HELZEL Messtechnik

WERA Remote Ocean Sensing

Shore Based Ocean Radar with *Compact* or *Array Type Antenna Systems*

WERA provides the **unique feature** to be configured for **Compact** or **Array Type Antenna** Systems

Compact receive antennas, using **Direction Finding** installed on Lemnos, Greece

or

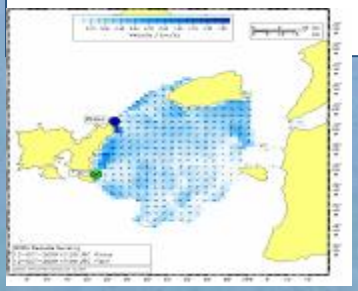
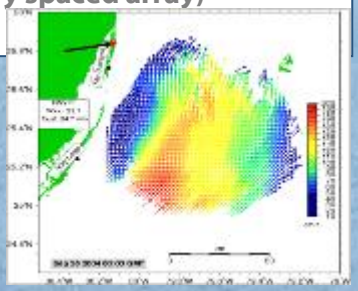
Array type receive antennas with **Software Beam Forming** installed at Garchine, France

TÜV SÜD ISO 9001

Always a wavelength ahead !

WERA
Remote Ocean Sensing

Always providing the **best radar configuration** for a **specific application**

Compact WERA with Direction Finding provide:	**Array Type WERA** with Beam Forming provide:
Real-time data	
▪ Requires long data collection period to get full coverage, typically 20 to 60 min ▪ Always high risk to have gaps in the map	▪ **5 to 10 minutes for current maps** ▪ **10 to 20 minutes for wave data** ▪ **Maps are almost free of gaps**
Siting	
▪ **Compact antenna system 3 x 3 to 12 x 12 m square** ▪ **Easy to find suitable sites and easy to install**	▪ Requires array of 8 to 16 small antennas (array length up to 0.1 % of range) ▪ **Array can be integrated into existing structures (arbitrary spaced array)**
	
Currents from a pair of 13.5 MHz DF systems Lemnos, Greece data provided by V. Zervakis	Dynamic current features from 16 MHz, 16 antenna array, data by Nick Shay, RSMAS
Currents	
▪ Mesoscale currents features can be measured ▪ Resolution can be limited due to long averaging and low accuracy in azimuth	▪ **High dynamic ocean current structures can be measured down to sub-mesoscale** ▪ **Highest temporal resolution possible**
Waves	
▪ Wave information covered by broad 1st order Bragg lines (estimates conceivable) ▪ No access to wave data on measurement grid	▪ **Measures local wave data on the grid** ▪ **Directional wave spectra are available for several locations on the grid**
Field of View	
▪ **more than ± 90° in azimuth (max. 270°)** ▪ slightly reduced range compared with BF	▪ ± 60° in azimuth for 12 or 16 channel systems, more with curved array ▪ ± 50° with 8 channels
Costs	
Compared with an 8 channel BF system ▪ **System costs are about 20% less** ▪ **Installation cost can be slightly lower**	For about **20% more investment** the user will get **good value** with a BF system, in particular **higher accuracy** and better **reliability** compared with a DF solution.

Please note: Both methods can be combined to provide best coverage for current maps

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