



ODYSSEA

Operating a network of integrated observatory
systems in the Mediterranean Sea

Project Deliverable Report

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1. Executive Summary

Most of the ODYSSEA Observatories are positioned along the North African and Middle East coastal and shelf zone, as well as along the poorly monitored and modelled coastal systems of Turkey and Greece, in order to enhance knowledge these areas. The establishment and operation of the ODYSSEA model Observatories is expected to:

- develop, test and demonstrate novel monitoring systems for data collection,
- collect new data on marine parameters which will support EU policies and strategies,
- involve local/regional end-users in data collection and model results assessment,
- dedicate operational modelling to serve multiple end-users' needs.

To achieve the above goals, it is imperative to train and educate the technical and managing staff of the Observatories as well as to educate young scientists and engineers to develop professional skills and competences to demonstrate the new technologies (sensors, models, systems) and to build awareness of policy-makers and end-users regarding platform usage. Capacity and awareness building are critical to linking environmental technologies to end-users needs, marine policies and legislation as well as supporting new and qualified “jobs of the sea”. The capacity building program in WP10, focusing on North Africa includes three main skills development modules:

- technical skills required for setting-up, operating and maintaining ODYSSEA Observatories;
- managerial skills required for the ongoing operation;
- marketing skills needed to identify and create partnerships with the end-users and for expanding the circle of end users as the project progresses.

During the first 18-month period, work in this WP was mainly devoted to the creation of training material as well as the organization of professional workshops (Task 10.1). The material prepared for these professional workshops carried out thus far (till M18) are compiled and presented in this deliverable. This material includes a number of presentations in power point format that were created by the partners responsible for training, mainly on technical aspects, such as data retrieval, analysis and management, numerical modelling and operational forecasting to be incorporated in the Observatories. These presentations are publicly available on the dedicated project website odysseaplatform.eu. For reasons of practical convenience, we have opted to refer to those presentations at the project website rather than incorporating them in the body of the deliverable as else the size of the deliverable would exceed the maximum that one may upload to the EC Research Participant Portal.

The training material have already been used in the training events that have been organized by the ODYSSEA Consortium in the first 18 months. Based on the experience of the first training events and once the Observatories begin generating new data from sensors and models, additional training material may be added to the current repertoire presented in D10.1. This content in combination with the content of D2.1 which detailed the steps required to “set up, operate and maintain an ODYSSEA Marine Observatory”,

will serve as a guide for maintaining the existing ODYSSEA Observatories in a sustainable way, as well as building new sites in the future.

In addition to the training material, this deliverable will also provide the context of the training activities for which they have been prepared, as well as a short report of those activities. Technically, these reports are part of D10.2 Reports of local workshops for capacity building (due in M54), but we did not want to wait until the end of the project to report already extensively on our capacity building activities. Therefore, we have added these reports as an annex. A shorter version of this report will be included in the period report for M18.

2. Introduction

This deliverable reports results of the activities undertaken by ODYSSEA partners involved in Task 10.1

These partners are:

- International Organization: RAC-SPA (WP and Task Leader)
- North African Partners: AGIR (Morocco), NSV (Algeria), ANDDCVS (Tunisia), RAED (Algeria)
- Europe: UNIBO (Italy), DUTH (Greece), Sapienza (Italy), Alseamar (France), Develogic (Germany), Deltares (Netherlands)
- Middle-East: University of Istanbul (Turkey), EcoOcean (Israel), Agora Partner (Israel)

According the Description of Action, this deliverable will cover the preparation of the training material for the Professional Workshops dedicated to the managers that will handle the Observatories developed within the ODYSSEA Consortium. The aim of these workshops is to develop the needed capabilities for the establishment of sustainable partnerships with local end-users and the initiation of local training workshops for the end-users (so they will be able to operate the Observatories independently).

For an efficient operability, it is considered that three main skills must be acquired by the Observatories' staff and on which the workshops have specially to focus:

1. Technical skills: needed for the establishment and technical operation of the Observatories (TECH)
2. Managerial skills needed for the ongoing operation (MNGT)
3. Marketing, Capacity building and assimilation tools: needed for the locating and creating partnerships with end users, and for expanding the circle of end users as the project will progress (MKTG+UO)

Regarding the 3rd skill, one should specify here that "Capacity building" concerns all the skills. Assimilation tools implies here the methods used for knowledge assimilation and should not be confused by "Data Assimilation", which is covered by the 1st skill. So, the 3rd skill corresponds to marketing and user outreach.

Therefore, it is more relevant to address in this report the following activities:

1. Capacity building to acquire technical skills
2. Capacity building to acquire managerial skills
3. Materials to support marketing, outreach and communication activities

This deliverable provides access to materials which have been created describe the previous common actions (scope, outline, photos, lectures, notes, etc) and to plan and organize the future ones according to the needs of Observatory Managers. We should note that as the platform evolves and the systems (models, sensors) operate, the focus goes to marketing and promotion skills.

3. Training Material

Training material have been developed for four dedicated events implemented to build capacity within and beyond the ODYSSEA Consortium.

The capacity building events thus far focused on:

- a. Numerical modelling workshop for Observatory scientists, held in Heraklion
- b. Workshop training for setting up ECOPATH models and addressing potential data issues
- c. Summer school for focusing on marine data collection/management targeted to oceanography scientists and students, held in Kavala Greece
- d. Management training for set-up and operation of ODYSSEA Observatory, held in Lisbon Portugal

3.1. Training material of the workshop: numerical modelling with Delft3D

Name of the event: Coupling of operational numerical models using as interfaces the Delft-FEWS and Aquasafe.

Venue: Heraklion (Greece)

Date: 5-9 March 2018

3.1.1. General information about the numerical modelling tools

[Delft3D](#) is a world leading 3D modelling suite to investigate hydrodynamics, sediment transport and morphology and water quality for fluvial, estuarine and coastal environments. As per 1 January 2011, the Delft3D flow (FLOW), morphology (MOR) and waves (WAVE) modules are available in open source.

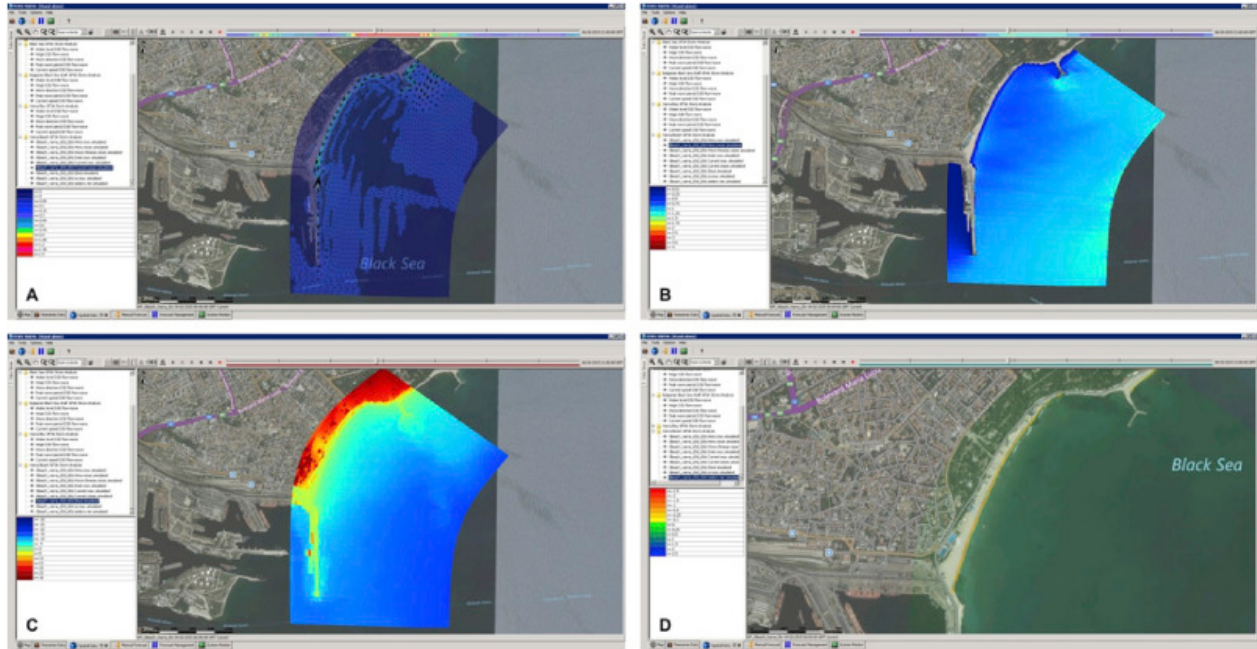


FIGURE 3.1: DELFT3D GRAPHICAL USER INTERFACE FOR THE DIFFERENT MODULES.

The FLOW module is the heart of Delft3D and is a multi-dimensional (2D or 3D) hydrodynamic (and transport) simulation program which calculates non-steady flow and transport phenomena resulting from tidal and meteorological forcing on a curvilinear, boundary fitted grid or spherical coordinates. In 3D simulations, the vertical grid is defined following the so-called sigma coordinate approach or Z-layer approach. The MOR module computes sediment transport (both suspended and bed total load) and morphological changes for an arbitrary number of cohesive and non-cohesive fractions. Both currents and waves act as driving forces and a wide variety of transport formulae have been incorporated. For the suspended load this module connects to the 2D or 3D advection-diffusion solver of the FLOW module; density effects may be taken into account. An essential feature of the MOR module is the dynamic feedback with the FLOW and WAVE modules, which allow the flows and waves to adjust themselves to the local bathymetry and allows for simulations on any time scale from days (storm impact) to centuries (system dynamics). It can keep track of the bed composition to build up a stratigraphic record. The MOR module may be extended to include extensive features to simulate dredging and dumping scenarios.

The software is continuously improved and developed with innovating advanced modelling techniques as consequence of the research work of our institute and to stay world leading.

For more information about Delft-3D model, click on the following link:

<https://oss.deltares.nl/web/delft3d>

Delft3D user manual can be download using the following link:

https://oss.deltares.nl/documents/183920/185723/Delft3D-FLOW_User_Manual.pdf

Delft-FEWS is a software package developed by Deltares to provide an easy and modular way of setting up operational forecasting systems. Due to the modular approach Delft-FEWS allows you to plug in a wide range of data sources, models and data types. This can all be configured in the Delft-FEWS configuration files.

Delft-FEWS was originally intended for hydrologists and used for Flood Early Warning. Currently Delft-FEWS is used in over 40 countries over the whole world and has expanded its areas of applicability towards droughts, hydropower, coastal systems, data conversion, shipping, dredging and long-term scenario studies.

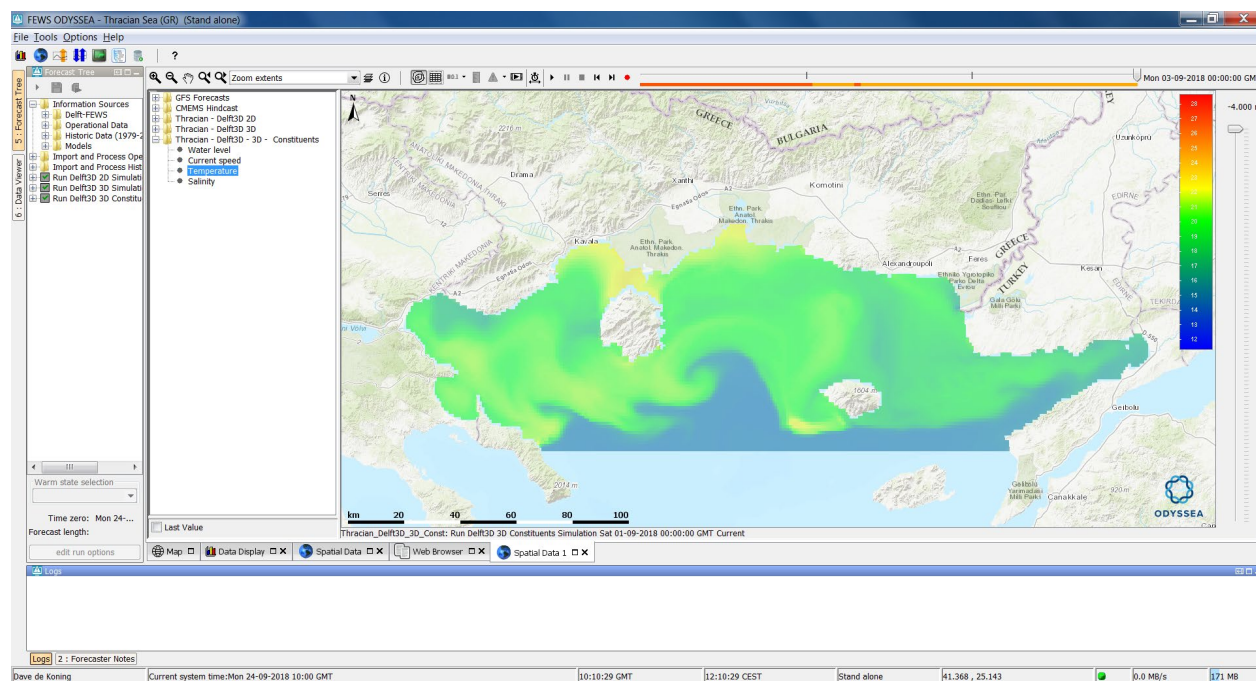


FIGURE 3.2: USER-FRIENDLY VISUALIZATION DISPLAYS IN DELFT-FEWS.

AQUASAFE is also a software package, developed by HIDROMOD, which aims to increase efficiency in operations management, providing real time information and its perfect integration with forecast and diagnostics tools.

According to the concepts implemented in AQUASAFE this integration is achieved by the management of measured data (sensors, remote detection) and modelled data (water distribution, wastewater, receiving waters, meteorology, etc.) in a uniform way.

AQUASAFE allows:

- to provide modelling results availability in real time, through the integration of Scada systems or other external data source with models, without human intervention;
- to anticipate problematic situations through the creation of personalized alarms, combining data from several sources (real or modelled);

- to launch automatic personalized scenario simulation processes, to assess management options in real time;
 - to produce automatic reports of modelling results and/or measures, based on user predefined templates;
 - to launch automatic personalized scenario simulation processes, to assess management options in real time;
 - to provide a practical way to use modelling results in the operation room, through the know-how of current users;
- **AQUASAFE** is a business intelligence platform supported by modelling tools and advanced data analysis systems

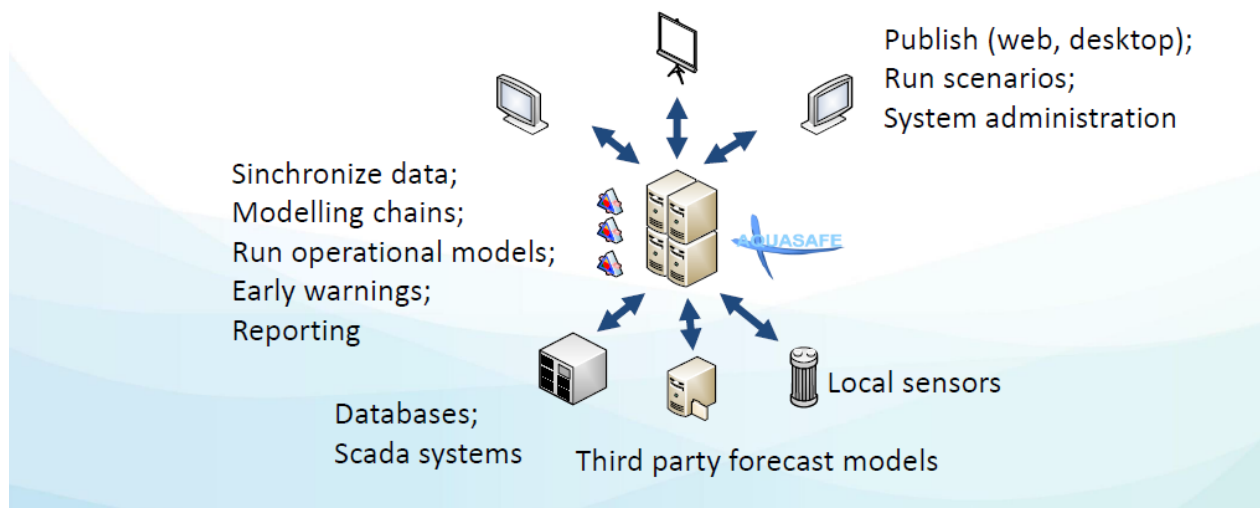


FIGURE 3.3: AQUASAFE CONCEPTUAL DIAGRAM

3.1.2. Objectives of the Workshop

The aim of the training was to learn on the set-up and running of operational hydrodynamic, wave and water quality models for the needs of the Observatories.

The participants should have left the workshop with a knowledge on models set up and operational use, i.e. processes resolved by the models, input files required and how to create them, output files produced and visualization, FEWS platform operation.

3.1.3. Target Audience

This training workshop is dedicated to Observatories managers/personnel who will (eventually) be responsible for running the modelling module of the local platform.

Desirable background and technical skills for Observatories personnel joining the workshop:

1. Most appropriate Background: Oceanographers/physicists/(civil) engineers, (preferably with an understanding of processes in the marine environment).
2. Skills: basic knowledge and understanding of numerical modelling (and eager to learn).

3.1.4. Training material of the workshop

The presentations given during the workshop (courses and exercises) are available for download following this link:

<http://odysseaplatform.eu/crete-workshop-presentations>

3.2. Training material of the workshop: Numerical Modelling with ECOPATH

Name of the event: ODYSSEA WP4 workshop on ECOPATH Modelling

Venue: Thessaloniki, Greece

Date: 3-5 July 2018

3.2.1. General information about the ECOPATH with ECOSYM

Ecopath with Ecosim (EwE) is an ecological modelling software suite for personal computers that has built and extended on for almost twenty years. The development is centred at Ecopath International Initiative, a non-profit research association established to secure the long-term development of EwE. EwE applications are widespread throughout the world. EwE is the first ecosystem level simulation model to be widely and freely accessible.

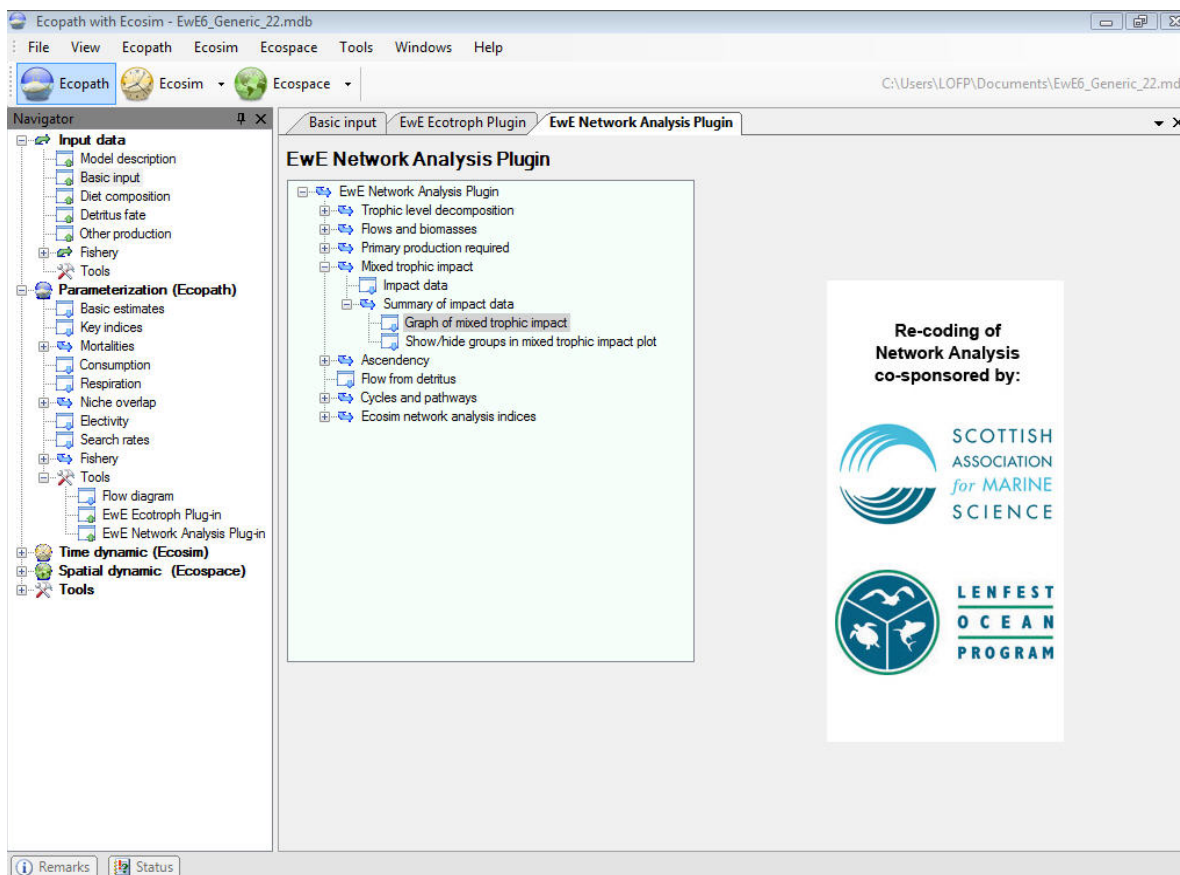


FIGURE 3.4: GRAPHICAL USER INTERFACE OF ECOPATH & ECOSIM.

As of January 2018, EwE has an estimated 8000 users in over 170 different countries and well over 800 publications in ISI Web of Knowledge, making EwE an important modelling approach to explore ecosystem related questions in marine science. EwE has three main components: Ecopath – a static, mass-balanced snapshot of the system; Ecosim – a time dynamic simulation module for policy exploration; and Ecospace – a spatial and temporal dynamic module primarily designed for exploring impact and placement of protected areas. The Ecopath software package can be used to:

- Address ecological questions;
- Evaluate ecosystem effects of fishing;
- Explore management policy options;
- Evaluate impact and placement of marine protected areas;
- Evaluate effect of environmental changes.

3.2.2. Objectives of the Workshop

Training workshop on setting up ECOPATH models and addressing potential data issues. This course is aimed at partners involved in ecosystem modelling (AUTH, IU and HCMR) using ECOPATH models and all else interested.

The participants were expected to leave the workshop understanding the kind of input data needed to set up, parameterize and balance their ECOPATH models, the processes described, as well as the output tables and graphs produced.

3.2.3. Target Audience

Partners who will (eventually) be responsible for setting up and running the ECOPATH models and potentially Observatories Personnel responsible for collecting the data.

Desirable background and skills for Observatories personnel joining the workshop:

- Background: Biologists/oceanographers/fisheries scientists (preferably with an understanding of ecological processes in the marine environment)
- Skills: basic knowledge and understanding of ecological modelling (and eager to learn).
- Software and background requirements from modellers:
- Software: Having EwE installed and running in personal computers
- Expertise: Attendance of EwE school, access to previous models (ECOSPACE) and papers

3.2.4. Training material of Thessaloniki workshop

The presentations given during the workshop are available for download by following these links:

http://odysseaplatform.eu/download/Workshop_presentation_Morocco.pdf

http://odysseaplatform.eu/download/Workshop_presentation_test.pdf

http://odysseaplatform.eu/download/Workshop_presentation_Thermaikos.pdf

More information on Ecopath and Ecosim can be found hereafter:

http://www.academia.edu/1483078/ECOPATH_WITH_ECOSIM_A_USERS_GUIDE

<https://ecopath.org>

3.3. Training material for the 1st ODYSSEA Summer School

Name of the event: 1st ODYSSEA Summer School on Operational Oceanography for Science, Business and Society

Venue: Nea Karvali, Kavala, Greece

Date: 03-12 September 2018

3.3.1. Objectives of the Summer School

The overall objective of the 1st ODYSSEA Summer School is to stimulate a scientific dialogue and create a learning experience about operational oceanography in the Mediterranean context. More precisely, after

the end of the program, the trainees, coming from both sides of the Mediterranean Sea basin, will be able to:

- Understand the concept of operational oceanography
- Use the ODYSSEA project platform for retrieving, managing and processing oceanographic and environmental data of the Mediterranean Sea
- Explore the Copernicus Marine Environment Monitoring Service (CMEMS) products, learn the data and parameters provided, download and process these datasets
- Retrieve and use satellite datasets and explore databases on the marine environment
- Learn about the modern developments on marine instruments and sensors used in field sampling for operational oceanographic monitoring
- Get acquainted with the use of operational forecasting mathematical models e.g., hydrodynamic, wave, water quality models, etc.

3.3.2. Target Audience

The program intends to train oceanographers and engineers, young researchers, PhD candidates or professionals at the early stages of their professional carriers who are interested in learning to manage the available marine environment data to provide targeted and understandable information to the relevant end users. 56 applications for various parts of the world, mostly from Northern African and Middle East countries, have been received.

3.3.3. Summer School training material

The presentations given during the Summer School can be download from ODYSSEA website using the following link:

<http://odysseaplatform.eu/1st-odyssea-summer-school-presentations>

3.4. Training material for the Workshop: Operation and Management of ODYSSEA Observatories

Name of the event: Training workshop on operational use and management of marine observatories (in parallel with the General Assembly)

Venue: Lisbon, Portugal

Date: 23-25 October 2018

3.4.1. Operation and Management Training material

The presentations given during the training sessions for Observatory Managers and operators can be download from ODYSSEA website using the following link:

<http://odysseaplatform.eu/odyssea-2nd-general-assembly/observatory-managers-operators-training>

ANNEX I. Overview Training Activities in the period M1 – M18

A-I.1. Capacity building activities to acquire technical skills

At the date of this delivery report, ODYSSEA Consortium have organized and is planning a series of events, as mentioned here below:

A-I.2. Capacity building activities already organized

#	Event description	Coordinated by	Venue - Date	Targeted Audience
1	A workshop on the coupling of operational hydrodynamic numerical models using as interfaces the Delft-FEWS and Aquasafe systems. The course emphasized and presented test cases on the configuration, set up and implementation of the prognostic hydrodynamic modelling (Delft3D) within the framework of Delft-FEWS and Aquasafe.	Katerina Spanoudaki & Nikos Kampanis (FORTH)	Heraklion (Greece), 5-9/3/2018	ODYSSEA Observatory Technical Staff (focusing on partners and Observatories from Northern Africa)
2	ODYSSEA WP4 workshop on ECOPATH Modelling	Athanassios Tsikliras (AUTH)	Thessaloniki, Greece 3-5/7/2018	ODYSSEA partners responsible for setting up and implementing the ecosystemic model Ecopath with Ecosim at ODYSSEA Observatories discussed technical issues and defined the Terms of Reference for the ecological and ecosystem modelling suite. The models will be implemented at all North African Observatories. Data issues were finalized.
3	A summer school was organized in which technical managers from the Northern Africa Observatories participated to receive knowledge about the concept of the project, to upgrade their management skills and to	Georgios Sylaios (DUTH)	Nea Karvali-Kavala (Greece), 3-12/09/2018	Oceanographers and engineers, young researchers, PhD candidates or professionals at the early stages of their professional careers.

	focus on instrumentation (gliders), models (hydrodynamic, oil spill, ecosystem) and the use of the ODYSSEA platform.			
4	A Training workshop on operational use and management of marine Observatories (in parallel session to the ODYSSEA General Assembly)	Slim GANA RAC/SPA	Lisbon, 23-25 October 2018	Observatory managers and technical staff, especially from Northern Africa

A-I.3. Upcoming events

#	Description of the event	Coordinated by	Venue - Date	Targeted Audience
1	A follow-up event on models with emphasis on SWAN and DELWAQ models and their integration in the framework of Delft-FEWS and Aquasafe will be organized.	Deltares and FORTH	To be announced	ODYSSEA Observatory Technical Staff (focusing on Observatory managers and staff from Northern Africa)
2	A training workshop will be organized by Develogic on the use and maintenance of Surface Sensors and Modular Seafloor Lander monitoring systems.	Develogic	February 2019	ODYSSEA Observatory Technical Staff (focusing on Observatory managers and staff from Northern Africa)
3	A training workshop will be organized by Alseamar on the use and maintenance of Gliders (SeaExplorer).	Alseamar	March 2019	ODYSSEA Observatory Technical Staff (focusing on Observatory managers and staff from Northern Africa)

A-I.4. Capacity building activities to acquire managerial skills

This aspect hasn't been addressed specifically at this stage. It will be developed during the next months as the ODYSSEA platform evolves and as the Observatories begin their operation.

Nevertheless, during the training workshop on operational use and management of marine observatories (in parallel with the General Assembly held in Lisbon 23-25 October 2018), the following issues have been addressed:

1. The conditions of Observatory sustainability
2. Business cases for the operationalization of ODYSSEA Observatories
3. Define a business plan to maintain the system after project completion (describe potential solutions)

4. Addressing emerging needs (new information and new technology)
5. Adding additional models and sensors.

A-I.5. Marketing, Outreach and Communication Activities

22 November 2018: Participation of SPA/RAC to the side-event titled “Generating marine data and services to support decision-making in Northern Africa and the Mediterranean”, organized in the frame of the “Convention on Biological Diversity” (Conference of Parties # 14) held in Sharm Al Sheikh, Egypt.

The Director of SPA/RAC gave the open statement of the side-event and Daniel CEBRIAN gave a presentation titled “**Enhancing national capacity through ODYSSEA**” (Attached in Annex III).

28 September 2018: Participation of RAC/SPA and ADDCNVS to “La nuit des chercheurs” (Researcher’s Night), organized by the Tunisian Ministry of Higher Education and Scientific Research and the European Program Management Unit (2020) in Cité de la Culture (28/09/2018).



FIGURE A-I.1: TUNISIAN STUDENTS, WHO HAS ATTENDED ODYSSEA SUMMER SCHOOL, HAS PRESENTED ODYSSEA DURING “LA NUIT DES CHERCHEURS”.

This was an open event aiming to bring the opportunity to the general public, including young students and researchers, to discover the research activities carried out in Tunisia as well as international projects funded by the European Union’s in the frame of Horizon 2020 research and innovation program.

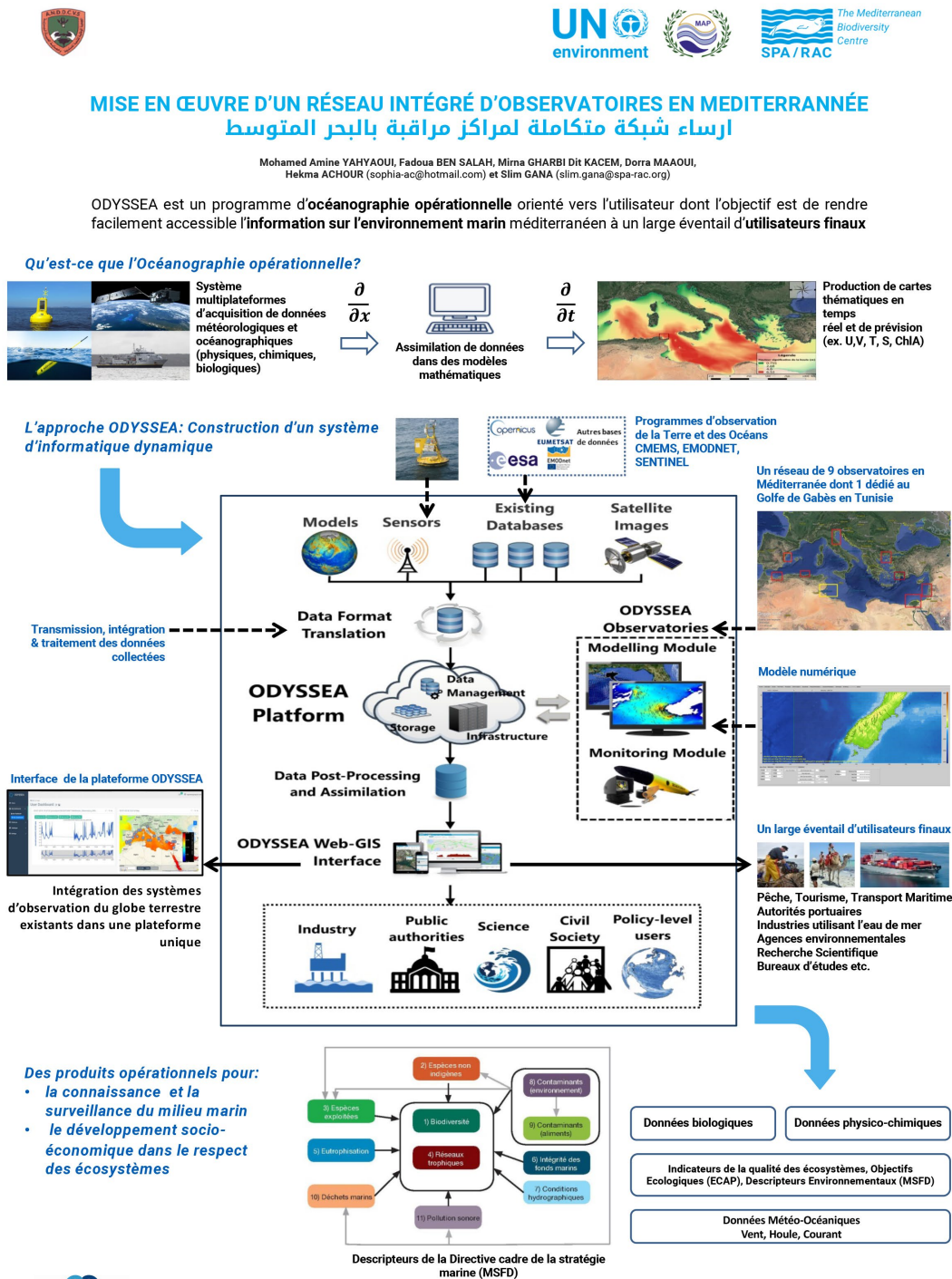


FIGURE A-I.2: POSTER PREPARED BY STUDENTS SUPPORTED BY SPA/ARC AND PRESENTED AT THE EVENT “NUIT DES CHERCHEURS” – TUNIS.

8 -16 September 2018, Thessaloniki International Fair (TIF): ODYSSEA was presented by DUTH as an example of an outstanding Research and Innovation project in the most important exhibition event in Greece. Activities included all-day information about the project, targeting the broad public.

26-28 June 2018, Kavala, presentation by Prof. Georgios Sylaios in Mutual learning event of H2020 project URBAN WASTE – Urban Strategies for Waste Management in Tourist Cities. Target audience were mainly local authorities and the services that the ODYSSEA Observatory could offer them.

30 May – 3 June 2018 (Corfu, Greece), ODYSSEA was presented by DUTH team in the 12th Panhellenic Symposium of Oceanography & Fisheries, target was the scientific and research community.

17-18 April, Malta, Prof. SYLAIOS in a COST action Meeting in Malta, attended by about 20 academia members and researchers from all over the EU, presented the ODYSSEA project and its main achievements.

15 February 2018, Tunis, Official National Launch of ODYSSEA in Tunisia, attended roughly by 50 participants coming from public institutions, universities and NGOs involved in marine activities.

Representatives of ANDDCVS and RAC/SPA outlined the objectives and planned activities of ODYSSEA, together with the support of ODYSSEA coordinating partner Democritus University of Thrace and ODYSSEA scientific director Dr. Ghada El Serafy of Deltares, and took stock of the relevant achievements and ongoing initiatives already underway. The workshop also served as an opportunity to discuss concrete methods for data collection through the ODYSSEA marine observatory as it nears the start of operations (by early 2019), and for maximising impacts of collaboration. Discussion focused largely on the Gulf of Gabès, the area to be covered by the Tunisian Observatory.

January 2018, ODYSSEA was selected by COPERNICUS MARINE SERVICE as a best practice example of how CMEMS data is being used.

7 November 2017, DUTH team, led by Prof. Georgios Sylaios, held an Info Event at the Municipal Library in Kavala (Greece) for Elementary and High-School educational staff informing them about ODYSSEA project activities and examine ways to collaborate soon.

26-29 October 2017, Prof. G. Sylaios presents ODYSSEA project and its activities to international stakeholders at Copernicus Marine Week organized by Mercator-Ocean in Brussels.

1st July 2017, DUTH launches the ODYSSEA-Greece Facebook and twitter pages to present, disseminate, downstream and inform marine end-users on data from CMEMS and other platforms (supported in the following months the launching of similar Facebook pages in Tunisia, Egypt, Turkey, Israel).

19-22 June 2017, Prof. G. Sylaios presents ODYSSEA project to international stakeholders from marine SMEs at the 11th GEO Workshop organized by the EASME in Helsinki, Finland.

A-I.6. Next Steps

Task #	Task Description	When?	Where?
10.2	Ongoing coordination and support during the project		
	ODYSSEA launches a workshop in Algeria	NSV started the process of organizing ODYSSEA KO workshop in Algeria. Initially, scheduled for 7th of May then 26th of June, it has been postponed to November 2018, and then once again to an unknown date.	
	ODYSSEA launches a workshop in Morocco	Expected January 2019.	
10.3	Demonstration of platform novelties and monitoring and modelling systems		
	National Workshop in Tunisia	May 2019	Tunis
	National Workshop in Morocco	October 2019	Casablanca
	National Workshop in Egypt	Early April 2020	Cairo
	National Workshop in Algeria	3 rd week of April 2020	Algiers
	1st boat training for N.A. partners (in Tunisia)	June 2019	Gulf of Gabès, subject to vessel availability
	2nd boat training for N.A. partners (in Tunisia)	June 2020	Gulf of Gabès, subject to vessel availability

Training for handling and working with the sensoric systems is planned for Q1 2019, which will comprise of a 1-week hands-on training at DEVELOGIC premises in Hamburg (Germany).

UNIBO (Marco Zavatarelli) has expressed his disposal to contribute (upon request) to improve the skill of the Observatories responsible for what concern the numerical modelling of the Observatory area, both from the physical and the biogeochemical point of view.

ANNEX II. Details of the capacity building events already carried out

A-II.1. Capacity building Event #1:

A-II.1.1. General information about the event

Name of the event: Coupling of operational numerical models using as interfaces the Delft-FEWS and Aquasafe.

Venue: Heraklion (Greece)

Date: 5-9 March 2018



FIGURE A-II.1: PARTICIPANTS GROUP PHOTO TAKEN DURING THE WORKSHOP OF HERAKLION (MARCH 2018).

A-II.1.2. Program of the training workshop

March 5, 2018	Introduction to FEWS
Time	Topic
08:30 - 09:00	Registration
09:00 – 11:00	• Introduction to Delft-FEWS • Importing data
11:00 - 11:30	Coffee break
11:30 - 13:00	• Basic Delft-FEWS concepts ○ Time series (sets) ○ Locations and parameters • Working with XML files
13:00 - 14:00	Lunch break
14:00 – 16:00	• Workflows (running tasks and models in Delft-FEWS) • Transformations (modifying/converting data: extrapolation, interpolation, defaults)

March 6, 2018	Introduction to FEWS and Delft3D
Time	Topic
08:30 – 11:00	• Step by step creation of Delft-FEWS workflows ○ Importing data (satellite, GFS, observations, your own data) ○ Setting up a Delft-FEWS transformation (conversion of data) ○ Let Delft-FEWS guide you in your workflow ○ Visualization of the data (1D, 2D)
11:00 - 11:30	Coffee break

11:30 - 13:00	• Delft Dashboard ○ How to prepare the grid ○ How to create the bathymetry ○ Set up boundary conditions ○ Create your own model
13:00 - 14:00	Lunch break
14:00 – 16:00	• Delft3D ○ How to run ○ How to inspect the data (quickplot) ○ Step by step through model files ○ Cold state files (model restart files)

March 7, 2018	Implementation of a Delft3D model
Timing	Topic
08:30 – 11:00	• Step by step implementation of a Delft3D model ○ Implement the model to another area
11:00 - 11:30	Coffee break
11:30 - 13:00	• Step by step implementation of a Delft3D model (cont'd) ○ Implement the model to another area
13:00 - 14:00	Lunch break
14:00 – 16:00	• Step by step implementation of a Delft3D model (cont'd) ○ Implement the model to another area

March 8, 2018	Implementation of your Delft3D model
Time	Topic
08:30 – 11:00	• Step by step implementation of your Delft3D model ○ Implement the model to your own area

11:00 - 11:30	Coffee break
11:30 - 13:00	• Step by step implementation of your Delft3D model (cont'd) ○ Implement the model to your own area
13:00 - 14:00	Lunch break
14:00 – 16:00	• Step by step implementation of your Delft3D model (cont'd) ○ Implement the model to your own area

March 9, 2018	Introduction to AQUASAFE
Timing	Topic
08:30 – 11:00	• Presentation/Implementation of AQUASAFE
11:00 - 11:30	Coffee break
11:30 - 13:00	• Presentation/Implementation of AQUASAFE (cont'd)
13:00 - 14:00	Lunch break
14:00 – 16:00	• Presentation/Implementation of AQUASAFE (cont'd)
16:00 – 16:30	Wrap Up workshop

A-II.2. Capacity Building Event#2

A-II.2.1.General information about the event

Name of the event: ODYSSEA WP4 workshop on ECOPATH Modelling

Venue: Thessaloniki, Greece

Date: 3-5 July 2018



FIGURE A-II.2: PARTICIPANTS TO THE THESSALONIKI WORKSHOP ON ECOPATH & ECOSIM

A-II.2.2. Program of the workshop

Tuesday, July 3, 2018

Timing	Topic	Presenter	Comments
09:30 – 10:00	Registration		
10:00 – 10:15	Welcome & logistics	Athanassios	
10:15 – 10:40	Update on observatories and platform	Georgios	
10:40 – 11:00	WP4-Modelling	Katerina	
11:00 - 11:30	Coffee break		
11:30 – 12:00	Ecosystem modelling in the Med	Athanassios	
12:00 – 12:30	Ecopath Data requirements	Athanassios	
12:45 – 13:00	Discussion on selected observatories	Georgios	
13:00 – 14:30	Lunch break		
14:30 – 15:00	Thermaikos Case Study	Donna	

15:00 – 15:20	EwE_1 (AUTH)	Donna	
15:20 – 15:40	EwE_2 (HCMR)	George	
15:40 – 16:00	EwE_3 (University of Istanbul)	Cetin and Yelda	
16:00 – 16:30	Coffee break		
16:30 – 17:00	Connecting models and deadlines	Donna/Athanassios	
17:00 – 17:30	Data from observatories (who will give it)	George	
17:30 – 18:00	Discussion and closure	George/Athanassios	
20:30	Dinner		

Wednesday, July 4, 2018

Timing	Topic	Presenter	Comments
09:30 – 10:00	Setting up Ecopath models	Donna	
10:00 – 10:30	Selection of functional groups	Donna/Athanassios	
10:30 – 11:00	Sources of problems	Athanassios	
15:30 – 16:00	Discussion on data and models	Donna/Athanassios	
11:00 - 11:30	Coffee break		
11:30 – 12:00	Model input	Donna/Athanassios	
12:00 – 12:30	Model output	Donna/Athanassios	
12:30 – 13:00	Connection to WP 8-Ecosystem assessment	Athanassios	
13:00 – 14:30	Lunch break		
14:30 – 15:30	ECOSIM	Donna	
15:30 – 16:00	ECOSPACE (in brief)	Donna	
16:00 – 16:30	Coffee break		
16:30 – 17:30	Challenges within ODYSSEA	Athanassios	

Thursday, July 5, 2018

Timing	Topic	Presenter	Comments
09:30 – 11:00	Working with data	Donna/Athanassios	

11:00 - 11:30	Coffee break		
11:30 – 13:00	Working with data	Donna/Athanassios	
13:00 – 14:30	Lunch break		
14:30 – 16:00	Working with data	Donna/Athanassios	
16:00 – 16:30	Coffee break		
16:30 – 17:30	Working with data	Donna/Athanassios	

A-II.3. Capacity Building Event#3

A-II.3.1.General information about the event

Name of the event: Summer School on Operational Oceanography for Science, Business and Society

Venue: Nea Karvali, Kavala, Greece

Date: 03-12 September 2018



FIGURE A-II.3: VIEW OF THE TRAINING PREMISE USED DURING THE SUMMER SCHOOL OF KAVALA (SEPT. 2018).

A-II.3.2. Program of the Summer School

Date	Hour	Course Title and Description	Tutor
03/09/2018 Monday	09:00-11:00	EuroGOOS & Operational Oceanography: Impact on Science, Business and Society	Glenn Nolan (EuroGOOS)
03/09/2018 Monday	11:00-13:00	Introduction to Operational Oceanography - Potential Products and Services	Ghada El-Serafy (Deltares)
<i>Introduction to potential products and services generated by operational oceanographic forecasting systems producing forecast of physical and ecological variables. A brief overview of the service chain will be given, from data source through end-user needs to end products, together with the description of the most important products and services such as early warnings, automated reports and alarms, prediction maps disseminated online and via dedicated apps, tailored to user needs.</i>			
03/09/2018 Monday	15:00 – 18:00	Introduction to Operational Oceanography - The ODYSSEA Concept	Georgios Sylaios (DUTH)
The ODYSSEA project and its contribution to operational oceanography of the Mediterranean Sea will be presented and discussed. The main objectives of the project, the novelties and the workplan and progress to date will be illustrated.			
04/09/2018 Tuesday	09:00 – 13:00	Ocean Operational Models - The Operational Capacity of FEWS	Ghada El-Serafy & Dave de Koning (Deltares)
<i>This course provides an overview on the operational capacity of Delft-FEWS, which is an open data handling platform designed for operational forecasting. After a general introduction on FEWS its main features will be explained such as managing locally acquired data, executing local models, providing consistent data quality, standardizing work processes, visualization and automated reporting. The course will also include the concepts of Delft3D models and their automated execution and under FEWS.</i>			
04/09/2018 Tuesday	15:00-18:00	Building a (simple) marine ecosystem Model - I	Marco Zavatarelli (UNIBO)
<i>The lecture will introduce the theory and application of marine ecosystem models. The steps leading to the formulation of a conceptual model and its components will be described. as well as the general philosophy of biomass-based models. The translation of basic ecological processes into mathematical equations will be addressed. Building on the above concepts, a simple model of marine ecosystem will be defined.</i>			
05/09/2018 Wednesday	09:00 – 13:00	Building a (simple) marine ecosystem Model - II	Marco Zavatarelli (UNIBO)

Date	Hour	Course Title and Description	Tutor
<i>The Theory leading to the definition of the model equations will be supported by practical exercises based on predefined MATLAB programs. Emphasis will be put on NPZD ecosystem models with some elements relating to the definition of more complex models.</i>			
05/09/2018 Wednesday	15:00-18:00	Operational forecasting of oil spill fate and transport in the marine environment	Katerina Spanoudaki (FORTH)
<i>The course will introduce participants to the principles of operational oil spill forecasting. A brief overview of the transport and weathering processes of marine oil spills will be given, including data sources, model design, derived products and services. The course will also provide an overview of the operational capacity of MEDSLIK-II, which is an open source oil spill model. After a general introduction, the main features of the model will be explained, and real case scenarios will be run.</i>			

Date	Hour	Course Title and Description	Tutor
06/09/2018 Thursday	09:00-13:00	Satellite data analysis – I	Anastasia Papadopoulou (DUTH)
<i>This section will introduce to the use of EUMESAT's Copernicus marine satellite information and will give the opportunity to explore the capabilities of Sentinel-3 satellite data throughout the access, data processing, visualization and analysis of satellite data with SNAP toolbox and/or scripting language. Participants will be able to learn the available Copernicus Marine Data Stream (CMDS) products and to begin work with CMDS focusing on their own applications.</i>			
06/09/2018 Thursday	15:00-18:00	Mediterranean Marine Databases & Data Gaps Analysis	Davide Astiaso Garcia (SAPIENZA)
07/09/2018 Friday	09:00-13:00	Marine Instrumentation & Sensors - The ODYSSEA Concept	Laurent Beguery (Alseamar)
<i>In the 1st Session, the technical aspect of the glider will be explained: How it works? what is inside? Why can it stay so long at sea? What kind of sensor can be mounted on a glider? All those questions will find an answer.</i>			
07/09/2018 Friday	15:00-18:00	Marine Instrumentation & Sensors - The ODYSSEA Concept	Laurent Beguery (Alseamar)
<i>In the 2nd Session, we will present several missions with the SeaExplorer which have been done with typical ODYSSEA payload. A special focus will be to show how the glider can work in a shallow or in a deep environment.</i>			

Date	Hour	Course Title and Description	Tutor
06/09/2018 Thursday	09:00-13:00	Satellite data analysis – I	Anastasia Papadopoulou (DUTH)
08/09/2018 Saturday	09:00-11:00	Satellite data analysis – I	Anastasia Papadopoulou (DUTH)
<i>This section will introduce to the use of EUMESAT's Copernicus marine satellite information and will give the opportunity to explore the capabilities of Sentinel-3 satellite data throughout the access, data processing, visualization and analysis of satellite data with SNAP toolbox and/or scripting language. Participants will be able to learn the available Copernicus Marine Data Stream (CMDS) products and to begin work with CMDS focusing on their own applications.</i>			
08/09/2018 Saturday	11:00-13:00	From CMEMS Products to Services	Georgios Sylaios (DUTH)
<i>Introduction to Mediterranean CMEMS datasets and to data from other existing platforms and networks (NOAA, Aquamaps, WCMC, etc.). Selected cases of data combination and analysis to produce meaningful results.</i>			
08/09/2018 Saturday	15:00-17:00	From CMEMS Products to Services	Georgios Sylaios, Nikolaos Kokkos, Konstantinos Zachopoulos (DUTH)
<i>CMEMS datasets will be explored, retrieved and processed to derive secondary parameters and indicators for test applications and services to potential users.</i>			

Date	Hour	Course Title and Description	Tutor
10/09/2018 Monday	09:00-13:00	Ecosystem Modeling in the Concept of ODYSSEA	Athanassios Tsikliras (AUTH)
<i>Ecosystem models using Ecopath with Ecosim (EwE) represent a static, mass-balanced snapshot of the ecosystem, i.e. the species it contains and their trophic interactions, covering the entire trophic spectrum from lower to higher trophic levels, including catches per fleet. EwE models have been widely used to assess the impact of fishing on marine ecosystems, address ecological questions, and, through temporal and spatial simulations, to explore management policy options and model the effect of environmental, meteorological and oceanographic changes.</i>			

Date	Hour	Course Title and Description	Tutor
10/9/2018 Monday	15:00-18:00	Ecosystem Modeling in the Concept of ODYSSEA	Dona Dimarchopoulou (AUTH)
<i>Selected test cases from Ecosystem models such as Ecopath with Ecosim (EwE) will be presented at this section.</i>			
11/09/2018 Tuesday	09:00-13:00	Presentation of ODYSSEA Platform V0	Simon Keeble (BLIT)
<i>An exploration of the platform architecture and how the platform functions from a technical perspective. A comprehensive view of the datasets available through the platform, how they are sourced and how to access them.</i>			
11/09/2018 Tuesday	15:00-18:00	ODYSSEA Platform V0 - User Capabilities	Simon Keeble (BLIT)
<i>An in-depth view of the end user functionality and how this can be used to serve different end users. An insight into the proposed future functionality.</i>			
12/09/2018 Wednesday	09:00-13:00	Business Case Scenarios	Georgios Sylaios, Nikolaos Kokkos, Konstantinos Zachopoulos (DUTH)
<i>Looking at specific business cases and investigating new ideas.</i>			
12/09/2018 Wednesday	15:00-18:00	Business Case Scenarios	Simon Keeble (BLIT)
<i>Looking at specific business cases and investigating new ideas. End of the Summer School.</i>			

A-II.3.3.Feedback of the participants on the summer school contents

Five questions were asked to the North African participants to the summer school (Kavala, sept. 2018) in order to evaluate the degree of assimilation of the technical notions prerequisites for the functioning of observatories, depending on the background of the participants.

Country and background of the participant	Question 1: What is your global evaluation of the summer school?	Question 2: Now that you have attended the summer school, do you feel that you have acquired the needed technical capabilities to contribute to the development of an oceanographic observatory in your country? Please, develop your answer.	Question 3: What are the technical skills or tools for which you think that you need still to enhance your knowledge?	Question 4: Do you think that your participation to this summer school and the knowledge that your learned will open for you new professional perspectives? Please, give details.	Question 5: Any other comment you wish to formulate?
ALG#1 Magister in Marine Sciences (2010)	The summer school was excellent opportunity to learn about the platform and improve some knowledges	Yes, I think that I have the needed capabilities to contribute to the development of an oceanographic observatory in my country. Especially on the aspect of collecting and analysing existing data concerning marine biodiversity.	I need to improve my knowledge's in data modeling and made practical training on using the modern fields instrumentation (Exp: Glider) for operational oceanography.	I don't think that the summer school and the knowledge that I learned will open for me new professional perspectives, but it was an excellent opportunity to learn about what this platform can offer and how it could be possible to contribute to the development of an	No other comment.

				oceanographic observatory in my country.	
ALG#2 Magister degree (Post-graduated) in Biological Oceanography & Marine Environment / june 2012	Very good experience, with a well organised event; interesting lecturers were involved to well explain the different aspects and aims of the ODYSSEA Project...	The training has provided lot of aspects, or needed knowledges in order to be technically ready to contribute to the development of an oceanographic observatory, but, it lacks of practical courses, that next trainings should possibly enhance...	The use of satellite datasets and forecasting models. The insertion of in situ data and other national data, and the integration of metadata by using the platform's integrated mathematical models...	Yes, of course, I think that I might be professionally efficient to work with ODYSSEA's partners, in order to contribute to the establishment of the project and to play the hyphen between the platform and its potential users...	In the future, ODYSSEA must emphasize its trainings on practical courses, with case studies, that will be, at my belief, interesting and provide more operational knowledges and expertise skills...
ALG#3 Electronic, Information technology Engineer.	The content of training was very interesting, as well the quality and knowledge of the consultants.	In my case, I think that technically I'm not totally ready, but with little more training, I will be. In my case, I think that technically I'm not totally ready, but with little more training, I will be.	Much more practice, business cases and finally trainings in the field.	In my case I don't know yet, because it was my first training in this sector.	No other comment.
EGY#1 M.Sc. (Master of Science) in the field of Physical Oceanography - august 2014	ODYSSEA summer school was very good, informative and of clear objective. Personally, I learned many things, got new ideas that I think will	Yes, I work at NIOF – EGYPT. And my institute make observations in both the Mediterranean Sea and the Red Sea. And I participated in many field trips. I think, after	Modelling and advanced marine instruments	Yes, I learned many aspects about modelling and Data sources that will allow me to see new research ideas. Also, I learned that there are problems in the data	I would like to thank all persons responsible of the ODYSSEA project and the summer school and the lecturers of the summer school. And wish them all good of

	be helpful in my future research.	the summer school, I can contribute more in these trips and may be make some developments.		gathering in my area, so I will see how to help with this matter.	things for their efforts and time.
MAR#1	The summer school was good assimilated for knowledge, skills and tools and comfortable with the professors, colleagues, courses, hosting.	I have the needed technical capabilities to contribute to the development of a oceanographic observatory in Morocco, Because I get enough Knowledge and practice, that give me the ability to use new Technical Skills and Tools in my country ,which will be helpful to have the Data such as hydrodynamic, wave, water quality and other parameters, with the help of models, sensors and Gliders given by the ODYSSEA, for share it in the ODYSSEA platform Morocco for the people.	I guess, I need more practicing in managing and processing oceanographic and environmental data of the Mediterranean Sea.	Yes, my participation will help me to develop my Professional perspectives, because I had the opportunity to start learning new skills such as work methodology with the modern models in marine in med sea which my country have a luck of this experience, so I think that will let me do my best to bring this new generation of technology with the help of the Head of observatory in my country.	I would like to thanks everyone making this big project working, and I think this project will serve us to know a lot of Knowledge about the Mediterranean Sea, and the most important we will share and work together to make this possible.
MAR#2 Master degree in	It was good, I am not specialized in oceanography but in general it was	I think I still need further trainings to be able to do so as I am not specialized and oceanography is not	Modelling, technical part and the “how to do” for the main aspects and steps.	Of course, I still have some lacking information that I need to develop but still, I	Not really, but I want to express my gratitude for all the organizers.

Biology Ecology, 2016	interesting, and I have learned so many new aspects and technical terms.	my field of work, I mean the theory for me is a bit lacking and I need to develop it more.		think this summer school was a great opportunity for me to open my vision on other concept apart of the freshwater world. My CV will be enriched with such and experience and new opportunities will be opened.	
MAR#3	Participant has not delivered his evaluation				
TUN#1 Fisheries and Aquatic environment Engineer (2016)	The summer school was good globally, the main objectives are so clear still the preparation, management and processing of database are not totally required. I think this problem can be solved if we have a larger space to practice it among the summer school or with a personal effort because the main steps were well explained by the tutors.	As I explained before, I still have some ambiguities, but the concept is so clear in my head, with practising in the future I can be able to contribute efficiently to the development of an oceanographic observatory in my country for sure.	The whole concept, what I need really is to prepare a dataset by myself from the beginning and to face all the problems along so I can be able to enhance my knowledge.	Of course, it's a very precious experience that added to me a lot professionally, I have a clear vision now for my field of specializing.	I want to thank you all the team of ODYSSEA for the knowledge acquired. But, if it's possible for the next summer school to allow a larger space for practicing and why not to treat a case from the beginning to the end to develop forecasting models, maps... as a result.
TUN#2	The summer school was an amazing opportunity that allowed me to know	Yes, I can proudly say that after attending the summer school I do have	I do believe that I still need to improve my knowledge about data	Yes of course. After attending this summer school, I can say that I	I propose that there should be a second summer school

Fisheries and Aquatic environment Engineer (2018)	in first-hand about the operational oceanography and the new technologies used in operational oceanographic monitoring, and on a scale from 0 to 5 I would evaluate the summer school with 4 points out of 5 as I expected that there would be a lot more of practical trainings [software's usage, modeling+/ how to run+/ develop the models and data processing] because personally I think they are crucial. So, in the near future the selected candidates can effectively contribute to the implementation of the observatories and generate a wide range of final data for the multiple expected end-users.	the needed technical capabilities to contribute to the development of an oceanographic observatory in Tunisia. But, to be honest I still have to enhance my knowledge by working on some aspects and steps mainly: data processing.	processing (Pre and Post-processing) with all what it includes from standardization, tackling the uncertainty...etc. This directly implies a continuous self-training and knowledge enhancement about programming and software manipulations (Python, Matlab, C++...).	improved my hard skills and it has helped me to better assimilate the notions related to the operational oceanography, and enhance the required skills, so I can further go forward in my professional career as I have now a much clearer vision. All of the mentioned above will certainly help me integrate the labor market by opening for me new professional perspectives either nationally or regionally, mainly opportunities related to operational oceanography, climate change related studies and forecasting, because recruiters may show interest in young dynamic scientists.	dedicated to practical trainings on the use of the software so the candidates can fully have the required technical skills and can efficiently help to implement and operate the observatories in their countries.
TUN#3	The summer school was a unique experience for me to acquire the theoretical	The summer school was a good initiative to introduce for us the basic	As we have been initiated into the efficiency of certain tools to develop	Certainly, the outcomes produced by this summer school have	During the summer school, they told us that ODYSSEA is not just a

Fisheries and Aquatic environment Engineer (2017)	and technical skills needed to conduct and evaluate the importance of operational oceanography in the Mediterranean context. It embraced different modules combining the quantitative and qualitative expertise for the use of operational oceanography. It allows us to discover and well understand the modern techniques used to retrieve, process and interpret oceanographic and environmental data in ODYSSEA platform. Thus, we became aware of its big importance to achieve the Sustainable Blue Growth of the Mediterranean Sea. Moreover, one of the best outcomes of the summer school was the fact that it gathered young researchers with different perspectives and from different	technical knowledge needed to understand the exact meaning of operational oceanography and its potential products and services. Now, I am able to explain the service chain of ODYSSEA platform and how it goes from data source through end-user needs to end products in order to contribute to operational oceanography in the Mediterranean Sea and particularly in Tunisia. I got the chance to learn more about Delft-FEWS and its important features used for the production of physico-chemical and ecological parameters' forecast. But honestly, I need to learn more about how to use it while applying it to some authentic examples as the course was basically theoretical. Also, I learnt the basics of Delft3D	oceanographic observatories in our countries, we learnt the basics about each tool and its features. However, I still need to manipulate it focusing on real applications. Now I feel that am proficient in the use of some scripting languages as R but I still need to enhance my knowledge in MATLAB and OCTAVE. Also, I learnt how to build some marine ecosystem models and operational forecasting models respectively as NPZD and MEDSLIK-II but I need to adapt them to real case scenarios in order to more understand their main features. Moreover, I need to enhance my knowledge in Delft-FEWS and apply its operational forecasting systems to real applications. Luckily, I acquired the essential technical skills for the use	allowed me to think more about the huge responsibility that I should assume for the development of our observatory in Tunisia. It improved my vision as a young researcher who is building the first steps of his professional career. Now my vision changed from thinking about what can I do to my circle, to what I can do to the whole Mediterranean region starting by Tunisia and using the knowledge I gained. I can admit that this summer school let me know that ODYSSEA is not just a project but it is a strong network where I can feel motivated and be sure that many fascinating things are being done for the sustainability of the Mediterranean region. Before the summer school, it was hard for	project, it is considered in Greece the “Melody of the sea”! As I consider myself a young changemaker and researcher, I will really be pleased to transcript the musical notes of this melody into real products and services that will be provided to many end-users going from the citizen to the decision-maker for the development of sustainable blue growth in the Mediterranean Sea.
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	backgrounds to build a powerful network throughout the Mediterranean region. So that it succeeds to produce win-win outcomes for the best of ODYSSEA project.	models' concepts and how can we execute them under FEWS. As I know now the basics, I am trying to read more about their concepts so I can adapt these models to our country and especially to Gulf of Gabès functioning. Concerning the Satellite data analysis, I feel that am able now to use Copernicus Marine Data Stream products or other data from other existing networks and platforms, process, visualize and analyse these data using scripting language as R Language or SNAP toolbox. Luckily, I had the opportunity to learn more about the marine instrumentation mainly glider. Now am able to explain the technical aspect of glider and its main missions within ODYSSEA project and show its huge importance	of glider but it will be better to manipulate it in reality and see how it works.	me to know in advance whether the project is going to be good for the field and for my own career but now I can ensure that ODYSSEA project and network is very significant for my future and totally responds to my perspectives. I believe that as I am part of ODYSSEA, I will learn broadly each year. It will let me learn as many techniques as I can to tackle an array of problems in my professional future adopting a critical mind. Thus, it will absolutely open new perspectives for me as am exposing myself to other ways of thinking, learning and doing by exchanging experiences with peers, experts and smart friends in the frame of ODYSSEA Network.	
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		for the development of our oceanographic observatory in Tunisia.			
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Objectives of the Summer School	Level of assimilation of the knowledges					Explanation of the levels
	E	D	C	B	A	
Understand the concept of Operational Oceanography				3	6	<i>E: Still not assimilated at all</i> <i>D: Large amount of aspects are still unclear</i> <i>C: Only few aspects are still unclear</i> <i>B: I'm comfortable with the main aspects addressed</i> <i>A: Wholly assimilated - I can explain it.</i>
Use the ODYSSEA platform for retrieving, managing and processing oceanographic and environmental data of the Med Sea		1	2	4	2	
Explore the CMEMS products (data and parameters provided), download and process these datasets			2	4	3	
Retrieve and use satellite datasets and explore databases on the marine environment			5	2	2	
About the modern developments in marine instruments and sensors used in field sampling for operational oceanographic monitoring			1	7	1	
Use of operational forecasting models e.g. hydrodynamic, wave, water quality models, data analysis tools, etc		1	5	2	1	
Average level of assimilation in %	0%	4%	27,5%	41%	27,5%	

A-II.4. Capacity Building Event#4

A-II.4.1. General information about the event

Name of the event: Training workshop on operational use and management of marine observatories (in parallel with the General Assembly)

Venue: Lisbon, Portugal

Date: 23-25 October 2018

Agenda of the Training Program for the Observatory Managers and Operators

Timing	Topic	Speaker(s)	Comments/Deliverables
Date: 23 October 2018			
08:30 - 09:00	Registration		
09:00 - 09:05	Welcome & logistics	Georgios & Adelio	
09:05 - 10:00	Objectives Partner Meeting Lisbon/ Update current status and challenges ODYSSEA	Georgios & Simon vD	
10:00 – 10:30	ODYSSEA Training: General framework	- Daniel CEBRIAN- MENCHERO (SPA- RAC) - Mercedes de Juan (VPORTS)	1. Implementation obligations of the Barcelona Convention Parties (and Parties to the Protocol ASP/BD) regarding monitoring of the status of Mediterranean environment 2. Implementation of the Ballast Water Convention in the framework of the Barcelona Convention
10:30 - 11:00	Coffee break		
11:00 – 13:00	ODYSSEA Training: Initial implementation of the Observatory	Yann	1. Explaining the benefits for users (what are the overall benefits of operating an observatory?) 2. Exploring the use-cases scenarios, linked to business cases. The 3 selected cases as decided during the WP leaders meeting in Athens will be explored first 3. Additional uses cases will be also be explored, especially different kind of cases than the 3 selected in Athens to cover a broad range

			of use cases and stakeholders
13:00 - 14:00	Lunch		
14:00 - 16:00	Use & Business Cases for V1 and V2 of the platform	Yann, Laura, Nicolas, Adelio, SimonvD	1. Selecting Use case #4 - #10 2. Exploring for each case the exact use and case and decide what business model would fit best. 3. What markets are to be served for each case? 4. What barriers of entry are to be expected for each case?
16:00 - 16:30	Coffee break		
16:30 – 17:30	Initiate networking with other projects and institutional actors	Menelaos	Presentations by Dr Ilias Mavroeidis, Programme Management Officer – Governance at UN Environment / Mediterranean Action Plan Coordinating Unit & Dr Sana Ben Ismail, Institut National des Sciences et Technologies de la Mer (Tunisia) & CLAIM H2020 project: collaboration perspectives with the ODYSSEA project.
17:30 – 18:00	Wrap Up Day One	Georgios, Bracha & Simon	

Timing	Topic	Speakers	Comments/Deliverables
Date: 24 October 2018			
09:00 - 09:15	Recap		
09:15 – 10:30	Platform Development	Nicolas Granier, CLS.	1. 30 minutes demo of Platform V0 2. For each use case, what does the user need or want to see and how are we going to get there? 3. Dashboard/Interface for the user
10:30 - 11:00	Coffee break		
11:00 – 12:00	ODYSSEA Training: Design of the Observatory	Georgios	1. Define Spatial boundaries of Observatory 2. Fitting technical design of units

			according to geographical, end users and ODYSSEA needs 3. Map end-users operating within Observatory limits 4. Initial approach to end-users 5. Reporting needs and marine data requests 6. Initial approach to relevant authorities
12:00 – 13:00	ODYSSEA Training: Initial implementation of the Observatory		1. Logistics for deployment 2. Defining the exact location for sensors deployment 3. Services Definition (Variables, Resolution, Frequency)
13:00 - 14:00	Lunch		
14:00 - 16:00	ODYSSEA Training: Outreach and citizens science	Arik Rosenblum & Assaf Ariel (EcoO.) Inbar Schwartz (SPNI) Claire Laudy (Thales)	1. Dissemination and outreach tools 2. Overview of citizens science programs 3. Sea Watch application 4. Tweet harvesting and semantic information analysis
16:00 - 16:30	Coffee break		
16:30 – 17:30	ODYSSEA Training: Sustainability and Maintenance of the Observatory	Georgios & SimonvD	1. The conditions of observatory sustainability 2. Business cases for operationalization of Observatories 3. Define a business plan to maintain the system after project completion (describe potential solutions) 4. Addressing emerging needs (new information and new technology) 5. Adding additional models and sensors
17:30 – 18:00	Wrap Up Day One	Georgios, Bracha & Simon van Dam	

Timing	Topic	Presenter	Comments/Deliverables
October 25, 2018			
09:15 – 10:45	Use of the observatory in operational mode – Local platform	- Adelio Silva - Katerina Spanoudaki - Marco Zavatarelli	- Local platform operation & management - Numerical Modelling (theory, setting up, implementation) - Data management: External Networks & databases, (New) Sensor data assimilation, data quality control procedures, metadata - User services - Customized forecasts for pre-defined end user groups - Warning alerts and alarms
10:45 - 11:15	Interactive session with the participants (Questions about the morning sessions)		
11:15 - 11:45	Coffee break		
11:45– 13:00	Use of the observatory in operational mode–ODYSSEA platform	- Nicolas - Simon Keeble	- Use the ODYSSEA platform to retrieve historic marine data to aid users understand the complexity of their environment - Use the ODYSSEA platform to aid users to retrieve operational marine forecasts - Use of ODYSSEA platform to optimize the siting and spatial planning of marine activities based on analysis of historic data - Data management - Format - Archiving - Transfer to ODYSSEA platform - Service-level agreement

			5. Operational forecasting (using open data handling platforms)
13:00 - 14:00	Lunch		
14:00 - 15:00	Maintenance of the Observatory	Laurent Beguery Rob Snip	1. Technical issues regarding maintenance of sensors 2. Technical issues regarding computerized data transfer responsibilities of observatories managers
15:00 – 16:00	Interactive session with the participants Questions about session T5 and the workshop in its whole Evaluation of the Workshop efficiency		
16:00 - 16:30	Coffee break		
16:30 – 17:30	Interaction between EMODNet and ODYSSEA	Patrick Gorringer (representing EMODNet and EuroGOOS)	Providing a ‘big picture’ perspective
17:30	End of the training		

ANNEX III. Details of the capacity building upcoming events

As stated in the “DOW” (Task 5.3):

Managers and operators of Model Observatories will be trained to use and maintain in operation the systems. These trainings will be done in group sessions at the premises of technological partners (Alseamar and Develogic) in conjunction with T10.1. After the training, managers and operators of Model Observatories will be able to operate the systems independently and solve minor maintenance issues, as well as train local end-users, stakeholders, young scientists and entrepreneurs on their use thereafter called local partners.

A-III.1. Training on Gliders provided by ALSEAMAR

A-III.1.1. Alseamar

ALSEAMAR is a high-tech company gathering the marine and underwater activities of the ALCEN industrial group for Ocean Science markets, Defence & Security, and Offshore Oil & Gas.

ALSEAMAR is the manufacturer of the SEA EXPLORER glider.



FIGURE A-III.1: THE GLIDER “SEA EXPLORER” ON WHICH ALSEAMAR WILL PROVIDE A TRAINING

This enduring autonomous underwater vehicle is dedicated to monitoring and/or to collecting environmental data. It is the sole glider fitted with rechargeable batteries, and also the sole one developed

and manufactured from a non-American company. The SEA EXPLORER equipped with appropriate sensors is the perfect low-logistic platform for cost-efficient oceanographic data gathering at large spatio-temporal scale. As the leader of WP5 (In-situ Monitoring) and Task 5.3 (Training), Alseamar will organize a training in one of its premises.

A-III.1.2.Objectives

- Learn how a SeaExplorer glider works in order to be able to prepare and operate the glider for scientific missions.
- Know-how:
 - Equipment functioning
 - Equipment preparation
 - Mission preparation
 - Deployment / Piloting / Recovery
 - Maintenance

A-III.1.3.People involved – Targeted Audience

Any people involved in the SeaExplorer for the following aspects:

- Laboratory preparation
- At-sea operations
- Data analysis

A-III.1.4.Prerequisite

- Minor computer skills for the following:
- Linux-based system: typical commands will be used like 'cd', 'ls', 'more', 'vi', ...
- Operating systems at sea: how to lift, ...
- General Physics understanding: what is a magnetic compass, Archimedes effect, ...

A-III.1.5.Training Program

Day 1: SeaExplorer Overview

- Presentation, round table
- Glider Principle and system breakdown
- Vehicle description
- Payload description
- Review of the day, Questions & Answers session (Q&A)

Day 2: Getting the instrument ready

- Ballasting

- Magnetic compass calibration
- Presentation of the day: piloting
- Review of the day, Q&A session

Day 3: Mission Preparation

- Mission's files preparation
- Glider simulation
- Getting ready to go at sea
- Review of the day, Q&A session

Day 4: At-sea Operations

- Safety at sea
- Deployment
- Field exercises
- Recovery
- Review of the day, Q&A session

Day 5: Piloting & Maintenance

- Piloting
- Working on the dataset
- Maintenance
- Additional operations
- Review of the day, Q&A session

A-III.1.6.Total Duration

The total duration of the training is: 35 hours

A-III.1.7.Educational Means

- SeaExplorer User Manual (to be provided during the training)
- SeaExplorer Piloting Manual (to be provided during the training)
- SeaExplorer Glider
- Students should bring a laptop running Windows

A-III.2. Training on sensors and Modular Seafloor Lander provided by Develogic

A-III.2.1. Develogic

Develogic subsea systems (partner 20) is a German company founded in 2000 and based in Hamburg with a focus on developing and manufacturing turn-key customized data-acquisition and telemetry solutions for marine monitoring applications.

To be able to deliver cost-effective systems with short turnaround times the company has developed a building block system containing all necessary elements for collecting data anywhere in the ocean and transporting it to the customers' office. Available technology ranges from modular pressure housings, data loggers and acoustic telemetry solutions to seafloor landers, large sensors- and telemetry buoys.

In the framework of ODYSSEA (WP5), Develogic will play a key role in customizing, manufacturing and providing the observatories with the static monitoring stations. Develogic will also integrate the in-situ sensors and will further contribute to the development of new sensors (such as the panorama camera and the micro plastic sensor) for the project.

In practice, Develogic will provide 4 modular seafloor lander and 9 surface instrument packages, which can be mounted on buoys or monitoring platforms.

Develogic will support installation of the static instrument platforms and provide training of local partners to ensure the safe operation and the ongoing maintenance of the monitoring platforms.

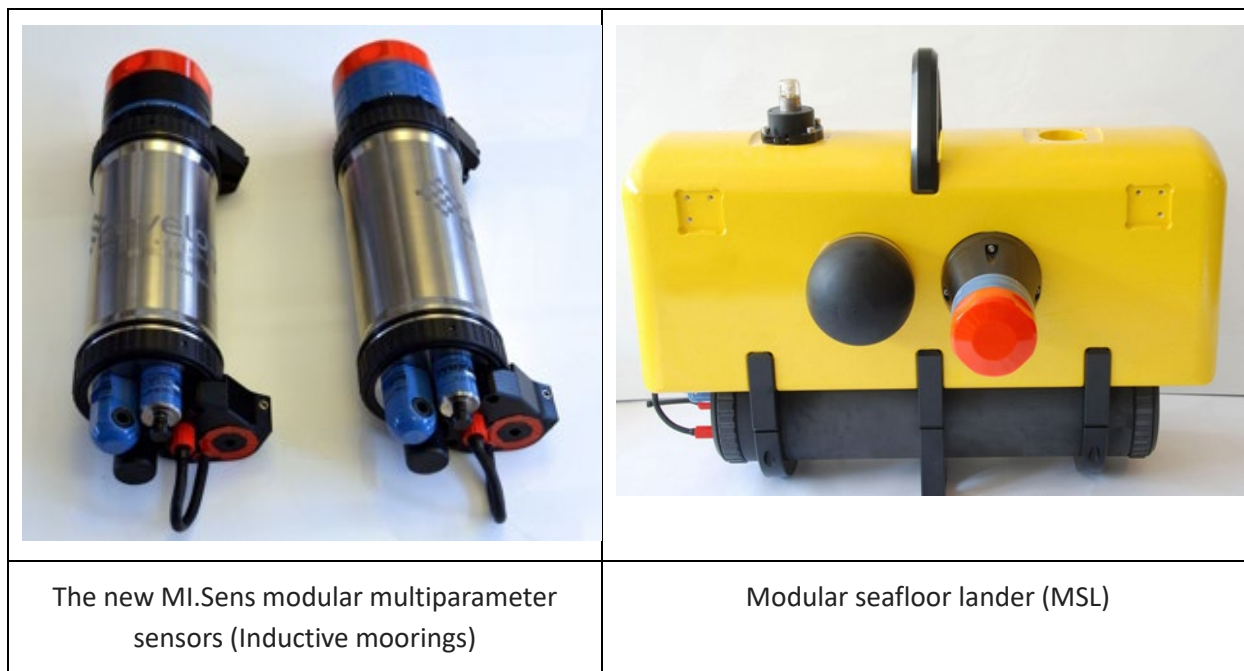


FIGURE A-III.2: TYPE OF MONITORING EQUIPMENT FOR WHICH DEVELOLOGIC WILL PROVIDE TRAINING

A-III.2.2.Developing Training Program

Day 1:

A-III.2.3.Handling of both the surface as the sea-floor lander on-land (0.5 hr)

- Identification of the different lander parts and systems
- Introduction about lander functionalities and operating system and purpose
- Lifting, cleaning, maintenance, sensible parts, types of material
- Turning systems on-off
- Standard settings possibilities of the sensoric systems

A-III.2.4.Deployment and recovery of the seafloor lander (4 hrs)

- Ejection and installation of ballast plate
- Executing deployment and recovery of the actual seafloor landers in our in-house test tank

A-III.2.5.Standard maintenance on both the surface as the sea-floor lander (2 hrs)

- Removing battery / electronics container
- Handling connectors
- Testing the system and different sensors
- Handling and Replacing O-rings

A-III.2.6.Battery refill procedure for the sensoric systems (1,5 hrs)

- Hands-on battery refill procedure exercise
- Testing battery container with Smart Power Switch system

Day 2:

A-III.2.7.Configuration settings and communication with the sensoric systems (6 hrs)

- What exactly can be configured
 - Frequency and duration of measurements
 - Communication (real-life if available and manual)
- How to configure the system
- Perform standard checks

A-III.2.8.Troubleshooting (2hr)

- What could cause errors, and how to solve them
- Real time trouble shooting

ANNEX IV. Presentation given during ODYSSEA Side-event in the frame of CBD-COP14 (Sharm Al Sheikh)



**Creating products
and knowledge for
the Mediterranean**



TRAINING AND CAPACITY BUILDING ACTIVITIES

UN Biodiversity Conference, Sharm El Sheikh, 22 October

Daniel CEBRIAN-MENCHERO and Slim GANA

SPA/RAC

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This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 727277

Supporting 2030 Agenda for Sustainable Development



Monitoring sea-level rise and prevention
of Metocean Extreme Events

13 CLIMATE
ACTION



Monitoring of water quality and pollutant
concentration

14 LIFE
BELOW WATER



Increase scientific knowledge, develop research
capacity and transfer marine technology

17 PARTNERSHIPS
FOR THE GOALS



Effective and targeted capacity-building in developing countries

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Effective and targeted capacity building



- **Target 17.6:** Enhance North-South, South-South cooperation on access to science, technology and innovation ...
- **Target 17.7:** Promote the development, transfer, dissemination and diffusion of environmentally sound technologies to developing countries ...
- **Target 17.8:** Fully operationalize the technology and innovation capacity-building mechanism for least developed countries and enhance the use of enabling technology, in particular information and communications technology...
- **Target 17.9:** Enhance international support for implementing effective and targeted capacity-building in developing countries to support national plans to implement all the sustainable development goals

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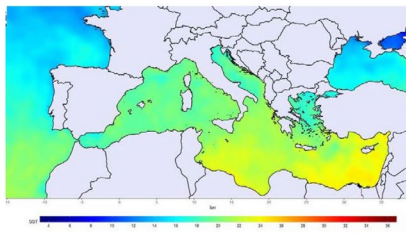
Knowledge and technology transfer



SPA/RAC is leading work to enhance national capacity of southern Mediterranean countries to monitor the marine environment.

Activites

- Develop technical skills
- Develop managerial skills
- Develop marketing capabilities of OBS. Staff



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Activities completed?



ODYSSEA

WORKSHOPS AND SUMMER SCHOOLS ON:

- ✓ Operational oceanographic modelling tools (Heraklion, March 2018)
- ✓ Ecosystem modelling (Thessaloniki, July 2018)
- ✓ Operational Oceanography (Kavala, September 2018)
- ✓ Training workshop for Observatory managers and technical Staff (Lisbon, October 2018)



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Upcoming activities?



ODYSSEA

TRAINING ON:

- ✓ Sea glider technologies (*Alseamar, France, February 2019*);
- ✓ In-situ monitoring sensors (*Develogic, Hamburg, Germany, March 2019*);
- ✓ In-field training onboard an oceanographic vessel (*Tunisia, 2020*);
- ✓ In-field training on board an oceanographic vessel (*Morocco, 2021*).

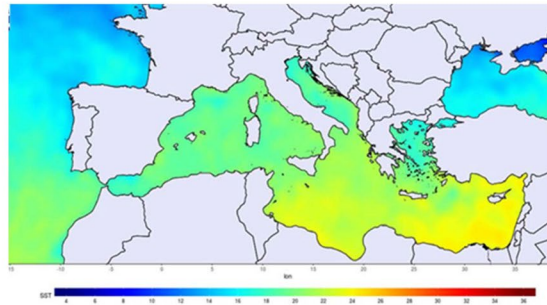


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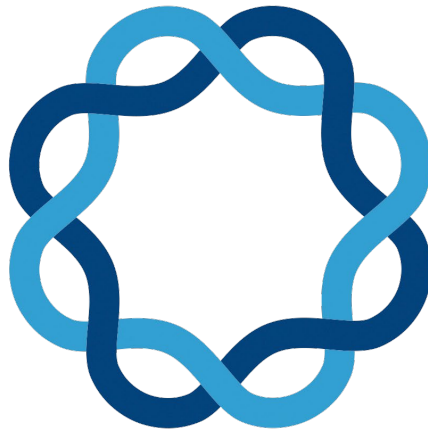
Observatory user guide



To ensure the continuity of the capacity building activities, an **Observatory User Guide** will be prepared based on the training materials.



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