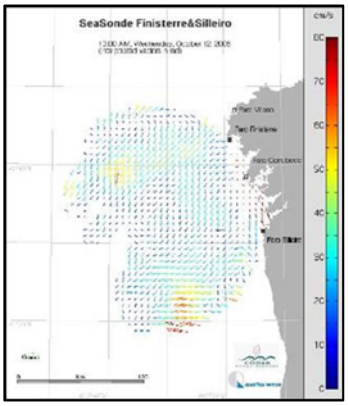
existing lanes. The receiving antenna could then be placed on an existing mast, which conveniently positioned the two antenna over one wavelength apart. Both the antenna at the Silleiro site were placed on a platform at a distance of 100m from the sea.

The radars send out a signal every second and the reflected spectre is then analysed by the computers installed in the respective lighthouses. Current maps and wave information are generated every 20 minutes and data is archived every hour. The central server is connected online to a second server at Puertos del Estado who then make the data available to the public online at www.puertos.es.

The Lighthouse at Finisterre

The Galicia experience has shown that Codar's SeaSonde can provide reliable, high quality data and that it is ready to be integrated into operational oceanography monitoring schemes. The radars have shown a reliability higher than 99.5% in the three month's since they have been installed.

After careful analysis and application studies conducted by Merchant Marine it was concluded that the SeaSonde data could provide a significant improvement to emergency planning and response in the area. Merchant Marine have supplied funding for continued Operations, making the SeaSonde units permanent deployments in Galicia.



A Current Map from the Radar

For further reading on the initial SeaSonde deployment in Galicia and the results, please refer to the following publication which is available to download from both OSIL and CODAR's websites:

Comparison of CODAR SeaSonde HF radar operational waves and currents measurements with Puertos del Estado buoys. Final report of Puertos del Estado, Spain, March 2006. Marta Alfonso, Enrique Alvarez and Jose Damian Lopez.

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