1st ODYSSEA Summer School Operational Oceanography for Science, Business and Society Akontisma Hotel, Nea Karvali, Kavala, Greece 3-12 September 2018

Organised by the ODYSSEA Project Hosted by the Democritus University of Thrace Venue: Akontisma Hotel, NeaKarvali, Kavala, Greece ODYSSEA Summer School Kavala 2018





www.odysseaplatform.eu



Objectives of the Programme

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 programme, 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 from 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 in 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.

Programme Novelty

Monitoring and forecasting of the marine environment is a challenge for oceanographers, as in the last few decades marine ecosystems have been subject to intense human pressure (pollution, extensive fishing and aquaculture, coastal erosion, tourism, etc.), coupled with climate change. Therefore, the protection and sustainable economic exploitation of these ecosystems requires real-time monitoring and operational prognostic modeling. In parallel, the volume of data concerning the marine environment collected by both satellites and on-site monitoring instruments is enormous and can be categorised as "Big Data". All these data need to be retrieved, processed, interpreted and then fed into numerical models for reanalysis and forecasting.

The 1st ODYSSEA Summer School introduces trainees to all stages of operational oceanography, contributing towards the Blue Growth of the Mediterranean Sea.

Target Audience

The programme intends to train oceanographers and engineers, young researchers, PhD candidates or professionals at the early stages of their professional careers who are interested in learning to manage the available marine environment data to provide targeted and understandable information to the relevant end users.

Registration Fees and Costs

Registration and attendance of lectures will be free of charge. Students are required to cover all costs related to travel, accommodation, local transportation and other living expenses.

Selection Procedure

The 1st ODYSSEA Summer School received 56 applications from various parts of the world, mostly from Northern African and Middle Eastern countries. After selection the following trainees have confirmed that they will be attending the 1st ODYSSEA Summer School:



Name	Country	Name	Country
Katherine Amorim	Brazil	Meysam Majidi Nezhad	Iran
Hassan Benaissa	Morocco	Konstantinos Michailidis	Greece
Djamel Benmayouf	Algeria	Melina Nalmpanti	Greece
Fadoua Ben Salah	Tunisia	Ilyass Nibani	Morocco
Eleni Bintoudi	Greece	Turgay Oksuzoglu	Turkey
Essam Buzaid	Libya	Thanasis Papadopoulos	Greece
Ahmed Elshazly	Egypt	Hanane Rassam	Morocco
Mirna Gharbi Dit Kacem	Tunisia	Georgios Vagenas	Greece
Amine Kabrane	Algeria	Borut Umer	Slovenia
Souad Lamouti	Algeria	Mohamed Amine Yahyaoui	Tunisia
Hussien Maiyza	Egypt	Elif Yılmaz	Turkey
Anna-Aikaterini Malamidou	Greece		

Programme Structure - Thematic Models - Description

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)
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.			
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)
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, standardising work processes, visualisation and automated reporting. The course will also include the concepts of Delft3D models and their automated execution and under FEWS.			
04/09/2018 Tuesday	15:00- 18:00	Building a (simple) marine ecosystem Model - I	Marco Zavatarelli (UNIBO)
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.			
05/09/2018 Wednesday	09:00 – 13:00	Building a (simple) marine ecosystem Model - II	Marco Zavatarelli (UNIBO)
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.			
05/09/2018 Wednesday	15:00- 18:00	Operational forecasting of oil spill fate and transport in the marine environment	Katerina Spanoudaki (FORTH)
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.			

Date	Hour	Course Title and Description	Tutor
06/09/2018 Thursday	09:00- 13:00	Satellite data analysis – I	Anastasia Papadopoulou (DUTH)
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, visualisation 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.			
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)
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.			
07/09/2018 Friday	15:00- 18:00	Marine Instrumentation & Sensors - The ODYSSEA Concept	Laurent Beguery (Alseamar)
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.			
08/09/2018 Saturday	09:00- 11:00	Satellite data analysis – I	Anastasia Papadopoulou (DUTH)
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, visualisation 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			
08/09/2018 Saturday	11:00- 13:00	From CMEMS Products to Services	Georgios Sylaios (DUTH)
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.			
08/09/2018 Saturday	15:00- 17:00	From CMEMS Products to Services	Georgios Sylaios, Nikolaos Kokkos, Konstantinos Zachopoulos (DUTH)
CMEMS datasets will be explored, retrieved and processed to derive secondary parameters and indicators for test applications and services to potential users.			

Date	Hour	Course Title and Description	Tutor
10/09/2018 Monday	09:00- 13:00	Ecosystem Modeling in the Concept of ODYSSEA	AthanassiosTsikliras (AUTH)
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.			
10/9/2018 Monday	15:00- 18:00	Ecosystem Modeling in the Concept of ODYSSEA	Dona Dimarchopoulou (AUTH)
Selected test cases from Ecosystem models such as Ecopath with Ecosim (EwE) will be presented at this section.			
11/09/2018 Tuesday	09:00- 13:00	Presentation of ODYSSEA Platform V0	Simon Keeble (BLIT)
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.			
11/09/2018 Tuesday	15:00- 18:00	ODYSSEA Platform V0 - User Capabilities	Simon Keeble (BLIT)
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.			
12/09/2018 Wednesday	09:00- 13:00	Business Case Scenarios	Georgios Sylaios, Nikolaos Kokkos, Konstantinos Zachopoulos (DUTH)
Looking at specific business cases and investigating new ideas.			
12/09/2018 Wednesday	15:00- 18:00	Business Case Scenarios	Simon Keeble (BLIT)
Looking at specific business cases and investigating new ideas.			

Useful Information

During each course day there will be two (2) thirty-minute breaks with light snacks and a full buffet meal served.

Students are required to bring their own laptop with Octave (or Matlab) , R and SNAP installed.

SNAP: http://step.esa.int/main/download/ R: https://www.r-project.org/ Octave: https://www.gnu.org/software/octave/ download.html Matlab (Trial software): https://www.mathworks. com/campaigns/products/trials.html

Tutors



Davide Astiaso Garcia, Sapienza University, holds a PhD in Thermal Science, Energy Technology and Building Physics in 2011, is Assistant Professor at Sapienza University of Rome (Dept. of Astronautic, Energetic and Electric

Engineering, Secretary General of the Italian Wind Energy Association (ANEV). His research activities at DIAEE started in 2006. He has scientific expertise in more than 15 national and international research projects (some of them as Project Coordinator) and he is author of more than 50 publications in journals and national and international congresses mainly concerning energy themes.



Donna Dimarchopoulou, Aristotle University of Thessaloniki, is a PhD student who holds a BSc degree in Biology and an MSc degree in Hydrobiology-Aquaculture, both from the Aristotle University of Thessaloniki.

Her research activity focuses on marine biodiversity, fish biology, stock assessment and fisheries management, and marine ecosystem modeling. She is an ECOPATH, GIS and stock assessment certified expert. She has published 7 peer-reviewed journal articles and 14 other items.



Laurent Beguery,

Alseamar, is a Senior Maritime Engineer. He started working at IPGP (Institut de Physique du Globe de Paris), designing ocean bottom seismometers for a European project called

GEOSTAR for about 5 years. The next 5 years, still at IPGPs, he had 23 ocean bottom seismometers to work with and his job changed to Marine Surveyor. Then, for another 5 years he took a position at DT-INSU to create the Glider National Center, working with up to 14 gliders. Since 2014, he has moved from scientific research to industry (Alseamar) to improve glider technology and still continues to operate them.



Dave de Koning, Deltares, has graduated with a degree in Hydraulic Engineering and Water Resources Management focusing on assimilating soil moisture data into hydrological models. At Deltares he specialises in

implementing operational forecasting systems for coastal environments, setting up water information systems following the OpenEarth initiative, and probabilistic forecasting and validation. As an advisor he participates in projects concerning operational forecasts for the riverine and coastal systems.



Dr. Ghada El Serafy,

Deltares, is an expert on mathematical modelling and data sciences for ecosystem health and marine environmental quality. She is actively involved in strategic research within Deltares

while being Assistant Professor of data assimilation and optimisation within the Applied Mathematics Dep. Of TU Delft. She is experienced in uncertainty and sensitivity analysis, and data assimilation. She has deep knowledge of integrating Earth Observation in monitoring strategies and assessment.



Simon Keeble is the Technical Director of UK based creative software development agency Blue Lobster IT Limited. He is an experienced technical lead who has worked in web and software development for over 25

years, with the last 10 years developing unique software solutions that engage stakeholder groups in National and International projects and initiatives relating to marine and aquatic observatories.



Nikolaos Kokkos is a PhD graduate of the Department of Environmental Engineering, Democritus University of Thrace, Greece. Currently he works in ODYSSEA and HERMES research projects. He speaks

English fluently and he is experienced in the numerical modeling of coastal hydrodynamics and biogeochemical processes.



Glenn Nolan currently works as Secretary General of the European Global Ocean Observing System (EuroGOOS AISBL) based in Brussels, Belgium. He leads EuroGOOS in delivering the 2015-2020 strategic plan to promote,

cooperate, co-produce and sustain Europe's Ocean Observing System. EuroGOOS is an international non-profit organisation with 41 members in19 countries charged with promoting and developing operational oceanography as Europe's contribution to the Global Ocean Observing System.



Dr. Anastasia Papadopoulou,

Democritus University of Thrace, is currently a postdoctoral researcher in the Department of Environmental Engineering at the Democritus University of Thrace in

Greece. Dr. Papadopoulou received her Ph.D in Optical Oceanography from the University of the Aegean in Greece, while she obtained Heracleitus II Ph.D Fellowship by the Education and Lifelong Learning Operational Programme. Her research interests focus on the calibration and validation of ocean colour remote sensing data and on the ocean optics.



Dr. Katerina Spanoudaki,

IACM-FORTH, is an expert in numerical modeling and monitoring of environmental processes, such as flow and quality of inland, transitional, coastal and marine waters. Her current research interests focus on

mathematical modeling of ocean circulation and marine pollution (oil spills, marine litter). She has participated in over 30 relevant national and EU funded projects and is a member of the steering committee of the oil spill MEDSLIK-II community model.



Professor Georgios

Sylaios, Democritus University of Thrace, is a graduate of the Department of Geology, University of Patras, Greece. He works at the Department of Environmental Engineering specialising

in the 'Management and Modeling of Coastal Aquatic Systems'. He has been the Greek representative in the International Scientific Committee of UNESCO for Ecohydrology and national representative in the International Scientific Committee for the typology and classification of coastal ecosystems according to the WFD. His published work comprises of 67 scientific journal papers, 9 book chapters and more than 50 international conference proceedings with works in a broad field of coastal hydrodynamics, ecosystem modeling and water quality.



Associate Professor Athanasios Tsikliras, Aristotle University of Thessaloniki, School of Biology, focuses his research on fish biology, stock assessment and fisheries, the effect of

climate on fish populations, and ecosystem management. He has been involved in 30 projects, serves as associate editor in 3 journals and editorial board member in 5, and chairs the ICES Working Group on Small Pelagic Fishes, their Ecosystems and Climate Impact. Author of 66 journal articles, 2 books, 12 book chapters and 150 other items. His work has received over 1500 citations (h-index=22).



Konstantinos

Zachopoulos, Democritus University of Thrace, is a Marine Scientist who holds a BSc degree in Marine Sciences in University of the Aegean and an MSc degree in Marine Renewable Energy in Heriot

Watt University, Orkney Islands Campus. He is currently a PhD candidate in the Department of

Environmental Engineering at the Democritus University of Thrace in Greece. He specialises in marine renewables, satellite image analysis and numerical modeling.



Associate Professor Marco Zavatarelli, at the Physics and Astronomy Department and at the Inter department Center for Environmental Sciences of the Alma Mater Studiorum Università di Bologna. He holds a doctorate

in Marine Environmental Sciences. Former research positions at Princeton University (USA), the Danish Hydraulic Institute-Ecological Modelling Centre (DK), the International Institute for Applied Systems Analysis (A) and the National Research Council (I). His main scientific activity is in the field of numerical modelling of the ocean general circulation and ecosystem dynamics. He has participated in many EU funded projects mainly concerned with circulation and ecosystem dynamics. He is author of more than 30 internationally peer-reviewed papers, with more than 800 quotations and an H index 15.



Akontisma Village Hotel, Nea Karvali, Greece

Practical Information

Location and access: Kavala is a coastal city in Northeastern Greece and the principal port of the Region of Eastern Macedonia -Thrace, located about 150 kilometers east of Thessaloniki. The standard way to reach Kavala is to catch a connecting flight from the Athens Eleftherios Venizelos Airport to the local Kavala "Megas Alexandros" Airport. Another way to reach Kavala is by plane is through the International Makedonia Airport of Thessaloniki which has numerous daily direct flights linking it to many major European cities. The ride from Thessaloniki Airport to Kavala is about an hour and a half of an easy drive, all on the Egnatia Motorway. For more info about Kavala please go here https://www.visitkavala.gr/en/

Accommodation will be provided at Akontisma Hotel. A reconstitution of Greek villages in Cappadocia (Asia Minor) Akontisma offers a selection of stone-built individual Single and Double rooms surrounded by lush greenery, near the coastal community of Nea Karvali of Kavala, with amenities corresponding to those offered by a 4 star hotel.

Special rates (see Reservation Form) for the ODYSSEA Summer School students and trainers include breakfast, two coffee breaks and a full buffet meal to be served during lunchtime or later in the evening if that is the common request of participants.

Hotel Akontisma is at a few minutes walking distance (500 m) from the village of Nea Karvali, 12km from the centre of the city of Kavala and about 20km from the local Megas Alexandros airport.

More information: KAPLANIS IOSIFIDIS, T. +302510316192, +302510316790, M. + 306970121288 akontismavillage@gmail.com with cc to odysseamer@gmail.com

Student Credits

Participants successfully attending the Summer School will be awarded a certificate of attendance which will provide them with 6 ECTS.

Summer School Secretariat

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