

Figure 1: Current map at high tide of 4.5 m

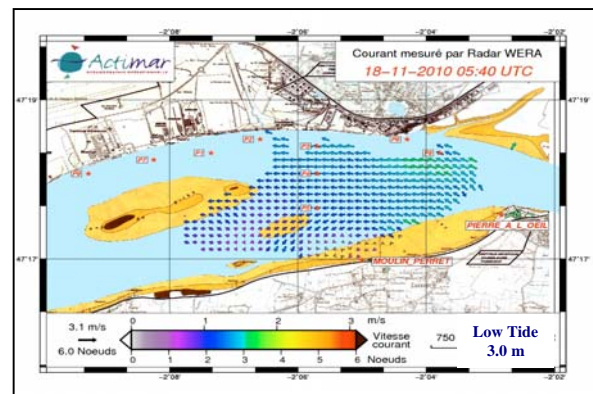


Figure 2: Current map at low tide of 3.0 m

High Resolution Current & Wave Mapping with WERA VHF

Helzel Messtechnik is the German manufacturer of the well known remote ocean sensing system WERA. The shore-based ocean radar "WERA" provides reliable data of ocean surface currents and significant wave height and direction over long distances (> 200 km) with outstanding spatial and temporal resolution for VTS, SAR and environmental protection applications.

As WERA is modular and broadband, it can be operated at very low frequencies to provide very long ranges or at the upper HF band (30 MHz) with a resulting range of 50 km. This product family is now extended by a VHF instrument operating up to 50 MHz providing highest resolution (down to 100 m range cell size) for ranges up to 20 km.

The very high operating frequency results in short array: < 20 m for 8 antennas (beam forming mode) or < 3 m for 4 antennas (direction finding). It is easy to install and can be part of a rapid deployment mobile unit housed in a van or trailer.

Such a mobile station has been recently installed for 2 months in France near the river Loire estuary close to St. Nazaire. Examples of the resulting current maps measured with a pair of 12 antennas, 43 MHz WERA systems are displayed in Figure 1 and 2.

A pair of stations is required to provide high quality 2-D vector maps. However, even a single station can provide 2-D current vectors but with reduced spatial resolution.

The typical applications are ship traffic management in Ports and Harbours.

Coastal Engineering Applications: land based high resolution current and wave measurements around headlands or artificial coastal features.

Environmental Management & Protection: real time monitoring of advection of pollutants, oil spills, larvae in coastal waters, enclosed basins or harbours.

Additional information could be found at www.helzel.com

Helzel Messtechnik GmbH

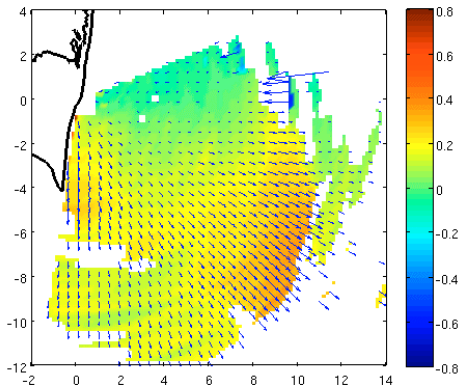
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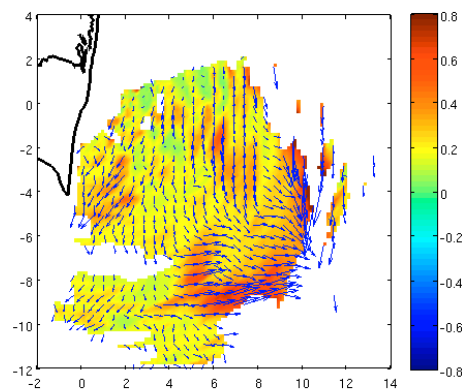
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Figures 3: WERA VHF mobile installation in France



Radial map of VHF WERA at Cape Hatteras, USA



Vector map derived for radials of single station
Data courtesy of G. Voulgaris (University of South Carolina)