Athens, 26-27 May 2015
Kostas Nittis Scientific and Strategic Workshop

Ritmare

Advancements in the RITMARE Ocean Observing System

A.Crise & RITMARE SP5 group

CNR Consiglio Nazionale delle Ricerche

OGS INGV Stazione Zoologica Anton Dohrn Napoli ENEA CoNISMa Consorzio Nazionale Interuniversitario per le Scienze del Mare CINFAI

Ministero dell'Istruzione dell'Università e Ricerca

RITMARE Programme

RITMARE Flagship Programme is the largest National Research Programme funded by the Italian Ministry of University and Research

90M€ (2012-15)

Structure: RITMARE is structured in **7 sub-projects**

Coordinator: National Research Council (CNR)

Partners: **OGS, INGV, SZN, ENEA, *CoNISMa, CINFAI***

SP5
Observing System

RITMARE OOS Objectives

International Dimension

Italian contribution to:

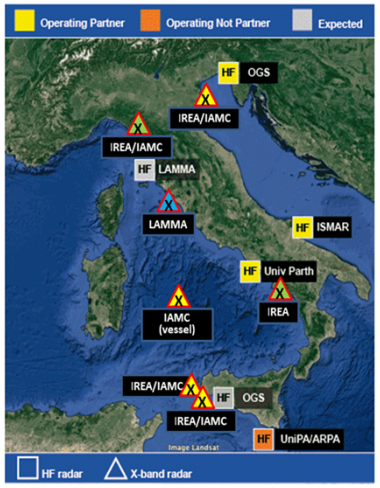
- EC JERICO NEXT
- EC FIXO3
- EC GROOM/EGO
- MonGOOS/EuroGOOS
- COPERNICUS Marine Services
- Link with ESFRI EuroARGO, EMSO (ICOS, LTER Europe)

RITMARE OOS in numbers

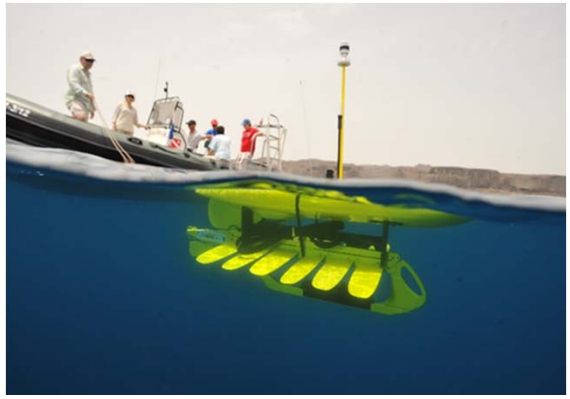
Project Structure	
Allocated funds (2012-15)	10.000.000€
Coordinator	OGS
Involved Institutions	• 5 Public Research Institutes • 2 University Consortia
Work Packages	5
Tasks	61
People involved	~ 400
Young scientists (<40y)	>70

RITMARE OOS Infrastructure

Ritmare Coastal Radar (X-band, HF) network



Infrastructure	
Fixed-point mooring	12*(+2)*
Gliders	5
Radars (**HF**, **X** band)	**3+2, 4+*3***
Relocatable equipment	2 additional deep-sea moorings
Pre-opeartional models	7 (2 Mediterranean scale)



Three Strategic Actions

Consolidation/development of existing infrastructures

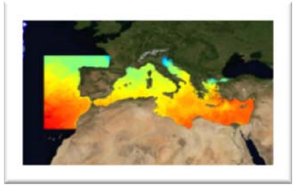
- **permanent component** (mooring network, satellite images, HF and X-band radars)
- relocatable component (gliders, drifters, relocatable infrastructures)

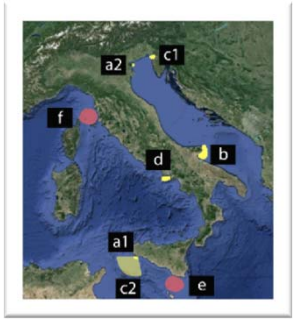
Development of E-infrastructure

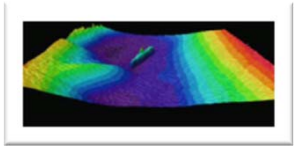
- **Interoperability**
- **Free and open data access**

Targeted research and Innovation

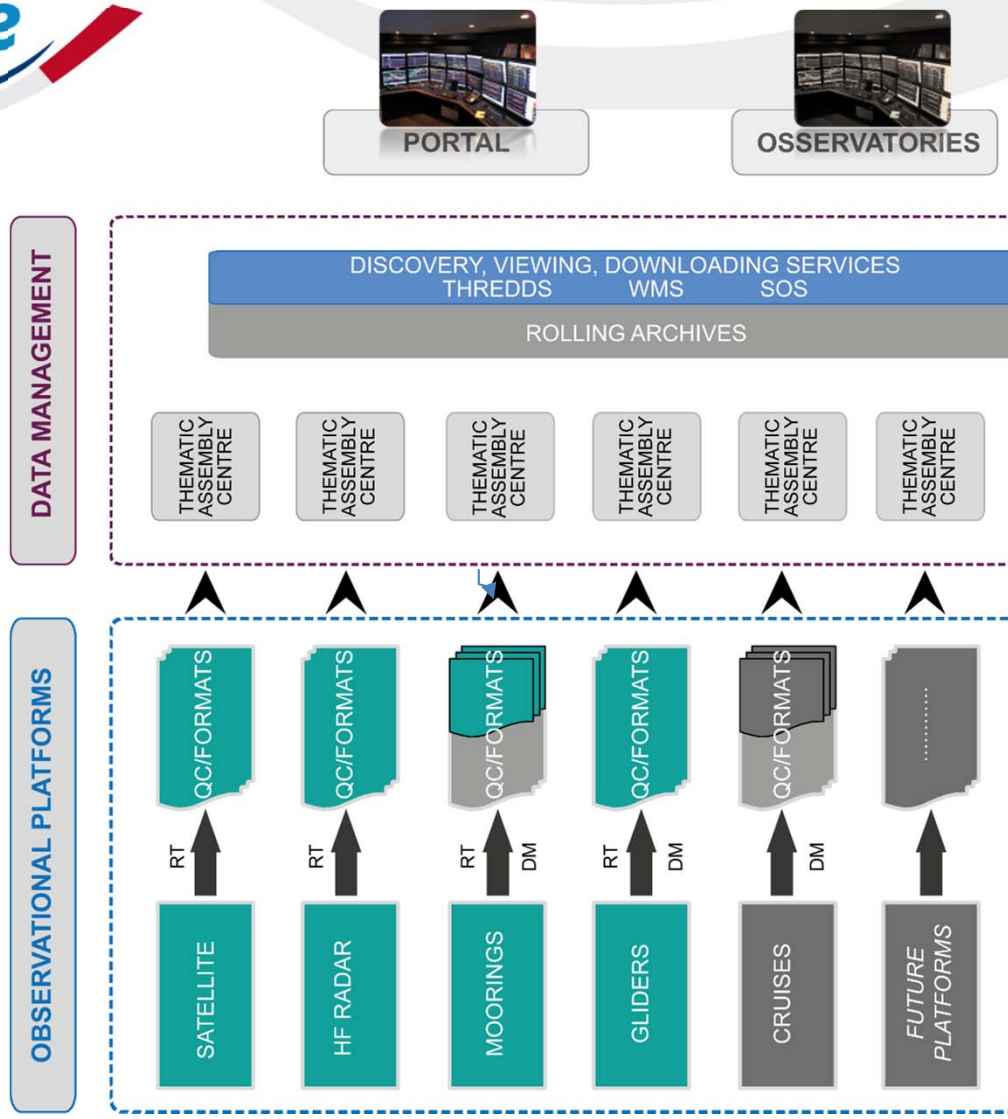
- new platforms (Lidar, coastal radars),
- Innovative products
- Improved stetellite outputs
- coastal and deep-sea observatories including biology,
- Targeted model components





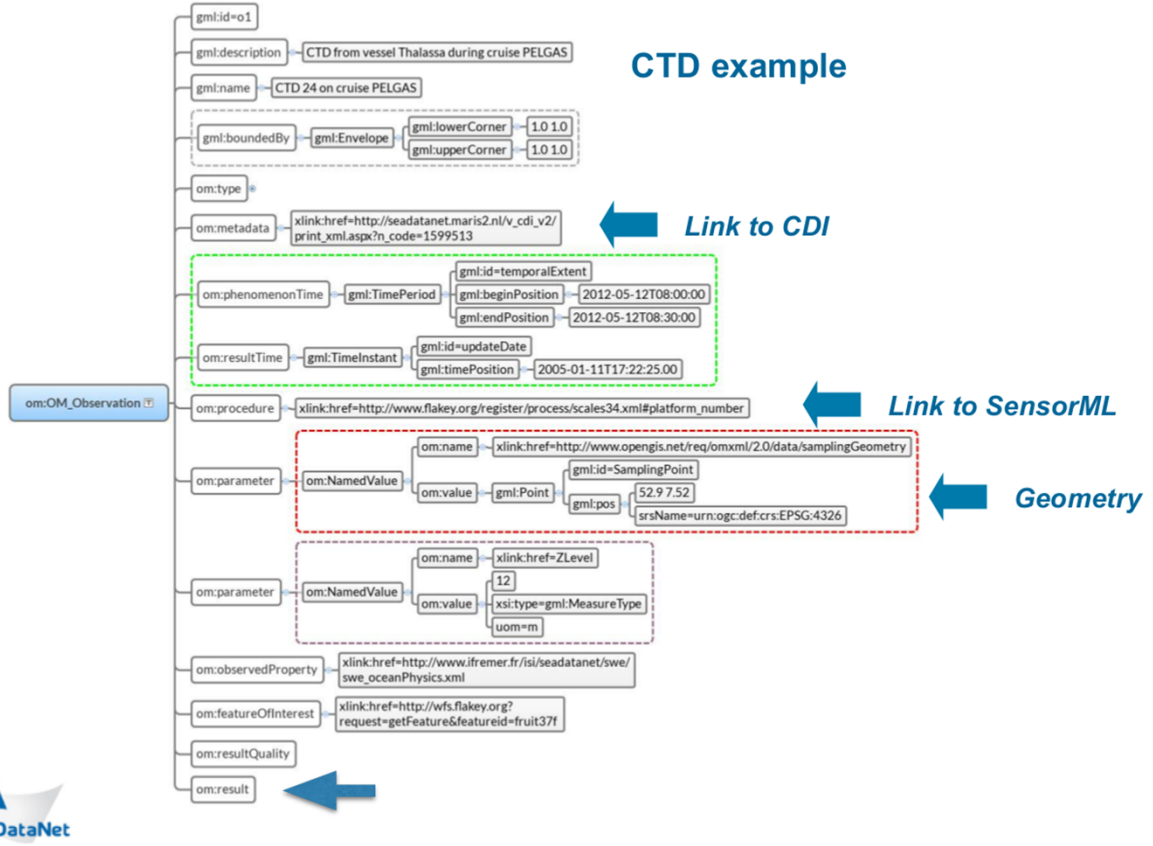


Conceptual Design



Web Enablement Services

O&M
CTD example



NRT Biological observations

Demonstration of NRT acquisition of biological observations

Stazione Zoologica Anton Dohrn

MC 1152
12/05/2015

Meso-zooplankton abundance:
1688 ind. m^{-3}

Long-term average (May, 1984-2014):
1572 ± 840 ind. m^{-3}

Most abundant taxa :
- copepod *Paracalnus parvus* (24%)
- cladoceran *Pleopis polyphaemoides* (23%

Dry mass: 6.4 mg m^{-3} (weight after 24h)
Long-term average (May, 1984-2014):
10.6 ± 3.8 mg m^{-3}

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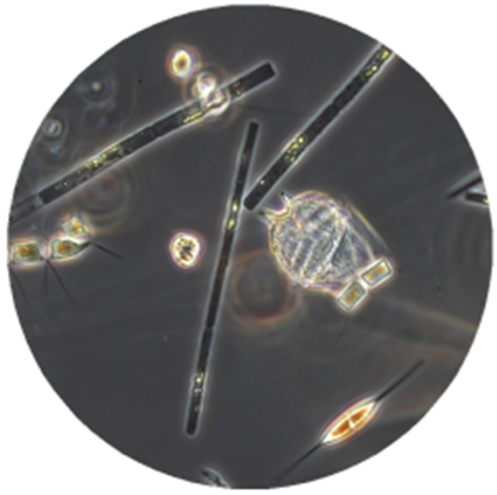
Phytoplankton abundance:
2.4 x 10^4 cells ml^{-1}

Phytoplankton groups percentage:
diatoms: 56.0%, flagellates: 41.7%,
dinoflagellates: 1.9%, coccolithophores: 0.4%

Most abundant diatom species:
Chaetoceros socialis (8.9%)
Chaetoceros curvisetus (6.9%)
Leptocylindrus danicus (5.0%)

Most abundant species in the net sample:
Chaetoceros curvisetus
Leptocylindrus danicus
Pseudo-nitzschia galaxiae

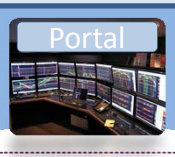


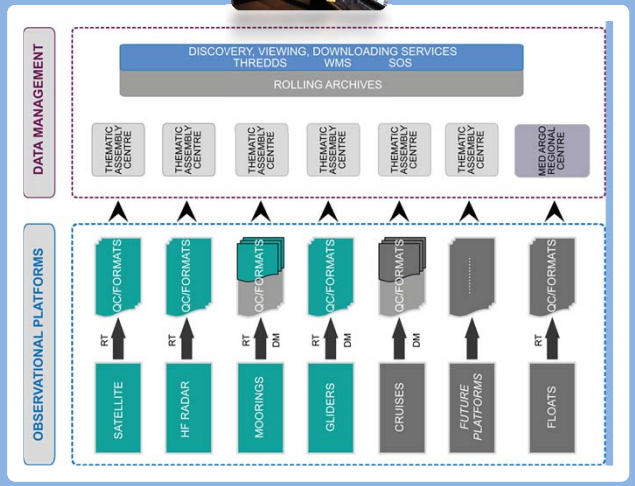
Live sample.
Main species in the picture: Leptocylindrus convexus, Cylindrotheca closterium and Gonyaulax sp.

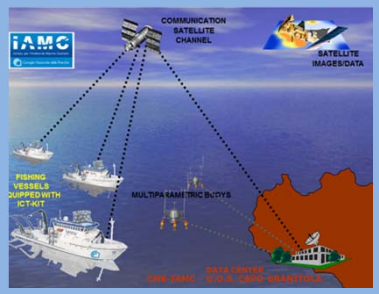
NOTES: *Preliminary quantitavive analsysis*

Extended RITMARE OOS

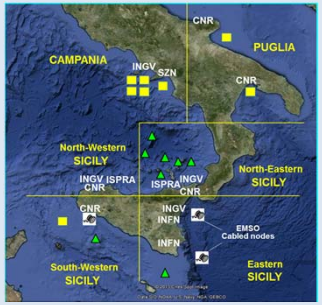
BioAcoustics Infrastructure



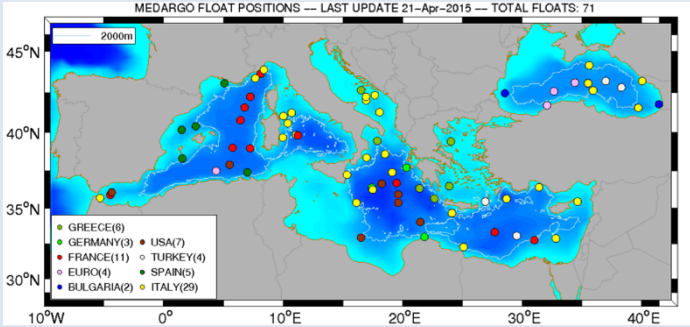




Fishery Oceanography Observing System Infrastructure



EMSO-MedIT



MedARGO

Italian fleet of autonomous instruments

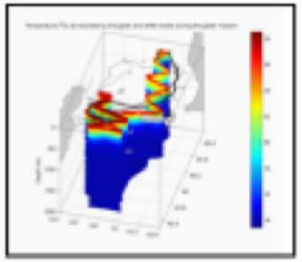
Ritmare

GROUND SEGMENT ACTIVITIES

- Design of a national glider operational infrastructure, and implementation of the Italian 'gliderport'
- Definition of good practices and related legal issues
- Statistical analysis and 3D sampling strategies in key areas
- Analysis, quality control and dissemination of *glider* and *drifter* data
- Demonstration of *Wavegliders* functionality in the framework of an integrated operative system

ACTIVITIES AT SEA

- *Seaglider* survey in South Adriatic Sea (2013 and 2014); MREA (Marine Rapid Environmental Assessment) mission with glider and drifters (2014)
- Missions in South Tyrrhenian Sea (2012 and 2013) to monitor the sea surface layer by *Waveglider* and satellite data



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Workshop

DOISST validation

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RITMARE Data Policy

Single data policy for the whole project. Main aspects:

- **Open and free access** for all users (internal and external)
- Data originator must be **quoted**
- Data originator must be **contacted** before any publication (in the first 2 years)
- A observation-dependent **moratorium** is adopted to preserve the data originator publication priority
- **Metadata** delivery is required

Lessons learned

- To work together we need to share the same language
- What you are doing is not always the most important thing in the world
- Your data are my data (and viceversa)
- There are more data committees that data producers
- Better to produce good data that try to fix them later
- Interoperabilty is not a bad word but it’s hard to obtain

Kostas Nittis Legacy

We are here not only to pay a tribute to Kostas memory but also to keep his legacy alive

Ritmare

SP5 group

Thanks for your attention!

Consiglio Nazionale delle Ricerche

INGV

OGS

Stazione Zoologica Anton Dohrn · Napoli ·

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