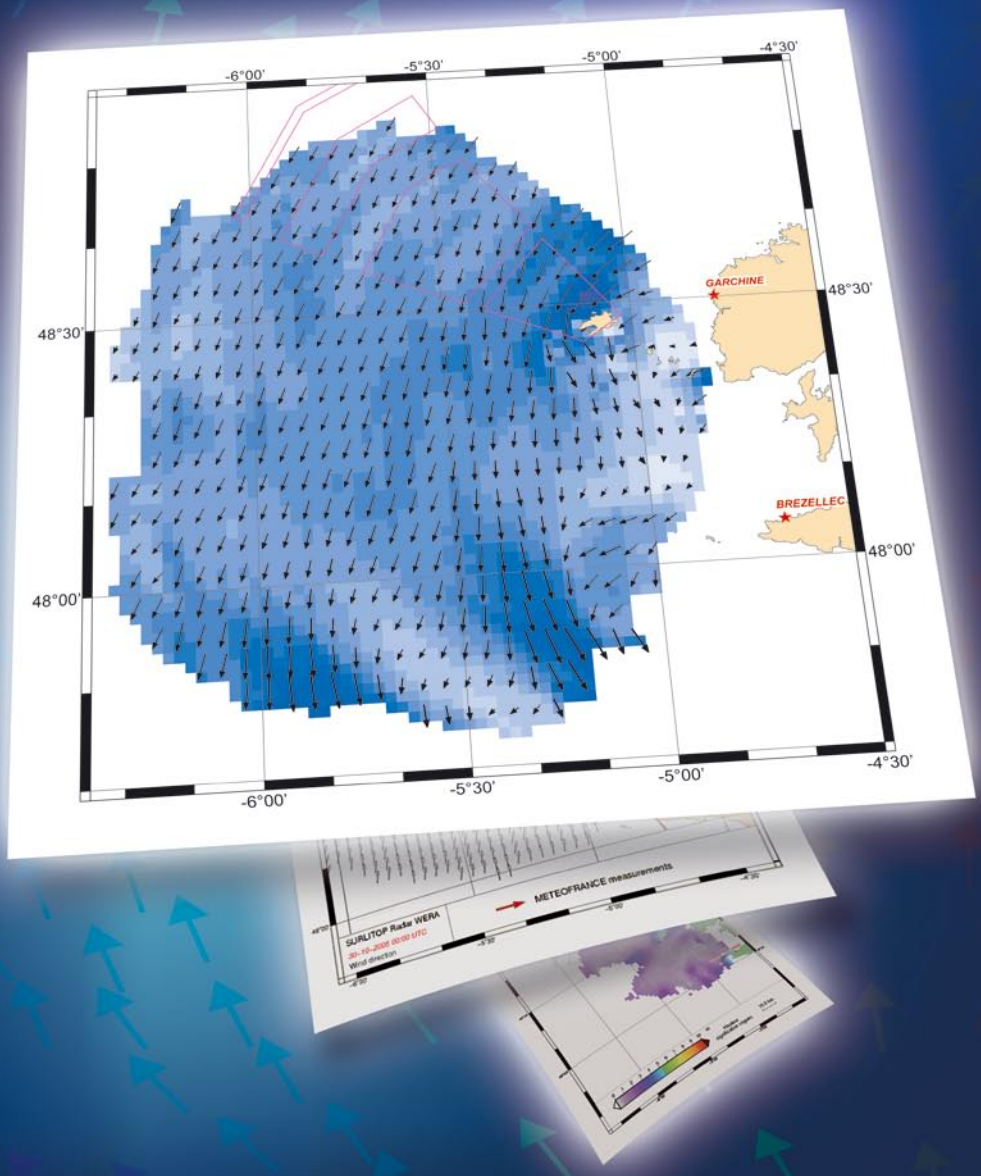
Helzel
Intelligente Hochfrequenz Messtechnik

WERA
Remote Ocean Sensing

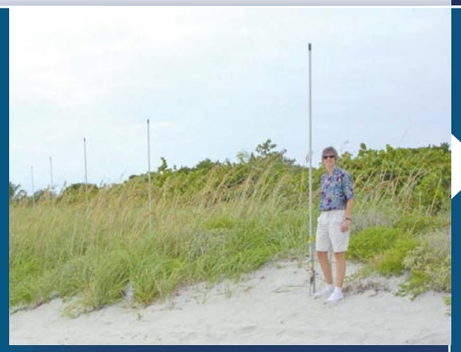
Leader in reliable high-quality ocean current, wave and wind mapping



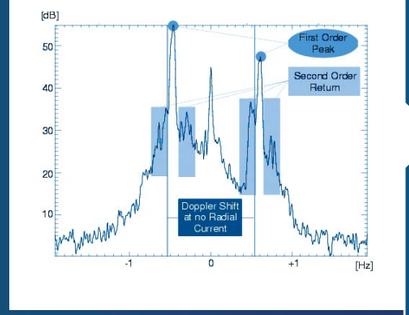
TÜV SÜD ISO 9001

Made in Germany

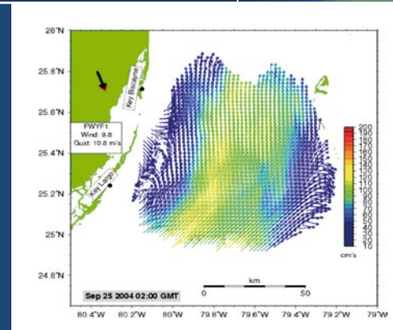
WERA
Remote Ocean Sensing



▲ WERA linear antenna array at a public beach on Key Biscayne, USA

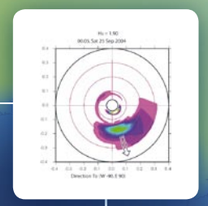


▲ Doppler spectrum



▲ Surface current image during the passage of Hurricane Jeanne, September 2004*

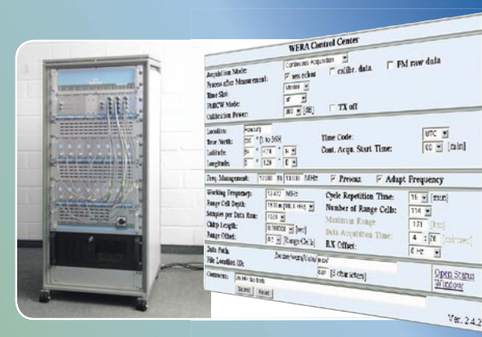
i This current map was generated with a pair of 16 channel, 16 MHz WERA systems providing a temporal resolution of 10 minutes.



Directional wave spectra can be generated up to half of the maximum range. Time series of current, wind and wave data can be extracted and archived at each grid point as well.

COASTAL MANAGEMENT

By monitoring with the highest temporal resolution for various applications:



▲ WERA Rack ▲ Screenshot of WERA Control Center

WERA combines all information for modern Coastal Management; Measurements with high spatial and temporal resolution of Surface Currents, Wind Direction and Wave Parameters. Over the horizon Ship Tracking is under development.

Range of operation:

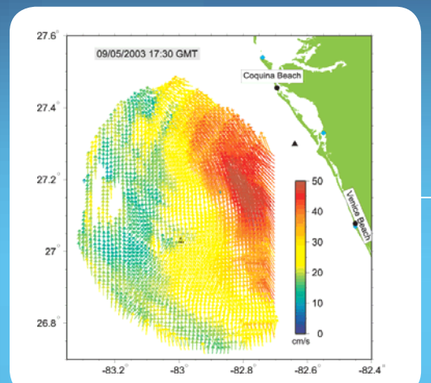
CURRENT
More than 200 km
Range resolution as fine as 250 m
Temporal resolution 3 to 10 min

WAVES
Significant waveheight and directional spectra up to 100 km

WIND
Direction up to 200 km
Wind speed (under investigation)

SHIP TRACKING
Up to 200 km (under investigation)

RELIABLE

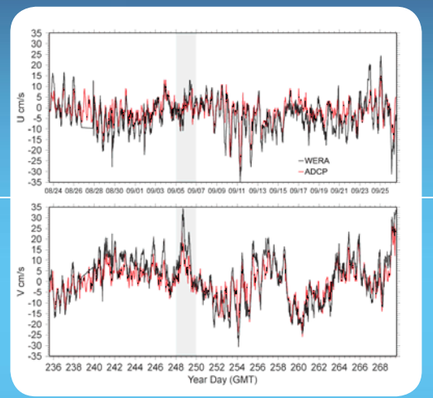


The robust shore based system delivers reliable data even under extreme weather and very dynamic ocean current conditions.

This surface current image was taken during the passage of Tropical Storm Henri on the 5th of September 2003.*

*WERA data kindly provided by Prof. Nick Shay, RSMAS Miami

HIGH QUALITY

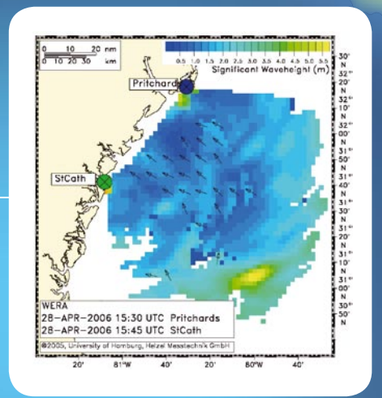


Time series comparison of the surface currents (WERA data in black) and sub-surface currents measured with an ADCP current meter during the experiment at the west coast of Florida.

The grey hatched area depicts the time when Tropical Storm Henri passed north of the HF-radar domain.**

**ADCP data kindly provided by Prof. Bob Weisberg at USF

OCEAN DATA



Maps of Significant Wave Height are available for each grid point within half of the radar range.

This wave map was taken at the east coast of South Carolina and Georgia.***

***WERA data kindly provided by Prof. Dana Savidge at SKIO and Prof. Rich Styles at USC

Search & Rescue Operations can narrow down the search radius for overboard persons or material.

Port authorities can use the data to improve vessel traffic services.

Scientists can use the complex current and wave maps for their research.

Met-offices benefit from WERA real-time data for forecasts.

Fishing Industry can optimise their operational area.

Environmental Protection benefits from this information in case of oil spills or lost containers.
Data can be used for planning of **Off-shore** installations like wind-farms or oil rigs.

Homeland Security is given a powerful tool to detect vessels beyond the horizon up to 200 km.

Tourism Industry can be supplied with information for yachting & recreation divers.

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Features:

- Flexible system (5 to 50 MHz) easily configured for long ranges (more than 200 km @ 5 MHz) or short range applications with highest spatial resolution (250 m)
- High temporal resolution
  30 s for ship tracking
  3 min for currents
  10 min for waves
- Safe and low noise operation mode:
  Low and non-harmful RF-power (7.5 Watts per transmit antenna).
  Almost no interference with other radio band users due to FMcw operation mode
- Near real-time mapping for measuring
  surface currents
  wind direction
  significant wave height
- Extraction of data from each grid point to generate time series of ocean data and directional wave spectra

We provide:

Support of your **site configuration** and **installation** of **modular hardware** that adapts easily to your requirements.

Our complete **on-site support package** includes **site-planning, user-training and maintenance**. Optional **control, signal processing software and application software** and regional service support are all available through our **global partners.**

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SEAVIEW SENSING

Software for wave, current and wind measurement, Quality Management

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