Final General Assembly Report
28th April 2015

Grant Agreement n° 262584
Project Acronym: JERICO

Project Title: Towards a Joint European Research Infrastructure network for Coastal Observatories

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Involved Institution: Ifremer
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SEVENTH FRAMEWORK PROGRAMME


JERICO

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I] Introduction

JERICO Research Infrastructure (RI) is the coastal component of the European marine observing system, and is funded by the FP7 program and recently extended through a newly awarded H2020 project (JERICO-NEXT). It gathers 33 partners from 15 European countries. This research infrastructure aims at further developing, harmonizing and integrating nationally funded marine observing systems, collecting physical, chemical and biological parameters from different platforms (ferryboxes, fixed platforms, gliders, HF radars, benthic systems …).

The General Assembly was the first part of this "JERICO week". In this report will be listed all relevant information (agenda, participant list, etc) and the slides of each presentation.

The JERICO Management Team would like to thank again everyone who participated to this final General Assembly and to the JERICO week.

Agenda

Time slot	Topic	Lead

Tuesday, 28th of April – General Assembly		
07:30-08:15	**Bus to Ifremer (Stop at Ibis Styles & Railway station)**	
08:30-09:00	**GA Welcome Speeches**	A. Dosdat, P. Farcy
09:00-10:40	**General Assembly:** *- WP 2 (09:00 – 09:20): Strengthening regional and trans-regional activities* *- WP 3 (09:20 – 09:40): Harmonizing technological aspects* *- WP 4 (09:40 – 10:00): Harmonizing operation and maintenance methods* *- WP 5 (10:00 – 10:20): Data management and distribution* *- WP 6 (10:20 – 10:40): Outreach*	 H. Wehde (IMR) W. Petersen (HZG) G. Petihakis (HCMR) R. Nair (OGS) S. Keeble (BL)
10:40-11:00	*Coffee break*	

11:00-12:50	**General Assembly:** *- WP 7 (11:00 – 11:20): Service and data access* *- WP 1 (11:20 – 11:50): A Common Strategy* *- WP 8 (11:50 – 12:20): Transnational access to coastal observatories* *- WP 9 (12:20 – 12:50): New methods to assess the impact of coastal observing systems*	L. P. de la Villéon (IFREMER) P. Morin (CNRS) S. Sparnocchia (CNR) T. Vukicevic (CMCC)
12:50-14:00	*Lunch*	
14:00-15:30	**General Assembly:** *- WP 10 (14:00 – 14:30): Improved existing and emerging technologies* *- WP 11 (14:30 – 15:30): Management*	G. Nolan (MI) P. Farcy (IFREMER)
15:30-15:50	*Coffee break*	
End of General Assembly meeting		

Participant List

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II] WP2 Presentation (H. Wehde, IMR)

Strengthening regional and trans-regional activities

WP2

Henning Wehde I Institute of Marine Research I henningw@imr.no

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1) *Tasks and % of completion -*
2) *List of partners*
3) *Deliverables and milestones*
4) *Main difficulties*
5) *Main significant results*

Tasks and % of completion -

Task 2.1: State of the Art in Coastal observing systems

Henning Wehde - **IMR**, SMHI, Deltares ,IH, AZTI, INGV, IO-BAS

Task 2.2 Cross regional integration and demonstration

Irene Lake - **SMHI**, IMR, Deltares ,IH, AZTI, INGV, IO-BAS

With the delivery of D-2.5 now the task are 100 % completed

List of partners

• Arctic ROOS	IMR
• BOOS	SMHI
• NOOS	Deltares and IMR
• IBI ROOS	IH and AZTI
• MONGOOS	INGV
• Black Sea	IO-BAS

Deliverables and milestones

D-2.1 Report on existing observation network from all ROOSs
D-2.2 Report on recommendations for future research and developments for filling gaps in the areas where observations are unattainable due to lack of best practice or technologies from all ROOSs
D-2.3 Integrated Pan European Atlas/first report on Coastal Observing systems

- *D-2.4 Demonstration of the feasibility of joint trans-regional product production Transports and E-HYPE*
- *D-2.5 Integrated Pan European Atlas/second report on Coastal Observing systems, update at the end of the project*

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- The first deliverables Deliverables were late
- Contribution to the sustainability
- Report on the Atlas:
  - development and implementation of an online tool outside the DoW

Main significant results

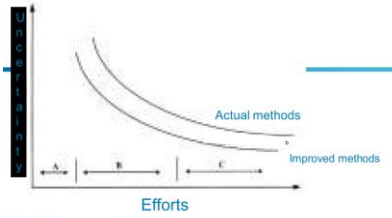
D-2.1 Report on existing observation network from all ROOSs

- A review of the present status of the observation systems provided by the regional Alliances of the European Global Ocean observing system (EuroGOOS).

- Arctic ROOS
- NOOS
- BOOS
- IBIROOS
- MONGOOS
- Black Sea GOOS

D-2.2 Report on recommendations for future research and developments

- The main aim for this report was to provide an overview of the
- main challenges the existing observational systems are facing to provide an integrated status of the marine environment
- to identify knowledge gaps, that are recommended to fill within the upcoming years.



Reducing uncertainty

A : too scarcely evolved efforts
B : more frequently measurements lead to improvement
C : New methodology needed for improvement

Periods important for processes

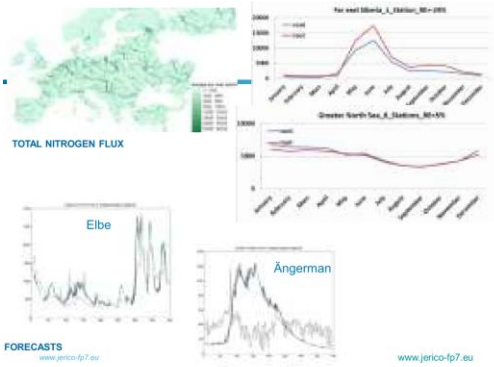
D2.3 Integrated Pan European Atlas/first report on Coastal Observing systems

The main aim for this deliverable is to provide an overview over and reference to the existing European observing systems. The aim is to include all the available observing systems in the seas around Europe.

D2.4 Demonstration of the feasibility of joint trans-regional product production Transports; E-HYPE

- *This report focused on:*
- *Development and setup of an operational hydrological forecast tool for delivering high-resolution real-time and forecast fluxes of water and nutrients to European Seas.*
- *Demonstration of an possible approach to a pan-European transport product.*

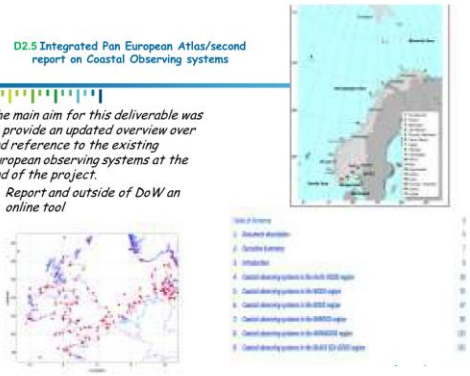
- *The hydrological data is intended as an improvement to the discharge climatologies and constant nutrient concentrations traditionally used by oceanographers as input to physical and biogeochemical ocean models.*
- *The transport calculations are useful for customers interested in movement of water masses e.g. oceanographers, environmental organisations or fisheries.*



D2.5 Integrated Pan European Atlas/second report on Coastal Observing systems

The main aim for this deliverable was to provide an updated overview over and reference to the existing European observing systems at the end of the project.

- *Report and outside of DoW an online tool*



Online tool for Atlas D-2.5

Online Atlas D-2.5

Online Atlas D-2.5

Thanks for listening

III] WP3 Presentation (W. Petersen, HZG)

WP3: Harmonizing Technological Aspects
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1) ***Main Objectives***
2) ***Tasks and % of completion -***
3) ***List of partners***
4) ***Deliverables and milestones***
5) ***Main difficulties***
6) ***Main significant results***

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WP3: Harmonizing Technological Aspects
Tasks

Tasks divided by platforms:

Task 3.1. FerryBox Systems
Task 3.2 Glider
Task 3.3 Fixed Platforms

WP3: Main Objectives :

- To provide a common base for the operational use of FerryBoxes, gliders, fixed platforms along European coasts 100%
- To review the current status of existing systems in operational use in European seas 100%
- To define the best technical practices for compatible, robust and cost-effective systems 90
- To define procedures for harmonizing and merging quality assessed FerryBox and Fixed Platform data at regional (ROOS) level (partly solved)
- To define procedures and technological solutions for integration and testing of new sensors on these systems (partly solved)

WP3
List of Participants

Person-Months per Participant

Participant number	Participant short name	Person-months per participant
1	IFREMER	2.80
2	SYKE	4.80
3	BWPAN	6.80
5	NIVA	5.80
6	OGS	4.80
9	CNR	7.80
11	HCMR	8.80
12	NERC	13.80
14	HZG	16.80
15	MUMM	3.80
16	CEFAS	8.80
17	SMHI	4.80
18	CSIC	5.50
20	MI	2.80
22	TECNALIA-AZTI	3.70
23	INSU/CNRS	7.80
26	PUERTOS	6.50
	Total	104.70

WP3
Workshops:

- 1st FerryBox workshop (30-31 August 2011 at HZG)
- joint workshop with WP4 about best practise for Fixed Platforms (Rom 2012)
- jointed workshop with GROO and EGO about Gliders (Majorca 2012)
- joint workshop with WP4 about best practise for all platforms (Crete 2012)
- 2nd FerryBox workshop in April 2013 in Helsinki
- joint workshop with WP4 on best practice for fixed platforms (Lisbon, 2014)

WP3: Deliverable

Deliverables (cont)

WP3: Main Difficulties

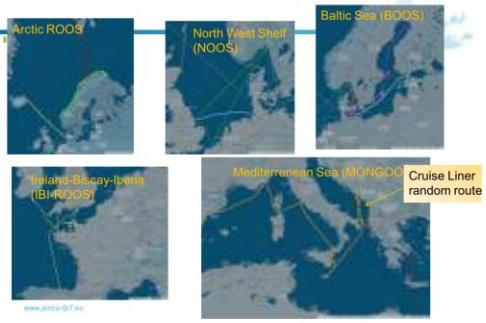
- too many partners with different responsibility and engagement
- large number of fixed platform and very inhomogeneous installation →
  difficulties in homogenization and development of clear recommendations for best practice
- partly overlap with WP4 regarding the content of the deliverables
- partly overlap with GROOM project regarding gliders
- merging of quality accessed data from different fixed platforms not completed

WP3: Main Significant Results (FerryBox task)

FerryBox Task:

- regular updated overview about active FerryBox lines, disseminated in www.ferrybox.org
- extensive exchange of experience and knowledge between FerryBox operators
- test of new sensors with regard to biogeochemistry and exchange of knowledge between partners
- joint activity with WP4 →
  detailed and comprehensive Handbook of best practise of FerryBox operation

WP3: Main Significant Results FerryBox Task (cont)



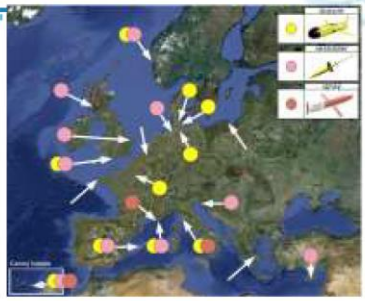
WP3: Main Significant Results Glider Task (con)

Glider Task:

- close cooperation and exchange with the later started glider project GROOM.
- regular exchange of experience and knowledge between Glider operators
- Comprehensive overview about the glider observatories and operations within Europe including cost analysis
- joint activity with WP4
  → Handbook of best practise of Glider operation including further references (further details) to GROOM deliverables

WP3:
Main Significant Results (Glider task)

European Fleet of Gliders

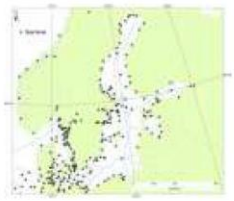


WP3:
Main Significant Results Fixed Platform Task

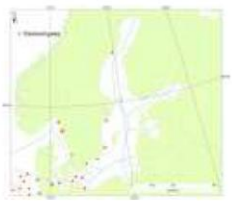
Fixed Platform Task:

- Comprehensive database and regular updated overview about the Fixed Platform and measured platform
- joint activity with WP4 → Handbook of best practise of Fixed Platform operation

WP3:
Main Significant Results Fixed Platform Task (con)

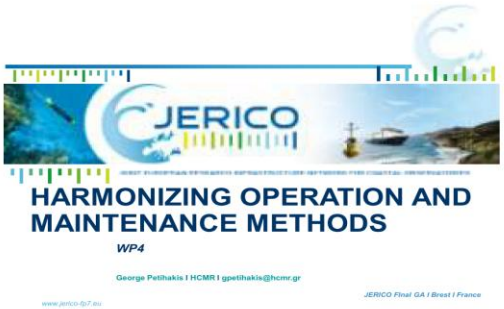


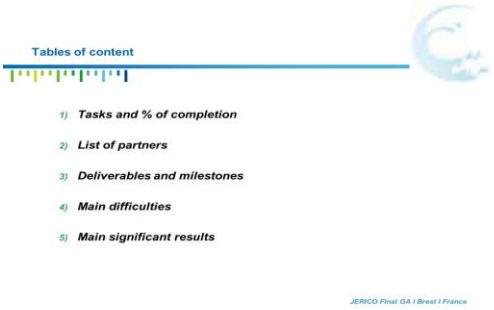
Sea Level Stations (BOOS)

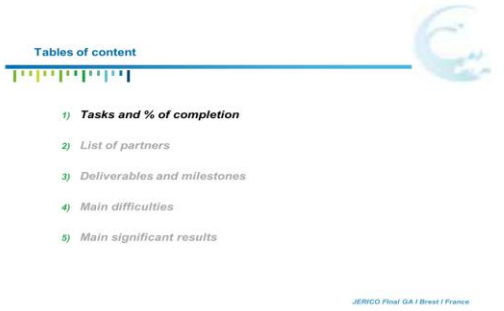


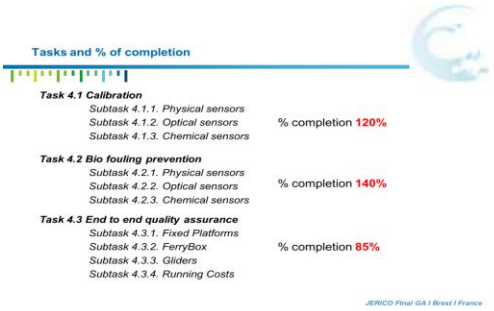
Dissolved Oxygen Stations (BOOS)

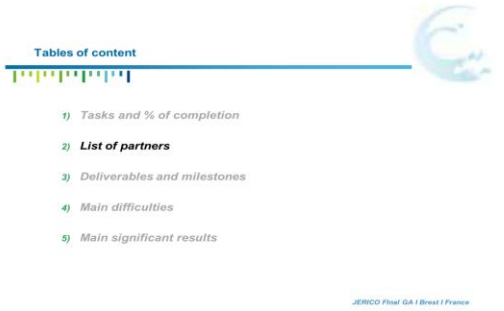
IV] WP4 Presentation (G. Petihakis, HCMR)

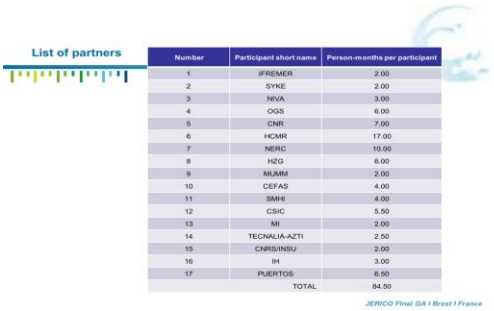












Number	Participant short name	Person-months per participant
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2	SYKE	2.00
3	NIVA	3.00
4	OGS	6.00
5	CNR	7.00
6	HCMR	17.00
7	NERC	10.00
8	HZG	6.00
9	MUMM	2.00
10	CEFAS	4.00
11	SMHI	4.00
12	CSIC	5.50
13	MI	2.00
14	TECNALIA-AZTI	2.50
15	CNRS/INSU	2.00
16	IH	3.00
17	PUERTOS	6.50
	TOTAL	84.50

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1) Tasks and % of completion
2) List of partners
3) **Deliverables and milestones**
4) Main difficulties
5) Main significant results

Deliverables and milestones

Del. no.	Deliverable name	Delivery date DOW	Date Delivered	Man Months	Lead benificiary
D4.1	Report on existing facilities	M18	M20	10.00	HZG
D4.2	Report on calibration best practices	M36	M36	20.00	HZG
D4.3	"Report on biofouling prevention methods	M36	M36	20.00	CNR
D4.4	"Report on best practice in operation and maintaining	M42	M48	20.00	HCMR
D4.5	Report on running costs of observing systems	M42	M43	14.50	CEFAS

MS. no.	Milestones name	WP n°	Delivery date DOW	Date Delivered	Lead contractor
MS15	Constitution of a permanent Working Group within JERICO for Calibration Activities	4	M30	M43	HCMR

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Main difficulties and positive lessons

Negative

- New consortium → hard to know the expertise of the partners during the proposal drafting period
- 4 years is a long period and difficult to sustain partner's interest
- Some partners never showed up → PUERTOS had 6mm
- Although the methodological approach was correct the 3 platforms are at very different level of harmonisation

Positive

- High level of expertise
- Workshops proved to be extremely useful
- Enthusiasm → more workshops
  → Biofouling experiment

Lessons

- Dedicated funds for workshops
- More exercises
- Try to find enthusiastic people
- More interaction with industry

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Main significant results

Task 4.1 Calibration

Sensor approach

Exercises

Main significant results

Exercises

Task 4.1 Calibration

Date	Title	Location
th February 2012	1st Calibration and biofouling prevention of optical sensors & sharing of calibration facilities	SYKE, Helsinki
h of October 2012	2nd Calibration exercise, sharing of calibration facilities	IFREMER, Brest
Sept-Oct 2013	Intercomparison of O2 sensors in situ and in lab	CNRS, Villefrance
TNA Exercises 1 OGS and 2 HCMR		

A Permanent Working Group Established

Main significant results

Task 4.2 Biofouling prevention

Sensor approach

During the 2nd JERICO WP3 & WP4 common workshop on Fixed Platforms in Rome 29th (February – 1st March 2012) it was decided to design and implement a common experiment

BIOFOULING MONITORING PROGRAM (BMP)

Main significant results

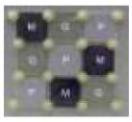
Task 4.2 Biofouling prevention

Coordination: Marco Faimali (ISMAR- CNR)

Partners: HCMR
AZTI
IFREMER
CEFAS
SMHI
SYKE

Main significant results

BMP Box



Main significant results - BMP

- Comparing the data from the different sampling sites, we can learn more about the reasons that determine the complex process of fouling colonization
- Despite the differences in fouling composition among sampling sites, some factors played always a key role in the settlement of organisms
- Such factors included the light availability, the materials employed and its physical nature
- Organism's settlement is a process affected by many chemical, physical and biological factors
- Field experiments highlight how complex and numerous are the interactions among factors, that can not mimicked in the laboratory
- **Further joint research have to be carried out in this field in order to understand all the interactions involved and to obtain a better characterization of settlement behavior and fouling process**

Main significant results

Workshops

Task 4.3 End to end quality assurance
Best Practices

Platform approach

Date	Title	Location
30 -31 August 2011	1st JERICO WP3 & WP4 common workshop on FerryBox	HZG, Hamburg
29th February – 1st March 2012	2nd JERICO WP3 & WP4 common workshop on Fixed Platforms	CNR, Rome
22 – 23 May 2012	3rd JERICO WP3 & WP4 common workshop on Gliders	IMEDEA, Palma
4-5 October 2012	4th WP3 & WP4 common workshop on Best Practices	HCMR, Heraklion
23rd April 2013	WP3 & WP4 status workshop	SYKE, Helsinki
13th March 2014	Dissolved Oxygen calibration / What are the best procedures? An interactive workshop to identify the best practices about dissolved oxygen calibration procedure.	FCT, Oceanology 2014, London

Main significant results

Task 4.3 End to end quality assurance
Best Practices

- Very difficult task
- Great variability between the 3 platforms
  - **Gliders** are more or less harmonised
  - **FerryBoxs** are following
  - **FixedPlatforms** → nightmare

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Report on best practice in conducting operations and maintaining
D4.4

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Main significant results

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Task 4.3 End to end quality assurance
Best Practices

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Main significant results

Task 4.3 End to end quality assurance
Best Practices

Gliders

FerryBox

Fixed Platforms

- *Many different designs produced both as off the shelf products as well as custom builds.*
- *In most cases, designs follow a fit-for-purpose approach adopted for the environment in which they are placed*
- *The environmental constraints in the coastal environment are high*
- *The variability of sensors that can be placed on board Fixed Platforms is very high*

Main significant results

Task 4.3 End to end quality assurance
Running Costs

- The cost of setting up and operating such systems can be significant
- It is the first time that costs are recorded for
  - Fixed Platforms
  - FerryBoxes
  - Gliders
  - Calibration labs

Joint European Research Infrastructure network for Coastal Observatories

D4.3.4 –Running costs of coastal observatories

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Main significant results

Task 4.3 End to end quality assurance
Running Costs

There was a large variability in costs between laboratories reflecting the different types of platforms and parameters being measured

Initial investment costs:
-Gliders 222,545 €
-FerryBoxes 110,298 €
-Fixed Platforms 86,526 €

Annual running costs:
-Gliders 184,014 €
-FerryBoxes 139,358 €
-Fixed Platforms 90,529 €

A large proportion of the total annual running costs (27%) of fixed platforms is associated with boat charter

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See you in JERICO NEXT

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V] WP5 Presentation (R. Nair, OGS)

DATA MANAGEMENT AND DISTRIBUTION

WP5

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Tasks and % of completion

Task 5.1: Create value for measured data
Activity description: development of a procedural framework for assigning uncertainties to some measured parameters.
% completed: 100%.

Task 5.2: Harmonization of delayed-mode data management procedures with SeaDataNet
Activity description: development of the JERICO data management framework for dealing with delayed-mode data.
% completed: 100%.

Task 5.3: Harmonization of real-time data management procedures with MyOcean/EuroGOOS
Activity description: development of the JERICO data management framework for dealing with real-time data.
% completed: 100%.

List of partners

Task 5.1: Create value for measured data
Task Leader: OGS.
Other partner involved: HCMR.

Task 5.2: Harmonization of delayed-mode data management procedures with SeaDataNet
Task Leader: IFREMER.
Other partners involved: HCMR, MUMM, OGS.

Task 5.3: Harmonization of real-time data management procedures with MyOcean/EuroGOOS
Task leader: IFREMER.
Other partners involved: CNR, NIVA, IMR, HCMR, PUERTO, SMHI.

Deliverables and milestones

DELIVERABLES

- D5.1: "DM Data Management Handbook, V1"
- D5.2: "RT Data Management Handbook, V1"
- D5.3: "First data management report"
- D5.4: "Guidelines for Uncertainty"
- D5.5: "Report on uncertainty for selected key parameters: temperature, salinity and chlorophyll-a"
- D5.6: "DM Data Management Handbook, V2"
- D5.7: "Second data management report"
- D5.8: "RT Data Management Handbook, V2"

Deliverables and milestones

MILESTONES

- MS16: "First JERICO management Handbook"
- MS17: "Launch of Service Access"
- MS18: "Report on activities"
- MS19: "Final JERICO management Handbook"

Main difficulties

- Late start.
- Slow responses and feedbacks.
- Poor communication amongst partners.
- Difficulty in accessing source documents.
- Diversity of platforms, sensors and parameters.
- Diversity of data handling formats, procedures and practices.
- Interaction and coordination with SeaDataNet and MyOcean.

Main significant results

A synergistic framework for handling data

Main significant results

Innovation: the JERICO tag, standardized descriptions of observing infrastructure using the OGC's SWE suite and the SensorML format

Main significant results

Examples of leading systems feeding the JERICO near-realtime data stream

Main significant results

- Fully functional partnerships with SeaDataNet and MyOcean → supports the "open & free" data policy paradigm; ensures compatibilty, interoperability, and the implementation of common data handling practices for coastal marine data in the European context.
- Added impetus to the contribution of coastal marine data to SeaDataNet and MyOcean → enhancing the availability and circulation of European coastal marine data.
- Establishment of a proactive approach to address "in-house" data issues → cooperation with SeaDataNet and MyOcean is allowing JERICO to participate actively in establishing Europe's database and management infrastructure for coastal marine data.

Main significant results

Del. no.	Deliverable name	Status
D5.1	DM data management handbook V1	Delivered
D5.2	RT data management handbook V1	Delivered
D5.3	First data management report	Delivered
D5.4	Guidelines for uncertainty	Delivered
D5.5	Report on uncertainty for selected key parameters: temperature, salinity and chlorophyll-a	Delivered
D5.6	DM data management handbook V2	Delivered
D5.7	Second data management report	Delivered
D5.8	RT data management handbook V2	Delivered

Mil. no.	Milestone name	Status
MS16	First JERICO management Handbook	OK
MS17	Launch of Service Access	OK
MS18	Report on activities	OK
MS19	Final JERICO management Handbook	OK

Thank you

VI] WP6 Presentation (S. Keeble, BL)

WP6: Outreach

David Mills (Cefas), Simon Keeble (Blue Lobster), Aldo Drago (UoM), Nicki Villiars (Deltares), Mark Hartman (NOC), Joaquin Tintoré (CSIC), Jo Foden (Cefas)

David Mills I Cefas I david.mills@cefas.co.uk

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Tasks and % of completion

6.1 End-user products and services (Community Hub, Datatool, public display) 95%

6.2 Jerico OceanBoard (Professional & public and educational glider tool) 100%

6.3 Summer schools (Malta 2013 & The Netherlands 2014) 100%

WP6 tasks

List of deliverables

Delive-rable Number	Deliverable Title	Lead benefi-ciary number	Estimated indicative person-months	Nature	Dissemi-nation level	Delivery date
D6.1	Design and launching of JERICO OceanBoard V0	18	8.00	P	PU	8
D6.2	Jerico Community Hub	18	5.00	P	PU	12
D6.3	Summer school 1	7	4.00	R	PU	27
D6.4	Development and implementation of suite of web-based interactive tools	18	8.00	D	PU	24
D6.5	Summer school 2	10	4.00	R	PU	30
D6.6	Final version of JERICO OceanBoard	18	6.05	P	PU	30
		Total	33.05			

Task 6.1 end-user products & services

Sub-task 6.1.1 Build Community Hub

Sub-task 6.1.2 Development of Jerico Datatool

Sub-task 6.1.3 Jerico public display monitor

Jerico Community Hub

During the course of the project:

27k website visits from 168 countries

8% from mobile devices – increasing.

Average time on site is 3:00 minutes.

Problems

Further outreach could have been achieved with social media

Content missing.

Website is functional but styles / platforms change a lot in 4 years!

Jerico Datatools

The Datatools were developed on the EMECO platform and embedded into the Jerico website

Task 6.2 Oceanboard

Sub-task 6.2.1 Jerico PROF
Sub-task 6.2.2 Jerico PUB
D6.1: Launch OceanBoard, completed M6
D6.6: Final version OceanBoard, completed M30

OUTPUTS
- Articles from 6 regions
- 44 Articles – average 1000 hits, max 27500

Main Problem – Limited input from partners

General | Mediterranean Sea

Task 6.2 Oceanboard

Sub-task 6.2.2 Educational tool

Task 6.3 summer schools

Sub-task 6.3.1 Jerico summer school 1; Malta
D6.3 Summer school 1 completed M27: Milestone 20: Report completed M28

1st Summer school 8th–13th July, University of Malta

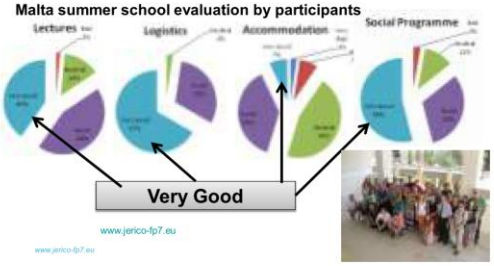
Operational Oceanography in the 21st Century – The Coastal Seas

- 84 applicants,
- 28 countries: Europe, Middle East, South America, Asia,
- 35 participants selected.

PROGRAMME
- Overview on operational oceanography
- Coastal observatories; COSYNA, sensors & platforms, FerryBox, ROVs
- MyOcean
- Numerical modelling techniques
- Data Management; data exchange, QC, data format, climatologies, SeaDataNet
- Visualisation and analysis of time series data
- Applications; satellite data, oil spill models, Jerico Datatool
- Excursion to HF radar

Task 6.3 summer schools: Malta

Malta summer school evaluation by participants



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Task 6.3.2 Deltares Summer School (14-20 June 2014)

Sub-task 6.3.2 Jerico summer school 2; Deltares, The Netherlands
D6.5 Summer school 2 M39 (July 2014). Milestone 21: Report M40 (Aug 2014)

- **Applicants' regional spread:** Poland (5), Netherlands (1), Chile(1), Italy (1), Argentina (1), Russia (1, Caspian Sea), Spain (1)
- **Applicants' current occupation; 7 MSc level & 4 PhD** PhD student / research assistant (8), Research fellow (1), Post-doc (1), DM Specialist (1)
- **Gender: F (6), M (5)**

Data to decisions

Marine monitoring > data > information > knowledge	
Monitoring & policy use	(data acquisition)
Version control	(data management)
EU portal landscape	(data dissemination)
From points to maps	(data analysis)
Model coupling	(data assimilation)
4th paradigm, Big data	(data interpretation)

Task 6.3 summer schools: Deltares

Deltares summer school programme

- **Saturday** Arrival, icebreaker and dinner
  1 evening visit to Sand Engine coastal observatory
- **Sunday** Data & information for monitoring [Cefas et al., FixO3]
  - » *MSFD, EMECO, monitoring strategy and networks*
- **Monday** Data interpolation
  - » *DIVA/DINEOF [University de Liege, Prof. J-M Beckers]*
- **Tuesday** Data dissemination
  - » *[EMODnet/SDN/MyOcean/EuroGOOS, EurOBIS]*
  - » *Co-organized with Delft Software Days (extra audience)*
- **Wednesday** Data management and curation
  - » *DOI, DataCite, Versioning [3TU datacenter, OpenEarth]*
- **Thursday** Data assimilation
  - » *[OpenDA]*
- **Friday** Data processing (departure at lunch)
  - » *Web Processing Service [EMECO et al., OpenEarth]*

Task 6.3 summer schools

Low registration rates (why)

- Malta is a nicer location for a summer school than the Netherlands,
- Deltares did not subsidise student travel while the Malta 2013 summer school did,
- The targeted coastal community was predominantly at the ICCE conference (int. conference on coastal engineering) that very week.

Evaluation highlights
(Scored out of 10)
- Topic – 9.4
- Balance – 8.5
- Social – 9.5
- Fieldwork 9.7
- Lectures – 7 to 9

JERICO Final GA I Brest I France

Summary

6.1 *End-user products and services - (Community Hub, Datatool, public display)*
- *Web site well received and used*
- *Community Hub – established*
- *Datatool – up and running*
- *Public display – loss of Ferry route prevented completion*

6.2 *Jerico OceanBoard - (prof & public and educational glider tool)*
- *OceanBoard Facility established but required more input*
- *Educational tool completed and deployed*

6.3 *Summer schools - (Malta 2013 & The Netherlands 2014)*
- *Completed*
- *High degree of student satisfaction*
- *Lesson learnt about advertising and the positive impact of subsidising attendance*

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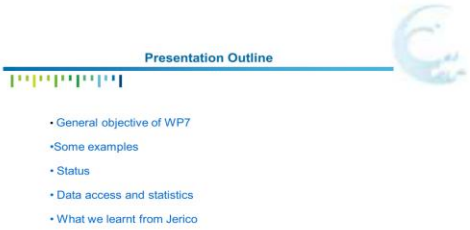
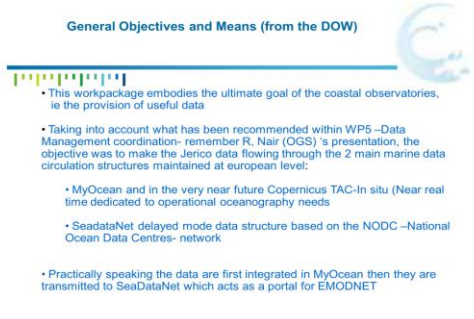
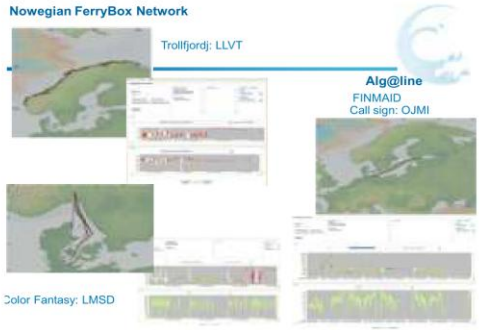
VII] WP7 Presentation (L. Petit De La Vileon, IFREMER)







1

1. How to access the data ?

From the Jerico home page ➔ data access

April 2015. Observing systems along the EU coasts 2011-2015 Contribution of Jerico

The objective of this slide is also to show that project data (here Jerico) contributes to a wider observing system and that it may be difficult to identify the number of specific downloading or the number of specific users for one project

Statistics are available only for the global system

2. How to get and visualize the data ?

Through the Coriolis web portal

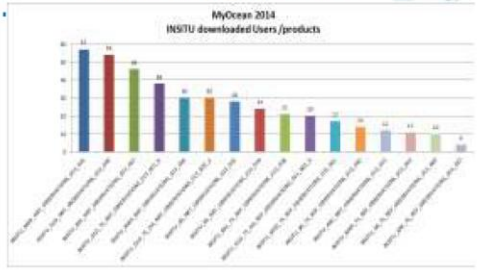
Example: 3 ferrybox vessels

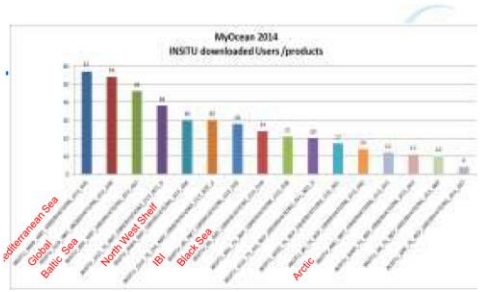
3 . How to get the data?

Through the Myocean:

- register as a user of Myocean
  http://www.myocean.eu/web/56-user-registration-form.php
- get a personnal user login and password
- connect to the MyOcean in situ distribution unit
  ftp1.ifremer.fr/INSITU_GLO_NRT_OBSERVATIONS_013_030
- an index file dedicated to Jerico allows to to sort out the Jerico data directory etc/project
- and links to the data directories montly and latest

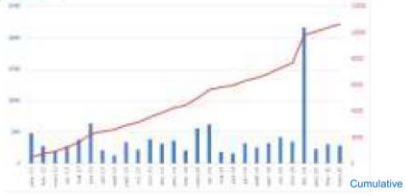
Statistics
Number of users of Myocean in situ products





Courtesy of Mercator (A. Delamarche, C. Giordan, D. Obaton)

Number of downloading of MyOcean data from the Global system 2013-2014-2015(3 months)



What we learnt from Jerico what could be enhanced in Jerico Next

- Data management process must be started from the beginning of the Project
- For each observing platform or system and data manager contact must be clearly identified not only the PI
- A stronger relationship must be set up between the « central « data management and the plateform data responsible (local data manager)
  - make simpler the tools to manage metadata (SensorML) to be used by non specialists. Doing so, data ingestion should be facilitated
  - Provide more feed back from the central system to the data providers (avoid that the central data management system could be considered as a « blind » system

3

VIII] WP1 Presentation (P. Morin, CNRS)

A Common Strategy

WP1 P. Morin, D. Durand, P. Farcy and I. Puillat

P. Morin I CNRS/INSU I pmorin@sb-roscoff.fr

WP1: A common strategy

Why JERICO ?

- To address the challenge of **observing** the complexity and high variability of **coastal areas at Pan-european level**
  - New requirements arising from WFD and MSFD
  - Operational marine services (GMES)
- Often driven through short-term research projects, marine observing systems mostly answer local/regional monitoring. **Sustainability is not guaranteed**

One of the main challenges for the European research community is now to **increase the consistency** and **the sustainability** of these dispersed infrastructures by addressing their future within a **shared pan-European framework.**

WP1: A common strategy

4 major actions

Objective: ***Developping a common strategy for a pan European network of operational coastal observatories to address the challenge of observing the complexity and high variability of coastal areas***

4 major actions:

1 - Set up an European Research Infrastructure for coastal observations based on existing systems in European coastal and shelf seas.

(initial state of existing networks, gaps, running costs, policies WFD and MSFD, technological developments, gouvernance)

2 - Creating a JERICO Label: To support **standardization** of operations and activities for the **benefit of data quality and availability** and **cost efficiency.**

(harmonization operation and maintenance methods, compability and interoperability to reduce costs, set of parameters, frequency, sampling scheme, data quality, best practices,...)

WP1: A common strategy

4 major actions

Objective: ***Developing a common strategy for a pan European network of operational coastal observatories to address the challenge of observing the complexity and high variability of coastal areas***

4 major actions:

3 - Organizing a Forum for Coastal Technology: To stimulate the development of new automated systems for the operational monitoring of the coastal marine environment, with the focus on the biochemical compartment.

4 - Promote access open access to JERICO network: to **external users** for their own experiments and testing **(TNA)** and access to data and services **(SA)**

WP1: A Common Strategy

Tasks and % of completion
Partners involved

- *Task 1.1: Set up the scene and implementation plan (M1-M24, INSU, all)* *100%*

  Rationale and definitions for a common strategy: define and give the orientations for the WPs and to prepare the roadmap for the future
- *Task 1.2: Jerico Label (M1-M12, HCMR, PUERTO, HZG, CEFAS)* *100%*
- ***Defining a label for coastal observatories, with inputs form WP3 and WP4***
- *Task 1.3: Forum for Coastal Technology (M6-M48, MI, Ifremer)* *100%*
- ***1st FCT at Ifremer Brest: Organisation of an intercalibration experiment of oxygen sensors.***
- ***2nd FCT at Oceanology International 2014 London : "Dissolved Oxygen Calibration: What are the best procedures?***
- *Task 1.4: Definition strategy and interfaces with the monitoring of marine biodiversity (M12-M42, NIOZ, all)* *100%*
- ***Potential of existing coastal observatories to develop into observatories of biodiversity with interfaces with a biodiversity network.***
- ***Delayed due to Carlo Heip death in autumn 2012.***

WP1: A Common Strategy

Tasks and % of completion
Partners involved

6 Tasks :

- *Task 1.5: Roadmap for the future (M24-48, INSU, all)* *99%*
- ***Analysis and synthesis of the deliverables of all the WPs to elaborate recommendations for new implementations of coastal observatories (cost/benefit, levels of running costs, optimization of existing funding, proposing a pan European governance, ...),***
- *Task 1.6: User access for the Trans National Activities (M1-M26, CNR, all WP8 partners)* *100%*
- ***3 calls for Trans National Access to existing infrastructures***

WP1: A Common Strategy

WP1 – List of Deliverables

Deliverable Number	Deliverable Title	Delivery date from DOW	Actual delivery date	Status	Lead Beneficiary
D1.1	First call for TNA proposals	8	9	Done	CNR
D1.2	Rationale and definitions for a common strategy	9	21	Done	INSU/CNRS
D1.3	Terms of reference of the FCT	9	14	Done	MI
D1.4	JERICO Label definition	18	38	Done	HCMR
D1.5	Second call for TNA proposals	20	21	Done	CNR
D1.6	First report of the FCT activity	24	27	Done	MI

WP1: A Common Strategy

WP1 – List of Deliverables

Deliverable Number	Deliverable Title	Delivery date from DOW	Actual delivery date	Status	Lead Beneficiary
D1.7	First report of the access activity	24	25	Done	CNR
D1.8	Second report of the FCT activity	36	40	Done	IFREMER
D1.9	Proposed strategy for biodiversity	36	38	Done	NIOZ
D1.10	Second report of the access activity	42	47	Done	CNR
D1.11	Final Report	48	48	Done	INSU/CNRS

WP1: A Common Strategy

WP1 – List of Milestones

Milestone Number	Milestone Name	Delivery date	Comments	Status	Lead contractor
MS3	First Steering committee outputs	9	First Steering committee report	Achieved M9	Ifremer
MS6	Infrastructure available for users	11	Call	Achieved M9	CNR
MS7	First Forum for coastal technology	18	First forum report	Achieved M18	MI
MS8	Second Steering committee outputs	18	Second Steering committee report	Achieved M18	Ifremer
MS9	Third Steering committee outputs	27	Third Steering committee report	Achieved M25	Ifremer

WP1: A Common Strategy

WP1 – List of Milestones

Milestone Number	Milestone Name	Delivery date	Comments	Status	Lead contractor
MS11	Fourth Steering committee outputs	36	Fourth Steering committee report	Achieved M37	Ifremer
MS12	Five Steering committee outputs	45	Five Steering committee report	Achieved M45	Ifremer
MS13	User report of activities	47	Final report	Achieved M47	CNR
MS14	Roadmap for the future	48	Final report	Achieved M48	Ifremer CNRS/INSU

WP1: A Common Strategy

WP1 – Main Difficulties

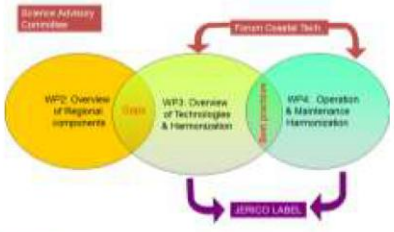
3 Main difficulties encountered:

Deliverable Number	Deliverable Title	Delivery date from DOW	Actual delivery date	Status	Lead Beneficiary
D1.2	Rationale and definitions for a common strategy	9	21	Done	INSU/CNRS
D1.4	JERICO Label definition	18	38	Done	HCMR
D1.9	Proposed strategy for biodiversity	36	38	Done	NIOZ

WP1: A Common Strategy

WP1 – Main Significant Results

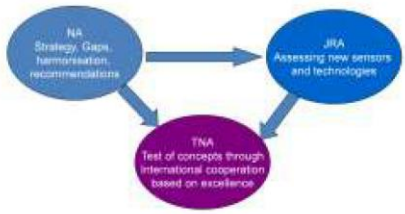
Task 1.1: Set up the scene and implementation plan



WP1: A Common Strategy

WP1 – Main Significant Results

Task 1.1: Set up the scene and implementation plan



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WP1: A Common Strategy

WP1 – Main Significant Results

Task 1.2: Jerico Label

Defining a label for coastal observatories

Definition and objective of the JERICO Label:

- Set of criteria defined to ensure some standardisation and interoperability and the quality of data for coastal observatories;
- to establish a **consensus on guidelines for best practices in the design, the implementation, the maintenance, the data policy and the valorisation** of operational coastal observatories;
- to get, for the partners and all new comers that comply with this label, a fair **recognition of the quality** of the managed observatories;
- to **help stakeholders** becoming aware of the European interest in the development of **high quality coastal observatories**;
- to foster a **wider market for the industry in sensor technology and platforms** based on the agreed standards.

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WP1: A Common Strategy

WP1 – Main Significant Results

Task 1.2: Jerico Label

Defining a label for coastal observatories

First Step: Set of ***three basic criteria*** proposed

- **Sustainability** of the observatory/platform to set a minimum time frame
- **Operationality** to ensure that real-time and delayed mode data will be reliable, accessible and easy to distribute
- **Observing purpose** where observatories are classified in 2 major categories:
  - **Primary or Core Parameters**. These are basic parameters required for the specific observing purpose
  - **Secondary Parameters.** These are additional parameters which are 'good to have'

Label awarded for 3 years from JERICO Scientific Committee and updated every 3 years

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WP1: A Common Strategy

WP1 – Main Significant Results

Task 1.3: Forum for Coastal Technology

Terms of reference of FCT:

- Provide a **strong interface between SMEs, industry, stakeholders and science & technology** by joint developments and technology transfer
- Seed an **Euro-ACT** in close collaboration with the US ACT organisation
- **Analyse the market, forecasting scientific and societal needs** for new coastal observations
- Identify **upcoming standards** for quality assessment and for reducing equipment and maintenance costs
- Sustain joint **research and development initiatives on sensors and platforms**
- Provide an unbiased third party test bed for sensors and measuring systems

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WP1: A Common Strategy

WP1 – Main Significant Results

Task 1.3: Forum for Coastal Technology

1st FCT at Ifremer Brest: Organisation of an intercalibration experiment of oxygen sensors.

2nd FCT at Oceanology International 2014 London (13th March): "Dissolved Oxygen Calibration: What are the best procedures?

Session 1: Presentations

- ***Scientific focus:***
  4 presentations (Ifremer, HZG, CNRS, Lab. Nat. Metrology et Essais (Fr)
- ***Manufacturer focus:***
  4 presentations (Anderaa, Rinko, Sea-Bird, NKE)

Session 2: Facilitated discussion

- *Adapted calibration (coastal or open sea) and the essential calibration steps (good practices)*
- *Calibration market (low cost sensors, training, certification, QC)*
- *Main field vs lab issues*

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WP1: A Common Strategy

WP1 – Main Significant Results

Task 1.4: Definition strategy and interfaces with the monitoring of marine biodiversity

Objectives:

- Carry out a study on the state and evolution of marine biodiversity in European coastal waters in regards of national and international legislation
- Investigate the potential of existing coastal observatories to develop into observatories of biodiversity
- To define interfaces with a future marine biodiversity network

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WP1: A Common Strategy

WP1 – Main Significant Results

Task 1.4: Definition strategy and interfaces with the monitoring of marine biodiversity

Three types of potential strategies identified for JERICO :

- ***Implement one or a few specific biodiversity related sensing techniques*** *in existing and foreseen infrastructure of platforms* ***to describe boundaries***
  Semi-automated imaging techniques and passive accoustics promising, genetic markers: potentials for the future

- ***Link to existing or developping pan-European initiatives of biodiversity*** *observation and tune mutual activities (space and time resolutions) or finalize cooperation*
  EMBOS, ICES, interests from initiatives like GEO BON, EEA and DEVOTES

- ***Optimize biochemical sensors*** *already present in the network to deliver explaining – or model parameters for biodiversity*
  Temperature, salinity, chlorophyll a, DO, pCO2, nutrients

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WP1: A Common Strategy

Main Significant Results

Task 1.5: Roadmap for the future

1 - ***Observing platforms: regional to pan-European integration***
- ❑ *Identification of gaps and recommendations for developping oberving systems by ROOS regions (IBIROOS, NOOS, BOOS, MONGOOS, Black Sea, Arctic ROOS)*
- ❑ *Identification of bottlenecks and priorities for the future*

2 - ***Sensors integration, new developments and innovation*** *(common and specific WP10 gaps, parameter measurements gaps, Innovation process)*

3 - ***Remaining gaps toward harmonisation***
- ❑ *Calibration procedures*
- ❑ *Operation and maintenance methods*
- ❑ *Coastal data management at European level*

4 - ***Strategy towards a better harmonised JERICO RI for the future***
- ❑ *Harmonisation in conducting operations and maintenance*
- ❑ *Harmonisation of calibration procedures*
- ❑ *Future data management at European and International levels*
- ❑ *Upgrade of the JERICO label in the future*

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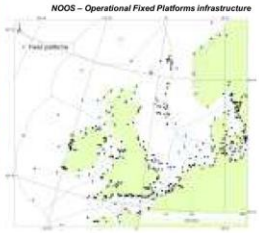
NOOS: FerryBox and Fixed Platforms maps

FerryBox routes in NOOS region (active lines in 2014)

NOOS – Operational Fixed Platforms infrastructure



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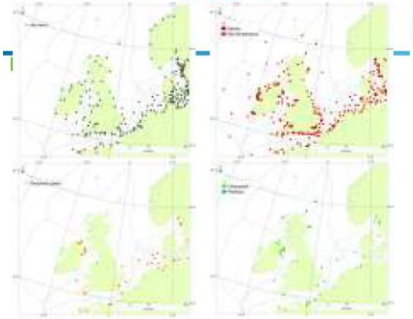
NOOS: Fixed Platforms – Maps by type of parameter



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State of the art in the networks and the sensors for the different types of platforms in the NOOS region:

	Well observed	Not sufficiently observed	Missing	Upcoming in the next 5 years (name of projects, persons involved)
Areas or networks	FerryBox lines Fixed Platforms	Gliders (only oceanographic campaigns)		
Sensors	FerryBox (T,S, Turb, Flu Chl) Gliders (T, S, O2, Chl Flu, Turb) Fixed Platforms (Sea Level, T, S)	FerryBox (O2, pCO2, Nutrients) Fixed Platforms (O2, Chl Flu, Turb)	FerryBox (Biological parameters) Gliders (pCO2, Nutrients, Biological parameters) Fixed Platforms (pCO2, Nutrients, Biological Parameters)	
Parameters				

JERICO Strategy Workshop I Brest I France

WP1: A Common Strategy

Main Significant Results

Task 1.5: Roadmap for the future

Strategy for the future

-***To expand the ferrybox network*** *to provide data on a North-South transect in the North Sea (by restarting the previously operated line between 2005 and 2009 from Amsterdam to Bergen with M/S Trans Carrier*
- ***To add the dissolved oxygen parameter to the existing ferrybox lines*** *not yet equipped with this sensor.*
- ***To harmonize the ferrybox set of sensors*** *by adding recently validated parameters such as carbon system sensors (pCO2, alkalinity) and in the future additional sensors under development such as nutrients and biological parameters (cyanobacteria, flow cytometer, …)*
- ***To implement in the NOOS region repeated glider sections*** *with a regular frequency to be determined.*
- ***To develop observations of biogeochemical and biological data*** *which are only marginally provided and lacking in most of the fixed platforms.*
  with mature sensors such as dissolved oxygen, fluorometers and turbiditimeters.
  in the future recenlty validated sensors such as carbon system sensors (pCO2, alkalinity and pH) nutrients, contaminants and biological sensors (flow cytometer, new biological sensors developed in WP10).-

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WP1: A Common Strategy

Main Significant Results

Task 1.5: Roadmap for the future

- ***To complete the set of observing platforms with HF Radars*** *such as the HF radar recently installed near the mouth of the Rhine river..*
- *To continue to collect* ***ship-based water samples*** *at some locations* ***for validation*** *and trend analysis*
- *To develop* ***monitoring platforms giving access to vertical profiles*** *of variables.*

As for the other European regions the ***sustainability*** *of the existing observational system is* ***one of the main challenges facing the partners****.*

*Coastal observing system sustainability should be pushed through a better collaboration framework between actors of core and downstream services, aiming to reach a general coherent system in which the levels of founding (Regional, National and European) are clarified and complementary****.***

Common recommendations for all regions and priorities for the future:

- *To* ***extand the spatial coverage*** *of ferrybox lines*
- *To* ***add the dissolved oxygen*** *parameter to the existing ferrybox lines not yet equipped with this sensor.*
- *To* ***harmonize the ferrybox set of sensors*** *by adding recently validated parameters such as carbon system sensors (pCO_2, alkalinity) and in the future additional sensors under development such as nutrients, contaminants (bio-sensors, passive sensors, ...) and biological parameters (cyanobacteria, flow cytometer, Fast-repetition rate fluorimetry, …)*
- *To implement* ***in all ROOS regions repeated glider sections*** *with a regular frequency to be determined (monthly, seasonnaly, yearly)*
- *To develop* ***observations of biogeochemical and biological data*** *on fixed platforms*

WP1: A Common Strategy

Main Significant Results

Task 1.6: User access for the Trans National Activities

OBJ: Management of the Trans-National Access to installations of the JERICO network.

SubTask 1.6.1 (M1 - M26): *:*

- *Preparation of the call – peer review*
- *Setting the "Selection Panel"*
- *Drafting the call*
- *Drafting the guidelines for evaluation*
- *Meetings of the Panel*

SubTask 1.6.2 (M11 – M47):

- *Information and reporting activities*
- *Drafting the specifications of the web site (call section), managing its construction and implementation.*
- *Managing the calls (call opening, proposals reception and transmission to the targeted providers for pre-screening technical review).*
- *Access reporting and information.*

WP1: A Common Strategy

Main Significant Results

Task 1.6: User access for the Trans National Activities

Three calls for access to coastal observatories launched

	1st Call 2012	2nd Call 2013	extra 3rd Call 2013	
Opening	12 January	14 January	19 September	
Deadline	3 April	27 March	25 November	
Evaluation	April – July	April – June	December – February	
Feedback to applicants	July	June	March	
Projects implementation	October onwards	October onwards	May onwards	
Submitted proposals	13	6	5	24
Approved proposals	10	5	5	20
Scheduled projects	9	5	5	19

WP1: A Common Strategy

Main Achievements

- Rationale and definitions for a common strategy: launching a European strategic view on OCO, implementation by the WPs
- First Call for TNA proposals jan-mar 2012 (13 proposals received, 11 approved, 2 rejected)
- Terms of reference for the FCT: definition of the role and objectives of FCT (exchange of information between users and providers, …)
- First FCT in Brest (october 2012), sensor intercomparison at Ifremer
- Second Call for TNA proposals jan-mar 2013 (6 proposals received, 5 approved, 1 rejected)

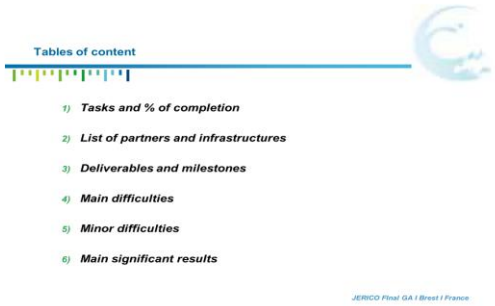
- Third Call for TNA proposals sept-nov 2013 (5 proposals received, 5 approved)
- Second Forum for Coastal Technology (London, March 2014)
- JERICO Label Definition (March 2014)
- Definition strategy and interfaces with the monitoring of marine biodiversity (task 1.4, D1.9) April 2014.
- Roadmap for the future, April 2015

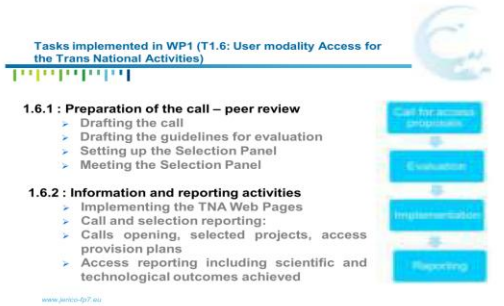

JERICO

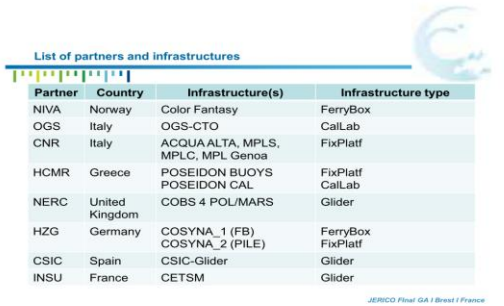

Ifremer

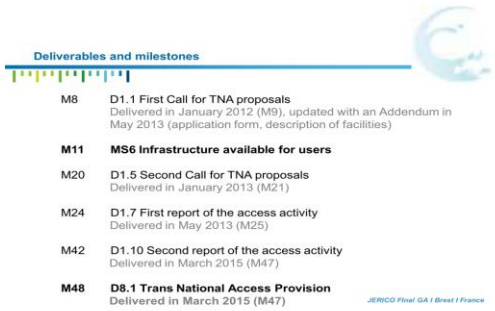

JERICO
WP1 P. Morin, D. Durand, P. Farcy and I. Puillat
Thank you
JERICO Final GA I Brest I France

IX] WP8 Presentation (S. Sparnocchia, CNR)









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Main difficulties

Many actors, difficult communications, a new experience to build togheter

Typical issues:

- Misunderstanding of TNA rules
- Undervaluation of own responsibilities
- Slow replies to contractual requests

requiring extra-effort of the TNA Office.

Minor difficulties

Some technical and logistical issues encountered

- Instrumentation failure
- Battery failure
- Re-scheduling due to bad weather
- Re-scheduling due to temporary infrastructure unavailability

All issues were resolved by cooperation between users and facility operators.

Only one user project couldn't be re-scheduled after equipment failure because of the end of JERICO.

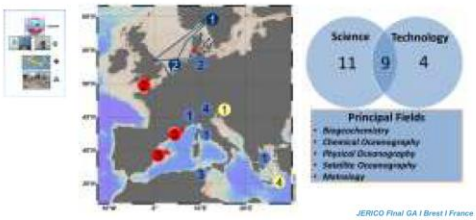
Main significant results

	1st Call 2012	2nd Call 2013	extra 3rd Call 2013	TOTAL
Submitted projects	13	6	5	24
Supported projects	9	5	5	19

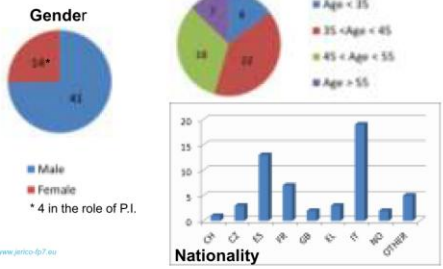
- All the projects submitted their reports
- 2 peer reviewed papers
- 10 presentations in conference proceedings
- All the projects are presenting results at the JERICO Science Day

Main significant results

Demand vs. facility, distribution per sectors and principal fields of study



Main significant results **User statistics**



Main significant results **Access provision**

- The JERICO infrastructures delivered **2670 calendar days** of access
- The estimated funding to facility providers is **452525.48 €** (ref. Amended DoW : 446837.66 €)
- JERICO supported the user groups with an estimated budget of **80000-85000 €**

Budget amounts will be definitely calculated with the final financial report. Real unit costs should be provided.

(Ref. : Reporting transational access and service activity costs, Version May 2011)

JERICO TNA links

The work done in WP8 is published on the project website:
http://www.jerico-fp7.eu/tna

In particular : developed procedures and rules, description of facilities, Call text, evaluation results, approved projects and their scores.

Results of User Projects are collected in
http://www.jerico-fp7.eu/tna/tna-outcomes

Conclusions

JERICO established concepts and procedures for the transnational access to coastal observatories.

JERICO TNA activities have
- Established new scientific collaborations between users and access providers,
- Served the community in promoting innovation and the transfer of know-how.

The JERICO TNA program will be improved and consolidated in **JERICO-NEXT** (WP7):
- Wider offer of observing infrastructure (novel observing technologies and different monitored environments, including physical, chemical and biological components).
- 1.3 M€ Budget allocated to facility providers to support implementation of selected user projects.

Acknowledgments

JERICO TNA activity wouldn't have been successful without the contribution and support of

the **Selection Panel** (evaluation, review and selection)
Janet Newton (University of Washington, Executive Director of NANOOS)
George Zodiatis (University of Cyprus, Vice Director)
Richard Dewey (University of Victoria, Associate Director Science Ocean Networks Canada)
Hans Dalhin (SMHI, EuroGOOS Past Director)
Roger Proctor (University of Tasmania, Director IMOS)
Franciscus Colijn (HZG Professor Emeritus, MODEG chair)
Laurent Mortier (Ecole Nationale Supérieure de Techniques Avancées, Coordinator of FP7 GROOM)
Alicia Lavin (IEO-Centro Oceanográfico de Santander, Director)

Acknowledgments

the **User Groups** (projects proposal and implementation)
AZTI-Tecnalia (ES), CENIM-CSIC (ES), CNR-IAMC (IT), CNR-ISSIA (IT), Ecole Nationale Superieure des Sciences de la Mer e de l'amenagement du littoral (ALG), HCMR (EL), JRC (IT), Lancaster University (UK), Masaryk University (CZ), Mediterranean Institute of Oceanography (FR), National Institute of Marine Sciences and Technologies (TUN), NIVA (NL), Observatoire Oceanographique de Villefranche/Mer (FR), SAROST SA (TUN), Stazione Zoologica A. Dohrn (IT), Systea S.p.a (IT), Universitat de Barcelona (ES), Universidad de Las Palmas de Gran Canaria (ES), Université de Neuchâtel (CH), Università Parthenope (IT)

Acknowledgments

the **JERICO Consortium** for infrastructure availability and collaboration in promoting the TNA opportunity

Simon and Kathryn (Blue Lobster Ltd) for supporting the JERICO TNA webpage implementation

and last but not least,

the ladies that supported the JERICO TNA Office: **Sara, Nolwenn, Maelle, Elodie and Ingrid.**

X] WP9 Presentation (T. Vukicevic, CMCC)

Final General Assembly

WP9- NEW METHODS TO ASSESS THE IMPACT OF COASTAL OBSERVING SYSTEMS

Nadia Pinardi and Tomislava Vukicevic CMCC Bologna and Lecce Italy

www.jerico-fp7.eu April 2015

OUTLINE

Main WP9 Objectives and partnership
WP9 Plan of work
WP9 Results for all the shelf areas
General conclusions

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WP9 MAIN OBJECTIVES

WP9 should apply sophisticated data assimilative models and statistical methods to demonstrate the impact of coastal observations in analyses and forecasts

Two types of experiments are carried out:
1.Impact of existing observational platforms (OSE)
2.Impact of future observational platforms (OSSE)

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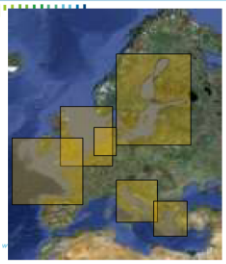
PARTNERS



- *CMCC (IT)*
- *IFREMER (FR)*
- *CNRS (FR)*
- *DMI (DK)*
- *DELTARES (NL)*
- *HCMR (GR)*
- *HZG (DE)*
- *RBINS-OD (BE)*

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WP9 IMPACTS

ANY SUSTAINABLE COASTAL MONITORING SYSTEM SHOULD SHOW ITS IMPACT ON THE QUALITY OF MODEL ANALYSES FOR FORECASTING AND RECONSTRUCTIONS (RE-ANALYSIS) --- see major international groups like GODAE OCEANVIEW OSE-OSSE

OSSE OFFERS THE ONLY OBJECTIVE WAY TO ASSESS THE IMPACT OF NEW TECHNOLOGIES ON MODEL ANALYSES

OSE WILL HELP TO DEFINE THE MINIMUM OBSERVING SYSTEM REQUIREMENTS AND THE POSSIBLE GAPS OF SELECTED TECHNOLOGIES

INTEGRATION OF OBSERVATIONS AND MODELS GIVES THE STATE-OF-THE-ART DATA SETS FOR MSFD ASSESSMENTS

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WP9 REGIONS OF WORK

	ADRIATIC	AEGEAN	BAY OF BISCAY& ENGLISH CHANNEL	NORTH SEA	BALTIC
OSE	CMCC	HCMR	CNRS-IFREMER	DELTARES HZG RBINS-OD	DMI
OSSE	CMCC		CNRS-IFREMER	HZG RBINS-OD	DMI

6

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WP9 FOCUS OBSERVATIONS

	ADRIATIC	AEGEAN	BAY OF BISCAY& ENGLISH CHANNEL	NORTH SEA	BALTIC
OSE	FISHERY OBSERVING SYSTEM TEMP.	HF RADAR & FERRY BOX SST	RECOPESCA TEMP PROFILES	TIDE GAUGES & HF RADAR & T PROFILES FROM BUOY STATIONS	CTD T-S PROFILES AND SATELLITE SST
OSSE	FISHERY OBSERVING SYSTEM TEMP. & SAL.		FIXED STATION & GLIDERS & FERRY BOX	HF RADAR & T PROFILES FROM BUOY STATIONS	GLIDERS

WP9 ASSIMILATIVE TOOLS AND DYNAMICAL MODELS

ADRIATIC	AEGEAN	BAY OF BISCAY	NORTH SEA	BALTIC
1/48 deg model & 3DVAR	1/48 deg model & SEEK Filter	1/50 deg model & Matrix representer	1 to 5 km models & Kalman filter, Observational sensitivity analysis	2 km model & 3DVAR

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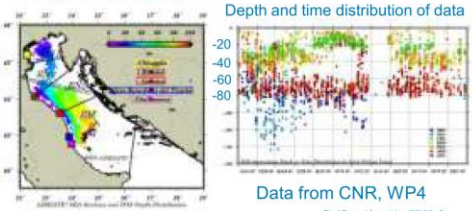
ADRIATIC SEA: OSE FOR FISHERY OBSERVING SYSTEM DATA (CMCC)

7 fishing vessels from 5 ports

Depth and time distribution of data



Data from CNR, WP4

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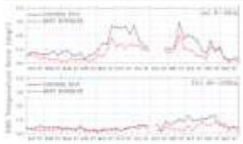
ADRIATIC SEA: OSE FOR FISHERY OBSERVING SYSTEM DATA (CMCC)

EXPERIMENT 2007	TYPE	ASSIMILATION
CONTROL RUN	SIMULATION	NO
BEST ESTIMATE	ASSIMILATION	ALL FOS
OSE01	ASSIMILATION	SELECTIVE 4 VESSELS
OSE02	ASSIMILATION	W/O Ancona



FOSE Mean RMSE (° C)	Control Run	Best Estimate	Error reduction %
0-40m	1.32	0.74	43.6
40-100m	0.53	0.34	35.9

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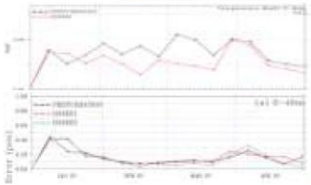
ADRIATIC SEA: OSSE FOR FISHERY OBSERVING SYSTEM DATA (CMCC)

EXPERIMENT	TYPE	ASSIMILATION
PERTURBATION	SIMULATION	NO
OSSE01	ASSIMILATION	ALL Synthetic FOS TEMP
OSSE02	ASSIMILATION	ALL Synthetic FOS TEMP+SALT



TEMPERATURE RMSE

SALINITY RMSE

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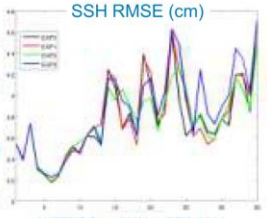
AEGEAN SEA: OSE FOR HF RADAR and FERRY BOX (HCMR)

HF RADAR

FERRYBOX

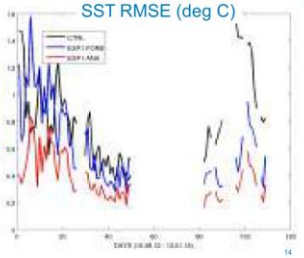
AEGEAN SEA: OSE FOR HF RADAR (HCMR)

Black: EXP0 (weekly assimilation of SSH,SST & T/S Argo profiles)
Red: EXP1 (additional assimilation of u,v components of surface currents)
Green: EXP2 (additional assimilation of ONLY u-component of surface currents)
Blue: EXP3 (additional assimilation of ONLY v-component of surface currents)

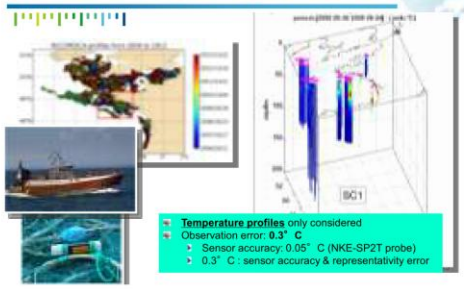


AEGEAN SEA: OSE FOR FERRY BOX SST data (HCMR)

Control experiment: Weekly assimilation of satellite SSH & SST and T/S Argo profiles
EXP1: Assimilation of additional SST FerryBox data along the route from Heraklion to Piraeus



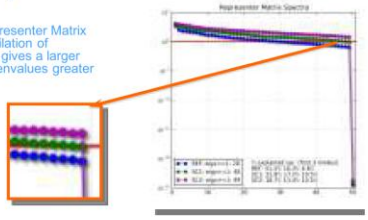
BAY OF BISCAY AND THE ENGLISH CHANNEL: OSE on RECOPESCA PROFILES (IFREMER, CNRS)



- **Temperature profiles** only considered
- Observation error: **0.3° C**
  - Sensor accuracy: 0.05° C (NKE-SP2T probe)
  - 0.3° C : sensor accuracy & representativity error

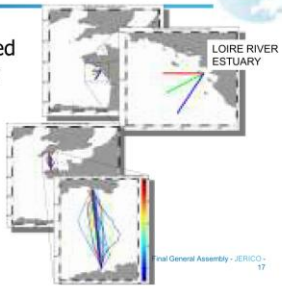
BAY OF BISCAY AND THE ENGLISH CHANNEL: OSE on RECOPESCA PROFILES (IFREMER, CNRS)

Based on Representer Matrix Spectra assimilation of RECOPESCA gives a larger number of eigenvalues greater than 1

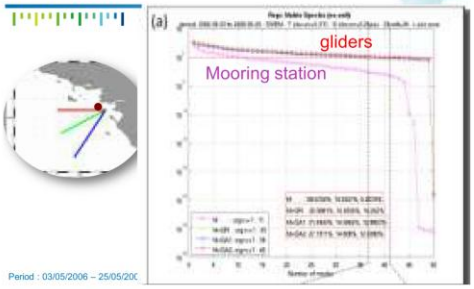


BAY OF BISCAY AND THE ENGLISH CHANNEL: OSSE on Ferrybox, gliders and fixed stations (IFREMER, CNRS)

- Loire river: fixed station+ glider section
- Western English Channel : Ferrybox + Glider section

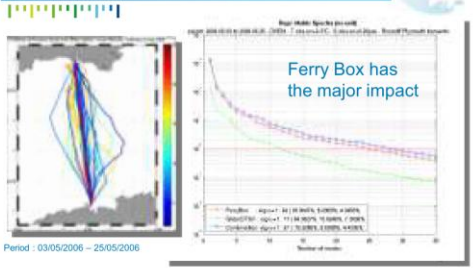


BAY OF BISCAY: larger number of modes greater than 1 means better network (IFREMER, CNRS)



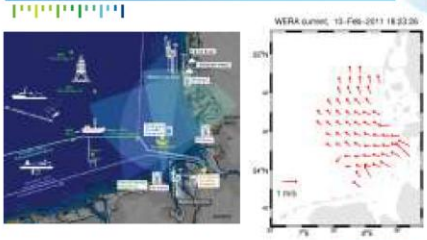
Period : 03/05/2006 – 25/05/20(

ENGLISH CHANNEL: larger number of modes greater than 1 means better network (IFREMER, CNRS)

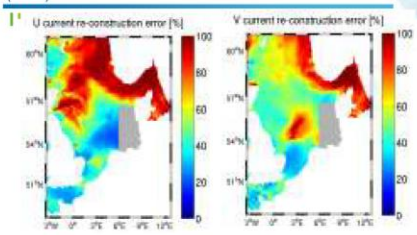


Period : 03/05/2006 – 25/05/2006

NORTH SEA-GERMAN BIGHT: OSE FOR HF RADAR (HZG)

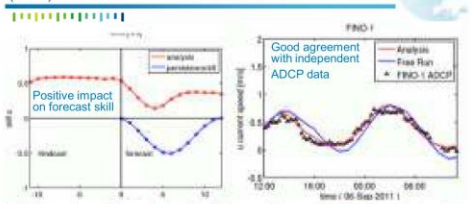


NORTH SEA-GERMAN BIGHT: OSE for HF RADAR (HZG)



Relative Re-construction errors for surface currents in the North Sea assuming that we have observations in the German Bight

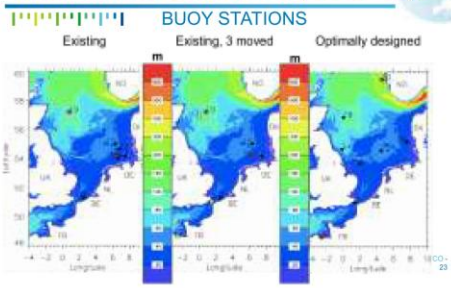
NORTH SEA-GERMAN BIGHT: OSE for HF RADAR (HZG)



Left: Comparison of the analysis skill with the persistence skill within the analysis window of 24 hours including 12 hrs hindcast and 12 hrs forecast in the German Bight

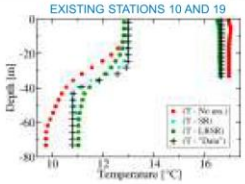
Right: Comparison of the surface current analysis (red) with the free run (blue) and the ADCP data taken at the FINO-1 platform (black triangles)

NORTH SEA: OSSE/OSE FOR MOORED BUOY STATIONS PROFILES (RBINS-OD)



NORTH SEA: OSE FOR MOORED BUOY STATIONS PROFILES (RBINS-OD)

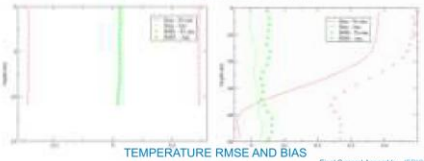
EXPERIMENTS	TYPE	ASSIMILATION
NO ASSIMILATION	SIMULATION	NO
ASSIMILATION	ASSIMILATION	ASSIMILATION OF T PROFILES AT EXISTING STATIONS



NORTH SEA: OSSE FOR MOORED BUOY STATIONS PROFILES (RBINS-OD)

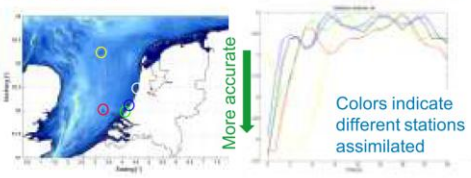
EXPERIMENTS	TYPE	ASSIMILATION
NO ASSIMILATION	SIMULATION	NO
ASSIMILATION	ASSIMILATION	ASSIMILATION OF T PROFILES AT OPTIMALLY DESIGNED STATIONS

OPTIMALLY DESIGNED STATIONS



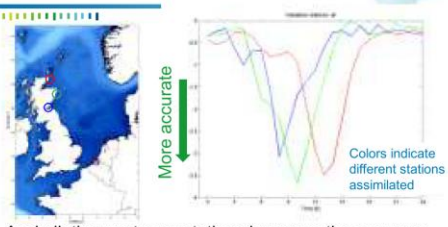
TEMPERATURE RMSE AND BIAS

NORTH-SEA: OSE ON TIDE GAUGES (DELTARES)



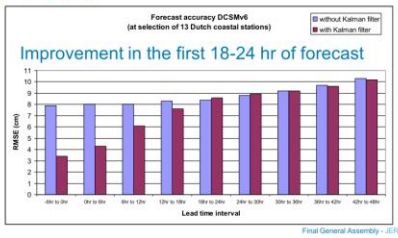
Assimilating nearby stations gives immediate impact on the forecast accuracy at Dutch stations

NORTH SEA: OSE ON TIDE GAUGES (DELTARES)

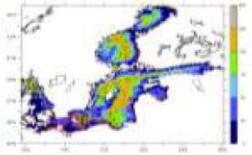


Assimilating upstream stations improves the accuracy at longer forecast lead times.

NORTH SEA: OSE ON TIDE GAUGES (DELTARES)



BALTIC SEA: OSE T/S CTD PROFILES AND SST (DMI)

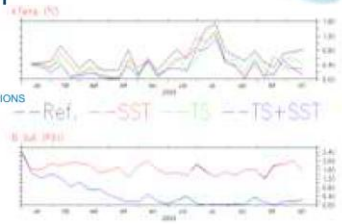


Sampling locations: black crosses for T/S profiles (OTHERS) and red crosses For T/S profiles from moorings

EXPERIMENTS	TYPE	ASSIMILATION
REF	SIMULATION	NO
EXP1	ASSIMILATION	ONLY SATELLITE SST
EXP2	ASSIMILATION	ONLY T/S FROM MOORINGS AND OTHERS
EXP3	ASSIMILATION	SAT SST+ T/S FROM MOORINGS AND OTHERS

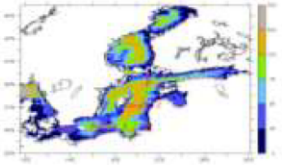
BALTIC SEA: OSE T/S CTD PROFILES AND SST (DMI)

MEAN OF DIFFERENCES BETWEEN OBSERVATIONS AND:
1)REF SIMULATION
2)EXP1 - SST
3)EXP2 - TS
4)EXP3 – TS+SST



BALTIC SEA: OSSE WITH GLIDERS (DMI)

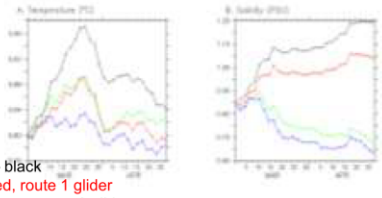
OSSE FOR GLIDERS ON ROUTE 1 AND 2



EXPERIMENTS	TYPE	ASSIMILATION
PURTURBATION RUN	SIMULATION	NO
EXP1	ASSIMILATION	ONLY ROUTE 1
EXP2	ASSIMILATION	ONLY ROUTE 2
EXP3	ASSIMILATION	ROUTE 1 & 2

BALTIC SEA: OSSE WITH GLIDERS (DMI)

OSSE FOR GLIDERS ON ROUTE 1 AND 2



Pert. run – black
Exp. 1 – red, route 1 glider
Exp. 2 – green, route 2 glider,
Exp. 3 – blue, route 1&2 glider

GENERAL CONCLUSIONS

- ✓ *The overall lessons learned are that all studied platforms can complement properly satellite monitoring and thus they are essential components of a future European coastal observing system*
- ✓ *OSE/OSSE provide a robust and feasible tool to show impacts of the observing system on end-user derived product quality (analyses and forecasts)*

GENERAL CONCLUSIONS

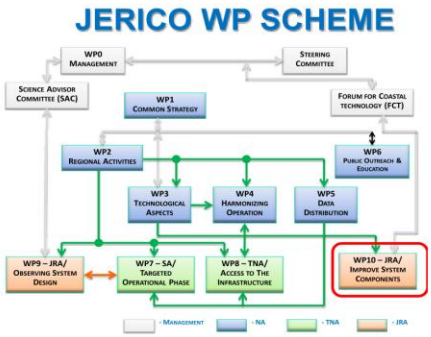
Major findings for each Observing platform used:

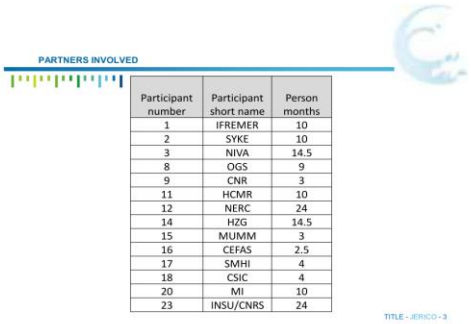
1) ***Tide Gauges*** *have large impact on accuracy of 12 an 24 hours sea level forecasts, need networking of data among data providers*
2) ***Fishing Vessels measurements*** *are impacting positively better with vertical profiles than single depth point measurements. Horizontal sampling scheme could be streamlined*
3) ***FerryBox*** *is a crucial component of the observing system for SST introducing high frequency data to resolve the daily cycle*

Fixed platform *profiles have positive impacts provided that they are not overlapping and sufficiently homogeneous in positions*

5) ***Gliders*** *offer a positively impacting platform in the shelf areas of freshwater intefluence*
6) ***HF radars*** *are a formidable monitoring system for the coastal area provided more progress is done in terms of quality control of the measurements*

XI] WP10 Presentation (G. Nolan, MI)




PARTNERS INVOLVED

Participant number	Participant short name	Person months
1	IFREMER	10
2	SYKE	10
3	NIVA	14.5
8	OGS	9
9	CNR	3
11	HCMR	10
12	NERC	24
14	HZG	14.5
15	MUMM	3
16	CEFAS	2.5
17	SMHI	4
18	CSIC	4
20	MI	10
23	INSU/CNRS	24

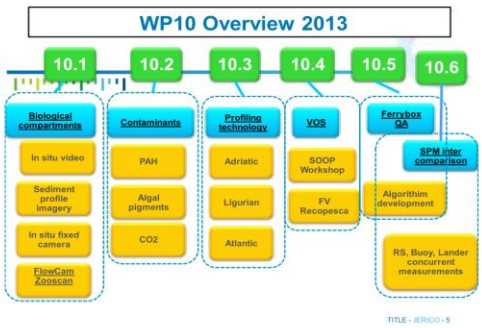
TITLE - JERICO - 3


WP10 OBJECTIVES

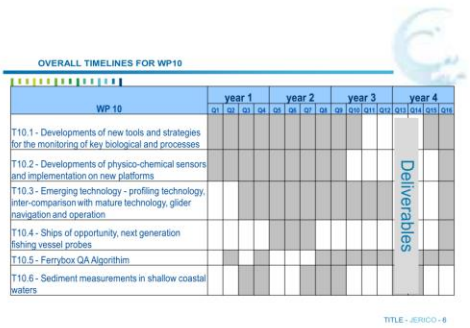
To examine the extent to which existing technologies can be improved and/or adapted to the benefit of coastal operational oceanography and to document and test emerging technologies that will underpin future operational oceanographic systems in Europe's coastal seas. The work package is sub-divided into tasks including:

1. *New tools and strategies for monitoring **key biological compartments** and processes*
2. *Development of new **physico-chemical sensors.***
3. *Use of **emerging profiling technologies** for coastal seas.*
4. *Increased use of **ships of opportunity** in making coastal oceanographic measurements.*
5. *Best practices in **coastal observatory implementation***

TITLE - JERICO - 4



TITLE - JERICO - 5


OVERALL TIMELINES FOR WP10

WP 10	year 1	year 2	year 3	year 4
T10.1 - Developments of new tools and strategies for the monitoring of key biological and processes				
T10.2 - Developments of physico-chemical sensors and implementation on new platforms				
T10.3 - Emerging technology - profiling technology, inter-comparison with mature technology, glider navigation and operation				
T10.4 - Ships of opportunity, next generation fishing vessel probes				
T10.5 - Ferrybox QA Algorithim				
T10.6 - Sediment measurements in shallow coastal waters				

Deliverables

TITLE - JERICO - 6

1

DELIVERABLES: WP10

Deliverable Number	Deliverable title	Lead Beneficiary	Estimated indicative person months	Nature	Dissemination level	Delivery date
D10.1	Report on trials and deployment	20	20	R	PU	36
D10.2	Set of software	23	60	R	PU	42
D10.3	Report on data analysis	14	32.5	R	PU	42
D10.4	Report on potential new sensors	1	30	D	PU	42
Total			*142.5*			

TITLE - JERICO - 7

TITLE - JERICO - 8

WP 10.1 Report on Trials and Deployments - Layout

The various field trials are presented in this report with a focus on different observation platforms and different parameters which will be measured by the various sensors.

Each field trial was assessed using the following headings

- Rationale
- Focus on new trials and experiments
- Instrument set up
- Platform used
- Methodology
- Assessment of the success/failure of trial

TITLE - JERICO - 9

D10.1 Trials and deployments

Table of Contents (abridged)

TITLE - JERICO - 10

WP 10.1 Report on Trials and Deployments Summary

- **Software Testing and deployment for Monitoring of key biological compartments 10.1** This trial was carried out by EPOC CNRS.
- **Phycoerythrin fluorometry in autonomous monitoring systems - WP10 Task 10.2 Development of new physico-chemical sensors**
- **Fast-repetition rate fluorometry in autonomous monitoring systems - WP10 Task 10.2 Development of new physico-chemical sensors**
- This trial was carried out by the Finnish Environment Institute SYKE, Marine Research Centre
- **WP10 Task 10.2.3 Carbon Development of new physico-chemical sensors**
  This trial was carried out by NERC.
- **Emerging technology: profiling technology, inter-comparison with mature technology WP10 Task 10.3 Use of emerging Profiling technologies in coastal seas.** This trial was carried out by OGS
- **Ships of opportunity/Next Generation fishing vessel probes - WP10 Task 10.4**
  This Trial was carried out by IFREMER
- **Ferrybox QA algorithim 10.5** - work carried out by HZG
- **Remote sensing of suspended particulate matter concentration, inter-comparison with smart buoy and benthic lander 10.6**
- Trial carried out by RBINS

TITLE - JERICO - 11

WP 10.2 Development of set of software for image analysis

- The Deliverable analyses the functionality and performance of these software systems under the following headings.
- Description of the rationale for the software development
- High level description of software and it functionality
- Information on Manuals and set-up of software
- How to get Delivery/download of software
- Conclusions
  - SPI
  - Video Imaging – Mobile and Fixed Platforms
  - Zooplankton /Phytoplankton

TITLE - JERICO - 12

D10.2 Software development

Table of Contents

WP 10.2 Development of set of software for image analysis

The 10.2 'Set of Software' deliverable is primarily linked to Task 10.1 from the Jerico Description of Work - **Development of new tools and strategies for the monitoring of key biological compartments and processes.**The idea behind this deliverable is to harness existing imaging and biology expertise within different fields to develop and test new software designed to process the following data:

- **Sediment Profile Images.**
  - SpiArcBase provides an excellent tool for the analysis of Sediment Profile Images (SPI).
- **Mobile platform recorded video.**
  - AviExplore allows the treatment of video imaging of the water sediment interface acquired using a ROV (or other mobile carriers) in order to infer the abundance of epibenthos (suprabenthos).
- **Fixed platform recorded video.**
  - AviExplore is also used to analyse video imaging by fixed cameras. The main purpose is to allow the survey of recruitment on substrates, as well as the growth characteristics of fouling organisms. Image analysis is used to track the animals settling on the substrate, measure their interactions and growth rates.
  - It is to be noted that for the convenience of final users, **a single software (AviExplore) is proposed for video data originating from fixed and mobile platforms** giving access to the different modules depending on the desired analysis.
- **Phytoplankton and Zooplankton images**. Zooprocess - an integrated analysis system for acquisition and classification of digital zooplankton images from preserved zooplankton and phytoplankton samples

WP 10.3 Report on Data Analysis (Moored Profile comparisons, 3D T/S structure)

The Deliverable 10.3 data analysis experiments presented are assessed under the following headings:

- Data collection methodology
- Quality assurance applied
- Analysis
- Scientific results
- Published papers (included as annex)

The real time quality control of operational observation data of a number of Jerico partners has also been addressed with the focus on FerryBox systems. Real time quality controls (RTQC) procedures have been formulated and presented. For all kinds of platform there are general tests applicable. The topics described are presented as according to the Description of Work (DoW)

- Review of data processing undertaken by JERICO partners
- manual intervention in data processing protocols
- development of (Matlab code) algorithms for data processing

D10.3 Data report

Table of Contents

WP 10.3 Report on Data Analysis (Moored Profile comparisons, 3D T/S structure)

This report focuses on Data analysis and processing techniques undertaken by JERICO partners, it also includes details on the data analysis of a number of inter-comparisons between various sensing technologies including:

- Data analysis Report on Dissolved Oxygen sensors inter-comparison exercises -Ifremer
- A Data analysis and evaluation on Star-Oddi and NKE probes in order to assess their capability to be used for physical oceanography purposes.-CNR-ISMAR
- Data analysis, methodological development and 3D T/S (Temperature/Salinity) structure along FerryBox lines carried out under the JERICO project. - NOC
- A report on a moored profile analysis trial to assess the data availability using different methods in varying weather and operating conditions and to compare profile measurements from a moored buoy with similar profiles from profiling floats, standard ship based CTD measurements and surface data from FerryBox systems.

WP 10.4 - Report on Potential New Sensors (Fishing Vessels and Voluntary Opportunity Ships)

The report on the new sensors and other emerging technologies is structured and presented as follows:

- Description of new sensors and emerging technology
- Appropriate platform for the sensor (Ferrybox, Glider, Fixed platform, other)
- Future steps
  - Integration into operational system
  - Timescale of integration
  - Cost implications
  - Other operational considerations.

Table of Contents

TRLs defined here

WP 10.4 - Report on Potential New Sensors (Fishing Vessels and Voluntary Opportunity Ships)

This report focuses on the documentation and testing of emerging sensor technologies looking at the improvements and development of emerging new technologies and sensors, along with the use and development of platforms allowing for the optimal deployment of novel sensors. These include emerging profiling technology, gliders and ships of opportunity.

One of the key objectives is to examine the extent to which emerging technologies can be utilised and/or adapted to the benefit of coastal operational oceanography and to document and test technology will underpin future operational oceanographic systems in Europe's coastal seas.

This report includes a description of Potential new sensors developed in relation to Tasks 10.3/10.4 - (Emerging Technology) and links the development of these potential new sensors for deployment on ships of opportunity (Volunteer Opportunity Ships – VOS) – including fishing vessels.

WP 10.4 - Report on Potential New Sensors (Fishing Vessels and Voluntary Opportunity Ships) - Conclusions

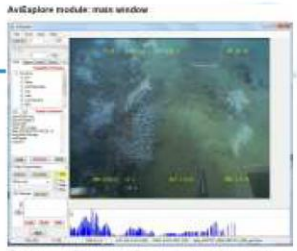
This report documents the improvements and the development of new tools and sensors used by Jerico partners allowing for:

(1) The measurements of a new set of parameters (including biological ones)
(2) A better precision of already available measurements (e.g., in relation with the monitoring of rising threats such as ocean acidification)

(3) The automation of parameter's acquisition, which will allow for operating at higher frequency and on wider geographical scales. This last point is also important in view of reducing the time lag between raw data measurements and the delivery of relevant end products (i.e., in developing operational observatories).
A key issue covered in this deliverable involved analysis of the use and the development of platforms allowing for the optimal deployment of sensors. This includes emerging profiling technology, gliders and ships of opportunity.
It is clear from analysis of the future steps that in many cases there is a requirement that the technology be improved and/or further adapted before it will be of wide ranging benefit to underpin future operational oceanographic systems in Europe's coastal seas.

AviExplore program

AviExplore module: main window



Example of a page of the User guide

Recopesca Trials Ireland

Recopesca Units installed on MV Saturnas and MV Willie Joe in February 2015

Trial vessels are scallop trawlers - operating in Irish /Celtic Sea

Issues with power supplies and communications – no data collected so far

Plan to continue trial throughout the summer

Recopesca Trial Preparation

TITLE - JERICO - 25

DIFFICULTIES ENCOUNTERED

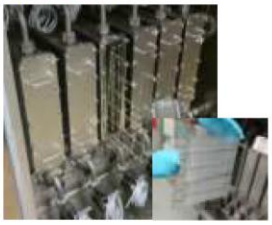
Some technical challenges:
Adriatic Sea deployments
Ferrybox: Open Atlantic trial (task leader retired)
Celtic Sea FOOS: "Transitional activity"

Some "light" contributions to final deliverables : still scope to improve 10.3 in particular.

TITLE - JERICO - 26

Thanks to all WP10 Partners!

PROTYPE TESTING - «CHEMICAL EXTRACTOR»
CHEM. MARINER PROJECT – TEST OSLO-KIEL



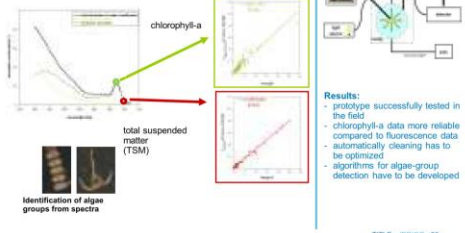
Polyetylene membranes and triolin

Membranes brought to laboratory for analysing of PAH, PCB and some pesticider.

TITLE - JERICO - 28

Flow-Through Point Source Integrating Cavity Absorption Meter (ft-PSICAM)

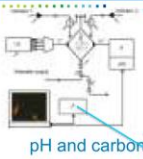
determination of chlorophyll-a and TSM
+ optional spectral analysis for algal group detection



Results:
- prototype successfully tested in the field
- chlorophyll-a data more reliable compared to fluorescence data
- automatically cleaning has to be optimized
- algorithms for algae-group detection have to be developed

TITLE - JERICO - 29

COMBINED APPROACH PH AND PCO2 INTO THE FERRYBOX



Physically implemented into the pCO2 will be tested!

pH and carbonate

pCO2
Combined in a common labview Software with data from the Ferrybox eg. SST, pressure

Kai Sørensen, NIVA
kai.sorensen@niva.no

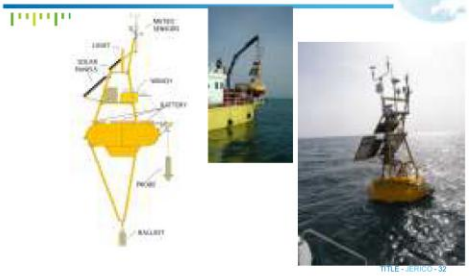
TITLE - JERICO - 30

INSERT TEXT

The new EOL buoy version 3 has been deployed in March 29th 2013 in the Villefranche bay.
The new version is larger and bigger than the previous one: 4 tons & 8m height & 3.6 diameter
The CTD profiler has been re-integrated in the buoy which provide one T&S profile every day (0-100m)
Additionally a cytometer has been also integrated for picoplankton & bacteria analysis

TITLE - JERICO - 31

THE OGS PROFILING DATA BUOY



TITLE - JERICO - 32

NEW OBSERVING SYSTEMS FOR SHIPS OF OPPORTUNITY

Ifremer – June 2012 – Workshop on Autonomous Surface vehicles

TITLE - JERICO - 33

SSD-Pesca Project

Future Upgrade of the FOS to FOOS: *Fishery & Oceanography Observing System*

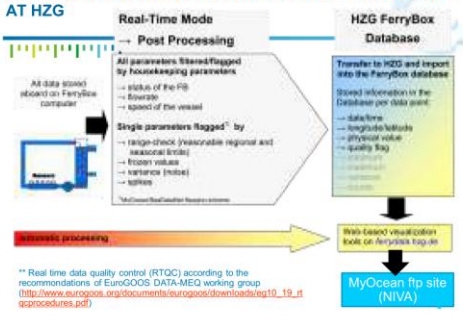
The e-logbook allows the control center to download the collected data and send back other info to the fisherman daily via GPRS or satellite

1 Bottom trawler already implemented
More vessels by the end of 2013

Collected data: *GPS, water temperature, salinity, pressure, meteorology, catch amount, species caught and target species size*

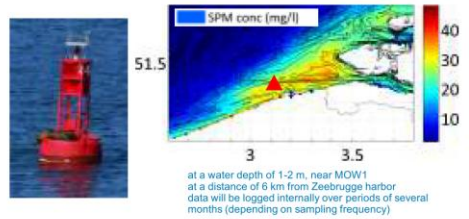
TITLE - JERICO - 34

TASK 10.5 FERRYBOX QA
FERRYBOX NEAR-REAL-TIME DATA QUALITY CONTROL** AT HZG



** Real time data quality control (RTQC) according to the recommendations of EuroGOOS DATA-MEQ working group (http://www.eurogoos.org/documents/eurogoos/downloads/eg10_19_rtqcprocedures.pdf)

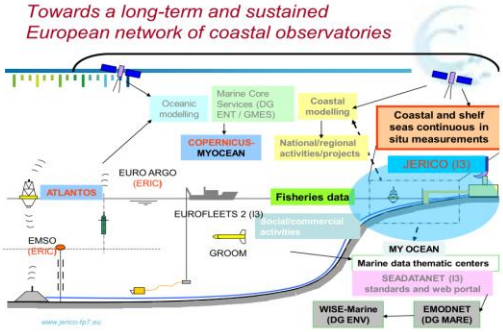
LOCATION

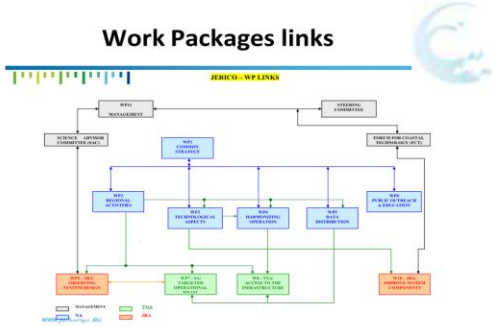


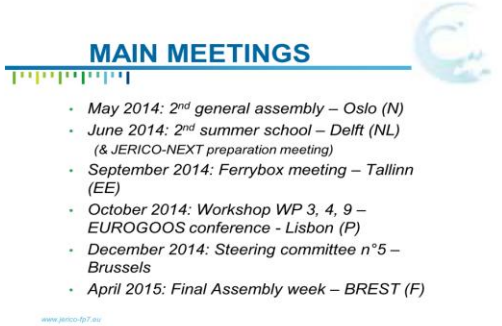
at a water depth of 1-2 m, near MOW1
at a distance of 6 km from Zeebrugge harbor
data will be logged internally over periods of several months (depending on sampling frequency)

TITLE - JERICO - 36

XII] WP11 Presentation (P. Farcy, IFREMER)







1

JERICO WEBSITE

- www.jerico-fp7.eu

- A practical link with the partners:
  - General information: next events (FCT), project news
  - Access to deliverable
  - Information on TNA and Data
  - Data tool provided by WP6
  - OCEANBOARD
- OCEANBOARD : a well adapt tool to touch the professional or non professional public.
- JERICOPROF and JERICOPUB

DELIVERABLES/ MILESTONES

28 DELIVERABLES FINALISED AND UPLOADED IN THE RP3
→ More than 2/month

58 DELIVERABLES FOR ALL THE PROJECTS
→ 1,2/month

All the milestones are achieved except one in WP10 :

MS25 : Data report on salinity and Temperature measurements from XBT and FerryBox

TECHNICAL REPORTING

1) ***RP3 TECHNICAL REPORTING IS QUITE FINISHED EXCEPT FOR WP9 AND WP10***

2) ***FINAL REPORTING IS TO PROVIDE BY THE WP LEADERS END OF MAY 2015:***

A Final report must be submitted to the EC within 60 days of the end of the project, in addition to the Periodic report covering the last reporting period. EC Template final report Front page	by coordinator
1. Final publishable summary	by coordinator + WP leaders
2. Use and dissemination of foreground Incl. lists of publications, patents, exploitable results	by coordinator + WP leaders
3. Report on social implication Incl. ethical, work force and gender aspects	by coordinator + WP leaders

FINANCIAL REPORTING

1) ***RP3 FINANCIAL REPORTING CONSISTS ON (as RP1 and RP2)***

PROVIDING AN EXCEL TABLE WITH ALL THE INFORMATION PER ITEMS (PERSONNAL COSTS, T&S, OTHER DIRECT COSTS, ACCESS COSTS) TO THE COORDINATOR BEFORE END OF MAY

2) ***AFTER ACKNOLEDGE BY THE COORDINATOR:***

- SUBMITION OF THE RP3 FORMC AND THE ADJUSTMENT FORMC FOR RP2

- FOR ACCESS COSTS, YOU NEED TO JUSTIFY THE REAL COSTS

- ALL THE DETAILS ARE TO BE DESCRIBED IN THE ATTACHED FILE TO FORMC ON THE COMMISSION PARTICIPANT PORTAL

A great thank to all Jerico participants, selection panel experts, partners and TNA user teams.

Thanks to Samsung for this great announcement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