

MILESTONE N°: 1

GRANT N°: 871153

PROJECT ACRONYME: JERICO-S3

PROJECT NAME: Joint European Research Infrastructure for Coastal

Observatories - Science, services, sustainability

COORDINATOR: Laurent DELAUNEY - Ifremer, France - jerico@ifremer.fr

MILESTONE NAME: ALL-REGIONS WS#1

Authors: L.GODIVEAU, L. DELAUNEY, Consortium

Involved Institution: Ifremer + all partners

Date: 03/03/2020



→ Please specify the type of milestone:

□ Report after a workshop or a meeting (TEMPLATE A)

- □ Report after a specific action (TEMPLATE B) (test, diagnostic, implementation,...)
- □ Document (TEMPLATE B) (guidelines,...)
- □ Other (TEMPLATE B) (to specify)

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Reference: JERICO-S3-WP13-MS1-03.03.2020-V1



Document description

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|----------------------|----------------------------------|--|
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| Document ID | JERICO-S3-WP13-MS1-03.03.2020-V1 | |

| JE | ERICO-S3 MILESTONE | | | |
|--|--------------------------------|--|--|--|
| Joint European Research Infrastructure network for Coastal Observatory | | | | |
| Sci | ence, Services, Sustainability | | | |
| | | | | |
| Milestones title REPORT - All Regions WS #1 (during the JERICO-Week # | | | | |
| Work Package Title | WP13 | | | |
| Milestones number | estones number MS1 | | | |
| Description | Report | | | |
| Lead beneficiary | 1 - IFREMER | | | |
| Lead Authors | L. GODIVEAU, L. DELAUNEY | | | |
| Contributors | Consortium (collective notes) | | | |
| Submitted by | L. DELAUNEY | | | |
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| | V3 - | | | |
| | | | | |
| Security | Consortium Only or Public | | | |

| Diffusion list | | | | |
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| Consortium beneficiaries | Х | | | |
| Third parties | | | | |
| Associated Partners | | | | |
| other | | | | |

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A) TEMPLATE A - report after a workshop or a meeting

1. A - Attendees





| | Jenico 33 Ki | | S WORKSHOP My | 20 - THURSDAY 20/02 |
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2. A - Agenda

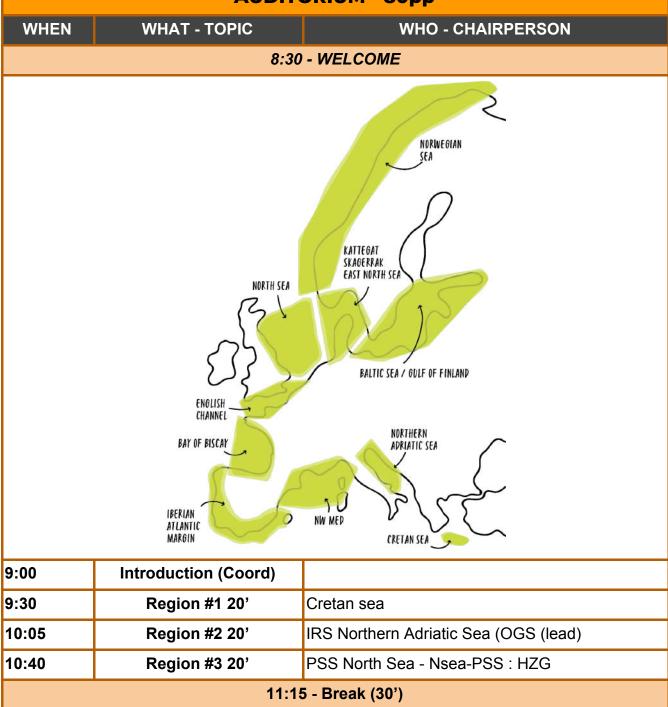
DETAILED AGENDA - WEDNESDAY 19th Feb. 2020

(FICOBA, IRUN - BUS DEPARTS AT 8:00 in SAN SEBASTIAN (See info PDF)

All Regions Workshop

WEDNESDAY PLENARY SESSION AGENDA

AUDITORIUM - 80pp





| 11:45 | Region #4 20' | PSS Channel : IFREMER | |
|-------|---------------------|---|--|
| 12:20 | Region #5 30' | PSS North-West Mediterranean; NW-MED-PSS : CNRS | |
| | 13:00 - 14:00 L | UNCH BREAK (1 hour) | |
| 14:00 | Region #6 30' | IRS Iberian Atlantic Margin (IH (lead) | |
| 14:45 | Region #7 30' | IRS Bay of Biscay (AZTI (lead) | |
| | 15:30 - Break (30') | | |
| 16:00 | Region #8 30' | IRS Kattegat-Skagerrak-Eastern North Sea (SMHI (lead) | |
| 16:45 | Region #9 20' | PSS Gulf of Finland, Baltic Sea; GoF-PSS : SYKE | |
| 17:20 | Region #10 20' | IRS Norwegian Sea (IMR (lead) | |
| 18:00 | WP1-9 Workshop | (for WP leaders only) (Antoine, Anna, Ingrid + Dominique) | |
| 19:00 | BUS TO SOCIAL EVENT | | |

DETAILED AGENDA - THURSDAY 20th Feb. 2020

(FICOBA, IRUN - BUS DEPARTS AT 8:00 in SAN SEBASTIAN (See info PDF)

THURSDAY PLENARY SESSION AGENDA AUDITORIUM - 80pp

| WHEN | | | | |
|---------------------|---|---|--|--|
| 8:30 - WELCOME | | | | |
| 9:00 | ARWS - DEBRIEF - 45' | | | |
| | COORD. | | | |
| 9:45 | TNA / VA REGIONS - 75' | | | |
| | Drawing regionally-oriented TNA Calls | | | |
| 11:00 - Break (30') | | | | |
| 11:30 | 11:30 - 13:00 WORKING GROUPS | | | |
| | ROOM 1 | WORKING GROUP - REGION 2: Baltic sea | | |
| SESSION 1 - | WORKING GROUP - REGION 9: Iberian Atlantic Margin | | | |
| 20' | ROOM 2 WORKING GROUP - REGION 3: Channel, North Sea | | | |
| | | WORKING GROUP - REGION 6: Kattegat-Skagerrak-Easter North Sea | | |
| | | WORKING GROUP - REGION 5: Cretan Sea | | |

Reference: JERICO-S3-WP13-MS1-03.03.2020-V1



| | ROOM 3 | WORKING GROUP - REGION 7: North West Mediterranean |
|--------------------|---|---|
| | ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, | WORKING GROUP - REGION 1: Norwegian sea |
| | ROOM 4 | WORKING GROUP - REGION 8: Adriatic |
| | | WORKING GROUP - REGION 4: Bay of biscay |
| | | 10 MINUTES TO CHANGE ROOMS |
| | ROOM 1 | WORKING GROUP - REGION 1: Norwegian sea |
| | NOO!VI I | WORKING GROUP - REGION 2: Baltic sea |
| | | |
| | | WORKING GROUP - REGION 4: Bay of biscay |
| | ROOM 2 | WORKING GROUP - REGION 3: Channel, North Sea |
| SESSION 2 - | | WORKING GROUP - REGION 6: Kattegat-Skagerrak-Easter North Sea |
| 30' | | WORKING GROUP - REGION 9: Iberian Atlantic Margin |
| | | 3 |
| | ROOM 3 | WORKING GROUP - REGION 7: North West Mediterranean |
| | | WORKING GROUP - REGION 8: Adriatic |
| | | WORKING GROUP - REGION 5: Cretan Sea |
| | 10 MIN | UTES FLEXIBILITY / TO CHANGE ROOMS etc. |
| | ROOM 1 | WORKING GROUP - REGION 1: Norwegian sea |
| | | WORKING GROUP - REGION 7: North West Mediterranean |
| | | WORKING GROUP - REGION 6: Kattegat-Skagerrak-Easter North Sea |
| | | WORKING GROUP - REGION 3: Channel, North Sea |
| SESSION 3 - 30' | | WORKING GROUP - REGION 8: Adriatic |
| 30 | ROOM 2 | WORKING GROUP - REGION 4: Bay of biscay |
| | | WORKING GROUP - REGION 9: Iberian Atlantic Margin |
| | | WORKING GROUP - REGION 2: Baltic sea |
| | | WORKING GROUP - REGION 5: Cretan Sea |
| 14:00 | | DEBRIEF REGIONS WG - 10' x 10 regions |
| | | 15:40 - Break (30') |
| 16:10 | | GENERAL DEBRIEF REGIONS (20') |
| - 3 - 1 - 2 | | |

3. A - Main report

1.1.



JERICO-S3 - KICK-OFF MEETING



FEBRUARY 17 - 21 2020

JERICO-S3 KICK-OFF MEETING

REPORT and CONTENTS

WEDNESDAY 19th Feb. 2020

(FICOBA, IRUN - BUS DEPARTS AT 8:00 in SAN SEBASTIAN (See info PDF)

All Regions Workshop

WEDNESDAY PLENARY SESSION

AUDITORIUM - 80pp

NOTES

(Authors: Collective notes)



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REPORTS AND MINUTES - DONE

MONDAY 17th Feb. 2020 ⇒ (MINUTES PER // SESSION)

.

STEERING COMMITTEE - MONDAY ⇒ MINUTES HERE

TUESDAY 18th Feb. 2020 ⇒ <u>REPORT HERE</u>

NOTES (discussions)

Cretan Sea (Maria)

Presentation give by Leonidas (HCMR) on behalf of Costas Frangoulis (HCMR)

Q1 (Patrick F., Ifremer): Nutrient transport from Black Sea and Turkey?

- Establishing links from Black Sea data sources via MONGOOS+Copernicus
- connection with Turkey not very straightforward but there has been collaboration in Perseus and SESAME projects. Effort to built more stable link to expand the supersite

Citizen science? Mini FB's on fishing vessels or sensors on fishing gear? Relation with WP6

- Activity is very popular in EU. But data acquisition concerning this topic is a concern, how to do it in a way to get data usable for science or other targets? Effort to assess this kind of activity and what is available.

Q2 (Carolina C., CNR): Any experiments planned with AQUACOSM? -need followup from Costas

Q3 (Lisette, RWS): How will connection from chl a etc. to policy realm (MSFD)? -follow up with Costas for needs and quality control, link probably already established

Comment (Joaquin, SOCIB): Societal part lists MSFD, but perhaps some descriptors/indicators can be specified, and also related to SDGs for all PSSs {and IRSs}

Q4 (Ingrid P., (Ifremer, coord.): How will the link with ICOS be made? Not overlapping, and

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how we can collaborate, what is the difference?

- -Contact made with ICOS related to carbonate chem data collected in last 6 months via CMEMS(priority has been given to EMODnet Chem?) need to push harder? Carbonate system sensors are not accredited by ICOS (need to pass many QC routines). Data being checked and feedback from ICOS to see what is required.
- → **Comment from Laurent C**.: need the label and we need to pay, possible to join intercomparison in Fall 2020.
- → Comment from Lauri (FMI): Will join ICOS-OTC next year with HEL-ARN FB. Intercomparison workshop organized in Aug/Sept 2020 in Belgium, FMI will join with own costs. Planned cooperation with ACTRIS (?) related to shipping emissions and climate change?
- → **Carolina C (CNR)**: PALOMA buoy pCO2 is ICOS-labeled, ask for info. The nation of Italy pays a fee to ICOS depending on what to register in ICOS (3 "places": land ecosystem marine) Italy signed commitment that ICOS applies QC on the data and provides services
- → Andrew K. (NIVA, WP3 IRS Leader): ICOS Norway is focusing on increasing coastal coverage need to be aware of this in relation to JERICO-RI and how we collaborate or find space. WP2 RI-related task take note of this. FYI: ICOS-OTC station fee for Norway is ~8kEuro/year/station.

Northern Adriatic Sea (Mirta)

Presentation given by Fabio Brunetti, OGS

Antoine G. (CNRS): Commonalities between BoB IRS and N. Adriatic, especially for extreme events, good to get in touch to collaborate and to get a parallel approach

Eric D. (PLOCAN): What is in place related to remote sensing and observations, satellite calibration?

Carolina (CNR): Data from buoy near Po river S1GB provide data for remote sensing validation via Copernicus.

Kai (NIVA): Agua Alta is part of the validation platform.

Patrick F. (Ifremer): Need for sensor calibration/metrology is needed, Laurent will provide some follow up in other RIs? Need best practices to get the best data...

Ingrid (Ifremer, coord.): How do you connect with LTER and DANUBIUS? Need synergy, but there could be a conflict... thinking about organizing a workshop for other RI's working in the same area.

Juanga (SOCIB): All IRS/PSS should have VA and TNA? But apparently not in N. Adriatic Sea IRS? [Seems that there was a confusion between CNRS(FR) and CNR(IT).] But Felipe mentioned that flow cytometer VA toolbox can potentially connect to N. Adriatic Sea IRS.

North Sea

(Presentation by Henning W. on behalf of Holger Brix, HZG)

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Presentation → Investigate more about the list of users

Lisette (RWS): integration of data (time and space) is an issue (esp. in policy realm) - how? Jukka: Integration important for PSS, and also esp. Between North Sea and English Channel PSS that Delatares has a task on.

Antoine G. (CNRS): Regarding scientific objective, focus on C, which was different from earlier PSS/IRS presentations? Take care have homogeneity in objectives across PSS/IRS?

Vlad (HZG) / Ingrid: Focus on carbon because observing infrastructure was already in place and developed, but also agree that specificities are good but we need commonalities too

Henning W.: agree, we should not focus on a single parameter. We can focus on one parameter (ex. carbonate) and keep in mind that other aspects are already being measured by other entities (CEFAS, fisheries etc.) due to resource limitations (funding)

Jukka S. (SYKE - WP4 PSS Leader): the PSS have 8 ≠ specific topics (in North Sea : connect with Danubius and CHannel PSS for example). All PSS need to connect and learn by example.

Antoine G.: we have to be clear on the overall objective, beyond J-S3 // Jukka: increase our capacity to make data products and services

Patrick F.: Provide services with the best data available (JERICO + other partners). \rightarrow what can we provide as services, with this information (parameters?).

Dominique (COVARTEC): We are beginning to create identity of JERICO-RI, important to keep in mind that we don't have to re-invent things or double effort \rightarrow focus on complementarity

Vlad M. (HZG) : Danubius is about the interface of the rivers and sea. There is complementarity with the PSS

Bezhad M.: does J-S3 focus on nearshore water and complement with Danubius, or J-S3 focus on larger sea?

Vlad M.: there is another internal project called MOSES focusing on sediment dynamics. Don't really know how they will manage the overlaps (sediment/sea ?) \rightarrow Ingrid: homework, discuss internally about the interactions and possibilities / difficulties.

Antoine G.: there are places without Danubius coverage. We can learn by example, but not all examples are transposable between regions (be aware of that)

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Channel

Presentation by Alain L. (Ifremer)

Eric D. (PLOCAN): Links with WP7, interest to implement instrumental and machine learning module/systems.

Alain L.: Proposition to install a new in situ platform in the mouth of the Somme Rover (long-term discrete monitoring since the 90s, plans to implement HF buoy also, so YES.

Lisette E. (RWS): Link with OSPAR?

Alain L.: as within EUNOSAT: a lot of data to share, dealing with low resolution monthly sampling to new integrated tools, low to high resolution, added value of PSS to be able to propose ecologically relevant assessment - Eco-hydrodynamic regions previously defined (OSPAR, EUNOSAT) and to move forward

Bezhad M. (CNRS): Good biological presentation. Place of bacteria in the food web? Connexion with eutrophication processes. How do we best address this in our coastal observing systems (not only in Channel PSS)?

Alain L.: Bacteria was forgotten. Today this has not been included yet but we hope to cope with it

Felipe A. (CNRS): bacteria and nano heterotrophs are considered by discrete sampling and counts (at least in some areas), new prototypes of sensors are dealing with automated counts of all microorganisms but not yet applied to the region, and we also started metabarcoding analysis of procaryotes. We need to include all this dynamically and go forward

Juanga (SOCIB): We need to raise awareness of where data comes from. To be able to show this with good metadata schemes.

Patrick F. : how do you manage interfaces in the North Sea PSS (only 1 PSS Channel-North Sea, no ?) → see Ingrid's comment

Alain L.: we are considering first issues within our PSS, but then we will make connections with North Sea (biodiversity, eutrophication, etc.). It should be feasible as soon as we identify common scientific questions we share

Ingrid P. (Ifremer, coord.): Originally, there was one common PSS in the proposal. Homework : work together! Make a 10 years prospective?

Jukka S. (SYKE - WP4 PSS Leader): agenda for the next 6 months is to create common points between the 10 sites. Key point: how the ≠ PSS communicate together, demonstrate with scientific study.

Alain L.: remember this is only the KO, we won't have all the answers now; be patient and trust us

Ingrid P. (Ifremer, coord.): Tomorrow brainstorming each region to address common questions. What can be addressed together and how Link to MSFD approach already addressed before. OSPAR, European Environmental Agencies. C cycle also in MSFD, I guess.

Alain L.: National representative for OSPAR and MSFD for Eutrophication.

Ingrid P., (Ifremer, coord.): to connect with MSFD and OSPAR referents on eutrophication in other countries. (Andrew: Also reminding about Joaquim's comment about SDGs, and also it

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could be valuable to cross reference EOVs/emerging EOVs?)

North west Mediterranean

Laurent Coppola (CNRS) presenting

Meteo events and floods: coupling of ocean and atmosphere not only scientifically but also politically. Is there a strategy?

Laurent C.: Strong collaboration with meteo france for the last 10 years: heavy rain impact, and storm events, it includes models and monitoring with fixed buoys. The plan is to maintain and further develop the system (especially to increase resolution). Is also important to consider long term changes to estimate climate change impact

Begoña P. (PdE): in the VA also Puertos del Estado. I agree with the importance of monitoring extreme events (meteo: wind and waves)

Ingrid: Omics: common topic among Adriatic and North Sea. we should discuss a long term strategy also within WP7

Task 7.3 technology assessment, DNA analysis

Ingrid: link wirth modelling and sat communities not only as users but also as collaborators. How do you see this connection?

Antoine M. (ACRI): the important point is to be able to put some QC and uncertainty estimate in the data, useful for remote sensing community for cav/val

Anouk B. (Deltares): satellite validation data need measurements associated with QC and calibration to be used for cal/val by sat communities

Antoine M.: agencies use in situ data for validation, but to be used for calibration of the sensors is very important to know the uncertainty of in situ data

Kai (NIVA): chl a (filtered then HPLC or spectrophotometer) is ok for validation, but chl a fluorescence sensor data is not yet ok. ALso important are reflectances measured by radiometry

Anouk B. (Deltares): is there an initiative to get new data for cal/val?

Antoine M.: EUMETSAT is working on new network for cal/val. They rely on boussole for ocean color and moby (hawaii). Calibration will be done on optical properties not on chl itself.

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Felipe A.: Not to be confused about calibration vs. validation. You can calibrate a sensor for a specific measurement or to calibrate a model or algorithm to estimate another type of variable. include in Jerico direct optical measurements (IOPs & AOPs).

Martin P. (IRB): what about a letter of support by ESA and NASA for JERICO-RI?

Ingrid: all partner in contact with ESA could write a letter all together to ask for support within jerico-RI

Antoine: jerico is emerging, not sure ESA/eumetsat is ready to support

Ingrid: not enough bio/bgc for this PSS. how can we get onboard this expertise? // **Laurent**: we should discuss with the involved partners

John A. (SOCIB): difficult to harmonize bio/bgc observations

Carolina C. (CNR): we should discuss within CNR how to involve people within bio/bgc for the next round and for a strategic common PSS plan

Antoine G. (CNRS): to be interdisciplinary and to deal with bio-physical coupling we need a plan

Behzad M. (CNRS): What about processes in JERICO? As primary productivity...As not only abundance and biomass are required.

→ MODELING :

Baptiste M. (SOCIB): models need QC data with associated uncertainty. models are also useful to design observing systems (OSE/OSSE approach). Within MONGOOS there are several regional models (with higher res) to account for coastal/shelf dynamics

Begona P. (PdE): interested in JERICO data for validation of regional models **Joaquin T. (SOCIB)**: satellite and models are underrepresented in JERICO-S3 unfortunately. **Ingrid :** in terms of users, we'll have to prioritise the list/types of users. Users wks planned in August (June ?)

ACTION: Set up some priorities and organise users workshops // user strategy

Iberian Atlantic Margin

Joao Vitorino (IH) presenting

Peter T. (MARIS): happy to see citizen science, it would be good that some of the IRS/PSS include some examples. The overview of the stations is what is expected to be received from

AZTI, San-Sebastian FEB. 17 to 21 2020



the IRS

Joao V. (IH): our data is sent to CMEMS In Situ and we understood that our data are already in Sextant, if something else is needed we will be able to provide it

Henning W. (IMR): we are integrating all data, which data are JERICO and which not? Old question

Ingrid P. (coord.): the data belongs to the original institutions, JERICO deals with harmonization and providing services. We cannot solve this completely right now. Open question: is this exclusive to use a JERICO label? No answer yet

Ingrid P. (coord): in the scientific questions you raise extreme events and coastal erosion, any special warning system in place for these processes?

Joao V. (IH): our data and forecasts are used by research and insitutions dealing with coastal erosion problems

Ingrid P. (coord): are you collaborating with Danubius?

Joao V. (IH): IH not at this moment.

Begoña P.G. (PdE): PdE not in principle either, but PdE is the node for the IBI MFC of CMEMS and we may have a connection with them for the IBI regional model. Checking internally in PdE.

Bay of Biscay

Anna Rubio (AZTI) presenting

Begoña (PdE): Use of camera in the Rive for marine litter. Other applications?

Anna (AZTI): Most mature applications costal for monitoring seasonal changes of erosion. Also 2 systems for monitoring litter in River (including the Adour River)

Ingrid (IFREMER): Could be nice to make a demonstration in a future Regional Workshop **Antoine (CNRS)**: Imagery would be a good transversal topic because of the numerous multidisciplinary applications.

Joao (IH): Is there groups doing monitoring for beaches using buoys

Anna R. (AZTI): Yes there is a team in AZTI running pilot experiments in collaboration with a local company.

Antoine (CNRS): Not in France, beach monitoring only for erosion (including cameras) water quality monitoring through classical water sampling

Kattegat-Skagerrak-Eastern North Sea (notes by Vlad)

Emilie Breviere (SMHI) presenting

Erric D. (PLOCAN): Mentions of aspects related to WP7. Leads to discussions after. **Emilie B.**: Agreed.

Martin P. (IRB): How feasible could it be to extend the joint system of reference images across

, ,

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the entire JERICO network? There is potential for a pan-European topic

Emilie B.: Need to confirm with Bengt (Karslon).

Jukka S.: The organisms are largely regional. These are very specific for the site. Maybe hard for a large scale comparison. Hard to imagine machine learning can be used for this due to limitations.

Ingrid P.: Can another consortium (cf. ask Ingrid) help with this task?

Kai S.: Laboratory analysis is needed for confirming the imaging is accurate.

Felipe A. : Automated imaging devices are one thing, but the issue of species migrating is more a problem for high resolution microscopy work. Dealing with rare species in large volumes of water is hard. Both types of catalogues are needed to really distinguish if a "new" species is real.

Gulf of Finland PSS (notes by Lauri)

Jukka Seppälä (SYKE) presenting

Lisette (RWS): Interesting presentation. How to tackle with conflicts of interests, transnational challenges?

Jukka (SYKE): Money helps. Mutually beneficial help without additional funding also OK.

Andrew (NIVA): SYKE first to mention cooperation (planned action) with AQUACOSM

Jukka (SYKE): there are three sites in Jerico-S3 doing such co-op. Funding to be collected from multiple sources, funding from TA only not enough.

Ingrid (IFREMER): maybe we should promote Jerico TA towards AQUACOSM people?

Behzad M. (CNRS): we should propose something scientific (?) for each PSS and use the lessons learned. Maybe joint WS with other relevant RI's?

Timo (SYKE): AQUACOSM will start in April 2020 - mutual interest to work together with JERICO-RI.

Kees (RWS): What is the situation of data use for modelling and EO?

Jukka (SYKE): biological data not enough in use at the moment. Better QC for data also needed.



Norwegian Sea (notes by Helene)

Henning Wehde (IMR) presenting

Sebastien L. (RBINS): mention eDNA activities, but no mention of EMBRC (?).

Henning W. (IMR): UiB and IMR are very involved with EMBRC, so there are existing links.

Ingrid P. (coord): another site interested in eDNA?

Felipe A. (CNRS): focus in microbial DNA in Channel PSS, not the same approach for microbes and other components.

Henning W.: need to define pan-European perspective for the various components.

Pauline Simpson (UNESCO): A comment, first presentation to recognise UN Decade for Ocean Science for long-term perspective?

Vlad (Hzg): Skagerrak region has also mentioned this, and included in the IRS presentation.

Ingrid: we need to collaborate and have a common strategy for the UN Decade for Ocean Science. Also some relevant initiatives that has been launched. New initiative launched just a week ago.

Felipe A. (CNRS): we are fully involved with the UN Decade (OceanObs etc.). Main issue is integrated in the regional approaches.

ACTION: mention it clearly and communicate

Ingrid P.: in conclusion, aligning and mentioning the UN Decade should be mentioned and communicated more clearly. Need to promote, for all regions.



- **PSS REGION 1.1 -**NORTH SEA

JERICO-





INTRODUCTION - COUNTRIES AND INSTITUTES INVOLVED in the PSS

Germany:

- Helmholtz-Zentrum Geesthacht (HZG)Alfred-Wegener-Institute (AWI)
- Netherlands: Deltares
- Norway:

 - Norwegian Institute for Water Research (NIVA)
 - Institute of Marine Research (IMR)



SPECIFIC REGIONAL ORGANISATIONAL CHALLENGES in the PSS (trans-institutional,

- Identify gaps in observation and analysis system with regard to carbon and nutrient cycling
- Lack of official JERICO-S3 PSS partner in the UK and Denmark
- Development of joint monitoring plan is difficult as many players in the North Sea region with diverse interests

1- SCIENCE // PSS - NORTH SEA



SPECIFIC SCIENTIFIC TOPICS AND OBJECTIVES (scientific case, link to WP1) in the PSS +

- Scientific objective: To refine the regional carbon budget including terrestrial inputs, coastal carbon cycling, and biological carbon fluxes
- coastal car Subtopics:
 - topics:
 Assure coherence of carbon observations between platforms and institutes Identify observational gaps
 Assure coherent integration of relevant carbon sources and sinks over compartments (air-see, land-sea, pelagic-benthic, and microbial processes)
 Integrate model calculations to provide context for observations

 - Integrate moder calculations to provide context nor observations
 Facilitate exchange with other RIs, especially Danubius
 Integrate knowledge about biological processes, e.g., phytoplankton distributions
 from models and satellite products
 Ensure "smooth" interfaces with neighboring PSS (Channel) and IRS (Kattegat,
 Skagerak, Eastern NSea)

→ IF UNCLEAR OR UNKNOW, WILL BE DISCUSSED DURING THE WORKSHOP.

1- SCIENCE // PSS - NORTH SEA

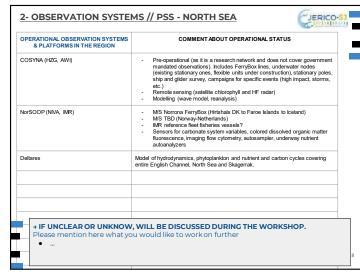


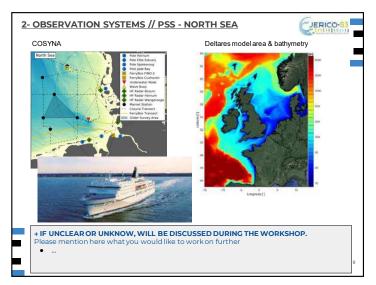
SPECIFIC OBSERVATIONAL CHALLENGES IN THE REGION, WHERE PILOT SUPERSITE IS **EXPECTED TO PROVIDE PROGRESS + comments**

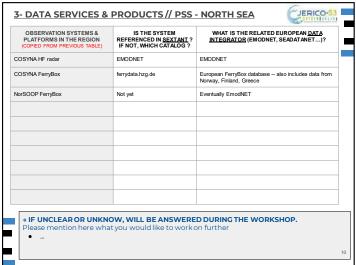
- Size of region makes comprehensive coverage almost impossible. Development of strategy for identification of hot spots/representative locations is crucial
- Treatment of near coastal sites in comparison to open NSea sites (influence of mud flats, sedimentation, etc.)

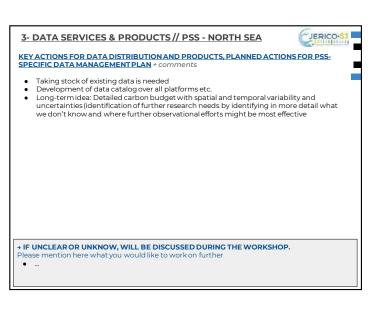
→ IF UNCLEAR OR UNKNOW, WILL BE DISCUSSED DURING THE WORKSHOP.

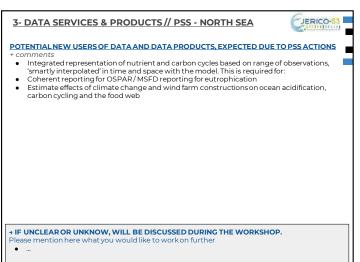
1- SCIENCE (& SOCIETY) // PSS - NORTH SEA SOCIETAL AND ECONOMIC EXPECTED IMPACTS (if known) in the PSS + comments • Improvement of knowledge about the role of NSea as carbon sink, especially creating a foundation for future estimates under climate change scenarios - contribution to international report (IPCC type) as well as regional decision making • IF UNCLEAR OR UNKNOW, WILL BE DISCUSSED DURING THE WORKSHOP. Please mention here what you would like to work on further • ...

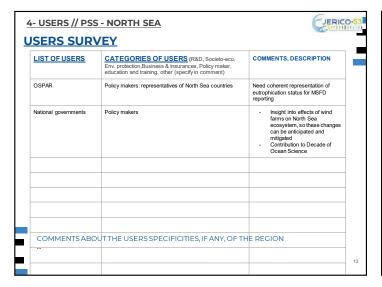












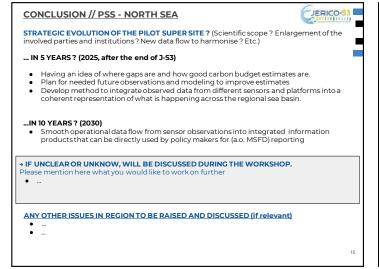
4- USERS // PSS - NORTH SEA

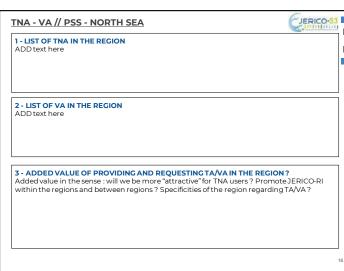
LINKS TO OTHER REGIONAL ACTORS, SYSTEMS AND OTHER RIS in the PSS + comments

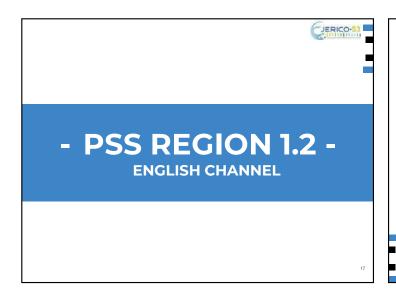
- DANUBIUS-RI (three sites in NSea region, Tidal-Elbe Supersite coordinated by HZG)

- OSPAR?

F UNCLEAR OR UNKNOW, WILL BE DISCUSSED DURING THE WORKSHOP.







PSS - ENGLISH CHANNEL PSS Contacts: <u>Lefebvre Alain*</u>, Verney Romaric (IFREMER)
Felipe Artigas (CNRS) *Alain.lefebyre@ifremer.fr

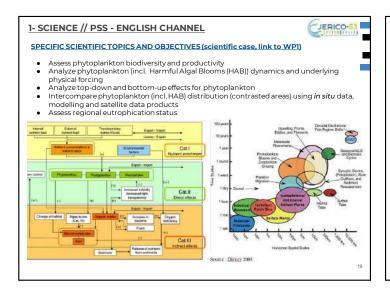
- France: IFREMER, CNRS-LOG (CNRS, Univ. Littoral, Univ. Littoral)
- The United Kingdom: CEFAS
- Belgium: Royal Belgian Institute of Natural Sciences (RBINS), Flanders Marine Institute (VLIZ)
- The Netherlands: DELTARES, Rijkswaterstaat (RWS)



JERICO-

SPECIFIC REGIONAL ORGANISATIONAL CHALLENGES

- Identify gaps in Observations systems/strategies that hamper regional studies of Eutrophication, phytoplankton biodiversity and productivity and Carbon cycle
- Promote a **Joint Integrated Monitoring Programme** (Biogeoch + Biol + Phys) including Low to High Resolution, Short to Long Term Observations
- $Improve \ {\bf governance}\ between \ the \ different\ Institutes, Universities\ coordinating\ Monitoring\ Progr.$
- Propose harmonized and ecologically relevant strategies for **WFD, MSFD, RSC** (OSPAR) Monitoring Progr.



1- SCIENCE // PSS - ENGLISH CHANNEL

SPECIFIC OBSERVATIONAL CHALLENGES IN THE REGION, WHERE PILOT SUPERSITE IS EXPECTED TO PROVIDE PROGRESS

- Identify consequences of anthropogenic **nutrients inputs** with superimposed global change on **eutrophication** direct (development of microalgae, harmful algal blooms, including bloidversity and dynamics aspects) and indirect effects (oxygen deficiency, fish and benthos kills).
- Define variability of water clarity, hydrological and sediment patterns and phytoplankton outbursts from short time scales (hourly, diurnal, fortnightly tidal) to long time scales (yearly to decades)
- Characterize the functioning of coastal zones as a **sink for CO2** and link to phytoplankton taxonomical/functional dynamics, distribution and primary productivity
- Solve the specific spatio-temporal dilemma in **primary production** studies
- Promote multi-disciplinary data integration
- Define main environmental English Channel characteristics (reference conditions, shift, trend) to support more global environmental research (contrasted areas)
- Propose scenarios considering a **moving world** (regulations, climate change)

1- SCIENCE (& SOCIETY) // PSS - ENGLISH CHANNEL



21

SOCIETAL AND ECONOMIC EXPECTED IMPACTS (if known) in the PSS + comments

- Eutrophication
- Biodiversity
- Coastal water quality
- Harmful Algal Bloom
- From global to extreme coastal events impacts
- MPA management
- Contribution to EU Directives (WFD, MSFD) and to Regional Sea Convention (OSPAR)

 Definition of the Good Environmental/Ecological Status (GES)

 Assessment of GES

 Definition of optimized monitoring programmes

 Definition, update of Indicators, metrics and thresholds

 Definition of Ecological Objectives (targets for GES)
- Support to stakeholders, environmental managers for regional and local environmental expertises

2- OBSERVATION SYSTEMS // PSS - ENGLISH CHANNEL OPERATIONAL OBSERVATION SYSTEMS & PLATFORMS IN THE REGION COMMENT ABOUT OPERATIONAL STATUS MAREL Carnot instrumented station (Ifremer) TRL 8 / Period: 2004 - now / Identify as WP8 TA (ID 1.2) MAREL Smile buoy (Ifremer) TRL 8 / Period: 2015 - now / Identify as WP8 TA (ID 1.4) MAREL Scene buoy (fremer) TRL 8 / Period: 2015 - now / Identify as WP8 TA (ID 1.3) WARP TH1 buoy (CEEAS) Connector (NIVA/RWS/DELTARES/CEFAS) Thornton (VLIZ) Period: 2015 - now / Identify as WP8TA (ID 38.1); http://www.vliz.be/en/buoy? CTD, turbidity, dissolved O2, pH, CO2; some Benthic lander MOW1 (RBINS) RV Sepia II (UMR LOG / Ifremer-Genavir) RV Simon Stevin (VLIZ) Continous from 2012 - now / Identify as WP8 TA (ID 38.1); CTD, Chla, depth. http://www.vliz.be/en/imis?dasid=4685&doiid=393; Montt phytoplankton, nutrients, pigments, CTD, SPM, Secchi http://rshiny.lifewatch.be/underway-data/; zooplankton: http://www.vliz.be/en/imis?dasid=4687&doiid=394; RV Thalassa + Ferry Box (Ifremer)

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| OBSERVATION SYSTEMS & PLATFORMS IN THE REGION | IS THE SYSTEM REFERENCED IN <u>SEXTANT</u> ? IF NOT, WHICH CATALOG? | WHAT IS THE RELATED EUROPEAN <u>DATA</u> <u>INTEGRATOR</u> (EMODNET, SEADATANET)? |
|---|---|--|
| WREL Carnot instrumented station fremer) | SEXTANT + CORIOLIS | Copernicus marine, EMODNET phys |
| AREL Smile buoy (Ifremer) | CORIOLIS | Copernicus marine, EMODNET phys |
| MAREL Scene buoy (Ifremer) | CORIOLIS | Copernicus marine, EMODNET phys |
| STAN buoy (CNRS) | | |
| VARP TH1 buoy (CEFAS) | | |
| Connector NIVA/RWS/DELTARES/CEFAS) | | |
| hornton (VLIZ) | IMIS | ICOS |
| lenthic lander MOW1 (RBINS) | | |
| RV Sepia II (UMR LOG / Ifremer- Genavir) | | |
| RV Simon Stevin (VLIZ) | IMIS | EMODnet Chemistry, biology, SEADATANET; LifeWatch, |
| RV Thalassa + Ferry Box (Ifremer) | SISMER | |

3- DATA SERVICES & PRODUCTS // PSS - ENGLISH CHANNEL CJERICO-S

KEY ACTIONS FOR DATA DISTRIBUTION AND PRODUCTS, PLANNED ACTIONS FOR PSS-SPECIFIC DATA MANAGEMENT PLAN \star comments

- Submission of all phytoplankton diversity data to relevant portals/databases
- Submission of all hydrological/biogeochemical data to relevant portals/databases
- Submission of all physical data to relevant portals/databases
- $\textbf{Data flow} \ \text{including} \ \textit{in situ}, \ \text{modelling and satellite products} \ (\text{link with WP6})$
- Clear overview of data portals and databases inter-connection
 - => best available data sources for Research purposes
 - concrete contribution to environmental assessment (From coastal WFD to offshore MSFD, OSPAR marine waters)
- New ${\bf tools}$ (packages, GUI) for data management/QA-QC/processing/valorisation (link with WP7, WP8, WP11)

3- DATA SERVICES & PRODUCTS // PSS - ENGLISH CHANNEL

POTENTIAL NEW USERS OF DATA AND DATA PRODUCTS, EXPECTED DUE TO PSS ACTIONS

- WFD, MSFD, Regional Sea Convention (OSPAR)
 Government: Ministry of Ecology, Agriculture (Eutroph.)
- Water Agencies
 Regional Direction of Environmental and Land Use Planning (DREAL, Fr)
 French National Biodiversity Office (OFB, Fr)
 Marine Protected Areas

- Water and Marine ecosystem managers, stakeholders
- Fisheries Aquaculture sectors Tourism (HAB, water quality) Engineering offices NGOs

- Citizens

JERICO-4- USERS // PSS - ENGLISH CHANNEL **USERS SURVEY** COMMENTS, DESCRIPTION LIST OF USERS CATEGORIES OF USERS (R&D, Societo-eco, Env. protection, Business & insurances, Policy maker education and training, other (specify in comment) TO BE COMPLETED LATER ON COMMENTS ABOUT THE USERS SPECIFICITIES, IF ANY, OF THE REGION

4- USERS // PSS - ENGLISH CHANNEL



LINKS TO OTHER REGIONAL ACTORS, SYSTEMS AND OTHER RIS_ in the PSS + comments

Regional actors:

- Marine Protected Area (Fr)
- Water Agencies (Fr)

Regional systems:

- Local Monitoring Activities (REPHY, SRN, RHLN, DYPHYRAD, IGA Grav., IBTS, CGFS)
- Other RIs:

National:

- IR ILICO PHYTOBS (Fr)
- IR ILICO PHYTOBO...

 IR ILICO COAST-HF (Fr)

 IR ILICO Somlit (Fr)
- EU/InternationalEMBRC

 - EMBRCESFRI Lifewatch

CONCLUSION // PSS - ENGLISH CHANNEL



STRATEGIC EVOLUTION OF THE PILOT SUPER SITE? (Scientific scope? Enlargement of the

... IN 5 YEARS? (2025, after the end of J-S3)

- Integration of all WPs contributions/recommandations!!!
- From Phytoplankton to Plankton (Phyto + Zoo)
- Shared vision of EOV/EBV to use in minimum/intermediate/optimized Monitoring
- $Improvement of spatial \ and \ temporal \ sampling \ strategies \ (to \ cover \ more \ processes)$
- Stabilized data flow -> contribution to eutrophication assessment (MSFD, OSPAR)
- Experts consortium for the English Channel area (Research/Innovation/policy support)

...IN 10 YEARS ? (2030)

Towards an Harmonized Optimized Integrated Observation System devoted to Plankton Diversity and Dynamics

(incl. Citizen and Socio-Economic Sciences)

TNA - VA // PSS - ENGLISH CHANNEL



1 - LIST OF TNA IN THE REGION

VLZ; RV Simon Stevin (Ferry Box / Automatic Underway Measuring System); Thornton Buoy; bottom moored tripods; regular sampling stations; Unmanned Surface Vehicle (USV); Automated unmanned vehicle (AUV); Remotely Operated Vehicle (ROV) [fremer: ID 1.2. MAREL Carnot instrumented station; ID 1.3. SCENES buoy; ID 1.4. SMILE Buoy. CEFAS: ID 6.1. Smart buoy; ID 6.2. FerryBox RV Endeavour.

2- LIST OF VA IN THE REGION ID 1.1. Mawenzi ID 6.1. CefMAtID [ID 8.1. Perico-Ecotaxa] ID 8.2. Cyto Fluo Tool

ID 38.1, VLIZ Marine data archive

3 - ADDED VALUE OF PROVIDING AND REQUESTING TA/VA IN THE REGION?Added value in the sense: will we be more "attractive" for TNA users? Promote JERICO-RI within the regions and between regions? Specificities of the region regarding TA/VA?

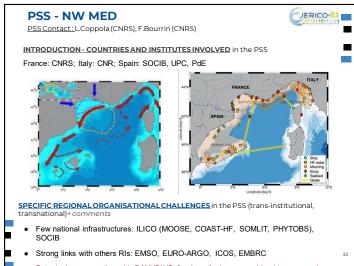
Highly contrasted areas within a given PS

High environmental gradients and high variability

High level expertise from Research to Policy support

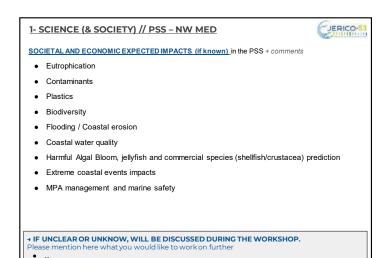
Logistic facilities (boats, labs)

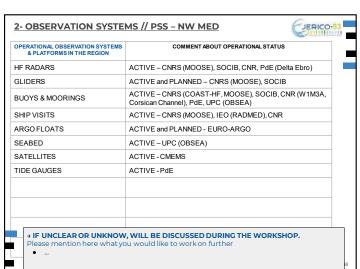




1- SCIENCE // PSS - NW MED SPECIFIC SCIENTIFIC TOPICS AND OBJECTIVES (scientific case, link to WPI) in the PSS + comments • Northern Current (NC) transport: water mass circulation, particles and plankton species, plastics, contaminants • Impact of major rivers inputs (on ecosystems) in the coastal area (Ebro and Rhône Rivers) • Shelf water cascading events: dense water formation, organic and contaminants plumes • Occurrence of extreme events: storms (Medicane), flash flooding, heavy rains... • Big cities impacts: eutrophication, contaminants * IF UNCLEAR OR UNKNOW, WILL BE DISCUSSED DURING THE WORKSHOP. Please mention here what you would like to work on further • Some river monitoring is missing • Mainly physical and BSC processes are observed • Few observations on the shelf (e.g. JULIO)

1- SCIENCE // PSS – NW MED SPECIFIC OBSERVATIONAL CHALLENGES IN THE REGION, WHERE PILOT SUPERSITE IS EXPECTED TO PROVIDE PROGRESS. + comments Observation of extreme meteorological events (floods and storms) Northern Current transport in 3D combining radars, buoys and gliders Bio-Gliders sections dedicated to zooplankton diversity and sub-mesoscale front impacts New optical (LISST) and ADCP sensor on gliders for suspended particulate matter characteristics and fluxes estimation Macrofauna and plastics video monitoring on fixed sites (GUARD1) Inter-calibration and Delayed Mode QC for a multiplatform, multidisciplinary system of systems Separating long term trends, inter-annual variability, seasonal cycles, high frequency dynamics and biological patchiness





3- DATA SERVICES & PRODUCTS // PSS - NW MED OBSERVATION SYSTEMS & PLATFORMS IN THE REGION ICOPIED FROM PREVIOUS TABLE IS THE SYSTEM REFERENCED IN <u>SEXTANT</u>? IF NOT, WHICH CATALOG? WHAT IS THE RELATED EUROPEAN <u>DATA</u> INTEGRATOR (EMODNET, SEADATANET...)? HF RADARS YES EDMODNET, CMEMS GLIDERS SEANOE, EGO SEADATANET EGO JCOMMOPS CMEMS BUOYS & MOORINGS YES CORIOLIS. SEADATANET, JCOMMOPS, CMEMS SHIP VISITS YES ARGO FLOATS YES SEADATANET, JCOMMOPS, CMEMS SEABED YES EDMODNET SATELLITE YES CMEMS TIDE GAUGES YES CMFMS

IF UNCLEAR OR UNKNOW, WILL BE ANSWERED DURING THE WORKSHOP.

3- DATA SERVICES & PRODUCTS // PSS - NW MED

KEY ACTIONS FOR DATA DISTRIBUTION AND PRODUCTS, PLANNED ACTIONS FOR PSS-SPECIFIC DATA MANAGEMENT PLAN + comments

- Reconstruct the 3-D coastal dynamics (models + in situ obs.)
- Identification of upwelling/downwelling areas
- Progress on new societal applications (pollutants, jellyfish, alien species ...)
- Improve BGC integration in coastal coupled models (e.g. SYMPHONIE-ECO3MS,...)
- Integration with CMEMS

F UNCLEAR OR UNKNOW, WILL BE DISCUSSED DURING THE WORKSHOP.

3- DATA SERVICES & PRODUCTS // PSS - NW MED



POTENTIAL NEW USERS OF DATA AND DATA PRODUCTS, EXPECTED DUE TO PSS ACTIONS

- Operational oceanography models for building new indicators (e.g. acidification with Mercator, CMEMS)
- National offices for biodiversity monitoring
- MPAs
- · Environmental agencies and local governments
- · Commercial operators
- Tourism
- Ports & coast guards
- Ocean Color community (eg. ACRI)

→ IF UNCLEAR OR UNKNOW, WILL BE DISCUSSED DURING THE WORKSHOP.

4- USERS // PSS - NW MED

USERS SURVEY



| LIST OF USERS | CATEGORIES OF USERS (R&D, Societo-eco, Env. protection, Business & insurances, Policy maker, education and training, other (specify in comment) | COMMENTS, DESCRIPTION |
|-----------------------------------|---|---------------------------------|
| Schools | Education | Adopt gliders, adopt floats |
| MPA | Env. protection | Biodiversity |
| SMEs | R&D | New sensors |
| Biodiversity agencies | Policy maker | Indicators |
| Safety at sea (e.g. coast guards) | | HF radars, models forecast |
| Ports | Societal economy | In situ obs and models forecast |
| Fishermen | Societal economy | Physical measurements |
| Insurance companies | Business | Physical measurements |
| | Societal economy | Physical meas., geohazard |

4- USERS // PSS - NW MED



LINKS TO OTHER REGIONAL ACTORS, SYSTEMS AND OTHER RIS in the PSS + comments

- ILICO: MOOSE, COAST-HF, SOMLIT, PHYTOBS (Fr RI)
- SOCIB: radars, gliders, buoys
- EMSO: moorings, buoys, seabed observatories (ERIC)
- EURO-ARGO: BGC-Argo deployments (ERIC)
- AQUACOSM: processes experiments (RI)
- EMBRC : in progress for augmented observatories (ERIC)
- LTER (Long-Term Ecosystem Research in Europe)

→ IF UNCLEAR OR UNKNOW, WILL BE DISCUSSED DURING THE WORKSHOP.

Missing strong connection with DANUBIUS

CONCLUSION // PSS - NW MED

STRATEGIC EVOLUTION OF THE PILOT SUPER SITE? (Scientific scope? Enlargement of the

... IN 5 YEARS? (2025, after the end of J-S3)

Consolidate EU harmonization and national infrastructures (e.g. Italy...)

Data access in an unique EU portal

Merge expertise

Reinforce bio-variables and data flow (e.g. EDMONET bio)

Implement omics observations

...IN 10 YEARS ? (2030)

→ IF UNCLEAR OR UNKNOW, WILL BE DISCUSSED DURING THE WORKSHOP.

ANY OTHER ISSUES IN REGION TO BE RAISED AND DISCUSSED (if relevant)

Missing a clear regional vision with all expertise. Now mostly physical approach (few BGC and little biology)

TNA - VA // PSS - NW MED

- 1 LIST OF TNA IN THE REGION Corsica Channel Observatory (CNR)
- COAST-HF EOL buoy in Villefranche/Mer (CNRS) Glider National Facility in La Seyne/Mer (CNRS)
- SOCIB Glider Facility (SOCIB)
- Sea Water Sensing Lab in Marseille (CNRS)
- OBSEA platform (UPC)

2 - LIST OF VA IN THE REGION

- TirLig e-infrastructure (CNR): sea surface currents from HF radars ECOTAXA (CNRS): web application for data and images from imagery systems (UVP, Zooscan....)
- SOCIB Data Centre Multi-Platform Observatory (QC procedures, DOI,...)
- ${\tt JERICO-RIe-infrastructure} \ ({\tt data}\ products\ the matic\ services)$

3 - ADDED VALUE OF PROVIDING AND REQUESTING TA/VA IN THE REGION?

Added value in the sense : will we be more "attractive" for TNA users? Promote JERICO-RI within the regions and between regions? Specificities of the region regarding TA/VA?

JERICO-



- PSS REGION 3 -

CRETAN SEA

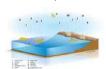
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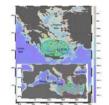
PSS - CRETAN SEA

PSS Contact: Frangoulis Constantin (Petihakis George)

INTRODUCTION - COUNTRIES AND INSTITUTES INVOLVED in the PSS

- · Countries: Greece, France, Norway, Finland
- Institutes: HCMR, CNRS, NIVA, SYKE
- Regional Action Nodes: MonGoos, UNEP-MAP





SPECIFIC REGIONAL ORGANISATIONAL CHALLENGES in the PSS (trans-institutional, transnational)

- Continuity in operation (i.e. maintenance funding) of infrastructures
- Strengthening of trans-institutional collaboration via National RI (HIMIOFOTS)
- Establishment of platforms with endurance in neighbouring countries
- Expand spatio-temporal coverage

1- SCIENCE // PSS - CRETAN SEA

SPECIFIC SCIENTIFIC TOPICS AND OBJECTIVES (scientific case, link to WPI) in the PSS

- Fill gaps in carbonate system data, pH trends, appropriate AT-S relationships
- Effects of atmospheric nutrients inputs on net primary productivity and phytoplankton

- Estimate significance of solubility and biological pumps in air-sea C-fluxes (HCMR, NIVA),
- $\bullet \quad \text{Approximating PP at deep layers and subsequent fates of C (HCMR, CNRS-MIO, NIVA, SYKE)}\\$
- $\label{lem:eq:energy} Effects of extreme atmospheric events on phytoplankton communities (HCMR, CNRS-MIO, NIVA, SYKE, links: WP2, WP4, WP7) (combination with AQUACOSM-plus)$
- $Up scale \ data \ from \ Cretan-PSS \ to \ a \ wider \ area, especially simulating \ air-sea \ C-fluxes \ using satellite \ data \ and \ regional \ ecosystem \ model \ LTL, \ based \ on \ ERSEM (HCMR, NIVA, link \ WP2)$
- Create collaboration schemes between Supersites to transfer knowledge, supply supporting hardware and human resources, to tackle regional and common research questions (HCMR, CNRS-MIO, NIVA, SYKE, feed to WP1, WP3, WP9).

1- SCIENCE // PSS - CRETAN SEA

SPECIFIC OBSERVATIONAL CHALLENGES IN THE REGION, WHERE PILOT SUPERSITE IS

- design new sampling strategies
- valuate novel technologies
- revisit best practices to promote the biological measurements

...to tackle challenges in this oligotrophic, low-biomass area, where most concurrent technologies fail

1- SCIENCE (& SOCIETY) // PSS - CRETAN SEA



SOCIETAL AND ECONOMIC EXPECTED IMPACTS (if known) in the PSS + comments

- · Contribute to healthy and productive oceans by
- optimising ocean monitoring of physicochemical conditions optimising ocean monitoring of biodiversity conservation and maintenance of sustainable ocean ecosystem services
- Address societal demands in the field of climate change, acidification, ecosystem
- Contribution to policy makers/implementors via input to directives (WFD, MSFD), improved definitions (GES), regional conventions (UNEP-MAP)

→ IF UNCLEAR OR UNKNOW, WILL BE DISCUSSED DURING THE WORKSHOP.

Other impacts?



| OBSERVATION SYSTEMS & LATFORMS IN THE REGION | IS THE SYSTEM REFERENCED IN SEXTANT? IF NOT, WHICH CATALOG? | WHAT IS THE RELATED EUROPEAN DATA INTEGRATOR (EMODNET, SEADATANET)? |
|---|---|---|
| Ferrybox PFB | Yes | CMEMS/EMODNET |
| Fixed platform HCB, | Yes | CMEMS/EMODNET |
| Fixed platforms E1-M3A | Yes | CMEMS/EMODNET |
| Fixed platformsSB | Yes | CMEMS/EMODNET |
| Glider (PG) | Yes | CMEMS/EMODNET |
| Argo-Floats | NA | Argo Network/CMEMS |
| Calibration Lab | NA | NA |
| Monitoring by R/V | No | CMEMS/SeaDataNet |

3- DATA SERVICES & PRODUCTS // PSS - CRETAN SEA

JERICO-S

KEY ACTIONS FOR DATA DISTRIBUTION AND PRODUCTS, PLANNED ACTIONS FOR PSS-SPECIFIC DATA MANAGEMENT PLAN + comments

- Submission to carbonate system related databases (input from T6.3) - SOCAT, first submission made in Jan 2020 - IOC-UNESCO, SDG indicator 14.3.1, submission under consideration
- Submission of phytoplankton diversity related databases (input from T6.3)
- Enable citizen science datastreams (input from T6.2)

3- DATA SERVICES & PRODUCTS // PSS - CRETAN SEA

JERICO-S

POTENTIAL NEW USERS OF DATA AND DATA PRODUCTS. EXPECTED DUE TO PSS ACTIONS

NEW DATA PRODUCTS/USERS

- pH, pCO2, DIC, AT, air-sea flux of CO2 fields from in situ observations New users: Scientists, students, educators, policy makers
- phytoplankton geographical distributions and PP from in situ data. Further product in combination with satellite data.

 New users: Scientists, students, educators,
- Upscale the Regional Data from Cretan-PSS to a wider area, especially simulating air-sea C-fluxes using satellite data and regional ecosystem model (HCMR, NIVA, link T2.3, T2.4) New users : Scientists
- Elements for the development of an enhanced delayed mode QC based on neighbour test (i.e. comparison with nearby sensor measuring the same variable on neighbour platform)

New users : Scientists, data managers

→ IF UNCLEAR OR UNKNOWN, WILL BE DISCUSSED DURING THE WORKSHOP.

Please mention here what you would like to
 Other databases to be considered?

→ IF UNCLEAR OR UNKNOWN, WILL BE DISCUSSED DURING THE WORKSHOP. ou would like to work on furthe

Other New users ?

4- USERS // PSS - CRETAN SEA



USERS SURVEY

| <u>LIST OF USERS</u> | CATEGORIES OF USERS (R&D, Societo-eco, Env. protection, Business & insurances, Policy maker, education and training, other (specify in comment) | COMMENTS, DESCRIPTION |
|--|--|--------------------------|
| Scientists | R&D | |
| Educators | Education and training | |
| Students | Education and training | |
| Media | Other | |
| EU, Regional Sea Converntions, Ministries, Local authorities, Fisheries regulating agencies | Policy maker, implementor | |
| Environmental managers (e.g. MPA managers) | | Potential user |
| Fishermen and aquaculture owners | Societo-eco | Potential user |
| Tourism related users: tourists, entrepreneurs, hotel owners, relevant professionals and workers | Societo-eco | Potential user |

F UNCLEAR OR UNKNOWN, WILL BE DISCUSSED DURING THE WORKSHOP.

Other users?

COMMENTS ABOUT THE USERS SPECIFICITIES, IF ANY, OF THE REGION

4- USERS // PSS - CRETAN SEA



LINKS TO OTHER REGIONAL ACTORS, SYSTEMS AND OTHER RIS_in the PSS

- Alliance with other environmental Ris
- AQUACOSM-plus joint studies / concrete link established
- ICOS-ERIC supporting data/contacts made EMBRC-ERIC new technologies/contact TBD
- · Alliance with Regional Actors

by providing demonstration of PSS activities promote the added value of integrated coastal observations to regional initiatives like

-MONGOOS / concrete link established -UNEP-MAP / concrete link to be established

→ IF UNCLEAR OR UNKNOWN, WILL BE DISCUSSED DURING THE WORKSHOP.

- se mention here what you would like to work on further Concrete link to coastal industries Concrete link to CMEMS, ESA, EuMetSat for calibration/validation of satellite observations Concrete link to promote the upscaled Cretan-PSS data to a wider area, and air-sea C-fluxes
- simulations (using satellite data and regional ecosystem model)

CONCLUSION // PSS - CRETAN SEA

STRATEGIC EVOLUTION OF THE PILOT SUPER SITE? (Scientific scope? Enlargement of the involved parties and institutions? New data flow to harmonise? Etc.)

IN 5 YEARS? (2025, after the end of J-S3)

- Fully established carbonate system monitoring and data flow Expanded NRT delivery of BGC data especially those of carbonate
- Stable links to multiple Ris established for improved joint observation capacity Creation of concrete link to coastal industries and citizen science Improved products (estimates of solubility pump, biological pump, PP,...)

... IN 10 YEARS? (2030)

- Expanded EOV, ECV coverage by supplementary sensors and new products Establishment of platforms with endurance in neighbouring countries & joint steering=> improved geographical coverage of Eastern Mediterranean and connection to Black Sea
- Enhanced citizen science
- Expanded proxy estimations

- Expanded proxy estimations
 Expanded hazard mapping
 Expanded warning systems
 Higher resolution with optimised monitoring coverage

ANY OTHER ISSUES IN REGION TO BE RAISED AND DISCUSSED (if relevant)

TNA - VA // PSS - CRETAN SEA

1 - LIST OF TNA IN THE REGION

POSEIDON - Monitoring, Forecasting and Information System for the Greek Seas

- Al Installations: Poseidon FerryBox (PFB), Location: Piraeus-Heraklion
- A2 Heraklion Coastal Buoy (HCB), Heraklion Gulf
- Cretan Sea El-M3A (M3A), Cretan sea
- Saronikos Gulf Buoy (SB), Saronikos Gulf;
- Poseidon Glider (PG), Cretan Sea
- POSEIDON Calibration Laboratory (PCL) Location: HCMR, Crete, Greece

2 - LIST OF VA IN THE REGION

POSEIDON Multi platform observatory Data Center Location: Anavyssos, Greece

Physical and BGC data collected by different platforms available through the API service, where users can gain access to NRT quality control data as well as to historical reprocessed data

3 - ADDED VALUE OF PROVIDING AND REQUESTING TA/VA IN THE REGION?

- TA Access to very oligotrophic area with high salinities
 TA Possibility of multiplatform access (including calibration lab and Aquacosm+ facilities)
 VA Access to enew carbonate system data
 VA Access to improved phytoplankton data

JERICO-S

- PSS REGION 4 -**BALTIC SEA (GULF OF FINLAND)**

PSS - BALTIC SEA (GULF OF FINLAND)

PSS Contact: Jukka Seppälä, SYKE, jukka.seppala@ymparisto.fi

INTRODUCTION - COUNTRIES AND INSTITUTES INVOLVED in the PSS

FINLAND

Finnish Environment Institute SYKE Finnish Meteorological Institute FMI

ESTONIA

Tallinn Technical University TALTECH

GERMANY

The Leibniz Institute for Baltic Sea Research IOW



JERICO-

1- SCIENCE // PSS - Gulf of Finland



SPECIFIC REGIONAL ORGANISATIONAL CHALLENGES in the PSS (trans-institutional, transnational)

How to transnationally share and operate platforms, equipment and use data Maintenance, development and use of instruments/platforms

How to manage joint data value chain: calibration – validation – data QC – data

Logistics, practicalities and legal aspects in cross-border missions (Ferrybox, Glider)

How to transfer knowledge inside region, between regions and between RIs How to promote the use of results from operational oceanography in society

Transsectoral issues ext. RI (Sharing best practices, cal-val-audit – chain, data flows,

Transnational issues int. RI (Sharing best practices, cal-val networks, sharing data, technologies ...)

1- SCIENCE // PSS - Gulf of Finland



SPECIFIC SCIENTIFIC TOPICS AND OBJECTIVES (scientific case, link to WP1) in the PSS

- To resolve how the state of the Gulf of Finland is affected by regional climate change and other human pressures
- To clarify the interplay of biological (algae blooms), biogeochemical (carbon fluxes, oxygen depletion), and physical (currents, mixing, weather forcing) processes in the region.
 - HAB detection
 - model-based predictions for deep water oxygen conditions
 - insights on biological interplay with the carbonate system
 - advancing forecast models for cyanobacterial blooms
 - analysing how phytoplankton communities are affected by extreme climatic forcing, in collaboration with experimental work of AQUACOSM-plus and supported by long-term observational data

1- SCIENCE // PSS - Gulf of Finland

CJERICO-S3

SPECIFIC OBSERVATIONAL CHALLENGES IN THE REGION, WHERE PILOT SUPERSITE IS EXPECTED TO PROVIDE PROGRESS

- How to coordinate transinstitutional/transnational data collection, how to tackle conflicts of interest and institute-specific preferences/habits?
- Is the data collection flexible enough (time, space, money) to meet the needs of scientific objectives, especially long-term needs?
- Do we get coherent data from various platforms, as methods and practices are not necessarily fully harmonised, especially at start?



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1- SCIENCE (& SOCIETY) // PSS - Gulf of Finland



SOCIETAL AND ECONOMIC EXPECTED IMPACTS in the PSS

- Coherent Regional Data improve science and operational oceanography (incl. EO product validation and ecosystem modelling)
 impact on management decisions/advice by nations, HELCOM, EU
- More holistic data products provide better visibility for marine environmental challenges -> impact on policies
- More efficient use of resources due to joint operations
- Increase of data coverage and reliability due to improvements in practices
- Long-term improvements in regional data quality and efficiency as best practices from PSS stream to other users



FJERICO-S3

2- OBSERVATION SYSTEMS // PSS - Gulf of Finland

| CJERICO-53 | |
|--|--|
| The state of the s | |

| OPERATIONAL OBSERVATION SYSTEMS & PLATFORMS IN THE REGION | COMMENT ABOUT OPERATIONAL STATUS:Operational | |
|---|--|--|
| Ferrybox Silja Serenade | Continuous T, S, O2, pCO2, pH, Chla, CDOM, Phycocyanin, turbidity, water samples for any lab analysis (e.g. nutrients) | |
| Ferrybox Finnmaid | $Continuous\ T,S,O2,pCO2,pH,Chla,CDOM,Phycocyanin,phycoerythrin,turbidity,methane water samples for any lab analysis (e.g. nutrients)$ | |
| Ferrybox Silja Europa | Continuous T, S, Chla, turbidity, water samples for any lab analysis (e.g. nutrients) | |
| Utö Observatory | Continuous T, S, O2, pCO2, pH, Chla, CDOM, Phycocyanin, turbidity, Imaging flowcytobot, water samples for any lab analysis (e.g. nutrients), ADCP, ice, profiling buoy (T,S,Chla, phycocyanin), weather, CO2 fluxes etc. | |
| Keri observatory | Temperature, salinity, chl a, phycocyanin, oxygen, turbidity | |
| profiling buoys | Temperature, salinity, chl a, phycocyanin, oxygen, turbidity | |
| Glider, FMI | Temperature and Salinity, Chla, CDOM, O2 | |
| Glider, TALTECH | Temperature, salinity, chl a, oxygen | |
| Argo floats | Temperature and salinity | |
| Coastal CTD-profiling stations | Temperature and salinity | |
| Open Sea monitoring | Temperature, salinity, chl a, oxygen. | |
| Wave rider | Waves | |

| 3- DATA SERVICES & PRODUCTS // PSS - Gulf of Finlar |
|---|
|---|

| OBSERVATION SYSTEMS & PLATFORMS IN THE REGION (COPIED FROM PREVIOUS TABLE) | IS THE SYSTEM REFERENCED IN <u>SEXTANT</u> ? IF NOT, WHICH CATALOG? | WHAT IS THE RELATED EUROPEAN <u>DATA</u> INTEGRATOR (EMODNET, SEADATANET)? |
|--|---|---|
| Ferrybox Silja Serenade | Yes | National database, EmodNET & CMEMS (bottle data so far, continuous data soon) |
| Ferrybox Finnmaid | yes | CMEMS & EmodNET, ICOS |
| Ferrybox Silja Europa | ? | CMEMS, EMODnet |
| Utö Observatory | Yes | National database so far |
| Keri observatory | ? | Temperature and salinity to EMODnet Physics; other parameters in MSI database |
| profiling buoys | No | National database so far |
| Glider, FMI | ? | |
| Glider, TALTECH | ? | MSI database so far; first steps made to include data in EGO database |
| Argo floats | ? | EuroArgo |
| Coastal CTD-profiling stations | Yes | SEADATACLOUD |
| Open Sea monitoring | Yes | SEADATACLOUD |
| Wave rider | Yes | |

3- DATA SERVICES & PRODUCTS // PSS - Gulf of Finland



KEY ACTIONS FOR DATA DISTRIBUTION AND PRODUCTS, PLANNED ACTIONS FOR PSS-SPECIFIC DATA MANAGEMENT PLAN

- Need to define Regional Data, and how to do QC, how it is labelled/distributed (The key feature for PSSs is shared, synoptic, interoperable, and openly available biological, biogeochemical, and physical data (hereinafter referred as Regional Data)).
- Developments in data distribution and products planned in collaboration with Subtask 7.5.2: Data-to-Products Thematic Services (D2PTS):
 - Biogeochemical state of coastal areas D2PTS: will provide regional, combined multiplatform observations products. Pilot application will be undertaken in GoF PSS.
- Not yet plans for PSS-specific DMP, need to follow developments in WP6

3- DATA SERVICES & PRODUCTS // PSS - Gulf of Finland



POTENTIAL NEW USERS OF DATA AND DATA PRODUCTS, EXPECTED DUE TO PSS ACTIONS

- Increase the use of data by modelling and EO communities (in house and external) [How to?]
- Promote the integrated Regional Data to HELCOM, BOOS
- Increased use of products (algae, oxygen, carbon, physics) by EU-level, ministries, regional authorities ...

6

4- USERS // PSS - Gulf of Finland JERICO-**USERS SURVEY** CATEGORIES OF USERS (R&D, Societo-eco, LIST OF USERS COMMENTS, DESCRIPTION v. protection, Business & insurances, Policy make ucation and training, other (specify in comment) ...MSDF, EEA, JRC, Other RIs HELCOM Regional convention Ministries National adm Local adm National regional administration, cities COMMENTS ABOUT THE USERS SPECIFICITIES, IF ANY, OF THE REGION ...HARD TO FILL IN DETAIL AT THIS STAGE

4- USERS // PSS - Gulf of Finland

JERICO-S

LINKS TO OTHER REGIONAL ACTORS, SYSTEMS AND OTHER RIS

- Other national key marine institutes/actors are kept informed through national RIs
- Partners are linked to European RI: ACTRIS PPP, AQUACOSM-plus, EMBRC-ERIC, Euro-Argo ERIC, EUROFLEETS+, ICOS ERIC and regional initiatives BOOS, HELCOM, EUSBSR.
- Collaborations with CMEMS insitu-Tac, OC-TAC, AERONET-OC...
- Strong regional link to AQUACOSM-plus by SYKE, joint actions to be planned
- Links to other regional actors need some time to get evolving, we need to get PSS running, before enlarging

CONCLUSION // PSS - Gulf of Finland



STRATEGIC EVOLUTION OF THE PILOT SUPER SITE? (Scientific scope? Enlargement of the involved parties and institutions? New data flow to harmonise? Etc.)

... IN 5 YEARS ? (2025, after the end of J-S3)

GoF PSS is functioning as jointly steered integrated entity with harmonized data flows. It is multidisciplinary and flexible, and able to adapt to provide data for new scientific challenges. Scientific and R&D excellence proven. Sustainable new products available. One of the key European sites for coastal studies. Attracting more scientific research funds.

...IN 10 YEARS ? (2030)

GoF PSS is having sub-units in Gulf of Riga and Gulf of Bothnia (with new parties maybe with less observational capacity), and is well connected to other PSS (to be) formed in the Southern Baltic, Kattegat/Skagerrak &

GoF PSS is key reference point for regional and local observatories. Well established science hub.

TNA - VA // PSS - Gulf of Finland



1 - LIST OF TNA IN THE REGION FMI Infrastructure: Utö Atmospheric and Marine Research Station (Utö) FMI Infrastructure: FMI Slocum G2 Glider "Uivelo"

SYKE Infrastructure: SYKE-ALG@LINE, Ferrybox network in the Baltic Sea SYKE Infrastructure: SYKE MRC-LAB

TALTECH Infrastructure: Central Gulf of Finland Autonomous Observing System 1. Ferrybox system in Tallinn-Helsinki line; 2: Keri bottom mounted profiler

- LIST OF VA IN THE REGION

FMI: Utö Atmospheric and Marine Research Station e-infrastructure

IOW: VOS Finnmaid GHG - BGC SYKE: SYKE-ALG@LINE e-infrastructure TALTECH: Keri Island research station e-infrastructure

3 - ADDED VALUE OF PROVIDING AND REQUESTING TA/VA IN THE REGION?

Baltic Sea TNA/VA grid may act as network and provides very high coverage and support to study regional phenomena

Baltic environmental conditions are extreme in many aspects and may attract specific scientific studies and also sensor developers.

JERICO-S3

KICK-OFF MEETING

FEBRUARY 17-21 2020

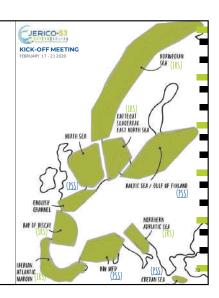


This project has received funding from the European Union's Horizon 2020 Research and Innovation programme under grant agreement No 871153.

Project coordinator: Ifremer

- END of REGION -

ARW - Discuss & debrief





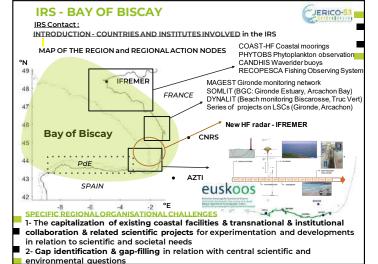
Purpose of the workshop

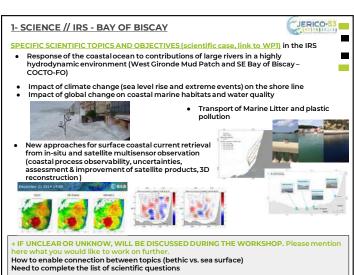
JERICO-53

All Regions/site together for a joint Brainstorming!

- - In Scientific approach and context
 - In Political Economical Societal context... users and stakeholders!
 - In generated data flows
- Prepare a joint scientific plan suitable to each
- Prepare a User strategy
- Prepare the business case: identify needed/existing services and products
- Anticipate/support harmonisation of data flow

Notes taking: One slide at the end of the PSS/IRS presentation to be filled out by a region secretary





1- SCIENCE // IRS - BAY OF BISCAY

JERICO-S

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SPECIFIC OBSERVATIONAL CHALLENGES IN THE REGION, WHERE PILOT SUPERSITE IS EXPECTED TO PROVIDE PROGRESS + comments

- Integrating multidisciplinary observations for the study of the land-sea continuum in two study areas (in relation to the previous questions):
 - West Gironde Mud Patch
 - SE Bay of Biscay: Fate of floating riverine litter (litter data, drifters, HF radar + numerical simulations)
 - Paving the way for expanding this approach to the whole Bay of Biscay
- Planning and implementation of new observations: New HF radar, new multidisciplinar sensors..
- Design and development (WP7) of tools for new data acquisition and integration (coupled BGC models at the adequate spatial resolution, DA, data blending techniques, benthic station...)

FUNCLEAR OR UNKNOW, WILL BE ANSWERED DURING THE WORKSHOP.

- Need to discuss further on how to integrate the different areas and com Sustainability of observations (and funds for exploitation of IRS data)

1- SCIENCE (& SOCIETY) // IRS - BAY OF BISCAY



SOCIETALAND ECONOMIC EXPECTED IMPACTS (if known) in the IRS + comments

- Biodiversity conservation, integrated ecosystem management, conservation of key habitats in the life cycle of harvested species (e.g. the common sole), application for the sustainable management of commercial species (fisheries and aquaculture)
- Water quality assessment, preservation of major economic activities (tourism, aquaculture)
- Marine Safety: SAR operation, navigation etc.
- Physical coastal Hazards, optimizing the management of induced impacts (coastline preservation, flooding risks)
- Marine litter: reduce impacts, improve continuous monitoring for evaluation of the mitigation/prevention strategies, reduce costs of mitigation strategies (active fishing for litter, on-beach litter collection)

→ IF UNCLEAR OR UNKNOW, WILL BE ANSWERED DURING THE WORKSHOP. u would like to work on furth

- Need of an action plan to complete the list Real links with the actors, how to engage the stakeholders (how to make the most of the limited resources for workshop organization to ensure involvement of stakeholders for tools co-design and co-creation)

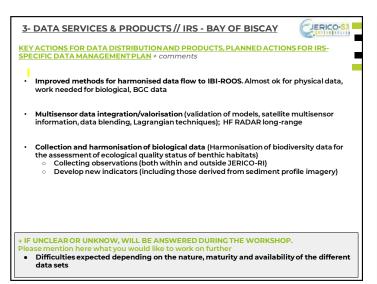
| OPERATIONAL OBS. SYSTEMS & PLATFORMS IN THE REGION | | UT OPERATIONAL ATUS | WHY ? ROADMAP TO HELP THE IRS MATURE REGARDING THAT SYSTEM ? |
|---|---|------------------------|--|
| Surface ocean currents from HF radar –Bas que antennas | Operational | euskoos | Sustainability, new developments for integration, increase impacts & users |
| Slope Buoys (TS and currents from 10 to 150m) | Operational | euskoos | Sustainability, new developments for integration, increase impacts & users |
| KOSTAsystem | Operational | euskoos | Sustainability, new developments for integration, increase impacts & users |
| Numerical model | Operational (no DA) | euskoos | Sustainability, new developments for integration, increase impacts & user |
| LIFE-LEMA River cameras | Operational (Oria & Ado | ur river) | Sustainability, new developments for integration, increase impacts & user |
| MAGEST | Operational (Gironde & Dordogne rivers) | | Sustainability, exemplify the nesting of European/national/local initiatives |
| SOMLIT | Operational (not in real time) | | Sustainability, new developments/strategies parameters in relation with the enhancement of interdisciplinarity |
| COAST-HF | Operational | | Sustainability, new developments for integration, increase impacts & user |
| DYNALIT | Operational (notall in real time) | | Sustainability, new developments for integration, increase impacts & user |
| PHYTOBS | Operational (not in real time) | | Sustainability, automatisation |

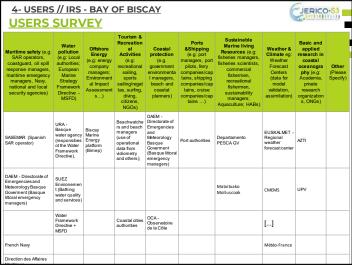
→ IF UNCLEAR OR UNKNOW, WILL BE ANSWERED DURING THE WORKSHOP.

- Strategy to aggregate other existing OO facilities (MyCOAST, French National RI –
- Need to complete the list with other observational systems (operational & monitoring)

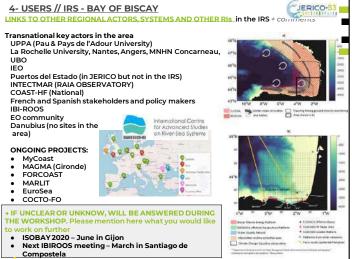
| OBSERVATION SYSTEMS & PLATFORMS IN THE REGION (COPIED FROM PREVIOUS TABLE) | IS THE SYSTEM REFERENCED IN SEXTANT? IF NOT, WHICH CATALOG? | WHAT IS THE RELATED EUROPEAN <u>DATA INTEGRATOR</u> (EMODNET, SEADATANET)? |
|--|---|--|
| urface ocean currents from HF radar – as que antennas | YES - through CMEMS INSTAC product: INSITU_GLO_UV_NRT_OBSERVATIONS _013_048; also EDIOS | CMEMS, EMODNET |
| lope Buoys (TS and currents from 10 o 150m) | YES through CMEMS INSTAC product: INSITU_BI_NRT_OBSERVATIONS_013_ 033 | CMEMS, EMODNET |
| KOSTAsystem | NO | - |
| Numerical model SE BoB | NO | - |
| LIFE-LEMA River cameras | NO | - |
| MAGEST | YES | ٤? |
| SOMLIT | YES | ٤? |
| DYNALIT | NOT ALL | ٤? |
| PHYTOBS | YES | ٤? |
| COAST-HF | YES | CMEMS, EMODNET |

• ...









CONCLUSION // IRS - BAY OF BISCAY

STRATEGIC EVOLUTION OF THE REGION, THE IRS? (Scientific scope? Enlargement of the involved parties and institutions? New data flow to harmonise? Etc.)

IN 5 YEARS? (2025, after the end of J-S3)

Connected transnational infrastructures ensuring continuous homogeneous observation of the region in its different compartments, allowing to:

- Fill identified scientific gaps Showcase several multidisciplinary integration applications Medium long term plan for development of observations to better cover stakeholder
- Create transnational synergies (within and between regions) to enable sustainability

...IN 10 YEARS ? (2030)

Transnational harmonized observatory from the surface to the bottom and from land to the astal ocean, with consolidated users

IF UNCLEAR OR UNKNOW, WILL BE ANSWERED DURING THE WORKSHOP. e mention here what you would like to work on further

ANY OTHER ISSUES IN REGION TO BE RAISED AND DISCUSSED (if relevant)

TA - VA // IRS - BAY OF BISCAY

LIST OF TA IN THE REGION

SPI (hardware & software) EUSKOOS Donostia Buoy ITSASDRONE (ASV)

2 - LIST OF VA IN THE REGION

- ADDED VALUE OF PROVIDING AND REQUESTING TA/VA IN THE REGION?

Added value in the sense: will we be more "attractive" for TNA users? Promote JERICO-RI within the regions and between regions? Specificities of the region regarding TA/VA?

Enhancing collaboration with external actors (know how, testing new sensors)

- IRS REGION 3 -**NORTHERN ADRIATIC SEA** ENGLISH . NORTHERN BAY OF BISCAY IBERIAN ATLANTIC MARGIN CRETAN CEA



1- SCIENCE // IRS - NORTHERN ADRIATIC SEA

The northern Adriatic Sea is a peculiar site for its:

- Morphology
- Physical forcing
- Marked seasonal and interannual variability
- ·Biogeochemical characteristics
- Anthropogenic impacts
- •Extensive observational sites

SPECIFIC SCIENTIFIC TOPICS AND OBJECTIVES (scientific case, link to WP1) in the IRS

- Understanding the development and impact of extreme events on marine dynamics and ecosystems.
- Better understanding of the coastal ecosystems and marine litter effects.
- Better knowledge of coastal/shelf physical processes.
- Coordinate operational oceanography toward the integration of synoptic and multidisciplinary observations, useful for monitoring and development of enhanced forecasting systems.
- 3D current models integrated with physical, chemical and biological oceanography
- Strong coordination with others IRS, PSS

1- SCIENCE // IRS - NORTHERN ADRIATIC SEA



Northern Adriatic sea is a fragile ecosystem sensible to marine extreme event as high-tides or storms. It is strongly influenced by anthropic pressure as: maritime traffic, fishing activities, fish farms and tourism. The contribution of pollutants from river discharges and the sea circulation influence the marine life and the trophic regime.

JERICO-

SPECIFIC OBSERVATIONAL CHALLENGES IN THE REGION, WHERE IRS IS EXPECTED TO

- Enlarge the sensors network capabilities through a better platforms integration
- Better monitor of the meteo-marine extreme events and the evolution of coastlines.
- Monitoring of the impact of climate change and acidification in coastal/shelf waters and its effects on biodiversity.
- Monitoring eutrophication and HABs effects on local ecosystems.
- Forecasting transport of pollutants and biological quantities.



| OPERATIONAL OBSERVATION SYSTEMS & PLATFORMS IN THE REGION | COMMENT ABOUT OPERATIONAL STATUS | WHY ? ROADMAP TO HELP THE IRS MATURE REGARDING THAT SYSTEM ? |
|---|---|--|
| MAMBO Miramare - C1 | Operating system – Monthly maintenance | Sustainability, integration, increase impacts & users |
| HF - RADAR | Operating system – Monthly maintenance | Sustainability, integration, increase impacts & users |
| MAMBO 2, MAMBO 3, MAMBO 4 | Operating system – Monthly maintenance | Sustainability, integration, increase impacts & users |
| DWRG1, DWRG2, DWRG3 | Operating system – Monthly maintenance | Sustainability, integration, increase impacts & users |
| Isonzo River, Tagliamento River | Operating system – Monthly maintenance | Sustainability, integration, increase impacts & users |
| PALOMA (CNR-ISMAR) | Operating system - Sensor maintenance every 4 weeks | Sustainability, integration, increase impacts & users |
| Acqua Alta (CNR-ISMAR) | Operating system - Sensor maintenance every 2 weeks | Sustainability, integration, increase impacts & users |
| S1-GB - Dynamic Pylon (CNR-ISMAR) | Operating system - Sensor maintenance every 4 months | Sustainability, integration, increase impacts & users |
| E1- Buoy (CNR-ISMAR) | Operating system - Sensor maintenance every 4 months | Sustainability, integration, increase impacts & users |
| IRB CIM operational oceanography | Field campaigns (monthly biweekly) (integrated oceanografy delayed mode) | Sustainability, integration, increase impacts & users |
| IRB RV001 | RV001 oceanographic buoy (real time) | Sustainability, integration, increase impacts & users |
| Argo - Floats | Operating system | Integration |

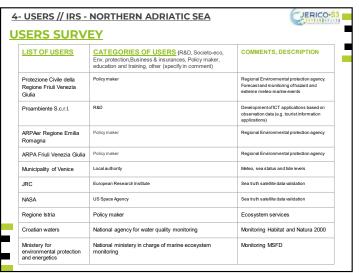
| 3- DATA SERVICES & PRODUCTS//IRS - NORTHERN ADRIATIC | | |
|--|---|--|
| OBSERVATION SYSTEMS & PLATFORMS IN THE REGION (COPIED FROM PREVIOUS TABLE) | IS THE SYSTEM REFERENCED IN <u>SEXTANT</u> ? IF NOT, WHICH CATALOG? | WHAT IS THE RELATED EUROPEAN <u>DATA</u> <u>INTEGRATOR</u> (EMODNET, SEADATANET)? |
| MAMBO Miramare - C1 | No, EDIOS | EMODnet PHysics |
| HF - RADAR | No, EDIOS | EMODnet PHysics |
| MAMBO 2, MAMBO 3, MAMBO 4 | No, EDIOS | National repositories NODC (free access) |
| DWRG1, DWRG2, DWRG3 | No, EDIOS | National repositories NODC (free access) |
| Isonzo River, Tagliamento River | No, EDIOS | National repositories NODC (free access) |
| PALOMA (CNR-ISMAR) | No, Eurocean | CNR-ISMAR database; pCO2 available through ICOS (free access) |
| Acqua Alta (CNR-ISMAR) | YES, Eurocean, DEMIS-SDR | CNR-ISMAR database |
| S1-GB - Dynamic Pylon (CNR-ISMAR) | YES, Eurocean, DEMIS-SDR | CNR-ISMAR database, partially EMODnet Chemistry |
| E1- Buoy (CNR-ISMAR) | No, Eurocean, DEMIS-SDR | CNR-ISMAR database, partially EMODnet Chemistry |
| RV001 | No, | National repositories (free access) Jadmon, Roscop, |
| IRB operational monitoring and oceanography | No | EMODnet and National repositories (free access) Jadmon, Roscop, |
| Argo - Floats | No, | |
| Glider | No, | |
| E2M3A | No | Oceansites database |

3- DATA SERVICES & PRODUCTS // IRS - NORTHERN ADRIATIC SEA

KEY ACTIONS FOR DATA DISTRIBUTION AND PRODUCTS, PLANNED ACTIONS FOR IRSSPECIFIC DATA MANAGEMENT PLAN

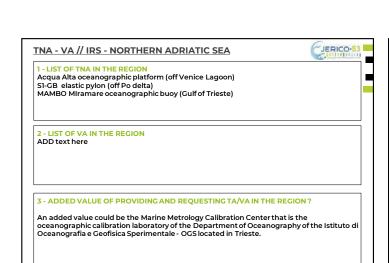
Prepare a map of platforms and list of parameters available
Discuss about what parameters are useful for the objectives of the NA-IRS
Establish a common regional scientific strategy for NA-IRS at several level: national, institutional, operational.
Integrate and harmonize physical, chemical and biological data coming from different sources.
Analyze gaps and develop a strategy to fill them.
Develop products useful for stakeholders (map, plot) and for modelling.





4- USERS // IRS - NORTHERN ADRIATIC SEA LINKS TO OTHER REGIONAL ACTORS, SYSTEMS AND OTHER RIS in the IRS Others regional institution operating on the same area Reference center for the Sea (Croatian national consortium for marine coastal observationonal oceanography and ecosystem monitoring) National Institute of biology (NIB) - Slovenija Agenzia Regionale per la Protezione dell'Ambiente (ARPA - FVG) Others project and Research Infrastructure operating on the same area DANUBIUS - RI LIER International Network ICOS - RI

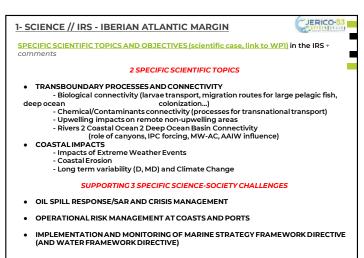
STRATEGIC EVOLUTION OF THE REGION, THE IRS? (Scientific scope? Enlargement of the involved parties and institutions? New data flow to harmonise? Etc.) ... IN 5 YEARS? (2025, after the end of J-S3) Complete the integration of the transnational existing infrastructures, to make available an homogeneous data flow. Analyze spatial and temporal gaps and develop a strategy to fill them. Develop case of study with products useful for stakeholders. Have a regional strategy plan for sustainability. ...IN 10 YEARS? (2030) Have an IRS fully operative, with gaps filled by models or expanding the platforms. Have products useful for the stakeholders and accessible by portal or other internet application. ANY OTHER ISSUES IN REGION TO BE RAISED AND DISCUSSED (if relevant)

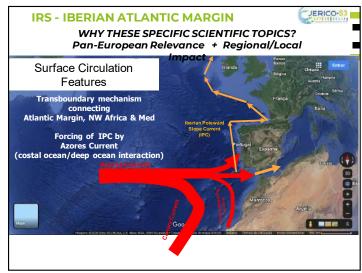


- IRS REGION IBERIAN ATLANTIC MARGIN

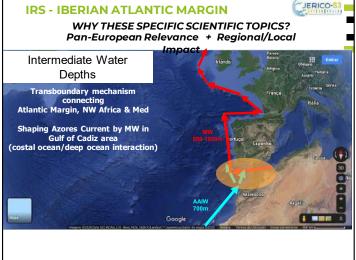


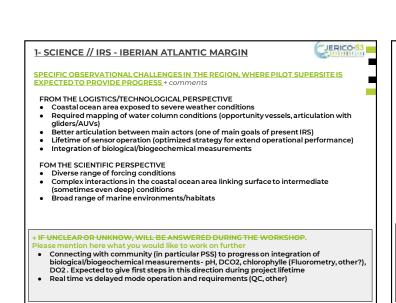












1- SCIENCE (& SOCIETY) // IRS - IBERIAN ATLANTIC MARGIN





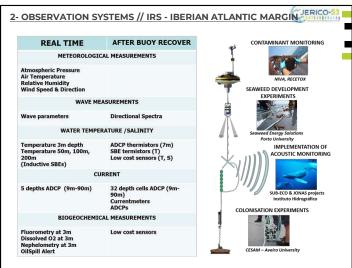






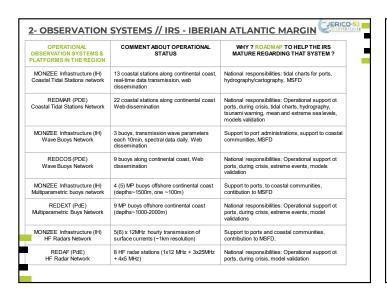


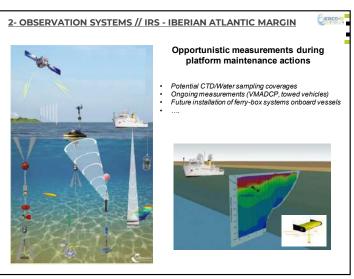


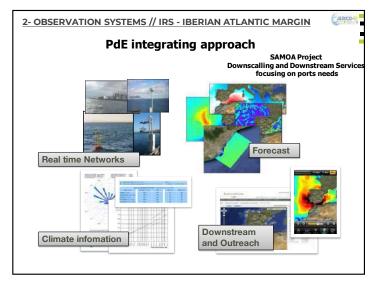




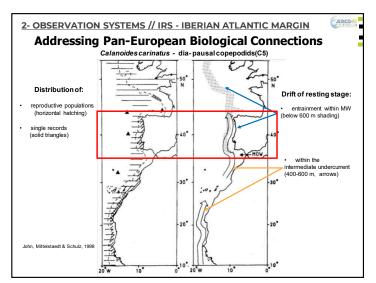


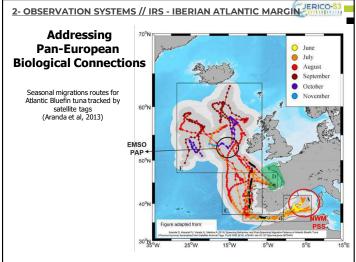


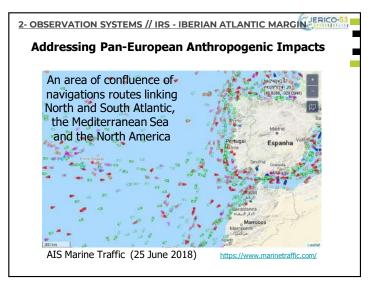


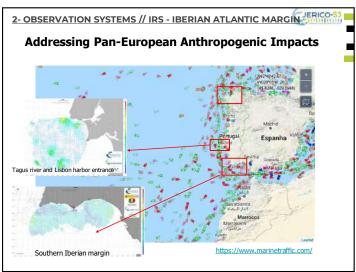


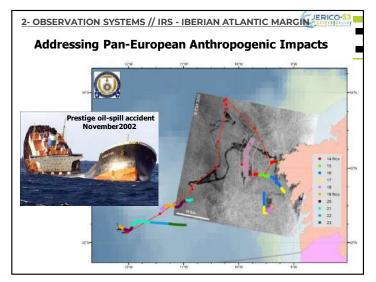


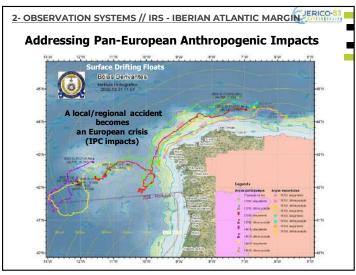


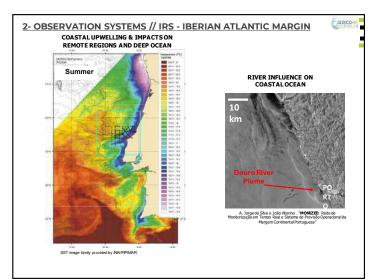


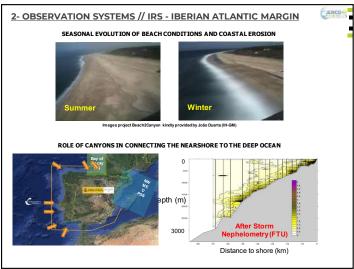




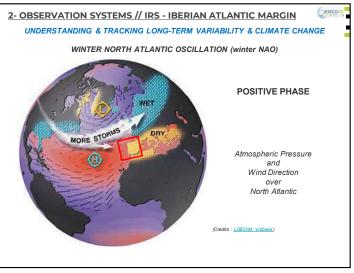












2- OBSERVATION SYSTEMS // IRS - IBERIAN ATLANTIC MARGIN - IBERIAN - IBER

| OBSERVATION SYSTEMS & PLATFORMS IN THE REGION (COPIED FROM PREVIOUS TABLE) | IS THE SYSTEM REFERENCED IN <u>SEXTANT</u> ? IF NOT, WHICH CATALOG? | WHAT IS THE RELATED EUROPEAN <u>DATA</u> <u>INTEGRATOR</u> (EMODNET, SEADATANET)? |
|--|---|---|
| MONIZEE Infrastructure (IH) Coastal Tidal Stations network | YES (CMEMS In Situ) | Data to IBIROOS (EMODNET), GTS |
| REDMAR (PDE) Coastal Tidal Stations Network | YES (CMEMS In Situ) | IBIROOS, MONGOOS, CMEMS In Situ TAC, PSMSL EMODnet, Tsunami Warning Systems |
| MONIZEE Infrastructure (IH) Wave Buoys Network | YES (CMEMS In Situ) | Data to IBIROOS (EMODNET), GTS |
| REDCOS (PDE) Coastal Wave Buoys Network | YES (CMEMS In Situ) | IBIROOS, MONGOOS, CMEMS In Situ TAC, PSMSL EMODnet, |
| MONIZEE Infrastructure (IH) Multiparametric buoys network | YES (CMEMS In Situ) | Data to IBIROOS (EMODNET), GTS |
| REDEXT (PdE) Multiparametric deep water Buoys Network | YES (CMEMS In Situ) | IBIROOS, MONGOOS, CMEMS In Situ TAC, PSMSL EMODnet, |
| MONIZEE Infrastructure (IH) HF Radars Network | YES (CMEMS In Situ) | Data to IBIROOS (EMODNET), GTS |
| REDAF (PdE) HF Radar Network | YES (CMEMS In Situ) | IBIROOS, MONGOOS, CMEMS In Situ TAC, PSMSL EMODnet, |

3- DATA SERVICES & PRODUCTS // IRS - IBERIAN ATLANTIC | SERIOS | KEY ACTIONS FOR DATA DISTRIBUTION AND PRODUCTS, PLANNED ACTIONS FOR IRSSPECIFIC DATA MANAGEMENT PLAN + comments • Integration of missing information in CMEMS In Situ TAC • Improve metadata availability for coastal sea level (e.g. EuroGOOS Tide Gauge Task Team-GLOSS activities) • Exchange QC/QA procedures • Complete integration of data in the GTS • Implementation of web dissemination compliant with INSPIRE (Hidrográfico+) * IF UNCLEAR OR UNKNOW, WILL BE ANSWERED DURING THE WORKSHOP. Please mention here what you would like to work on further • ...

3- DATA SERVICES & PRODUCTS // IRS - IBERIAN ATLANTIC MARGIN

POTENTIAL NEW USERS OF DATA AND DATA PRODUCTS, EXPECTED DUE TO IRS ACTIONS

+ comments

New users from the national scientific communities

New users from the European/Global community (cooperation with other partners from Atlantic basin)

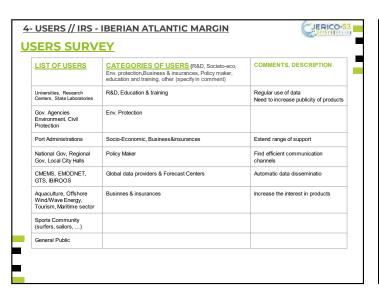
New users from the business & insurance sector

Introduction of new QC procedures/tools for data collected by the IR

IF UNCLEAROR UNKNOW, WILL BE ANSWERED DURING THE WORKSHOP.

Please mention here what you would like to work on further

...



4- USERS // IRS - IBERIAN ATLANTIC MARGIN

LINKS TO OTHER REGIONAL ACTORS, SYSTEMS AND OTHER RIS in the IRS + comments

OTHER RIS
EMSO (participation in common actions not yet with na articulated strategy)
EUROARGO (participation in common actions not yet with na articulated strategy)
EMBRC (to be developed)
MONGOOS

OTHER REGIONAL ACTORS
PLOCAN (CANARY ISLANDS)
PARTNERS IN AZORES & MADEIRA

OBSERVING SYSTEMS & MONITORING NETWORKS
IBIROOS (PdE is Regional Node for InSitu Data Collection), GOOS
NEAMTWS (North East Atlantic & Mediterranean Tsunami Warning System)
ESURFMAR

MAIN DATA PROVIDERS & FORECAST CENTERS
CMEMS (PdE is the node for InSitu Data Collection)
EMODNET
IBIROOS
GTS

ATLANTIC INITIATIVES: AANCHOR













~JERICO

IRS-Kattegat-Skagerrak-Eastern NS

IRS Contacts: Bengt Karlson and Emilie Breviere

SCIENTIFIC OBJECTIVES in the IRS + comments

- Phytoplankton diversity and abundance Implementing automated imaging in flow systems in stationary ocean observatories and in ferrybox systems on research and merchant vessels
- A Harmful Algal Bloom early detection and warning system Combining observations and modelling
- Higher trophic dynamics: Implementing in-situ imaging and automated object analysis systems in stationary ocean observatories (e.g. Underwater observatory North Sea, HZG/AWI, Klas Ove Möller)
- Carbonate system
 - Harmonisation between different underway carbonate measuring sensors
 - Harmonisation with Surface Ocean Carbon Atlas data
 - Observations at the Baltic Sea-North Sea transition zone
 - Long term change



IRS-Kattegat-Skagerrak-Eastern NS

IRS Contacts: Bengt Karlson and Emilie Breviere

SCIENTIFIC OBJECTIVES in the IRS + continued

- Litter and microplastics
 - o Demonstrate monitoring capacity using ferry box and novel analytical device (pyrolysis GCMS)
 Study the baltic outflow for microplastics

 - o Test whether microplastics are vectors of antibiotic resistant genes
- Contaminants
 - Assessing seasonality of marine concentrations of pharmaceuticals and personal care products (PPCPs), in relation to the seasonality of sources (this will require repeated campaigns).
 - Assessing the Baltic outflow on a yearly basis for PPCPs (through coupling concentration data with hydrodynamic model simulation).
 - Assessment of spatial/temporal variability of degradation products of PPCPs (from EU priority list) in relation to spatial/temporal variability of phytoplankton (assuming biota is a driver of degradation).



IRS-Kattegat-Skagerrak-Eastern NS

IRS Contacts: Bengt Karlson and Emilie Breviere

SOCIAL AND ECONOMIC OBJECTIVES in the IRS + comments

- Contribute to the goals of the UN Decade of Ocean Science for Sustainable Development
- Raise awareness of the current situation in the IRS at the National Marine Agencies and the National Food Agencies, in the aquaculture and fishing industries
- Educate the public in the coupling with their own actions and the environmental situation in the IRS and globally
- Improve cooperation between national and regional stakeholders in the area, e.g.
 - County administration boards
 - Water quality monitoring programs



IRS Contacts: Bengt Karlson and Emilie Breviere IRS-Kattegat-Skagerrak-Eastern NS OBSERVATION SYSTEMS INVOLVED in the IRS (LINK TO WP2) OPERATIONAL READINESS LEVEL (1 TO 9) → will be redefine by the workshop R/V Svea, monthly cruises, includes ferrybox, sampling at stations etc. for automated observations to be implement ms. e.g. Imaging FlowCytobot and carbonate devigen ocean observatory, IMR G.M. Dannevig, monthlyresearch cruises FerryBox on ferry Color Fantasy, Oslo-Kiel, FerryBox on ferry Color Hybrid, Strömstad-Sandefjord rs, e.g. Imaging FlowCytobot and car talled and operational by mid-2020 FerryBox HZG 7-9 uency sampling and novel sensors, e.g. Hydro-FIA for pH and Kristineberg SMHI + Univ. of Gothenburg At present onlytemperature and wave parameters are m At present, most oceanographic parameters are fully operational and higher tropic levels are pre-analyszed. Ocenographical data are transferred to Panoaea goland underwater observatory (with CPICS ging system, HZG) in 10 m water depth,

IRS Contacts: Bengt Karlson and Emilie Breviere IRS-Kattegat-Skagerrak-Eastern NS OBSERVATION SYSTEMS INVOLVED in the IRS (LINK TO WP2) Koster fjord buoy Color Hybrid and Color Fantasy **Wave buoys** Wave height and direction Temperature Ferrybox on R/V Svea Underwater observatory Helgoland R/V Dannevig IFCB

IRS-Kattegat-Skagerrak-Eastern NS → ASSOCIATED RIs and systems (e.g. EMSO, satellite etc.)

IRS Contacts: Bengt Karlson and Emilie Breviere

The deep observatory will be deployed in October 2020.

COSYNA

elgoland underwater observatory (with CPICS laging system, HZG) in 25 m water depth,

- DANUBIUS (no Scandinavian sites)
- NorSOOP
- Norwegian Environmental Agency coastal ecosystem monitoring system (including HABs)
- - Ocean colour observations, e.g.

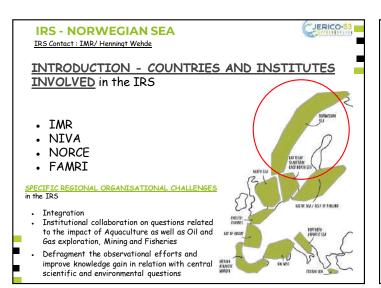
 Sentinel 3A and B, OLCI, Chlorophyll a (xxx algorithm)
- SST observations from satellite
- Oil observations from satellite
- Ice observations from satellite





| <u>USERS SURVEY</u> | | | | |
|---|---|--|--|--|
| <u>LIST OF USERS</u> | CATEGORIES OF USERS (R&D, Societo-eco, Env. protection, Business & insurances, Policy maker, education and training, other (specify in comment) | COMMENTS, DESCRIPTION | | |
| Relevant national ministries | Policy-maker | Ministries of Climate/Environment, Trade/fisheries | | |
| National marine/water management agency | Policy-maker | Swedish Agency for marine and Water Management, The Federal Maritime and Hydrographic Agency - Germany, Norwegian Environment Agency | | |
| Regional/local water management body | Policy-maker | Lower Saxony Water Management, Coastal Defence and Nature Conservation Agency - Germany, Viken County Council, Norway, County administration boar of Halland and Västra Götaland, Sweden. | | |
| National food safety authorities | Governmental body | Swedish National Food Agency, Norwegian Food Safety Authority | | |
| National Coast Guard | Military body | Swedish, Norwegian, | | |
| Aquaculture and fishing industries | Business | | | |
| Tourism | Business | | | |
| National Climate Service Center | Education/research | Germany, Norway | | |

- IRS REGION 5 - NORWEGIAN SEA



1- SCIENCE // IRS - NORWEGIAN SEA

SPECIFIC SCIENTIFIC TOPICS AND OBJECTIVES (scientific case, link to WPI) in the IRS + comments

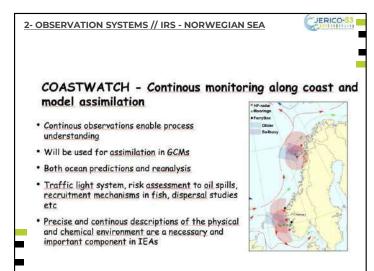
JERICO-S

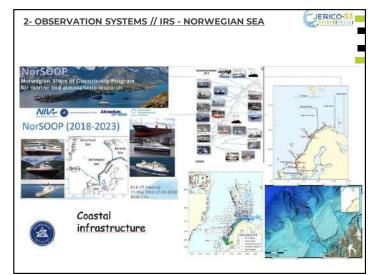
 Harmful Algal Blooms: Developing an Harmful Algal Bloom early detection and warning system (combination observation and modelling)

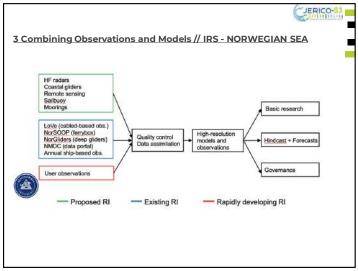
- Land-Coastal-Ocean interactions: Retention in fjords etc
- Human Impact/ Impact of Climate Change: Adaptation/Carbon system Sustainable fisheries management: defragment observations supporting Sustainable fisheries
- Integrated Ecosystem Assessment: Contribution to understand the impact of the different stressors and drivers on the marine ecosystem
- Contaminants: Impact of contaminants on human health
- Quality assurance
- Emerging technology/parameters/eDNA

1-SCIENCE (& SOCIETY) // IRS - NORWEGIAN SEA SOCIAL AND ECONOMIC OBJECTIVES in the IRS + comments Raise awareness of the current situation in the IRS Contribute to improve situation in the IRS Focal point Defragment observations Integrate information Intensify the collaboration with the different Marine Institutes and Food Safety Agencies Intensify collaboration with the aquaculture industry to improve added value Extend the collaboration with the fishing industry

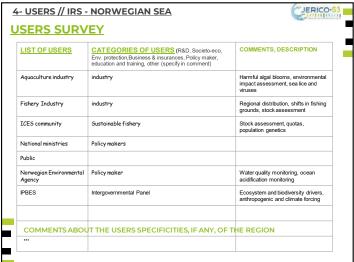
- Harmonise the cooperation between national and regional stakeholders in the coastal area of the Norwegian Sea (i.e. Water quality monitoring programs)
- Contribute to the goals of the UN Decade of Ocean Science for Sustainable Development











4- USERS // IRS - NORWEGIAN SEA

LINKS TO OTHER REGIONAL ACTORS, SYSTEMS AND OTHER RIS in the IRS + comments

- NOR500P
- NORARGO
- NOREMSO
- **EMBRC**
- Environmental monitoring program (Norwegian environmental ministry, pollution..)
- ICOS Norway
- Aquacosm
- Other national/EU projects...

CONCLUSION // IRS - NORWEGIAN SEA

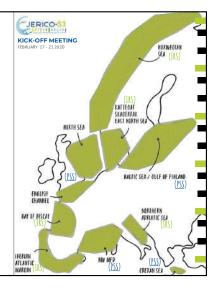
STRATEGIC EVOLUTION OF THE REGION, THE IRS? (Scientific scope? Enlargement of the involved parties and institutions? New data flow to harmonise ? Etc.)

- FOR THE NEXT 12 MONTHS
- Identify additional observational efforts to include
- Continue defragmentation of the information obtained by the different observational methodologies
- Start process of integrating existing long term datasets across the region
- 1) FOR THE 4 YEARS OF PROJECT
- Set up a prototype of an early detection and warning system for harmful $% \left(1\right) =\left(1\right) \left(1\right) +\left(1\right) \left(1\right) \left(1\right) +\left(1\right) \left(1\right) \left(1\right) \left(1\right) +\left(1\right) \left(1\right)$ algae for the area (same as the Skagerrak/Kattegat IRS)
- Enhance the incorporation of ocean health information
 Develop a climate service based on high quality observations of ecosystems and environmental parameters
- IRS LONG TERM OBJECTIVES
- Contributing to an integrated service combining observational efforts and modelling activity
- Providing services to the public, business etc.
- Sustain observational efforts applying different methodologies
- Information sharing in operational mode (right information to the users in

JERICO-S TNA - VA // IRS - NORWEGIAN SEA 1 - LIST OF TNA IN THE REGION Norferry/NORSOOP FerryBox 2 - LIST OF VA IN THE REGION Norferry/NORSOOP Ocean Literacy and FerryBox data touchscreen console 3 - ADDED VALUE OF PROVIDING AND REQUESTING TA/VA IN THE REGION? Added value in the sense: will we be more "attractive" for TNA users? Promote JERICO-RI within the regions and between regions? Specificities of the region regarding TA/VA?









JERICO-S3 - KICK-OFF MEETING



FEBRUARY 17 - 21 2020

JERICO-S3 KICK-OFF MEETING

REPORT and CONTENTS

THURSDAY 20th Feb. 2020

(FICOBA, IRUN - BUS DEPARTS AT 8:00 in SAN SEBASTIAN (See info PDF)
THURSDAY PLENARY SESSION AGENDA

AUDITORIUM - 80pp

NOTES

(Authors : Collective notes)



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| MONDAY 17th Feb. 2020 ⇒ (MINUTES PER // SESSION) | 2 |
| STEERING COMMITTEE - MONDAY ⇒ MINUTES HERE | 2 |
| TUESDAY 18th Feb. 2020 ⇒ REPORT HERE | 2 |
| WEDNESDAY 19th Feb. 2020 ⇒ REPORT HERE | 2 |
| THURSDAY 20th Feb. 2020 | |
| NOTES (discussions) | 2 |
| ARWS DEBRIEF | 2 |
| TNA/VA Regions session (3 WORKING GROUPS) | 3 |
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According to the Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation) and the 78-17 modified law of 6 January 1978, you have a right of access, rectification, erasure of your personal data and a right of restriction to the data processing. You can exercise your rights before the Ifremer data protection officer by mail at the following address: IFREMER – Délégué à la protection des données- Centre Bretagne – ZI de la Pointe du Diable – CS 10070 – 29280 Plouzané - FRANCE or by email: dpo@ifremer.fr // jerico@ifremer.fr

Ifremer shall not hold your personal data for longer than necessary with regard to the purpose of the data processing and shall destroy it thereafter.

REPORTS AND MINUTES - DONE

MONDAY 17th Feb. 2020 ⇒ (MINUTES PER // SESSION)

STEERING COMMITTEE - MONDAY ⇒ MINUTES HERE

TUESDAY 18th Feb. 2020 ⇒ <u>REPORT HERE</u>

WEDNESDAY 19th Feb. 2020 ⇒ REPORT HERE



NOTES (discussions)

ARWS DEBRIEF

- Usage of TNA for joint experiment with Aquacosm
- TNA for ICOS oriented experiment
- Danubius River Shore and JERICO on shore and open sea...
- EMSO / Euro-ARGO ? Need to be built
- eLTER, need to be built.

SDG14 => 14.1.2.3.5 and especially 14.1.1 ->index of coastal eutrophication...

Do not forget theres is a matrix interaction btw SDGs

Patrick F.: do not forget the work that has been done in J-NEXT, we do have links with EuroARGO and EMSO. e.g.: For EMSO some coastal obs were proposed in TNA. In J-S3 we have to define the new contacts, new interfaces

Joaquin T.: The EuroARGO community is developing a coastal component → not forget. SOCIB developed: coastspredict.org - Home, we try to look at the similarities in the coastal zone. Try to propose at the UN decade a component that focuses on the coastal ocean worldwide, focusing on similarities rather than \neq . \rightarrow A lot of documents on the website. (presented in OceanObs, and received well).



Laurent D.: possibility to organise a workshop according to the Belem statement with



developing countries (Brazil, South Africa etc.). It could be a start, being part of it.

Emilie B.: enter the JERICO community (and the "coast predict" website) in the website of the UN decade for ocean science as soon as possible - don't wait until it is over-crowded!

The Decade of Ocean Science for Sustainable Development



TNA/VA Regions session (3 WORKING GROUPS)

Questions Summary

- Confirm status of access providers, Review PSS/IRS slides on TA/VA access providers operational
- Identify what projects could be undertaken at a multi-regional scale
 Summary: Align Jerico Call with other projects.
 Preference for Open calls to be discussed with coordination
- Identify what combination of access providers could be used? eg Microplastics
 J-NEXT E.g Lab to Sea to VA/Data possible
- Provisional Timeline for upcoming TNA Projects Focus on First TNA call in M6
 Mix between continuous call and fixed call possible (thematic)
 Open calls are good for industry!
- Identify potential issues regarding time sensitivity for access to infrastructure
 Related to open call scenario // delays inevitable from past experience

THURSDAY KICK-OFF MEETING NOTES

AZTI, San-Sebastian FEB. 17 to 21 2020



- Are there temporal and spatial monitoring strategies related to pss/irs that could run consecutively -could this be organised by PSS/IRS leaders – Requires TA applications to be synchronized - Related to open call scenario
- Identify what VA access providers will be utilised with part of TNA
 All members group potential access providers for VA
- Data Management related to TNA Actions (Relationship with e_Jerico and WP6 Connected TO VA) Possible to offer e infrastructure/services if required
- How could collaboration with other RIs e.g. Aquacosm,ICOS be developed within TNA/VA - ICOS, Aquacosm, ENVRI-FAIR, EMSO, ACTRIS etc.
- Each task force Nominate an internal evaluator for TNA Selection Panel Jukka (SYKE), John A. (SOCIB), Laurent C. (CNRS)
- Industry in your TNA project ?
 More Guidance on reporting for applications/users
