



ODYSSEA

<http://odysseaplatform.eu>



European Space Agency



## VIRTUAL SCHOOL “SATELLITE OBSERVATIONS & DATA PROCESSING IN OPERATIONAL OCEANOGRAPHY” 23-27 November 2020

### JUSTIFICATION OF THE VIRTUAL SCHOOL

In the frame of the EU HORIZON 2020 project ODYSSEA, The ODYSSEA Consortium, composed by 28 partners, including SPA/RAC as manager of the project training package, announces its 3<sup>rd</sup> ODYSSEA School, within its cycle of training on observatories management.

The 3<sup>rd</sup> ODYSSEA School will focus on the synergy between satellite observations of the sea surface and in situ measurements. Due to the Coronavirus pandemic, the 3<sup>rd</sup> ODYSSEA Summer School becomes a virtual one to be organized in November 2020.

Satellite observations are essential to monitor and study the oceans dynamic and water quality. They provide an unmatched spatial and temporal coverage of such key oceanic variables as sea surface temperature and salinity, sea level, ocean colour, surface winds and even floating debris distribution. Most ocean satellite data are freely available on the web for research studies.

Complemented with in situ observing platforms, oceanographers can perform validation/calibration of satellite data and then accurate estimates of selected key sets of biogeophysical variables, with the intention of either making operational predictions across time and spatial boundaries or advancing fundamental knowledge through development of empirical relationships and theoretical models.

The virtual school will give an overview of existing satellite products and their relevance to understand the physical and biological oceanographic processes occurring in the Mediterranean. The main goal of the school is, through theoretical lectured, hands-on training and tutorials, to give technical skills to the participants in handling satellite and in-situ data in synergy, and to develop marine research approach based on multi-sources information, especially for South Mediterranean countries, allowing them to become ready to face the challenges of the next decade 2021-2030, which has been declared by UN as the decade of Oceans.

### OBJECTIVES OF THE VIRTUAL SCHOOL

The objective of this 3<sup>rd</sup> ODYSSEA School is to familiarize students with the "Sentinel Satellites" ocean observation system, to explain the usefulness of each sensor and the bio-geophysical parameters to which they give access and to reinforce their capacity to apply, or even develop, tools analysis of satellite observations, and interpret them in complementarity with in-situ data and numerical models outputs available on ODYSSEA platform. Also, emphasis will be made on the synergy between remote sensing and in-situ data, calibration/validation procedures and data assimilation schemes in numerical model. made on the synergy between remote sensing and in-situ data, calibration/validation procedures and data assimilation schemes in numerical model.

After the end of the program, the trainees will be able to:

- Understand satellite sensors measurements principles and what environmental observations they provide;
- Retrieve and use oceanographic datasets, especially satellites and numerical models' output, and explore international databases on the marine environment;
- Use the ODYSSEA project platform for retrieving, managing and processing oceanographic, environmental and satellite data of the Mediterranean Sea, along with other processing tools;
- Understand data calibration/validation procedures;
- Understand how satellite data are assimilated in numerical models;
- Use the knowledge that have been acquired in their research and work and promote the use of satellite data and ODYSSEA platform in their countries.

## PROGRAMME NOVELTY

Monitoring and forecasting of the marine environmental status are a challenge for oceanographers, as in the last few decades marine ecosystems have been subject to intense pressure under the action of human activities (pollution, extensive fishing and aquaculture, coastal erosion, tourism, etc.) and under the effects of climate change. Therefore, a sustainable blue economy (reconciling marine resources protection and exploitation) requires enhancing the capacity of young marine scientists on real-time monitoring and operational prognostic modelling, in order to be able to assess objectively the environmental status and help in marine spatial planning strategies and in decision-making. On top of that, the volume of data concerning the marine environment collected both by satellites and on-site monitoring instruments is becoming more and more enormous. All these data need to be retrieved, processed, interpreted and then fed into numerical models for reanalysis and forecasting by skilled observatories scientists, focusing on different areas of the Mediterranean.

## TARGET AUDIENCE

The program intends to train Mediterranean oceanographers and marine engineers, young researchers, PhD students or professionals at the early stages of their careers who are interested in learning to manage the available marine environmental, oceanographic and

satellite data to provide targeted and understandable information to the relevant end-users. Note that teaching will be in English.

## SELECTION PROCEDURE

The selection of the trainees (min. 25 - max. 30) will be carried out by an ad-hoc scientific committee composed of specialists in physical oceanography and remote sensing applied to the marine domain.

## PREREQUISITES

Preferably, attendees should have academic background or professional experience on the following topics:

- Physical Oceanography (waves, currents, tides)
- Marine environmental Sciences
- Remote Sensing, use of radiometric and radar data
- Geospatial data processing and scientific computing (Qgis, MatLab, Python)

In view of the ODYSSEA project focus on supporting the development of Mediterranean marine observatories, candidates from or developing their activity in Mediterranean countries will be given priority.

## REGISTRATION AND FEES

Registration and attendance of lectures will be free of charge. When admitted, students are expected to attend all Virtual school sessions.

## PROGRAMME STRUCTURE – THEMATIC MODULES – DESCRIPTION

Remote sensing experts and physical oceanographers will guide students through a combination of lectures and tutorials covering the following topics:

- 1) Introduction to dynamic oceanography;
- 2) Ocean Dynamic using Altimetry;
- 3) Modelling primary production;
- 4) Ocean colour applications for ecosystem state assessment;
- 5) Climate impacts and feedbacks;
- 6) Ocean colour and Altimetry in data assimilation;
- 7) Waves and Winds;
- 8) Datasets archive, management, visualisation and analysis using the ODYSSEA Platform;
- 9) Ocean data retrieval and post-processing.

The detailed agenda of the virtual school will be communicated soon.



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## DEADLINE FOR APPLICATIONS

Please send a CV (preferably in accordance with the Europass template, see here: <https://europass.cedefop.europa.eu/fr/documents/curriculum-vitae/templatesinstructions> and a motivation letter (max 1 page) in English to apply.

The **deadline for the submission of applications is November 8th, 2020.**

Applications should be submitted electronically to the following e-mail addresses:

Daniel-Cebrian [daniel-cebrian@spa-rac.org](mailto:daniel-cebrian@spa-rac.org); cc: [car-asp@spa-rac.org](mailto:car-asp@spa-rac.org)

Slim Gana [slim.gana@yahoo.fr](mailto:slim.gana@yahoo.fr)

Georgios Sylaios [gsylaios@env.duth.gr](mailto:gsylaios@env.duth.gr)

Menelaos Chatziapostolidis [odysseamer@gmail.com](mailto:odysseamer@gmail.com)