Coordination of coastal radar network at national level: the RITMARE project experience in Italy

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WHO WE ARE

Institute of Marine Sciences – National Research Council

7 Labs, ~200 researchers

http://www.ismar.cnr.it/

Research fields:
- Physical and Chemical Oceanography,
- Coastal Management,
- Marine Biology,
- Marine Technology,
- Fishery and Aquaculture,
- Marine Geology,
- Climate and Paleoclimate.

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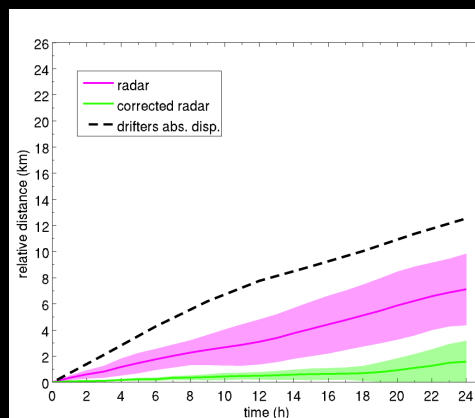
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ISMAR HF RADAR NETWORK AND RECENT RESEARCHES

4 Codar SeaSonde @ 25 MHz operating from 2013 to 2015 in South Adriatic Sea, now moving to Ligurian Sea (North-West)

Historical data at http://radarhf.ismar.cnr.it
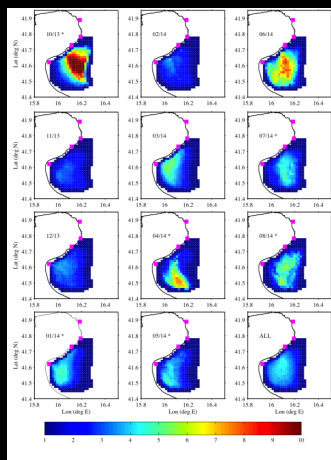
Surface current analysis for fishery applications

Fusion of HF radar and drifter data to improve trajectory hindcast for search and rescue and oil spill mitigation

THE RITMARE PROJECT

1. Maritime Technologies for the development and construction of a Demonstration Vessel

2. Technologies for Substainable Fishing

3. Planning of the Maritime Space in Coastal Waters

4. Planning of the Deep Marine Environment and the Open Sea

5. *Observation System for the Marine Mediterranean Environment*

6. Research, Training and Dissemination Structures

7. *Interoperable Infrastructure for the Observation Network and Marine Data*

THE RADAR ACTION

▪Integration of regional coastal radar observing systems

▪Definition of radar interoperable data format

▪DataCenter implementation for real time/delayed mode data dissemination and visualization

▪Definition, implementation and harmonization of standard QA/QC procedures

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RESEARCH INSTITUTES INVOLVED

1. Institute of Marine Sciences (CNR - ISMAR)

2. National Institute of Oceanography and Experimental Geophysics (OGS)

3. Department of Sciences and Technologies, University of Naples "Parthenope", CoNISMa

4. Institute for Coastal Marine Environment (CNR - IAMC)

5. Institute for Electromagnetic Sensing of the Environment (CNR – IREA)

RITMARE COASTAL RADAR NETWORK

HF radar component: Frequency 25 MHz and 16 MHz;
                    7 SeaSonde CODAR systems;
                    3 WERA systems;

Participants: CNR - ISMAR, La Spezia (leading partner);
                 OGS, Trieste;
                 CoNISMa - UniParthenope DiST.

X band radar component: Frequency 9,5 GHz; 4 systems

Participants: CNR - IAMC (Messina)
                 CNR - IREA (Naples)

The project is very open to extend the existing core network to new participants.

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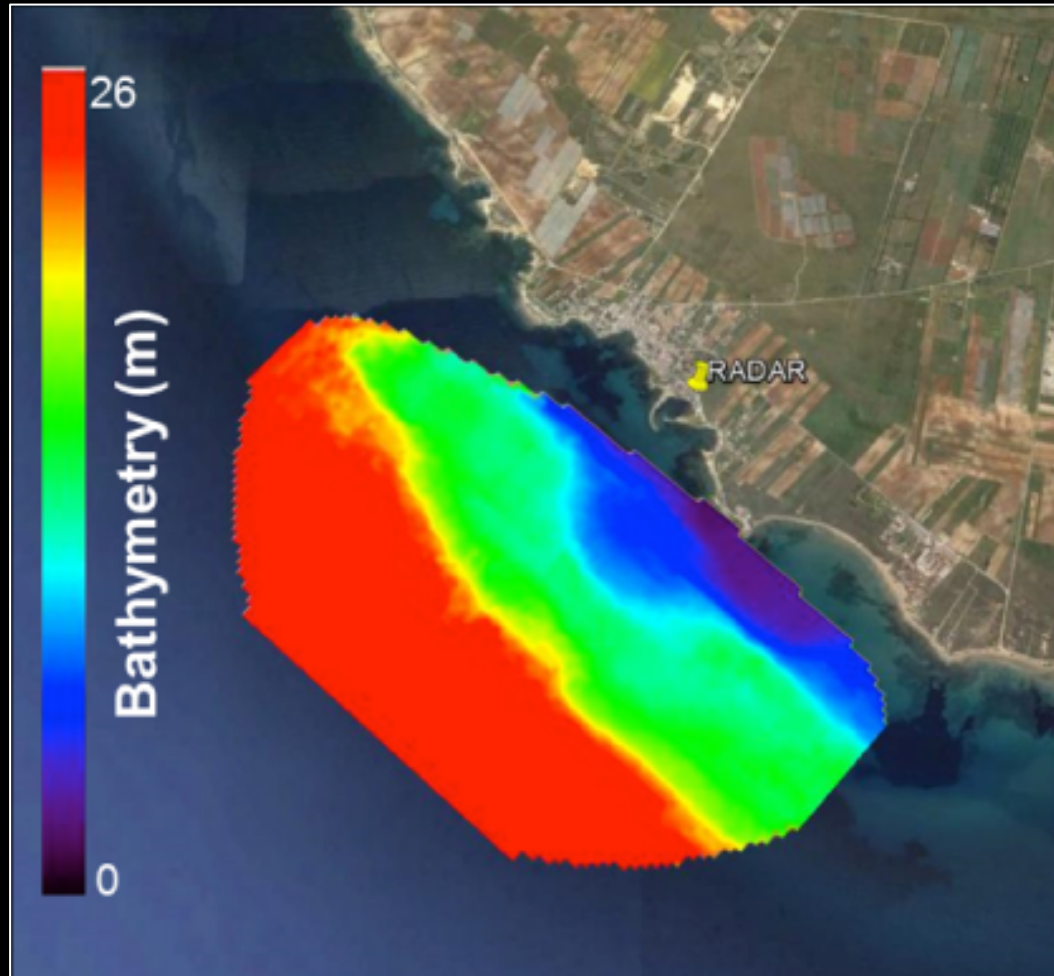
THE RITMARE COASTAL RADAR NETWORK

THE RITMARE HF RADAR NETWORK

X BAND RADAR NODES

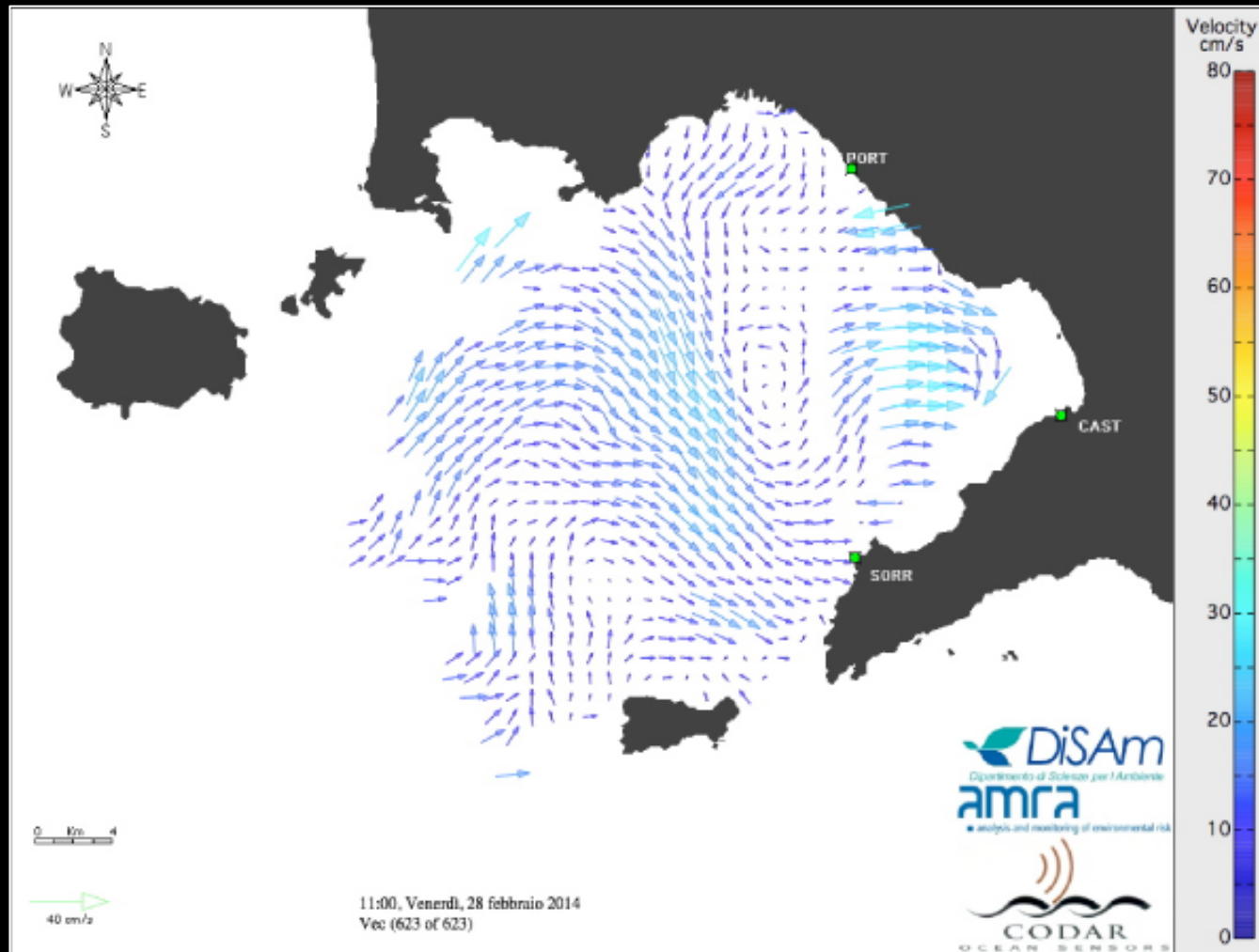Bathymetry map relevant to the neighborhood of Capo Granitola

X BAND RADAR NODES

Current map relevant to the neighborhood of Capo Granitola

HF RADAR NODES

Example of total velocity field from Gulf of Naples

THE INTEROPERABLE DATA FORMATS

- Definition of NetCDF format for radial and total velocities compliant with:
    - > CF-1.6 convention
    - > US HF radar community (ROWG) recommendations
    - > INSPIRE convention

- Visualization and access to radial and total velocity maps:
    - > THREDDS architecture (UNIDATA compliant)
    - > RITMARE open source suite, OCG standards based

■ = ongoing

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COORDINATION AT EUROPEAN LEVEL

▪CNR-ISMAR is member of the European HFR Task Team under EuroGOOS supervision.

▪Ongoing discussion at European level for data and metadata harmonization.

▪First demo of web platform for unified HF radar data visualization and access within EmodNET project.

▪Data available at http://hfr-thredds.emodnet-physics.eu/thredds/catalog.html

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CRITICAL POINTS

▪Coordinate research groups working with different consolidated data architectures.

▪Build data and metadata structures suitable for different technologies (e.g. Codar vs WERA, HF vs X-band).

▪Match different operative needs requiring different data and metadata fields in the structure (e.g. operational oceanography vs modeling requirements, Real-Time Mode vs Delayed Mode).

▪Homogenize different QA/QC approaches.

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RITMARE NETWORK OF COASTAL RADARS

Coordinator:
Annalisa Griffa (ISMAR CNR)
Participants:
Carlo Mantovani, Lorenzo Corgnati (ISMAR CNR)
Francesco Serafino (IREA CNR)
Simone Cosoli (OGS)
Francesco Raffa (IAMC CNR)
Enrico Zambianchi, Marco Uttieri (CoNISMa - ULR Parthenope DiST)

Thank you for your attention.

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