

## Newsletter

April 2012

- **ROW-2012 in Toulon, France**
- **WERA User Group Meeting**
- **WRC-2012 Outcome and Consequences**
- **Australian Network extended by two WERAs**
- **WERA as part of German COSYNA**
- **WERA Operators Seminar 2012**
- **Upcoming Conferences**

Meet us during US-EU Baltic Symposium 2012



**Introduction of the  
Compact HF Radar "WERA-S"**

Thomas Helzel



## International Radiowave Oceanography Workshop 2012



April 17 – 19, 2012

We would like to draw your attention to the upcoming ROW-2012 workshop which will be held April 17 – 19 at the University of Toulon, France.

This workshop is a technical and scientific orientated workshop for all groups working with Ocean Radar or interested in this technique.  
It is a perfect occasion to get manufacturer independent feedback from Ocean Radar users.

Details on the ROW-2012 meeting, venue, accomodation and agenda could be found on the official ROW-2012 webpage at <http://radiowaveoceanography.org/>

Directly following on ROW-2012, we will have our:

## WERA User Group Meeting

Friday - April 20, 2012

We would like to invite the WERA User Group to meet on Friday morning at 9:00 am for exchange and discussions in the meeting room of the Faculty of Law, University of Toulon. The meeting will finish with a snack for lunch. The "father" of WERA, Klaus-Werner Gurgel and Thomas Helzel will be available for ongoing discussions until 3 pm on Friday.

Please note that there is no extra registration fee for the WERA User Group meeting. For organisational purposes, please register for this meeting by e-mail to [hansen@helzel.com](mailto:hansen@helzel.com)

Suggestions for additional topics for the agenda are welcome.  
Please give us your feedback on participation and topics until April 1.

## WRC-12 Outcome and Consequences on Ocean Radar

At the World Radiocommunication Conference 2012 (WRC-12) the ITU (International Telecommunication Union) has officially recognized oceanographic radars. In the future primary (under some restrictions) and secondary bands will be allocated worldwide.



**Benefits for future ocean radar users:** The process to apply for a radio transmission approval will be smoother and faster.

**Consequences for existing ocean radars:** there is no action required at present as it is a lengthy process until the local agencies have adopted to the new regulations.

**Existing experimental licenses** will continue to be valid and depend on the local authorities.

**If changes in existing deployments** are required, we would like to ask you to consult factory to check if software and hardware modifications are required.

The allocated bandwidth ranges from 25 to 650 kHz. The individually allocated bandwidth depends on country specific regulations. It might be possible to get extended bandwidth on non-interference basis for experimental applications.

Region 1 (Europe & Africa)	Region 2 (America)	Region 3 (Asia & Australia)
Frequency in MHz	Frequency in MHz	Frequency in MHz
4.438-4.488 (50 kHz secondary)	4.438-4.488 (50 kHz primary)	4.438-4.488 (50 kHz secondary)
5.250 -5.275 (25 kHz secondary)	5.250-5.275 (25 kHz primary)	5.250-5.275 (25 kHz secondary)
9.305-9.355 (50 kHz secondary)	-	9.305-9.355 (50 kHz secondary)
13.450-13.550 (100 kHz secondary)	13.45-13.55 (100 kHz secondary)	13.45-13.55 (100 kHz secondary)
16.1-16.2 (100 kHz secondary)	16.1-16.2 (100 kHz primary)	16.1-16.2 (150 kHz secondary)
24.450-24.600 (150 kHz secondary)	24.45-24.65 (200 kHz primary)	24.45-24.6 (150 kHz secondary)
26.200-26.350 (150 kHz secondary)	26.200-26.420 (220 kHz primary)	26.2-26.35 (150 kHz secondary)
39-39.500 (500 kHz secondary)	-	39.5-40.0 (500 kHz primary)
-	41.015 – 41.665 (650 kHz primary)*	41.015 – 41.665 (650 kHz primary)*
42-42.500 (500 kHz secondary)	43.35 – 44.0 (650 kHz primary)*	43.35 – 44.0 (650 kHz primary)*

\* U. S.

\* Republic of Korea

### Call Sign

In the future, each radar has to identify itself every 20 minutes by means of a call sign (morse code). The exact method and synchronization of these call signs need to be defined by a working group consisting of the manufacturers of the ocean radar systems.

### Frequency Sharing

Regarding frequency sharing between ocean radars, the working group should work out a method to share the same frequency within a region even if stations of different manufacturers are used.

# Next WERAs for Australian Coastal Ocean Radar Network

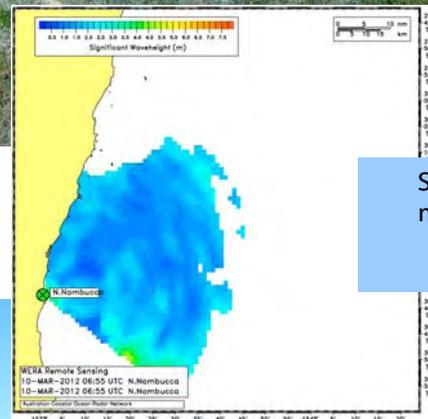
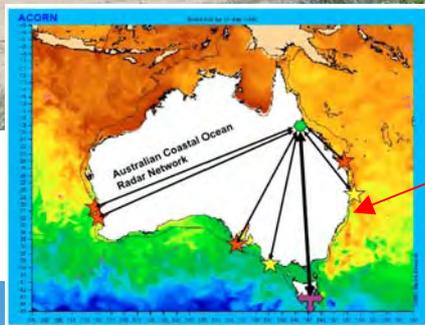
Two additional 16-channel WERA systems extend The Australian Coastal Ocean Radar Network ACORN at the Australian East Coast near Coffs Harbour. They were taken into operation in March 2012 by James Cook University, Townsville.

Working at a frequency of 13,92 MHz they achieve a range of more than 100 km.

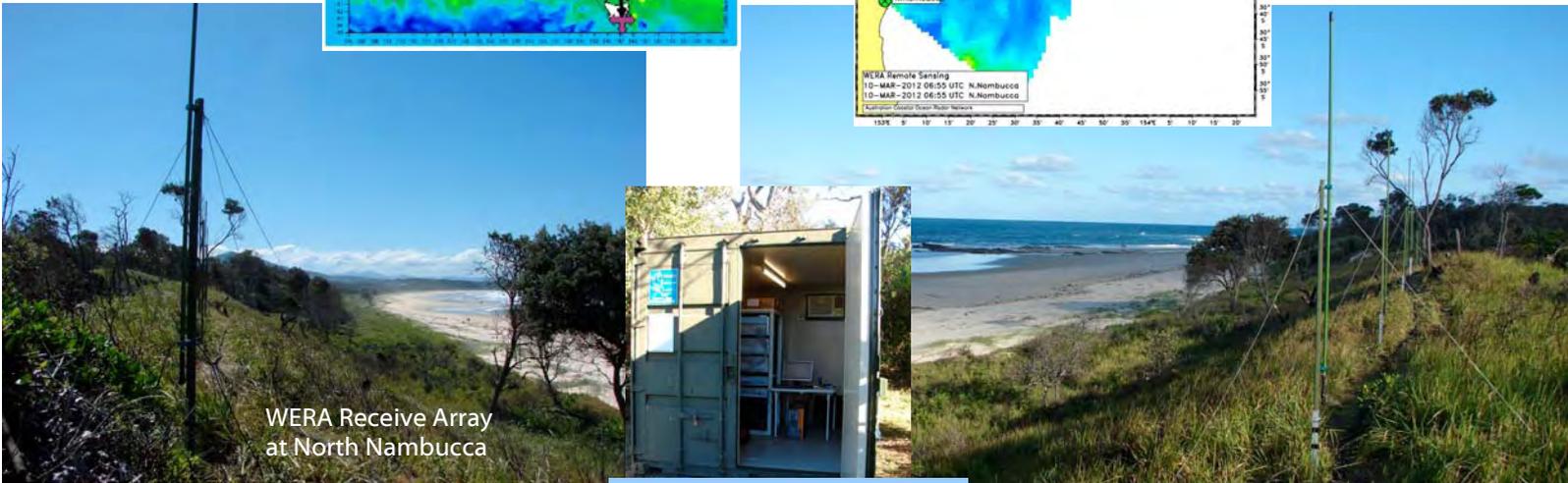


WERA Transmit Array at Red Rock

Significant Waveheight measured by the North Nambucca site

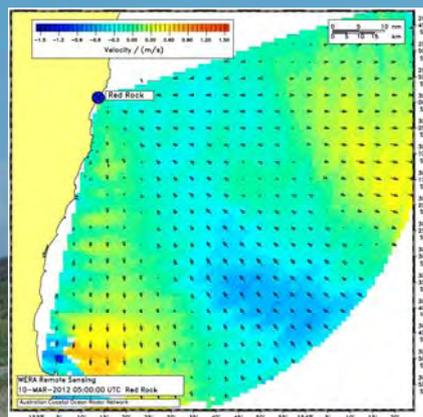


The Australian Coastal Ocean Radar Network



WERA Receive Array at North Nambucca

Thermal isolated Container with WERA system



Current velocity map from Red Rock site (with 4.5 min integration time)

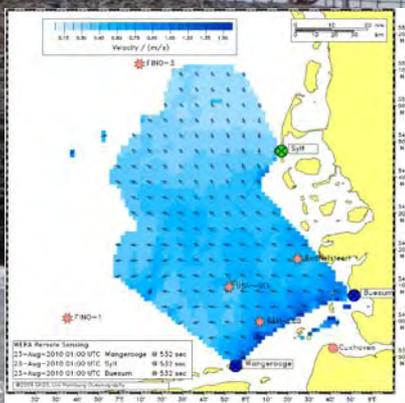
The extremely curved Receive Antenna Array at the Red Rock Site demonstrate the flexibility of the WERA system to choose the optimum solution for each site condition

## WERA as part of the COSYNA system

Within the Coastal Observation System for Northern and Arctic Seas (COSYNA) ground-based radars are used to obtain synoptic maps of hydrographic parameters, particularly waves, currents and the local water depth (bathymetry). Three radar systems operating in the high frequency (HF-band) and the microwaves (X-band) regime are used to probe the sea surface in COSYNA.



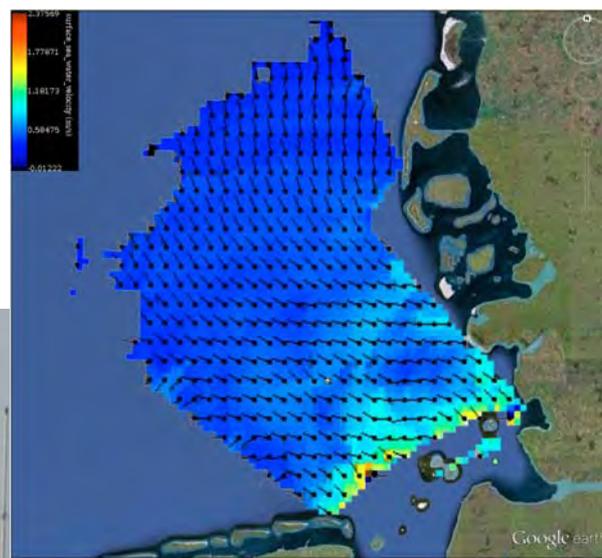
WERA Receive Antenna Array Büsum, German Bight



Current velocity map

In COSYNA the antennae for the HF-band system (WERA) – used to monitor ocean surface currents, waves and wind direction – are located on Sylt, near Büsum and at Wangerooge at the German North Sea coast.

Synoptic current map derived from the continuous measurements of the HF-radar systems (snapshot from the COSYNA data portal imported to Google earth). From the Doppler shift of the backscattered signal the radial current components are retrieved. Combining the measurement from the stations, 2D surface current vectors are retrieved (current direction depicted by line, current velocity colour coded). The synoptic current data from the German Bight are used for data assimilation into numerical models.



## WERA Operators Seminar

We would like to invite you to join us for our next WERA Operators Seminar in Kaltenkirchen, Germany:

September 24 - 28, 2012

This one-week intensive seminar is an excellent opportunity for potential users or for operators who already work with the WERA system and data on a daily basis to get to know all they need to experience about our Ocean Remote Sensing Technology.

Understanding the physics and technology behind WERA, an overview on the system hard- and software structure, basics for site planning will be explained to enable users or consultants to carry out future site planning, introduction to the software tool box and tools for quality assurance will be points on our agenda.

One day is reserved for a field trip to one of the WERA sites at the North Sea coast to carry out practical training.

For additional details on our seminar, please visit <http://www.helzel.com/de/13917-WERA-Operators-Seminar>



Mark your calendar to meet us:

**PIERS**  
Progress In Electromagnetics Research Symposium  
PIERS 2012 in Kuala Lumpur, Malaysia, 27-30 March, 2012



**MMTC 2012**  
**World Maritime Technology Conference**  
29 May - 1 June 2012  
Lenexpo, Saint Petersburg, Russia



**OCEANS 2012**  
**MTS/IEEE YEOSU**  
May 21-24, 2012, The Ocean Resort  
Yeosu, Republic of Korea

**10<sup>th</sup>** International Conference  
COASTAL ZONE CANADA  
Time for action!  
June 9 - 14, 2012 Rimouski, Quebec

**ISEA TECH WEEK**  
Semaine internationale des sciences et technologies de la mer  
International Marine Science and Technology Week  
Brest - Centre de congrès Le Quartz  
8 - 12 OCTOBRE 2012  
www.seatechweek-brest.org