



ODYSSEA

**Creating products
and knowledge for
the Mediterranean**



WP10: CAPACITY BUILDING IN NORTH AFRICAN COUNTRIES ... and OTHER MEDITERRANEAN COUNTRIES

November 2021, Virtual General Assembly

Slim GANA and Daniel CEBRIAN

SPA/RAC

daniel.cebrian@spa-rac.org



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

Reminder of WP10 Objectives

“Ensure that ODYSSEA platform, observatories and associated services are mastered by North African countries stakeholders, allowing their use at those countries level for monitoring, vulnerability and risk management and optimize the availability of unused countries datasets for ODYSSEA”



**Knowledge
and
Technologies
Transfer**

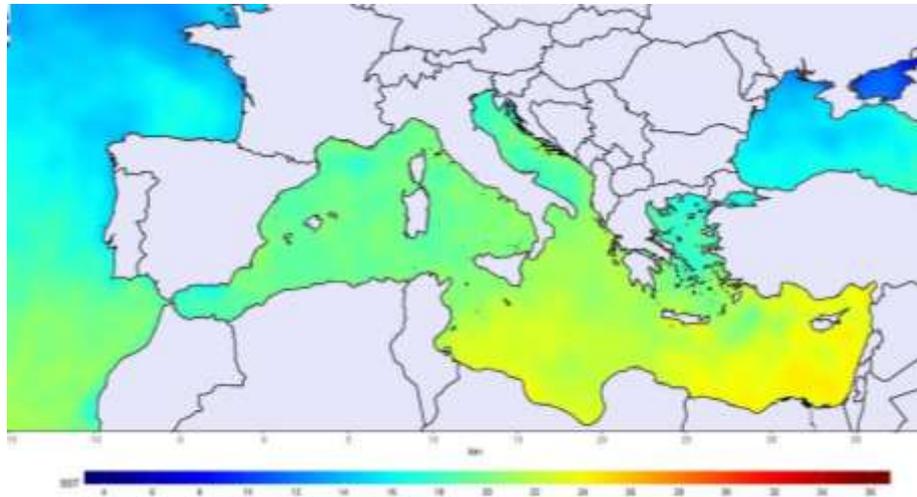


Training and capacity building activities



As WP10 Leader, SPA/RAC is in charge of Capacity Building Program support to North African Countries, with the aim to:

- **Develop Technical skills in the field of Marine Environment Monitoring →**
- **Develop Managerial skills**
- **Develop Marketing capabilities of OBS. Staff**



Objectives: “Ensure that ODYSSEA platform, observatories and associated services are mastered by North African countries stakeholders, allowing their use at those countries level for monitoring, vulnerability and risk management and optimize the availability of unused countries datasets for ODYSSEA”

Deliverables and Months of delivery



ODYSSEA

- D10.1: Training material for workshops (Done in M18)
- D10.2: Reports of local workshops for capacity building (M54, in preparation)
→ D10.2 interim report have been issued in M36 and incorporated in the ODYSSEA 2nd interim report (Done in M36)
- D10.3: Protocols of demonstrations (M54, in preparation)



CAPACITY BUILDING ACTIVITIES CARRIED OUT DURING THE PROJECT

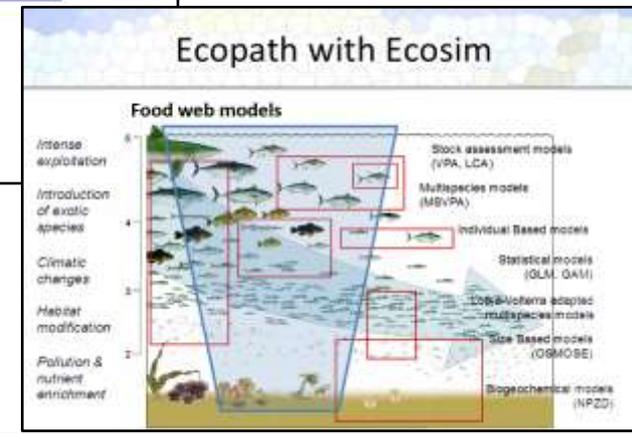
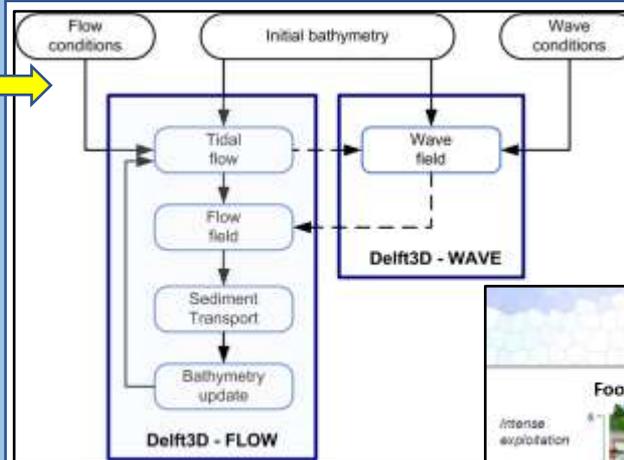


ODYSSEA

→ (Heraklion, March 2018)
Workshop on Operational
Oceanography Modeling
focusing on Delft-Fews and
Aquasafe tools with 1
participant from Egypt and
2 from Morocco



→ (Thessaloniki, July 2018)
Ecosystem Modelling
Workshop focusing on
Ecopath and Ecosim with
the aim to understand the
input data needed to
setup, parameterize and
run the model.





(Kavala, September 2018)

• **Summer School on Operational Oceanography**

SPA/RAC awarded full scholarships to 4 North African students and 2 partial scholarships to 2 students

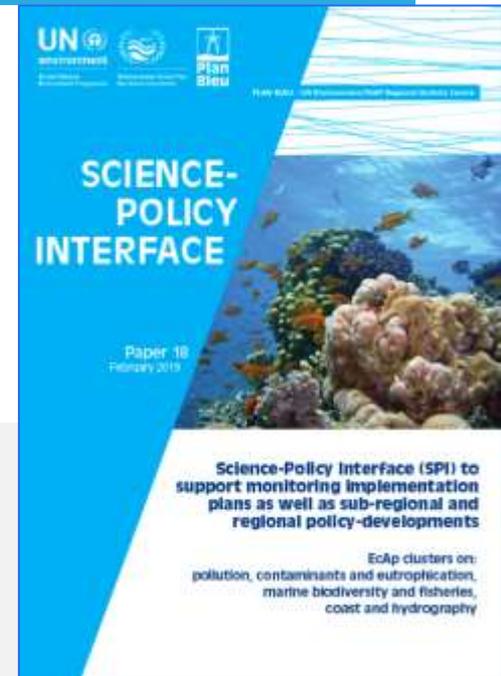
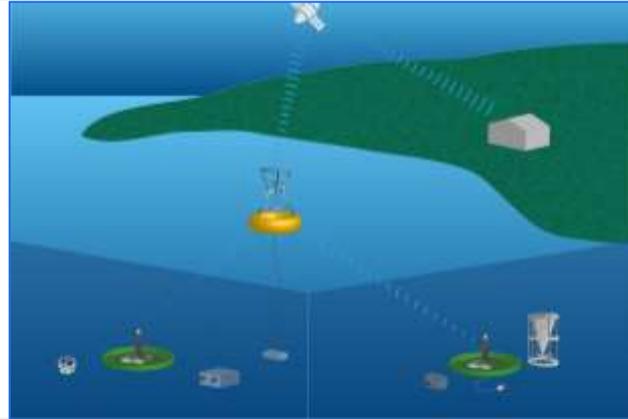
1 Tunisian student was selected by a staff of lectures and has been awarded a partial support to follow a training in oceanographic data processing, in Deltares (not concretized due to Covid-19 pandemic).

Lisbon, October 2018 (in parallel with the G.A.)

- Training workshop for Observatory managers and technical Staff



ODYSSEA



- **D. Cebrian: The Ecosystem Approach (EcAp) in the Mediterranean Sea: Integrated Monitoring needs and obligations**
- **Delft-FEWS Basic Configuration Course**
- **Delft-FEWS Basic Configuration – Exercises**
- **L. Friedrich: Use & Business Cases**
- **M. Juan: Implementation of the Ballast Water Conv. in the Framework of Barcelona Conv.**
- **S. Keeble: The ODYSSEA Platform**
- **Martinez: Sensoric Systems by ALSEAMAR, DEVELOGIC and LEITAT**
- **Rodrigues: Use of the Observatory in the Operational Mode**
- **A. Rosenblum: Community Engagement & Citizen Science**
- **Schwartz: Sea Watch Public monitoring App for Marine Hazards**
- **K. Spanoudaki: Use of the Observatory in Operational Mode – Local Platform**
- **G. Sylaios: ODYSSEA Observatories: Setup, Operation & Maintenance**

Al Hoceïma - Morocco, October 2018

- National Kick-off meeting and National Workshop



January 2019: Al Hoceïma - Morocco

- Presentation of the capacity building programme to be performed in the frame of ODYSSEA and how this programme is integrated in the Mediterranean Action Plan and in the Marine Strategy of the European Union (WP11) to Moroccan attendees *for a large range of public institutes as Universities, Fisheries Research Institutes, Environmental protection Agency, NGO, Port Authority, etc...*



Glider Training by Alseamer 8-12 April 2019 Rousset – France



Developing technical skills

At this training workshop, participants from Tunisia, Morocco, Israel and Greece were trained how to use SeaExplorer Gliders to collect data from water column.

- 1. Theoretical Basis**
- 2. Practical Training in workshop on how to set up the glider and prepare the mission at sea**
- 3. Deployment at sea**
- 4. Recovery and Maintenance**



Develogic Sensors Training

Hamburg - July 2019



ODYSSEA

Participants from:
Greece, Israel, Morocco,
Tunisia, Turkey



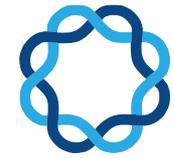
Develogic training workshop has addressed:

1. Theoretical Basis of data acquisition parametrization and mission preparation
2. Visit of workshop where the surface buoy and the lander are manufactured
3. Demonstration of how the monitoring equipment is prepared before the mission at sea
4. Miscellaneous questions and answers



2nd Summer School session, September 2-6, 2019

Oceanography and Fisheries in the Mediterranean - Greek island of Alonissos



ODYSSEA

2 Young Scientists From Tunisia:
1 - Dr Nadia Mkhinini: Assistant Professor (Hydro-Meteorology)
2- Fadoua Ben Salah, Eng. Marine Sciences, Ph.D. Candidate, Oceanography

Side Outcome:
Strengthening gender equity and knowledge exchange networks between the North and South of the Mediterranean young scientists

← **Tweeter**

 **ODYSSEA Platform**
@ODYSSEAPlatform

ODYSSEA 2nd Summer School session on Alonissos a 'great success' odysseaplatform.eu/2019/09/24/ody...
#Oceanography #maritime #Mediterranean #H2020





Third ODYSSEA Summer School: « Virtual School of Oceanography from Space »

With the kind collaboration of:



23-27 November 2020

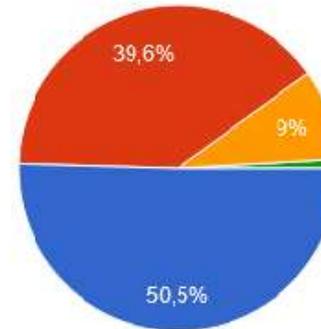
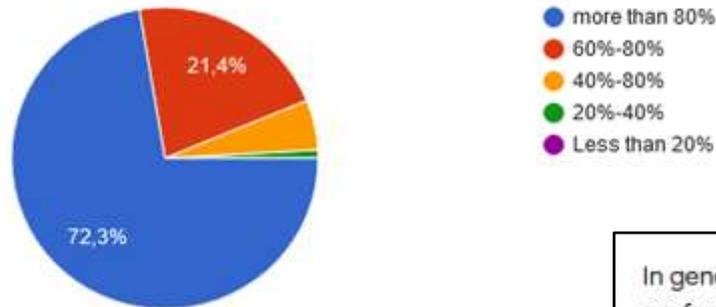
AGENDA

GMT+1 time	10:00-11:00	11:00 - 11:15	11:15 - 12:15	12:15 - 14:30	14:30-15:30	15:30-16:30
Monday 23/11/2020	1- Welcome to the Virtual School by UNEP/MAP-SPA/RAC 2- Introduction to the Webinar and Odyssea (Georgios Sylaios (ODYSSEA Coordinator, DUTH University) 3 - Introduction to Oceanography from Space (Hayley Evers-King, EUMETSAT)	SHORT BREAK	Satellite Data Retrieval from Copernicus (Hayley Evers-King)	LUNCH BREAK	Overview of ODYSSEA project activities and outcomes Georgios Sylaios (ODYSSEA Coordinator)	
Tuesday 24/11/2020	1- Measuring Sea Surface Temperature from Space 2- Working with SST data from Satellites (Hayley Evers-King)	SHORT BREAK	1 - Measuring Ocean Color from Space 2 - Working with ocean color data from satellites (Hayley Evers-King)	LUNCH BREAK	Introduction to Marinomica Services and Products (Simon Keeble, BLIT)	
Wednesday 25/11/2020	- Measurement of Sea Surface Level using altimeter sensors in the open ocean - Retrieval of Tides, currents, waves and winds (Florence Birol, LEGOS)	SHORT BREAK	Satellite altimetry in the coastal zone (Florence Birol, LEGOS)	LUNCH BREAK	Meso-scale eddies and their dynamics using Marinomica (Cori Pegliasco, CLS)	
Thursday 26/11/2020	Exercises on satellite altimetry data - Session 1 (Florence Birol, LEGOS)	SHORT BREAK	Exercises on satellite altimetry data – Session2 (Fernando Nino and Fabien Léger)	LUNCH BREAK	Forecasting tools for wind and waves in Marinomica (Katerina Spanoudaki, FORTH)	Automatic detection of Offshore Oil Spill using Satellite data. (Juan Peña Ibanez, EOS-Orbital)
Friday 27/11/2020	Monitoring coastal erosion patterns from space: Coastal erosion 'hotspots' and trend analysis –(Konstantinos Zachopoulos, DUTH)	SHORT BREAK	Freshwater fluxes and SPM data products in river plumes - Nikolaos Kokkos (DUTH)	LUNCH BREAK	Eutrophication indices in Marinomica (Lorinc Meszaros, Deltares)	

RESULT OF THE SURVEY CARRIED OUT AFTER VSOS (100 attendees from 20 Countries)

Will you use the Marinomica platform in the future?

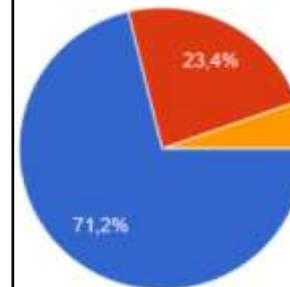
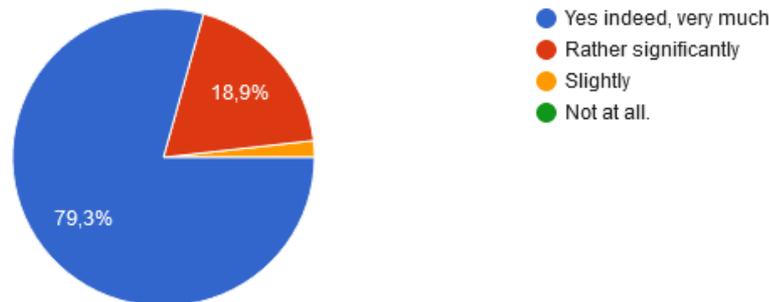
Did the thematic content of the Virtual School meet your expectations? Please one option



- Yes indeed, very much
- Rather significantly
- Slightly
- Not at all

In general, do you think that the knowledge acquired will help you in your research or professional activities?

Will this training encourage you to use satellite data for oceanographic applications in the future?



- Yes indeed, very much
- Rather significantly
- Slightly
- Not at all



Supports and involvement in Professional Workshops



ODYSSEA

1- 7 october 2020: Tunisian End-Users and stakeholders Webinar and Marinomica Demonstration:



Follow-up meetings with institutional stakeholders (TN)

Webinar with Tunisian end-users (

Professional meeting with Tunisian fish farmers and platform demonstration

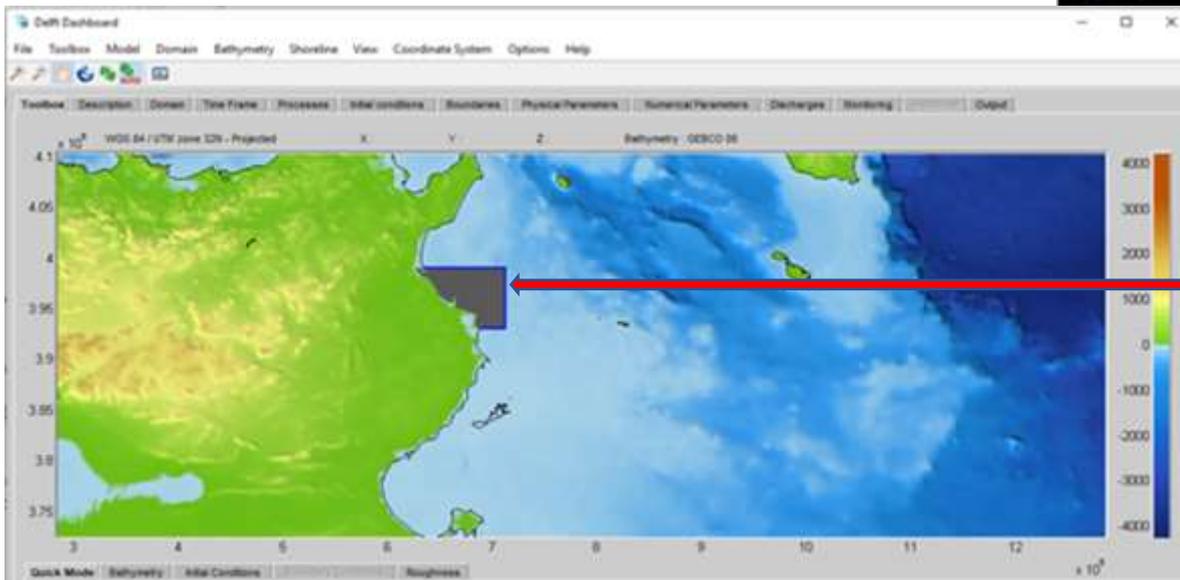
During Tunisian End-Users Workshop, talk about: « Assessment of the Hydrodynamic and water quality in the area of interest using available data on the platform »



ODYSSEA

Tide model using
Delft-3D code

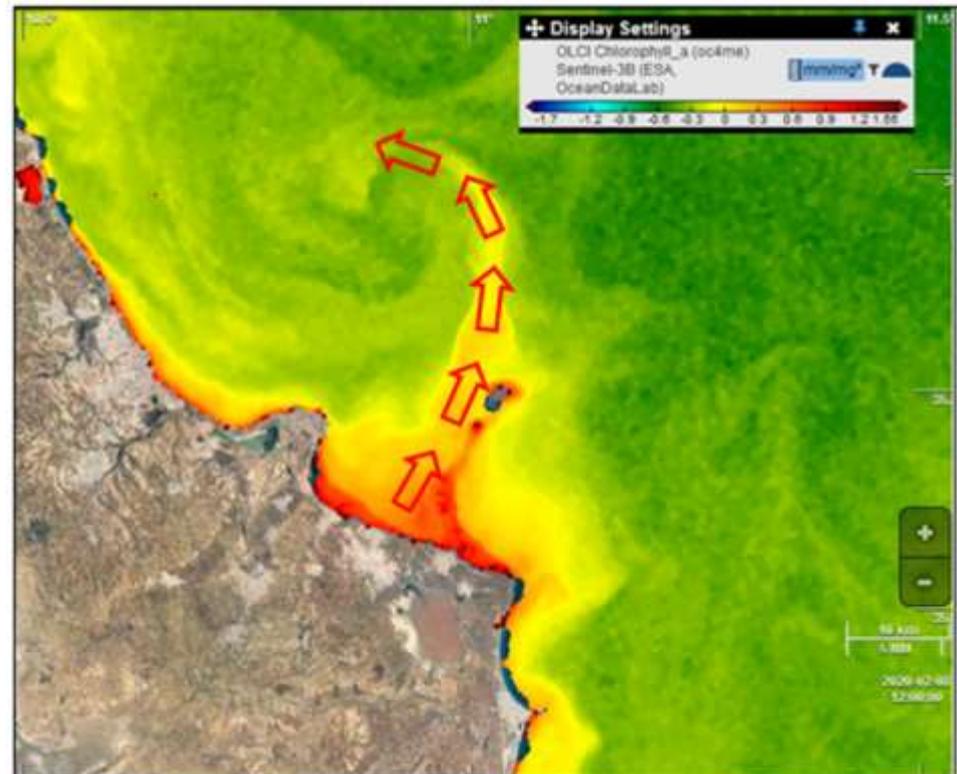
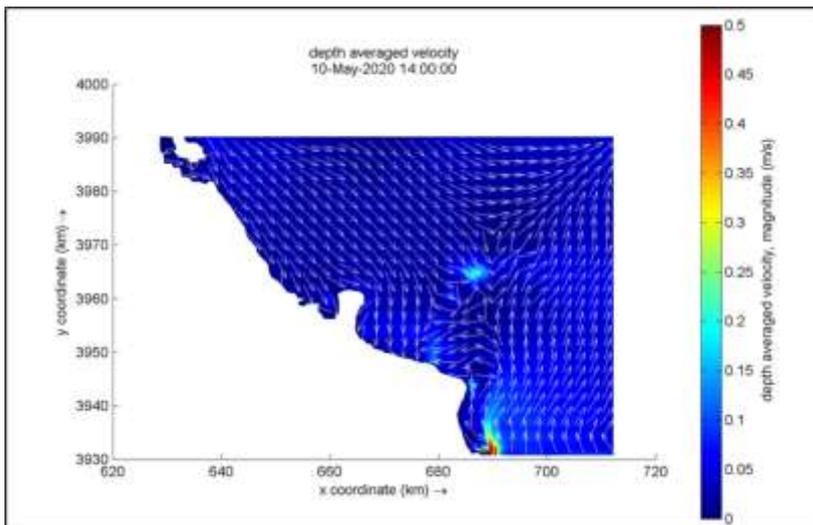
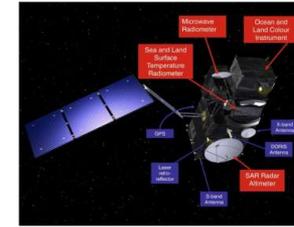
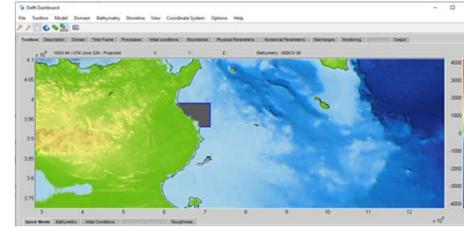
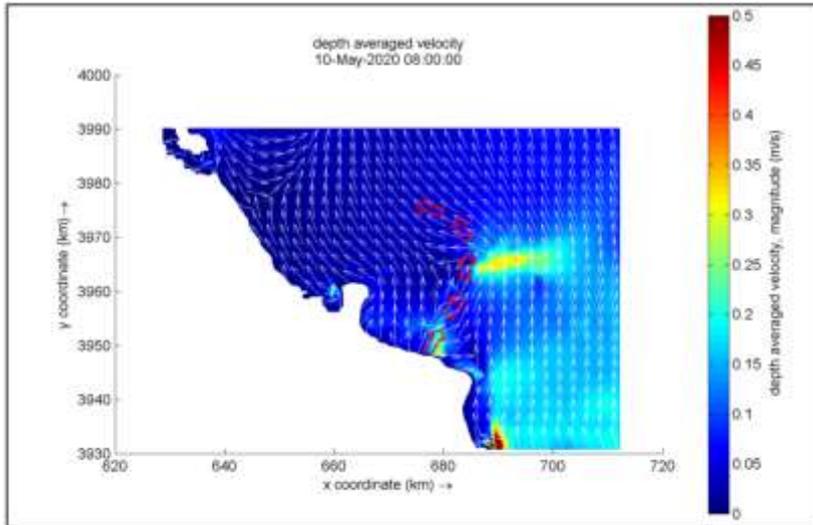
OLCI Sentinel-3 data



During Tunisian End-Users Workshop: « Assessment of the Hydrodynamic and water quality in the area of interest using available data on the platform »



ODYSSEA



Supports and involvement in Professional Workshops

22 – 24 February 2021:

Training on « Geospatial analytics and Remote Sensing for Climate Change Impact on Marine and Coastal Ecosystems » for Egyptian End-Users

Dr. Esraa Aziz El Masry
 Ph.D., Coastal Geology
 Lecturer of Marine Geology
 Oceanography Department
 Faculty of Science
 Alexandria University
 Egypt
 2021

Sea-level Rise

Geoinformatics' applications:

1. Relative Sea level rise (RSLR) through:
Tide gauge stations
Altimetry satellite
2. Absolute SLR (specific area)
= RSLR – land subsidence rate
3. Study of SLR consequences / risk (GIS)
Expected impacts from sea level rise using high-resolution cartographic data
DEM+LULC maps+ SLR scenario= vulnerable areas.



From CMEMS to coastal scales

ODYSSEA

Copernicus Marine Service

Delim-PEWS

Initial and boundary conditions

Copernicus Marine Service

YOUR SEARCH

ODYSSEA ANALYSIS, FORECAST, PRT, DRG, E13

Supports and involvement in Professional Workshops



**2-3 June 2021:
Platform Validation by
Moroccan End-Users &
Operational Oceanography
Training Workshop**

Synergy between ODYSSEA and the IMAP programme of the UNEP/Mediterranean Action Plan (Barcelona Convention)

ODYSSEA - Morocco training workshop

ODYSSEA PLATFORM USER VALIDATION & OPERATIONAL OCEANOGRAPHY
June 2nd-3rd, 2021

ODYSSEA COORDINATOR
UNEP/IMAP - SPA/RAC
UN Environmental Programme/Mediterranean Action Plan
odyssea@unep.org | unep.org/odyssea

UN environment programme SPA/RAC

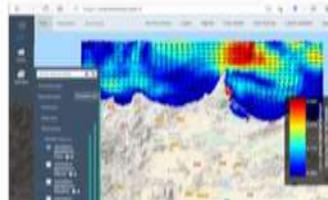
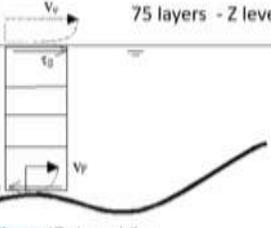


Spatial discretization & running cycle
Morocco Observatory

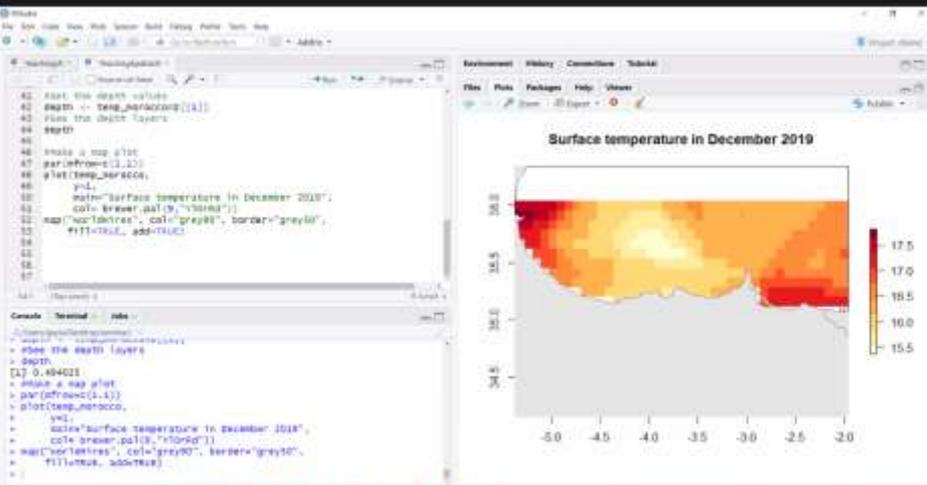


70x250 (~dx = 800m)

75 layers - Z level vertical discretization

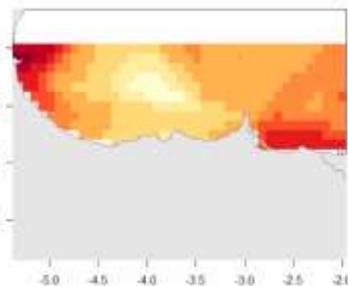


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42. #set the axes values
43. #set the map projection
44. #set the data layers
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Surface temperature in December 2019



Geographic Systems

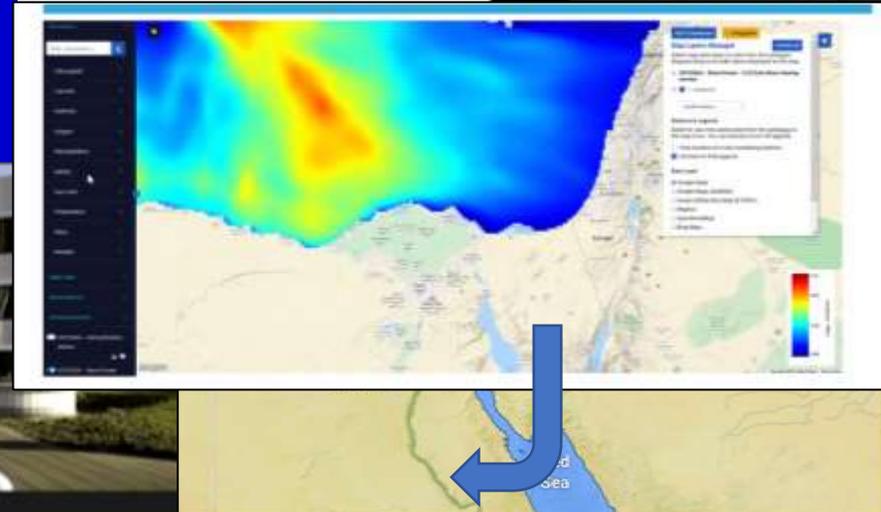
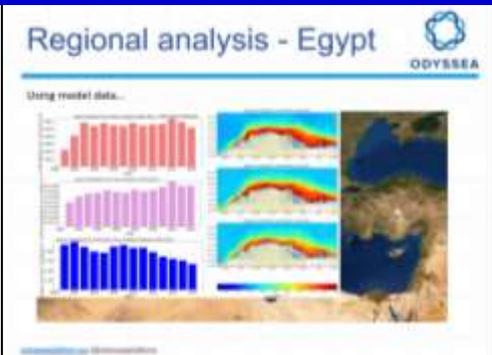
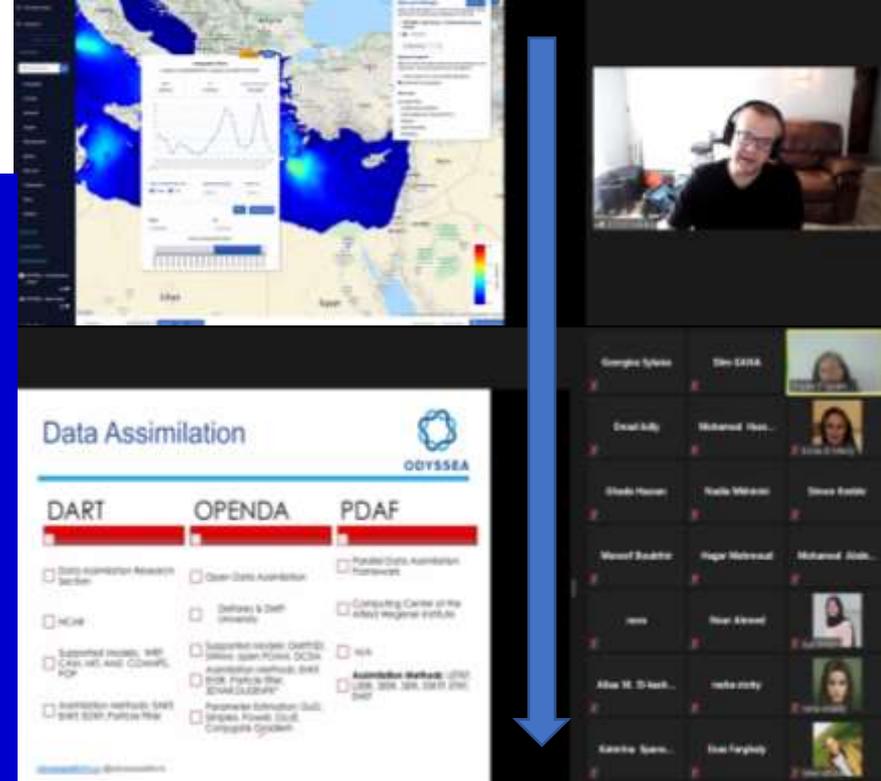


Supports and involvement in Professional Workshops

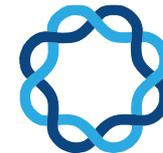
14-15 July 2021:

Platform Validation and Capacity Development workshop for Egyptian End-Users: « Hydrodynamic and Water Quality Modeling based on Marinomica Platform »

- 1. Marinomica demonstration**
- 2. Data Assimilation in Model**
- 3. Wave and current modeling**
- 4. Eutrophication modeling**



Communication in Conferences and Networking



IMPLEMENTATION OF AN INTEGRATED NETWORK OF OBSERVATORIES IN THE MEDITERRANEAN

إرساء شبكة متكاملة لمراكز مراقبة بالبحر المتوسط

"Supporting UN sustainable development goals and regional ecological objectives in the Mediterranean Sea through integrated marine observing systems, capacity building and tailored information services: ODYSSEA(*) project case"

Slim Gana¹, Laura Friedrich², Daniel Cebrian-Menchero², Menelaos Chatzipostolidis³ and ODYSSEA consortium
 (1): SPA/RAC – UN Environment – Mediterranean Action Plan – Tunis. Contact: slim.gana@spa-rac.org
 (2): WCMC – UN Environment – UE - (3): DUTH University – Greece.

Abstract:
 The Mediterranean Sea is governed by a comprehensive framework of global and regional objectives for sustainable development and biodiversity conservation. The Aichi Biodiversity Targets and United Nations (UN) Sustainable Development Goals 13 and 14 set ambitious targets for ecological parameters monitoring programmes, conservation and sustainable use of marine ecosystems and resources.

The European Union (EU) aims to achieve good environmental status in its seas by 2020 through the Marine Strategy Framework Directive, while also driving forward the development of a sustainable blue economy. Moreover, the Integrated Monitoring and Assessment Programme (IMAP) adopted under the UN Environment Mediterranean Action Plan sets out monitoring and reporting requirements for 14 ecological objectives.

While this policy framework aims to ensure a sustainable future for the Mediterranean Sea, countries are facing challenges in implementing and monitoring progress towards the different objectives as this requires considerable technical and institutional capacity (monitoring of marine parameters, data analysis, database management, translation of data to indicators, etc.). Indeed, capacity building, technology and knowledge transfer are recognised as critical to help countries to achieve their commitments by the UN sustainable development and biodiversity conservation agenda, the EU and within the context of IMAP.

The ODYSSEA consortium is currently building an innovative platform and network of marine observatories that will deliver ocean observing data and model outputs to fulfil tailored end-user needs and policy maker requirements. This project supports capacity building efforts in the Mediterranean in three ways:

- First, by setting up a network of integrated marine observing systems, ODYSSEA is increasing the spatial and temporal coverage of oceanographic and ecological monitoring across the region, with a particular focus on data poor areas;
- Second, this is accompanied by focused capacity building activities which will enable North African countries to expand their own monitoring programmes;
- Third, ODYSSEA will facilitate access to key data for decision makers by providing tailored information services through a user-driven online platform, thus enabling them to make well informed decisions for a sustainable blue economy and effective biodiversity conservation in the Mediterranean Sea.

more information: www.odysseaplatform.eu

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 742277.



On the Synergy Between Altimetric data and a WebGIS Platform to Understand Coastal Hydrodynamic Processes: The ODYSSEA Project

12th coastal altimetry workshop – ESA/ESRIN – 4-7 February 2020 – Roma.

Slim Gana, and Daniel Cebrian-Menchero on behalf of ODYSSEA consortium
 SPA/RAC – UN Environment – Mediterranean Action Plan – Tunis. slim.gana@spa-rac.org

Abstract:
 ODYSSEA* is a R&D project funded by EU under the topic "Envision an Integrated Mediterranean Sea Observing System" (ocean.ec.europa.eu). The ODYSSEA consortium is currently building an innovative platform and network of integrated Mediterranean marine and coastal observatories that will deliver ocean observing data and model outputs to fulfil end-user needs and policy maker requirements. Thanks to this system, ODYSSEA is increasing the spatial and temporal coverage of oceanographic and ecological monitoring across the Mediterranean region, with a particular focus on data poor areas.

Olders and static observing stations started to collect and transmit in near real time in-situ data: Temperature, Salinity, Dissolved O₂, Chlorophyll, Microplastics, waves, currents and sea surface level in 9 areas across the Mediterranean. Simultaneously, operational records, with assimilation capabilities (satellite and in-situ data) are being implemented to cover the coastal waters of the 9 areas of interest.

The ODYSSEA platform (Figure 1) integrates all the existing data servers (COMOS, Mercator, Seadatanet, Erosdat, NCEP, ESA, NASA, etc.). The end-users will only have to deal with a unique data server to access to hindcasts, historical maps, water quality and current time-series, satellite data, mission conditions and to forecasts.

The data platform and the numerical model are interfaced using the DELFT-FEWS system, which is a powerful tool for data assimilation, handling time series data and managing forecasting processes. DELFT-FEWS incorporates a wide range of general data handling utilities, while providing an open interface to any external. Thanks to the ODYSSEA system, it is possible to compare the output of the models with satellite data covering the coastal zone, especially regarding sea level variation, in order to validate either model outputs or altimetry data, based on what is already known about the observations areas. As part of a synergistic approach, tests will be done with and without altimetric data assimilation and we will compare quantities as SSH and SLA over a relevant period of time. Besides, the comparison with model output, glider data along Sentinel-3 track will be also compared with altimetric data, in order to shed light on the relation between sea surface signature of structures and what is occurring at depth. Progressively, this synergistic approach will yield to a reliable assimilation of Sentinel-3 altimetric data into the FEWS-DELFT system, along with in-situ data collected by the observatories, in order to better understand the hydrodynamic features occurring in the coastal areas. For more details: www.odysseaplatform.eu

Figure 1: Logical interface of the ODYSSEA platform: choosing the sea surface height in the entire Mediterranean (33.1°N-36.8°N and sea level variation 2016 in Venice (34.3°N, 12°E).

Figure 2: Web user interface accessed by a Web browser (powered by WebGIS, 01/04/2020).

* ODYSSEA project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 742277.

Sept.2019: OceanObs'19 Conference – Hawaii

odysseaplatform.eu | @odysseaplatform

Feb. 2020: 12th Coastal Altimetry Workshop organized by ESA – Frascati - Italy

Communication in Conferences and Networking

**Creating products
and knowledge for
the Mediterranean**



PRESENTATION: “TRAINING AND CAPACITY BUILDING ACTIVITIES”

CBD – COP 14 / Sharm Al Sheïkh – Egypt – 22 November 2018

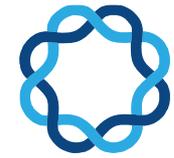
Daniel CEBRIAN-MENCHERO and Slim GANA

SPA/RAC

daniel.cebrian@spa-rac.org

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COP14 → ODYSSEA GOALS COMPLIANCE WITH 2030 AGENDA FOR SUSTAINABLE DEVELOPMENT



ODYSSEA

Monitoring Sea-Level Rise and prevention of Metocean Extreme Events



13 CLIMATE ACTION



ODYSSEA

Monitoring of Water Quality and Pollutants Concentration

14 LIFE BELOW WATER



Increase scientific knowledge, develop research capacity and transfer marine technology

Effective and targeted capacity-building in developing countries



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17 PARTNERSHIPS FOR THE GOALS



Communication in Conferences and Networking



ODYSSEA

23-25 June 2021 : 15th Meeting of SPA/BD Focal Points

 **UNITED NATIONS** **EP**

UNEP/MED WG.502/Inf.14

  **UNITED NATIONS
ENVIRONMENT PROGRAMME
MEDITERRANEAN ACTION PLAN**

24 May 2021
Original: English

Fifteenth Meeting of SPA/BD Focal Points

Videoconference, 23-25 June 2021

Agenda item 7: Status of implementation of the Ecosystem Approach (EcAp) Roadmap

7.2. Status of implementation of the ODYSSEA project on Mediterranean observatories

The ODYSSEA project: Opportunities for supporting the Integrated Monitoring and Assessment Programme (IMAP) through integrated marine observing systems, capacity building and information services

Communication: “The ODYSSEA project: Opportunities for supporting the Integrated Monitoring Programme (IMAP) through integrated marine observing systems, related capacity building and information services”



ODYSSEA

**Creating products and knowledge
for the Mediterranean**

THANK YOU

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