2024 IEEE INTERNATIONAL WORKSHOP ON

Metrology for the Sea

PORTOROŽ, OCTOBER 14-16, 2024

[FINAL PROGRAM]

MetroSea
SLOVENIA 2024

2021 2030 United Nations Decade of Ocean Science for Sustainable Development

Commissione Oceanografica Italiana

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Welcome Message from the General Chairs

On behalf of the Organising Committee, we welcome you to Slovenia!

The event in Portorož follows a successful event in Malta, the first outside and on another side of Italy. The 2024 IEEE International Workshop on Metrology for the Sea (*MetroSea 2024*) will take place at the Hotel St. Bernardin, between the two important institutions supporting this meeting, the Faculty of Maritime Studies and Transport of the University of Ljubljana, the launch pad for young seafarers, and the National Institute of Biology in Piran, the only Slovenian institution that studies the sea and monitors its quality. The remains of the former monastery consist of a well-preserved and significant bell tower, the presbytery of the church and the retaining wall with arches. The use of this building dates back to the 15th century and is dedicated to St Bernardine of Siena. The activities in the monastery ended in the 19th century and the Austrian Army later used the complex as a fortress from which the soldiers defended the bay. The hotel serves as a prestigious setting for the organisation of international conferences, seminars, short courses - and holidays.

The conference is jointly organized by national sections IEEE Italian Section, IEEE Slovenian Section and IEEE Bulgarian Section, as well by the IEEE Ocean Engineering Society (OES) and IEEE Instrumentation and Measurement Society involving several Chapters:, IEEE OES Italian Chapter, IEEE Italian Instrumentation and Measurement Chapter, IEEE Sensors Council Italy Chapter, IEEE Women in Engineering Italian and Bulgarian Section Affinity Groups and IEEE Italian and Slovenian Sections of Young Professionals.

We are pleased that the *IEEE MetroSea* conference is sponsored by UNESCO as an Ocean Decade activity, underlining the conference's support for sustainability, and again by the IEEE Oceanic Engineering Society, testifying to its value and role in Society.

The sea is the special kind of water in which life on planet Earth began and which we all want to stay and evolve, even if we humans have to change our habits to do so. It is the water that made it possible for humans to travel from one continent to another in the first place and that they still use today, even though there are other means. It is also a great reservoir and a source of food for all living creatures. However, for generations it has served as a dumping ground for quietly and unpleasantly growing amounts of waste, especially on the seabed, and the battle to exploit the non-food minerals and resources it contains has begun. Its health is a major challenge to the survival of humanity, as it is one of the most important environmental components threatened by global warming.

Mastering the measurement of marine health parameters is a challenge for all of humanity, as evidenced by the growing interest in marine science. New technologies and analytical methods in this field have significantly improved the ability to obtain more detailed marine data by combining numerical approaches and measurement systems. For example, advances in computer science, data acquisition, modelling, spectrometric techniques, analysis and remote sensing have fostered collaboration between different scientific disciplines based on the measurement and interpretation of marine data. This multidisciplinary convergence includes

the understanding and modelling of physical/chemical/biological processes and the transition to advanced digital techniques such as artificial intelligence and tools such as digital twinning to address the scientific and operational challenges of our seas and oceans.

The advantages of taking a multidisciplinary approach have minimized the uncertainty in marine technical research. The 2024 IEEE International Workshop on Metrology for the Sea is focused on bringing together individuals involved in creating instruments and measurement techniques for sea-related purposes. It will address, among other topics, new technologies for monitoring the marine environment, utilizing metrology in sea industry production, measuring ship components, sensors and signal conditioning tailored to maritime use, and calibration methods for electronic testing and measurement specific to marine applications.

In order to promote and to outpin breakthrough research on these topics, authors of all the above relevant contributions are welcome to submit an extended version to the special issue of Journal of Marine Science and Engineering (ISSN 2077-1312) "**Global Navigation Satellite System for Maritime Applications"**, by 30 November 2024. More details were available on the website.

The Workshop Technical Program consists of three parallel oral sessions (handling 13 special sessions and the regular ones), and a poster session scheduled over three days. The technical program encompasses several events and activities. With the wide range of technical sessions covering the many fields of metrology for the sea we are happy to welcome you to the variety of technical presentations that await you this year. In particular, we welcome the members of the IEEE Oceanic Engineering Society that supports the Workshop in several ways.

We deeply thank the keynote speakers:

- *Milena Horvat*, Jožef Stefan Institute, Department of environmental sciences, Slovenia, will speak about "***Metrological Challenges of Emerging Contaminants in the Marine Environment***".
- *Roberto Sabia*, European Space Agency, will report and highlight challenges on "***ESA Ocean Remote Sensing Activities and Perspectives***".
- *John R. Potter*, Norwegian University of Science and Technology, Norway, will discuss on "***What next for ocean sensing and monitoring?***"

We are pleased to have them as plenary speakers and thank them in advance for coming to our conference to share their valuable knowledge and experiences with us.

The technical program also includes:

- Panel Session on "***Observing platforms for studying climate change and biodiversity in coastal areas and lagoons - a focus on the Venice Lagoon use-case***", organized by Filippo Campagnaro, Department of Information Engineering - University of Padova, Italy
- **Tutorial** on "***Solar Photovoltaics - From Basics to Marine Application***", organized by Matevž Bokalič, University of Ljubljana, Slovenia, on the premises of the University of Ljubljana.
- **Tutorial** on "***Hydrographic Drone Workshop***", in-depth description of autonomous hydrographic survey technologies, organized by Andrea Faccioli, CODEVINTEC Italiana srl, Italy;

- **Tutorial** on "*Photogrammetry for Coastal and Underwater Environments: Techniques, Applications, and Challenges*", organized by Silvio Del Pizzo, University of Naples Parthenope, Italy.
- **Technical visits** are organized to the neighbouring National Institute of Biology in Piran.

Four Awards are offered by International Institutions and Companies, and they will be assigned to young researchers.

In an effort to create a unified platform for researchers to share their discoveries in the field of marine metrology, the Workshop remained to keep a respectful number of special sessions. This expansion facilitates the natural meeting of experts and promotes discussions in their specific research areas. We thank the organisers of these special sessions for their cooperation and support in the organisation of the Workshop.

We would also like to thank the people who make this workshop possible every year. We are grateful for the invaluable contributions of all the authors and reviewers, as well as for the financial and moral support of our sponsors.

Finally, we would like to deeply thank all our Patrons and Sponsors.

We all share a deep respect for the Sea, its health and its life. So, the IEEE International Workshop on Metrology for the Sea 2024 is just around the corner, and I wish you good luck and calm seas!

<div align="right">

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IEEE MetroSea 2024 Keynote Speakers

Plenary Session - Monday October 14 - H 10:20

Metrological Challenges of Emerging Contaminants in the Marine Environment

Milena **Horvat**

Jožef Stefan Institute, Department of Environmental Sciences, Slovenia

ABSTRACT

The metrology of marine pollutants involves the precise measurement and analysis of contaminants in marine environments, essential for understanding the impact of pollution on ocean ecosystems and human health. While traditional pollutants like potentially toxic elements and persistent organic pollutants (POPs) have been extensively monitored, emerging contaminants such as pharmaceuticals, microplastics, and endocrine-disrupting chemicals are now of significant concern. These contaminants pose metrological challenges due to their diverse sources, persistence, and potential for bioaccumulation, as well as their presence at low concentrations. Advances in analytical methods, in particular mass spectrometry, have improved detection and quantification of these trace contaminants. However, accurate assessment also relies on effective sampling methods. Passive sampling techniques, such as diffusive gradients in thin films (DGT) and polar organic chemical integrative samplers (POCIS), are gaining traction for their in situ deployment and time-integrated results.

Despite these advancements, significant challenges remain in calibration, the development of standardized procedures, and the availability of certified reference materials. Establishing a traceability chain and obtaining comparative results across studies are further complicated by the lack of these reference standards. This lack hinders the ability to produce reliable and comparable data, which is critical for assessing pollution levels and impacts accurately. International collaboration and robust regulatory frameworks are crucial to address these issues effectively. Coordinated efforts are needed to develop and validate new methodologies, create comprehensive reference materials, and ensure consistency in monitoring practices globally. This collective approach is vital for protecting marine biodiversity and human health from the threats posed by emerging contaminants.

SPEAKER BIOGRAPHY

Prof. Milena Horvat is the head of the Department of Environmental Sciences www.environment.si (since 1997) at the Jožef Stefan Institute and the dean of the Jožef Stefan International Postgraduate School - www.mps.si (since 2016) in Ljubljana, Slovenia. Her main expertise is in the field of mercury research, which is interdisciplinary and covers the fields of analytical chemistry, human health, polluted areas, the marine environment, and clean technologies and sensor development. She worked as a senior researcher at the Marine Environmental Laboratory of the International Atomic Energy Agency (IAEA) in Monaco for five years, focusing on marine research and capacity building among member states to conduct marine pollution studies. Her efforts significantly contributed to enhancing the capabilities of various countries in monitoring and managing marine pollution. She is the author and co-author of over 300 articles in SCI journals and 24 book chapters. She has organized several international conferences and workshops and has been the guest editor of 16 special issues of journals, including Environmental Health Perspectives, Environmental Research, Analytical and Bioanalytical Chemistry, Marine Chemistry, ...). She received the national Ambassador for Science Award in 2002, the national Zois Award for Research Excellence on 2014, and the international Life of Achievement Award at ICMGP in 2019. She has been a supervisor of 18 Doctoral Dissertations and several master's and diploma theses.

Plenary Session - Tuesday October 15 - H 11:00

ESA Ocean Remote Sensing Activities and Perspectives

Roberto **Sabia**
European Space Agency

ABSTRACT

The keynote intends to cover a wide range of European Space Agency (ESA) satellite activities, projects and initiatives on the oceanic domain, with a distinctive focus on the science of the remote measurements and the related geophysical parameters retrievals.

This will showcase the portfolio of projects within the Science for Society Ocean Science Cluster, which embodies 40+ projects exploiting spaceborne assets for the estimates of a diverse set of physical and biogeochemical oceanic variables. A specific focus will be on the EC-ESA joint Earth System Science Initiative (ESSI) with an emphasis on the collaborative ocean projects.

In a wider perspective, a subset of activities within the frame of the ESA Climate Change Initiative (CCI) programme will be described, debriefing specifically on the ocean Essential Climate Variables (ECVs) that are monitored within CCI, e.g.: Sea Surface Temperature, Sea Surface Salinity, Ocean Colour, Sea Level and Sea-state.

Lastly, a sketchy overview on the aquatic domain activities within the scope of the Fiducial Reference Measurements (FRMs) will be given, to provide awareness of the qualified selection of in-situ measurements to be used for satellite data validation.

SPEAKER BIOGRAPHY

Roberto Sabia was born in Napoli, Italy, in 1975.

He graduated cum laude in Environmental Sciences, curriculum in Oceanography, at Universitá Parthenope in Napoli, Italy (2002), and obtained the Ph.D. cum laude in Signal Theory and Communication at Universitat Politecnica de Catalunya (UPC) in Barcelona, Spain (2008), with a Thesis on the ocean salinity retrieval applied to the ESA Soil Moisture and Ocean Salinity (SMOS) mission. In 2006, he was visiting Ph.D. student at NOC, Southampton, UK. From 2010 to 2013, he was an ESA post-doc Research Fellow at ESA-ESRIN, Frascati, Italy. In 2013, he was with Telespazio-UK Ltd. seconded at ESA-ESTEC, Noordwijk, the Netherlands, and since 2015 at ESA-ESRIN, Frascati, Italy, with coordination responsibilities on several oceanographic projects. In 2023, he has been appointed Earth Observation Ocean Scientist at ESA-ESRIN, Frascati, Italy. In 2008, he was the recipient of the best Ph.D. award in Remote Sensing of the European IEEE GRS Society. In 2010, he has led a European COST Action proposal titled "SMOS Mission Oceanographic Data Exploitation (SMOS-MODE)", successfully funded for the period 2011-2015. In 2018 he obtained the APM Project Management Qualification (PMQ).

His research interests are within the ocean remote sensing and climate change domains - specifically on ocean salinity, carbon cycle and ocean acidification.

What next for ocean sensing and monitoring?

John R. **Potter**

Norwegian University of Science and Technology, Norway

ABSTRACT

For tens of thousands of years, mankind treated our planet as if it had infinite capacity to provide resources and absorb our waste. This was fine. Until the industrial revolution. The first wake-up call to reach a wide audience was probably Rachel Carson's 'Silent Spring', published in 1962. In the following 50 years it became apparent that we had to think differently if we were to survive; sustainably, with circular economic models and recycling. But "We cannot protect something we do not love, we cannot love what we do not know, and we cannot know what we do not sense. (paraphrased from Richard Louv). In this regard, the ocean, covering 70% of our planet, providing 50% of the oxygen we breathe, and much of the food we eat, has been sadly the most neglected. Why? Because it is deep, dark, and the pressures and corrosive nature of its environment make observation, even survival, difficult.

But you and I are privileged to live in a special time, one in which robotics (which does not care so much about pressure, or lack of oxygen to breathe) can be deployed to sample the ocean. But robotics alone would not suffice. The ocean is not kind to electromagnetic waves, which makes everything from radio communications to GNSS (GPS) fail underwater. The sole remaining technology for long-distance communication is acoustics, which suffers from severe bandwidth limitations. So how can we overcome this? Fortunately, we have not only emerging robotic maturity, but also AI to help us. AI can be applied in two very distinct ways to solve this problem. At the outer, overview levels, AI can provide the Deep Learning capabilities that we need to mine the enormous quantity of data that will be delivered from robotic systems. At the local level, applying edge computing, AI will allow small robotic systems to act intelligently and independently, analysing and reacting to their own sensory system data streams, to take intelligent decisions without the need for detailed external control.

In this way we have an opportunity, applying maturing robotics technology and AI, to deliver the essential data and understanding we need to responsibly manage our planet's resources. We have a huge challenge ahead of us, make no mistake. But there is reason to be optimistic, if we can bring these technologies to bear, and thereby contribute a critical component of the solution to the current crises.

SPEAKER BIOGRAPHY

Prof. John R. Potter earned a Joint Honours Maths and Physics BSc. from Bristol and a PhD. in Glaciology and Oceanography from Cambridge working in the Antarctic, where he spent four consecutive summers studying ice mass balance. He was awarded the Polar Medal by Queen Elizabeth II in 1988. Dr. Potter was at NATO in Italy, working on acoustic propagation fluctuations, 1986-1991 where he found and married his lifetime soulmate. This was followed by sailing across the Atlantic and through the Panama Canal to San Diego where he worked at Scripps Institution of Oceanography on Ambient Noise Imaging and marine mammal acoustics. In 1995 Dr. Potter sailed across the Pacific (with his growing family) and on to Singapore where he founded the Acoustic Research Laboratory (ARL) and co-founded the Tropical Marine Science Institute (TMSI) in NUS. John headed the ARL and was an Associate Director of the TMSI for 12 years, working on passive acoustic imaging, marine mammal acoustics, autonomous sensing and underwater communications networking. In 2004 he took a 'Seabbatical' year with his family, circumnavigating the Indian Ocean by sailboat on a sponsored voyage of research, public outreach, and education. In 2007 he returned to Italy, first as a consultant and then as project leader at the CMRE on communication networking. He then served as a Principle Strategic Development Officer at CMRE, before leaving in 2018 to work on his boat in New Zealand. He recently took up a full Professorship at NTNU in Trondheim, Norway where he now works on marine mammals and Distributed Acoustic Sensing over Fibre Optic cables.

Dr. Potter is a Fellow of the IEEE and MTS, IEEE OES Distinguished Lecturer, Associate Editor for JOE and JASA, PADI Master Scuba Diver Trainer and an International Fellow of the Explorer's Club, among other things. It is no longer true that he neither owns nor operates a television.

IEEE MetroSea 2024 Tutorials

Tutorial Session - Tuesday October 15 - H 16:00

Solar Photovoltaics - From Basics to Marine Applications

Matevž **Bokalič**

Faculty of Electrical Engineering, University of Ljubljana, Slovenia

ABSTRACT

This talk provides a concise overview of solar photovoltaic (PV) technology, from fundamental principles, to marine applications. It begins by exploring the interaction between sunlight and photovoltaic cells, discussing concepts such as photon absorption, carrier generation, and recombination resulting in the theoretical efficiency limit. An overview of different PV technologies is given. The transition from individual cells to modules and large-scale power plants is explained, alongside the role of power electronics and grid connection.

The fluctuating PV energy production results in weather influenced daily and yearly cycles that require battery storage and emerging "Power to X" technologies to support green transition of electricity generation. A market overview outlines key trends, including the steady decline in PV system prices and the global growth of PV installations, which surpassed 1 TW in 2022.

Last part of the talk focuses on the marine context including floating PV systems, PV integration on vessels and off-grid buildings such as lighthouses as well as remote weather stations. Finally, the metrological and reliability challenges of marine PV applications are discussed, including the effects of water reflections, salinity, and system degradation.

SPEAKER BIOGRAPHY

Matevž Bokalič received his PhD from University of Ljubljana in 2013. He continued his research with Laboratory of Photovoltaics and Optoelectronics at University of Ljubljana. He focuses on spatial characterization of photovoltaic devices, and investigation of meta-stabilities and long-term operation of photovoltaic devices. His research highlights include introduction of electroluminescence imaging to characterization of dye-sensitized solar cells, invention of the bandgap imaging method and a book entitled "Spatially Resolved Characterization in Thin-Film Photovoltaics".

Photogrammetry for Coastal and Underwater Environments: Techniques, Applications, and Challenges

Silvio **Del Pizzo**
University of Naples "Parthenope", Italy

ABSTRACT

The coastal and underwater environments are not only vital hubs of biodiversity but also but also play an important role in the economic and cultural life of the entire world. These dynamic ecosystems face unprecedented threats from climate change, pollution, and urbanization. For these reasons, the UN Agenda 2030 for Sustainable Development calls on the entire scientific community to adopt innovative and sustainable approaches to study, monitor and safeguard our coastal and underwater environments. In this tutorial we will explore how photogrammetry emerges as a powerful tool for addressing this challenge, offering sustainable techniques to survey and monitor these important environments. Photogrammetry employs the principles of remote sensing and image analysis, presenting a sustainable alternative to conventional surveying methods. Leveraging aerial and submarine drones, photogrammetry allows to acquire intricate details of coastal landscapes without disturbing fragile ecosystems.

This Tutorial Session aims to explore the latest advancements, challenges, and applications in photogrammetry; describing the principal theoretical background and leading-edge methodologies, currently used during surveying sessions both in coastal area and underwater environment. The tutorial is based on lectures focused on selected topics that cover the entire classical photogrammetric workflow along with "learning by doing" sessions, where the participants will work with real photogrammetric dataset and will solve real issues.

The detailed content is structured as follows:

UNDERWATER PHOTOGRAMMETRY

- Theory: Image sensors and their features, lens and their features, the main phases of the photogrammetric workflow, planning of a photogrammetric survey, photogrammetry in underwater environments.
- Practice: chose the correct lens and sensor, lens calibration, plans a photogrammetric acquisition, create a 3D model using an underwater image dataset.

SPEAKER BIOGRAPHY

Silvio Del Pizzo is an Associate Professor at the Department of Science and Technology of the University of Naples "Parthenope" and a PArthenope Navigation Group (PANG) Laboratory member. He previously worked as Assistant Professor (RTDb) at the same University, where he obtained a PhD in Geodetic and Topographic Science at the University of Naples Parthenope in May 2013. His research activities are focused on the geomatic field and specifically his main interests are Camera sensors, Photogrammetry, Computer Vision, and Remote Sensing applied to navigation, furthermore during the last years he worked on GNSS positioning, Visual Navigation, and Measurements Integration algorithms. From August 2013 he worked as a postdoctoral researcher in several projects of the University of Naples "Parthenope" with Navigation, Positioning, and Remote Sensing as the main topics. He is the author of more than 50 publications in journals and international conferences.

Tutorial Session - Wednesday October 16 - H 09:00

Hydrographic Drone Workshop

Codevintec

ABSTRACT

This workshop will provide an in-depth description of autonomous hydrographic survey technologies.

Topics covered include an overview of sonar and underwater survey instruments, as well as autonomous surface and underwater vehicles. Participants will gain experience with a compact, high payload capacity ASV and observe real-time data acquisition and analysis. The workshop aims to enhance participants' knowledge in applying this technologies for scientific and commercial purposes.

AGENDA

- Welcome and Greetings (introduction of the organizers and the workshop objectives)
- Overview of Sonar and Underwater Survey Instruments
- Overview of Autonomous USV and ASV Vehicles
- Detailed Description of the CK-14 Drone
- Description of the Payload Used in the Practical Demonstration
- Mission Planning with Hydrographic Software PDS
- Live Data Acquisition - Coffee Break
- Analysis and Interpretation of Acquired Data
- Open Q&A Session

IEEE MetroSea 2024 Venue

IEEE **MetroSea 2024** will be held at **Grand Hotel Bernardin - Portorož, Slovenia**.

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6320 Portorož, Slovenia

Use the QRCode to open the location on *Google Maps*

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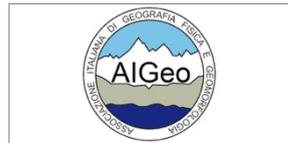
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Program Schedule - Monday, October 14

MONDAY, OCTOBER 14, 2024		
10:00 - 10:20	Opening Ceremony - Welcome Addresses	
10:20 - 11:00	Keynote Session #1 - Milena Horvat, Jožef Stefan Institute, Department of Environmental Sciences, Slovenia Metrological Challenges of Emerging Contaminants in the Marine Environment	
11:00 - 11:20	Coffee Break	
11:20 - 13:00	S1.1 - Toxicity and Ecological Risk Assessment of "Contaminants of Emerging Concern" in the Marine Environment	S1.2 - Embedded systems in seaborne applications	S1.3 - Towards Transparent Ocean using Underwater Sensor Networks
13:00 - 14:00	Lunch	
14:00 - 15:40	S2.1 - Methodologies and ecological indicators for the monitoring of anthropogenic impacts in transitional waters and marine ecosystems - PART I	S2.2 - AI Techniques for Marine Environment Preservation and Climate Change Impact Assessment - PART I	S2.3 - Remote sensing for marine and coastal area applications
15:40 - 16:00	Coffee Break	
16:00 - 17:20	S3.1 - Methodologies and ecological indicators for the monitoring of anthropogenic impacts in transitional waters and marine ecosystems - PART II	S3.2 - AI Techniques for Marine Environment Preservation and Climate Change Impact Assessment - PART II	
19:00	Welcome Reception Grand Hotel Bernardin - Lobby Bar	

Program Schedule - Tuesday, October 15

TUESDAY, OCTOBER 15, 2024			
09:00 - 10:40	S4.1 - Recent advances about the safety of ship and navigation - PART I	S4.2 - An Integrated Perspective To Monitor Coastal Environments: Sensors, Methodologies And Analysis Tools - PART I	S4.3 - New metrological approaches for monitoring the status of aquatic habitats and its changes - PART I
10:40 - 11:00	Coffee Break / Poster Session #1		
11:00 - 11:40	Keynote Session #2 - Roberto Sabia, ESA ESA Ocean Remote Sensing Activities and Perspectives		
11:40 - 13:00	S5.1 - Recent advances about the safety of ship and navigation - PART II	S5.2 - An Integrated Perspective To Monitor Coastal Environments: Sensors, Methodologies And Analysis Tools - PART II	S5.3 - New metrological approaches for monitoring the status of aquatic habitats and its changes - PART II
13:00 - 14:00	Lunch		
14:00 - 15:40	S6.1 - Remote sensing, in-situ surveys, and GIS applications for marine and coastal areas - PART I	S6.2 - An Integrated Perspective To Monitor Coastal Environments: Sensors, Methodologies And Analysis Tools - PART III	S6.3 - New metrological approaches for monitoring the status of aquatic habitats and its changes - PART III
15:40 - 16:00	Coffee Break / Poster Session #1 (continue)		
16:00 - 17:40	Tutorial Session #1 - Faculty of Engineering - University of Ljubljana Matevž Bokalič, University of Ljubljana Testing and the Use of Photovoltaics		
20:00	Gala Dinner Restaurant Arkade - Hotel Histrion		

Program Schedule - Wednesday, October 16

WEDNESDAY, OCTOBER 16, 2024				
09:00 - 10:20	S7.1 - Technologies, techniques and methodologies for coastal monitoring - PART I	Tutorial Session #1 Silvio Del Pizzo, Parthenope University of Naples Photogrammetry for Coastal and Underwater Environments: Techniques, Applications, and Challenges	S7.3 - Innovative Approaches in Conservation Strategies For Sedentary Marine Fishes	Tutorial CODEVINTEC - HYDROGRAPHIC DRONE WORKSHOP
10:20 - 10:40	Coffee Break / Poster Session #2			
10:40 - 12:20	Panel Session - Observing platforms for studying climate change and biodiversity in coastal areas and lagoons			
12:20 - 13:00	Keynote Session #3 - John R. Potter, Norwegian University of Science and Technology, Norway What next for ocean sensing and monitoring?			
13:00 - 14:00	Lunch			
14:00 - 15:40	S8.1 - Technologies, techniques and methodologies for coastal monitoring - PART II	S8.2 - Remote sensing, in-situ surveys, and GIS applications for marine and coastal areas - PART II	S8.3 - Exploring the Depths: Progress and Challenges in Surveying Underwater Environments	
15:40 - 16:00	Coffee Break / Poster Session #2 (continue)			
16:00 - 16:30	Closing and Award Ceremony			

Technical Program - Monday, October 14

09:00 - 18:00	*Grand Hotel Bernardin - Foyer* **REGISTRATIONS**

10:00 - 10:20	*Grand Hotel Bernardin - Room Europa A* **OPENING CEREMONY**

10:20 - 11:00	*Grand Hotel Bernardin - Room Europa A* **PLENARY SESSION - KEYNOTE SPEAKER** **Chair**: Franc Dimc, *University of Ljubljana, Slovenia*

Metrological Challenges of Emerging Contaminants in the Marine Environment

Milena Horvat, *Jožef Stefan Institute, Dept of Environmental Sciences, Slovenia*

11:00 - 11:20	*Grand Hotel Bernardin* **COFFEE BREAK**

11:20 - 13:00	*Grand Hotel Bernardin - Room Europa A* **Session 1.1 - Toxicity and Ecological Risk Assessment of "Contaminants of Emerging Concern" in the Marine Environment** **Chair:** Francesca Biandolino, *National Research Council, Italy*

11:20   **Microcosm Culture of a Shallow Hydrothermal Water Reveals a Shift of Microbial Communities**
Carmen Rizzo (Stazione Zoologica Anton Dohrn, Italy & National Research Council, Institute of Polar Sciences, Italy); Erika Arcadi and Rosario Calogero (Stazione Zoologica Anton Dohrn, Italy); Alessandro Ciro Rappazzo, Gabriella Caruso, Giovanna Maimone and Angelina Lo Giudice (ISP-CNR, Italy); Franco Andaloro and Teresa Romeo (Stazione Zoologica Anton Dohrn, Italy)

11:40   **Do Virgin and Chemical-Spiked Microplastics Affect Ephyrae Jellyfish Survival and Behaviour?**
Elisa Costa (National Research Council, Italy); Chiara Gambardella (National Research Council (CNR), Italy); Veronica Piazza, Roberta Miroglio, Marco Faimali and Francesca Garaventa (National Research Council, Italy)

12:00 **Influence of Settling/Rising Velocity on the Vertical Distribution of Microplastics in the Marine Environment**
Paolo Bello (University of Rome La Sapienza, Italy); Agnese Pini (University of Rome "La Sapienza", Italy); Simone Zazzini (University of Rome La Sapienza, Italy); Paolo Monti and Giovanni Leuzzi (Università Roma La Sapienza, Italy)

12:20 **Sources and Distribution of Polycyclic Aromatic Hydrocarbons and Microplastics in Sediments From the Gulf of Trieste**
Oliver Bajt and Jena Jamšek (National Institute of Biology, Slovenia)

12:40 **Effects of Polypropilene Microplastics on the Growth and Reproduction of Gammarus Aequicauda**
Francesca Biandolino (National Research Council - Water Research Institute, Italy); Isabella Parlapiano (Water Research Institute, Italy); Ermelinda Prato (CNR, Italy)

11:20 - 12:20   *Grand Hotel Bernardin - Room Europa C*
Session 1.2 - Embedded systems in seaborne applications
Chair: Maciej Gucma, *Maritime University of Szczecin, Poland*

11:20 **Early Warning Systems for Marine Monitoring**
Chiara Gambardella (National Research Council (CNR), Italy); Elisa Costa, Roberta Miroglio, Roberta Nugnes, Marta Giuga, Filippo Castelli, Veronica Piazza, Francesca Garaventa and Marco Faimali (National Research Council, Italy)

11:40 **Integrated IoT-Edge Measurement Station for Wind and Current Parameters Estimation and Presentation**
Maciej Gucma (Maritime University of Szczecin & 3 G Tech Ltd., Poland); Lucjan Gucma, Rafał Gralak, Bartosz Muczyński and Mateusz Bilewski (Maritime University of Szczecin, Poland)

12:00 **Modern Light Sources on the Ship**
Romuald Maśnicki and Janusz Mindykowski (Gdynia Maritime University, Poland); Beata Palczynska (Gdańsk University of Technology, Poland); Dawid Werner (Gdynia Maritime University, Poland)

11:20 - 12:20   *Grand Hotel Bernardin - Room Europa D*
Session 1.3 - Towards Transparent Ocean using Underwater Sensor Networks
Chairs: Wai-keung Fung, *Cardiff Metropolitan University, UK*
Nazila Fough, *Robert Gordon University, UK*

11:20 **Evaluating the Impact of Ranging Error in Underwater Localization Using SAR Satellite Data**
Aminu Muhammad, Craig Stewart, Nazila Fough and Somasundar Kannan (Robert Gordon University, United Kingdom (Great Britain))

11:40 **Machine Learning Based Underwater Optical-Acoustic Communications Channel Switching for Throughput Improvement**
Craig Stewart and Aminu Muhammad (Robert Gordon University, United Kingdom (Great Britain)); Wai Keung Fung (Cardiff Metropolitan University, United Kingdom (Great Britain));

Nazila Fough (Robert Gordon University, United Kingdom (Great Britain)); Radhakrishna Prabhu (IDEAS Research Institute, United Kingdom (Great Britain))

12:00   **Comparative Analysis of Throughput Maximization Strategies in Underwater Acoustic Networks: Results From At-Sea Experiments**
Davide Cosimo (University of Pisa, Italy); Antonio Montanari (University of Padova, Italy); Daniele Sebino Terracciano and Lorenzo Bazzarello (Italian Navy, Italy); Riccardo Costanzi (Università di Pisa, Italy); Filippo Campagnaro and Michele Zorzi (University of Padova, Italy)

13:00 - 14:00   *Grand Hotel Bernardin*
LUNCH

14:00 - 15:40   *Grand Hotel Bernardin - Room Europa A*
Session 2.1 - Methodologies and ecological indicators for the monitoring of anthropogenic impacts in transitional waters and marine ecosystems - PART I
Chairs: Giuseppe Denti, *National Research Council, Italy*
Matilda Mali, *Polytechnic University of Bari, Italy*

14:00   **Laying the Foundation for Future Assessments: Preliminary Investigation of Benthic Biodiversity in a Mediterranean Marine Cave**
Antonella Schiavo (Università degli studi di Bari Aldo Moro, Italy); Muriel Oddenino (Interuniversitary Consortium for Marine Science (CoNISMa), Italy); Guadalupe Giménez, Roberta Trani, Cataldo Pierri and Caterina Longo (Università degli Studi di Bari Aldo Moro, Italy)

14:20   **A Histological Protocol to Assess the Reproductive Biology of the Black Coral Antipathella Subpinnata**
Carlotta De Blasi (CoNISMa, Italy); Daniela Semeraro (Università degli Studi di Bari Aldo Moro, Italy); Marco Vito Guglielmi (National Research Council, Italy); Maria Mastrodonato (Università degli Studi di Bari Aldo Moro, Italy); Giovanni Chimienti (Università Degli Studi di Bari Aldo Moro, Italy)

14:40   **Monitoring of Marine Ecosystem Subjected to Infrastructrural Intervention**
Matilda Mali (Politecnico di Bari & DICATECh, Italy); Maria Michela Dell'Anna (Politecnico di Bari, Italy); Francesco Paolo Buonocunto (ISMAR - CNR, Italy); Alfonsa Milia (Naple I, Italy); Lucia Spada (Water Research Institute -National Research Council, Italy); Santina Giandomenico (Water Research Institute - National Research Council, Italy); Leonardo Damiani (Politecnico di Bari, Italy)

15:00   **Evaluating Lanthanum-Induced Alterations in Manila Clam: An Integrated Method**
Marco Vito Guglielmi (National Research Council, Italy); Michela Marashi (University of Bari Aldo Moro, Italy); Daniela Semeraro (Università degli Studi di Bari Aldo Moro, Italy); Marcella Narracci (National Research Council, Italy); Antonella Di Leo (Water Research Institute IRSA - CNR Taranto, Italy); Claudia Leoni (National Research Council, Italy); Maria Mastrodonato (Università degli Studi di Bari Aldo Moro, Italy); Giovanni Scillitani (University of Bari Aldo Moro, Italy)

15:20   **The Polychaete Sabella Spallanzanii as PCBs and PAHs Bioindicator: A Case Study From 2006 to the Present**

Loredana Stabili (Water Research Institute (IRSA) CNR Taranto, Italy); Adriana Giangrande and Daniele Arduini (University of Salento, Italy); Margherita Licciano (DiSTeBA University of Salento Lecce, Italy); Maria Immacolata Acquaviva (Water Research Institute (IRSA) CNR Taranto, Italy); Lucia Spada (Water Research Institute -National Research Council, Italy); Claudio Calabrese (University of Salento, Italy); Santina Giandomenico (Water Research Institute - National Research Council, Italy)

14:00 - 15:20	*Grand Hotel Bernardin - Room Europa C* **Session 2.2 - AI Techniques for Marine Environment Preservation and Climate Change Impact Assessment - PART I** **Chairs:** Fabiana Di Ciaccio, *University of Florence, Italy* Paolo Russo, *Sapienza University of Roma, Italy*

14:00   **Optimized Monitoring of Underwater Marine Waste Using Knowledge Distillation**
Bushra Jalil (Scuola Superiore Sant Anna, Italy); Luca Maggiani (Sma-rty Italia, Italy); Luca Valcarenghi (Scuola Superiore Sant'Anna, Italy)

14:20   **Advancing Sea Surface Temperature Forecasting With Deep Learning Techniques on Copernicus Data: An Application in the Gulf of Trieste**
Pietro Manganelli Conforti (Sapienza University of Rome, Italy); Paolo Russo (University of Rome La Sapienza, Italy); Fabiana Di Ciaccio (University of Florence, Italy)

14:40   **Modeling of the North Atlantic Gyre's Meridional Overturning Circulation With Neural Nets**
Owen Jiang (Lexington High School, USA); David Nizovsky (Vanderbilt University, USA); Tingying Helen Zeng (InnoBridge Institute, USA); Mikhail Mikhail Shalaginov (Massachusetts Institute of Technology, USA)

15:00   **A ML-Based Multi-Species Analysis to Explore the Environmental Drivers of Cetaceans Behaviors**
Carla Cherubini (University of Bari, Italy); Leonardo Saccotelli (CMCC, Italy); Giovanni Dimauro (Universita' di Bari & Dipartimento di Informatica, Italy); Giovanni Coppini (CMCC, Italy); Giulia Cipriano and Roberto Carlucci (University of Bari, Italy); Carmelo Fanizza (Jonian Dolphin Conservation, Italy); Rosalia Maglietta (STIIMA-CNR, Italy)

14:00 - 15:40	*Grand Hotel Bernardin - Room Europa D* **Session 2.3 - Remote sensing for marine and coastal area applications** **Chairs:** Peter Planinsic, *University of Maribor, Slovenia* Ferdinando Nunziata, *Sapienza University of Rome, Italy*

14:00   **SAR-Driven Time Variability Analysis of the Coastline of the Lake Ptuj, Slovenia**
Zakir Khan (Università degli Studi di Napoli Parthenope, Italy); Mozhgan Zahriban Hesari (Parthenope University of Naples, Italy); Ferdinando Nunziata (Sapienza Università di Roma, Italy); Dušan Gleich and Peter Planinsic (University of Maribor, Slovenia); Maurizio Migliaccio (Universita' Napoli Parthenope, Italy)

14:20   **Multi-Frequency Synthetic Aperture Radar Speckle Analysis of Sea Surface**
Anna Verlanti (Università degli Studi di Napoli Parthenope, Italy); Ferdinando Nunziata (Sapienza Università di Roma, Italy); Maurizio Migliaccio (Universita' Napoli Parthenope, Italy)

14:40   **Validation of QuikSCAT-Derived Coastal Winds**

Giuseppe Grieco (National Research Council, Italy); Marcos Portabella (Institut de Ciències del Mar - Consejo Nacional de Investigaciones Cientificas, Spain); Ad Stoffelen and Anton Verhoef (Koninklijk Nederlands Meteorologisch Instituut, The Netherlands); Stefano Zecchetto (Consiglio Nazionale delle Ricerche, Italy); Andrea Zanchetta (Hong Kong Baptist University, Hong Kong)

15:00   **Phase-Only Antenna Array Synthesis With Beam/Null Steering Capabilities for Propagation Impairment Mitigation in Coastal Environment**

Giulia Buttazzoni (University of Trieste, Italy); Elena Marongiu (University of Cagliari, Italy); Fulvio Babich (University of Trieste, Italy); Alessandro Fanti (University of Cagliari, Italy); Francesca Vatta and Massimiliano Comisso (University of Trieste, Italy)

15:20   **Precision Aquaculture Framework for Remote Mussel Growth Monitoring With IoT Blockchain and Cloud Integration**

Gagan Narang (Università Politecnica delle Marche, Italy); Alessandro Galdelli (Università Politecnica Delle Marche, Italy); Anna Nora Tassetti (National Research Council, Italy); Ike Olivotto and Matteo Zarantoniello (Marche Polytechnic University, Italy); Adriano Mancini (Università Politecnica delle Marche, Italy)

15:40 - 16:00   *Grand Hotel Bernardin*
                            COFFEE BREAK

16:00 - 17:20   *Grand Hotel Bernardin - Room Europa A*
                            Session 3.1 - Methodologies and ecological indicators for the monitoring of anthropogenic impacts in transitional waters and marine ecosystems - PART II
                            Chairs: Giuseppe Denti, *National Research Council, Italy*
                            Matilda Mali, *Polytechnic University of Bari, Italy*

16:00   **The Merging of Long Underwater Linear Transects With Multiple Spot Dives to Find Pinna Nobilis (Linnaeus, 1758) Survivors**

Fernando Rubino, Giuseppe Denti and Giovanni Fanelli (Water Research Institute, Italy)

16:20   **Monitoring of the Quality of the Environment and Mussels in an Integrated Multitrophic Aquaculture System in the Gulf of Taranto**

Loredana Stabili and Maria Immacolata Acquaviva (Water Research Institute (IRSA) CNR Taranto, Italy); Francesca Biandolino (National Research Council - Water Research Institute, Italy); Carmela Caroppo and Rosa Anna Cavallo (Water Research Institute (IRSA) CNR Taranto, Italy); Santina Giandomenico (Water Research Institute - National Research Council, Italy); Isabella Parlapiano (Water Research Institute, Italy); Ermelinda Prato (National Research Council - Water Research Institute, Italy); Lucia Spada (Water Research Institute -National Research Council, Italy); Tiziano Verri and Elisa Quarta (Università del Salento, Italy)

16:40   **Machine Learning Models for Monitoring Salinity in River Estuaries: A Case Study of the Po River**

Leonardo Saccotelli and Giorgia Verri (CMCC, Italy); Giovanni Dimauro (Universita' di Bari & Dipartimento di Informatica, Italy); Alessandro De Lorenzis (CMCC, Italy); Carla Cherubini (University of Bari, Italy); Giovanni Coppini (CMCC, Italy); Rosalia Maglietta (STIIMA-CNR, Italy)

17:00   **Cellulose Recovery From Tunicates: A Circular Economy Approach for Aquaculture-Waste Management**
Matilda Mali (Politecnico di Bari & DICATECh, Italy); Darya Nefedova (Politecnico di Bari, Italy); Natalija Topić Popović and Ivančica Strunjak-Perović (Ruđer Bošković Institute, Croatia); Stefano Todisco (Politecnico di Bari, Italy); Piero Mastrorilli (Polytechnic of Bari, Italy); Maria Michela Dell'Anna (Politecnico di Bari, Italy)

16:00 - 16:40   *Grand Hotel Bernardin - Room Europa C*
Session 3.2 - AI Techniques for Marine Environment Preservation and Climate Change Impact Assessment - PART II
Chairs: Fabiana Di Ciaccio, *University of Florence, Italy*
Paolo Russo, *Sapienza University of Roma, Italy*

16:00   **Real-Time Floating Marine Litter Detection on USV**
Guido Lazzerini, Alberto Topini, Gherardo Liverani, Lorenzo Cecchi and Alessandro Ridolfi (University of Florence, Italy); Fausto Ferreira (University of Zagreb, Croatia)

16:20   **Marine Litter Classification Through Multi-Camera System: Perception and Latency**
Bushra Jalil (Scuola Superiore Sant Anna, Italy); Luca Maggiani (Sma-rty Italia, Italy); Luca Valcarenghi (Scuola Superiore Sant'Anna, Italy)

19:00   *Grand Hotel Bernardin - Lobby Bar*
WELCOME RECEPTION

09:00 - 16:00	*Grand Hotel Bernardin - Foyer* **REGISTRATIONS**

09:00 - 10:40	*Grand Hotel Bernardin - Room Europa A* **Session 4.1 - Recent advances about the safety of ship and navigation - PART I** **Chair:** Silvio Del Pizzo, *Parthenope University of Naples, Italy*

09:00 **An Application of the Extended Maximum Entropy Principle for the Spectral Analysis of Ship Motions**
Raphaël E. G. Mounet and Ulrik Dam Nielsen (Technical University of Denmark, Denmark)

09:20 **Correlation of Collision Damage Statistical Properties by Gaussian Copula Functions**
Salvatore Gaglione, Vincenzo Piscopo and Andrea Sciacca (University of Naples Parthenope, Italy)

09:40 **Hot-Spot Stress of Ti Welded Joints Used in Marine Structures**
Pasqualino Corigliano (University of Messina, Italy)

10:00 **Validation of the Sea State Estimation Method Using a Simulated Ship Motions Dataset**
Silvia Ascione (University of Naples Parthenope, Italy); Ulrik Dam Nielsen (Technical University of Denmark, Denmark); Vincenzo Piscopo (University of Naples Parthenope, Italy)

10:20 **Modelling Oil Spill and Dispersion at Sea From a Double Hull Oil Tanker Following Collision Events**
Giuseppe M. Trainiti (University of Naples Parthenope, Italy); Daniela Cianelli (Stazione Zoologica Anton Dohrn, Italy); Enrico Zambianchi and Vincenzo Piscopo (University of Naples Parthenope, Italy)

09:00 - 10:20	*Grand Hotel Bernardin - Room Europa C* **Session 4.2 - An Integrated Perspective To Monitor Coastal Environments: Sensors, Methodologies And Analysis Tools - PART I** **Chairs:** Andrea Buono, *Parthenope University of Naples, Italy* Silvia Merlino, *National Research Council, Italy*

09:00 **Some Insights on the Calibration and Drift of Oceanographic Probes for Measuring Temperature and Conductivity**
Gilda Savonitto, Cinzia Comici, Stefano Küchler, Rajesh Nair, Nevio Medeot and Riccardo Gerin (National Institute of Oceanography and Applied Geophysics - OGS, Italy)

09:20   **The Effects of Thermal Drift on the Reliability of Water Analyzers**

Jacques Tene Koyazo and Aime' Lay-Ekuakille (University of Salento, Italy); Sabino Maggi (Institute of Atmospheric Pollution, Italy); Maurizio Palmisano (CNR-ISAFOM, Italy); Ramiro Velázquez (Universidad Panamericana, Mexico); Patient-Dérrick Bakajika Mukoma (TELESOL, Democratic Republic of the Congo); Giuseppe Passarella (Water Research Institute, Italy)

09:40   **Integrating Topographic and Underwater Measurements for Comprehensive Coastal Area Inspection: An Interdisciplinary Approach**

Ali Alakbar Karaki, Ak, Ilaria Ferrando, Bianca Federici and Domenico Sguerso (University of Genoa, Italy); Matteo Guideri, Roberto Nardini and Nunziante Langellotto (Ministero Difesa, Italy)

10:00   **Multi-Technics for Coastal Asset Evaluation on Naples Waterfront (Southern Italy)**

Giovanni Fasciglione (University of Naples Parthenope, Italy)

09:00 - 10:40	*Grand Hotel Bernardin - Room Europa D*
	Session 4.3 - New metrological approaches for monitoring the status of aquatic habitats and its changes - PART I
	Chair: Pietro Ferraro, *National Research Council, Italy*

09:00   **[INVITED] - Assessing the Efficiency of Environmental Protection Systems: Tips and Tricks**

Roberta Pedrazzani and Giorgio Bertanza (University of Brescia, Italy)

09:20   **Bionomic Characterisation of Benthic Communities on Rocky Shores of Lipsi Island (Aegean Sea, Greece)**

Francesca Lauricella (Università degli Studi di Genova, Italy); Maria Morán-Garcìa (Archipelagos Institute of Marine Conservation, Greece); Maurice Calton Seal (Archipelagos Institute of Marine Conservation, Saudi Arabia); Anastasia Miliou (Archipelagos Institute of Marine Conservation, Greece); Laura Macrina (King Abdullah University of Science and Technology (KAUST), Saudi Arabia & KAUST Red Sea Research Center, King Abdullah University of Science and Technology, Saudi Arabia)

09:40   **Surface Partial Pressure of CO2 in Seawater: A Preliminary Comparison Between In-Situ Measurement and Model Data, Along a Round-The-World Route**

Andrea Bordone, Chiara Lombardi and Giancarlo Raiteri (ENEA Marine Environment Research Centre of S. Teresa, Italy); Francesca Durbiano (Istituto Nazionale di Ricerca Metrologica, Italy); Stefano Pavarelli (Istituto Nazionalre di Ricerca Metrologica, Italy); Francesca Romana Pennecchi (Istituto Nazionale di Ricerca Metrologica - INRIM, Italy); Francesca Rolle (Istituto Nazionale di Ricerca Metrologica - INRiM, Italy); Marco Santiano (INRiM, Italy); Michela Sega (Istituto Nazionale di Ricerca Metrologica, Italy)

10:00   **Better Together: Ex Situ Co-Culture of Seaweed and Two Mediterranean Demosponge Species**

Joseba Aguilo-Arce and Giuseppe Corriero (University of Bari Aldo Moro, Italy); Roberta Trani and Caterina Longo (Università degli Studi di Bari Aldo Moro, Italy)

10:20   **Wrangelia Penicillata (Rhodophyta, Ceramiales): Another Indigenous Invasive Species in the Mediterranean Sea?**

Antonella Bottalico and Andrea Tursi (University of Bari Aldo Moro, Italy); Giovanni Chimienti (Università Degli Studi di Bari Aldo Moro, Italy); Francesco Mastrototaro (University of Bari Aldo Moro, Italy)

10:40 - 11:00	Grand Hotel Bernardin
	COFFEE BREAK - POSTER SESSION #1

PS1-1 **The Concept of a Measurement Data Acquisition Platform Based on Compressive Sensing**
Beata Palczynska (Gdańsk University of Technology, Poland); Romuald Maśnicki and Janusz Mindykowski (Gdynia Maritime University, Poland)

PS1-2 **Preliminary Data on the Toxicity of Heated Tobacco Products on Marine Organisms**
Isabella Parlapiano (Water Research Institute, Italy); Francesca Biandolino (National Research Council - Water Research Institute, Italy); Ermelinda Prato (CNR, Italy); Maria Immacolata Acquaviva and Loredana Stabili (Water Research Institute (IRSA) CNR Taranto, Italy); Giuseppe Denti (Water Research Institute, Italy); Santina Giandomenico (Water Research Institute - National Research Council, Italy)

PS1-3 **Technological Innovation to Better Understand the Fate of CO2 Dissolution in Marine Environment: The Case of Multiparametric Observatory of Panarea (Aeolian Arc)**
Cinzia Giuseppina Caruso, Gianluca Lazzaro, Sergio Scirè Scappuzzo, Alessandro Gattuso, Manfredi Longo, Marco Meschis and Sabina Morici (Istituto Nazionale di Geofisica e Vulcanologia, Italy); Agostino Semprebello (Università Degli Studi di Messina & Istituto Nazionale di Geofisica e Vulcanologia (INGV) - Sezione di Palermo, Italy); Fabio Sposito and Domenico Traina (Istituto Nazionale di Geofisica e Vulcanologia, Italy); Francesco Italiano (OGS, Italy)

PS1-4 **Long Term Monitoring Activities to Investigate the Colonization Dynamics of Non-Indigenous Seaweeds in Transitional Waters**
Giuseppe Denti (Water Research Institute, Italy); Pasquale Ricci (University of Bari, Italy); Ester Cecere (Water Research Institute, Italy); Antonella Petrocelli (Water Research Institute - National Research Council, Italy)

PS1-5 **Comparison of Linear and Rank-Correlation for the Sea State Estimation**
Silvia Ascione and Vincenzo Piscopo (University of Naples Parthenope, Italy); Antonio Scamardella (University of Naples "Parthenope", Italy)

PS1-6 **Biodegradation of Polylactic Acid/ Poly(Butylene Adipate-Co-Terephtalate) Mulching Film Under Weathering Conditions**
Gianluigi De Tommasi (Università degli Studi di Bari, Italy); Giacomo Scarascia Mugnozza (Politecnico di Bari, Italy); Matilda Mali (Politecnico di Bari & DICATECh, Italy); Darya Nefedova and Maria Michela Dell'Anna (Politecnico di Bari, Italy); Piero Mastrorilli (Polytechnic of Bari, Italy)

PS1-7 **Quantification of Microplastic Contamination in Drinking Water Produced by a Surface Water Treatment Plant**
Raffaella Mossotti (CNR, Italy)

PS1-8 **Assessment of Copper Effects on a Diatom Species Through Multi Scale Fractal Fourier Ptychographic Microscopy**

Angela Sardo (Stazione Zoologica Anton Dohrn, Italy); Vittorio Bianco, Lisa Miccio and Daniele Pirone (CNR-ISASI, Italy); Jaromir Behal (ISASI-CNR, Italy); Pasquale Memmolo (CNR-ISASI Institute of Applied Sciences & Intelligent Systems, Italy); Elena Cavalletti (Stazione Zoologica Anton Dohrn, Italy); Pietro Ferraro (ISASI CNR, Italy)

PS1-9 **Promptable Sonar Image Segmentation for Distance Measurement Using SAM**
Hamidreza Farhadi Tolie and Jinchang Ren (Robert Gordon University, United Kingdom (Great Britain)); Junayed Hasan (National Subsea Centre Robert Gordon University, United Kingdom (Great Britain)); Somasundar Kannan and Nazila Fough (Robert Gordon University, United Kingdom (Great Britain))

PS1-10 **Underwater Target Detection Analysis Using Spherical Acoustic Sensor Arrays**
Rida Sundas, Khaliq Ur Rahman, Nauman Anwar Baig, Nazila Fough and James Njuguna (Robert Gordon University, United Kingdom (Great Britain))

PS1-11 **Securing Underwater Wireless Communication with Frequency-Hopping Spread Spectrum**
Khaliq Ur Rahman and Nazila Fough (Robert Gordon University, United Kingdom (Great Britain)); Christ McDermott (Robert Gordon University, United Arab Emirates); Rida Sundas, Nauman Anwar Baig and Somasundar Kannan (Robert Gordon University, United Kingdom (Great Britain))

PS1-12 **Insights into Environmental Variables Affecting Seasonal Cetacean Behaviors**
Giulia Cipriano, Carla Cherubini, Pasquale Ricci and Angelica Catacchio (University of Bari, Italy); Carmelo Fanizza (Jonian Dolphin Conservation, Italy); Leonardo Saccotelli and Giovanni Coppini (CMCC, Italy); Rosalia Maglietta (STIIMA-CNR, Italy); Roberto Carlucci (University of Bari, Italy)

11:00 - 11:40	*Grand Hotel Bernardin - Room Europa A*
	PLENARY SESSION - KEYNOTE SPEAKER
	Chair: Salvatore Gaglione, Parthenope University of Naples, Italy

ESA Ocean Remote Sensing Activities and Perspectives

Roberto Sabia, *European Space Agency*

11:40 - 13:00	*Grand Hotel Bernardin - Room Europa A*
	Session 5.1 - Recent advances about the safety of ship and navigation - PART II
	Chairs: Pasqualino Corigliano, *University of Messina, Italy*
	Vincenzo Piscopo, *Parthenope University of Naples, Italy*

11:40 **Comparative Analysis of Carbon Fiber Composite Sandwich Structures for Enhanced Boat Safety**
Marcello Raffaele, Giulia Palomba and Pasqualino Corigliano (University of Messina, Italy)

12:00 **Enhancing Safety in Autonomous Navigation: Weather-Aware Trajectory Planning**
Silvia Pennino (Parthenope University of Naples, Italy); Egidio D'Amato (University of Naples Parthenope, Italy)

12:20 **AIS Data Fasification - How Long Will It Be Before We Can No Longer Trust AIS?**
Andrej Androjna and Marko Perkovič (University of Ljubljana, Slovenia)

12:40   **Test of Galileo HAS in Precise Maritime Survey**
Gabriele Portelli (University of Naples Parthenope, Italy); Antonio Angrisano (Messina University, Italy); Giovanni Cappello, Silvio Del Pizzo and Salvatore Gaglione (University of Naples Parthenope, Italy); Ciro Gioia (University of Naples "Parthenope", Italy); Salvatore Troisi (University of Naples Parthenope, Italy)

11:40 - 13:00   *Grand Hotel Bernardin - Room Europa C*
Session 5.2 - An Integrated Perspective To Monitor Coastal Environments: Sensors, Methodologies And Analysis Tools - PART II
Chairs: Giulia Buttazzoni, *University of Trieste, Italy*
Giuseppe Grieco, *National Research Council, Italy*

11:40   **A Geophysical Model Function-Based Approach to Estimate the Wind Speed in the Gulf of Salerno Using C-Band SAR Data**
Adil Muhammad and Giovanna Inserra (Consiglio Nazionale delle Ricerche, Italy); Andrea Buono (Università degli Studi di Napoli Parthenope, Italy); Giuseppe Grieco (National Research Council, Italy); Maurizio Migliaccio (Universita' Napoli Parthenope, Italy); Katrin Schroeder and Mauro Caccavale (Consiglio Nazionale delle Ricerche, Italy)

12:00   **On the C-Band Scattering Signatures of Coastal Polar Polynyas**
Andrea Buono (Università degli Studi di Napoli Parthenope, Italy); Giovanna Inserra (Consiglio Nazionale delle Ricerche, Italy); Giuseppe Aulicino (Parthenope University of Naples, Italy); Maurizio Migliaccio (Universita' Napoli Parthenope, Italy)

12:20   **Analysis of Nearly Collocated C- and X-Band Marine Backscattering**
Luigi di Michele (Università degli Studi di Napoli Parthenope, Italy); Ferdinando Nunziata (Sapienza Università di Roma, Italy); Maurizio Migliaccio (Universita' Napoli Parthenope, Italy)

12:40   **GNSS Signals for Sea Wave Measurements**
Mohamad Khalil, Francesco Crenna and Giovanni Battista Rossi (University of Genova, Italy)

11:40 - 13:00   *Grand Hotel Bernardin - Room Europa D*
Session 5.3 - New metrological approaches for monitoring the status of aquatic habitats and its changes - PART II
Chair: Stefania Federici, *University of Brescia, Italy*

11:40   **Advanced Digital Holography Techniques for Detecting and Characterizing Microplastics in Aquatic Environments**
Pietro Ferraro (ISASI CNR, Italy); Marika Valentino (Istituto di Scienze Applicate e Sistemi Intelligenti ISASI-CNR, Italy); Vittorio Bianco, Lisa Miccio and Pasquale Memmolo (CNR-ISASI, Italy)

12:00   **[INVITED] - The Effects of Microplastic Properties on Their Interactions in the Aquatic Environment**
Ula Rozman and Gabriela Kalčikova (University of Ljubljana, Slovenia)

12:20   **Evaluating the Effects of Micro- and Nanoplastics Using True-To-Life Materials**
Serena Ducoli (University of Brescia, Italy); Luca Fambri and Claudia Gavazza (University of Trento, Italy); Silvie Bernatova, Khouloud Abid, Donatella Spadaro, Antonino Foti, Maria Grazia Donato and Pietro Giuseppe Gucciardi (Institute for Chemical and Physical Processes - IPCF

CNR, Italy); Luca Nalbone (University of Messina, Italy); Filippo Giarratana (University of Messia, Italy); Mariacristina Cocca (Consiglio Nazionale delle Ricerche, Italy); Rachele Castaldo (National Research Council of Italy, Italy); Stefania Federici (Università degli Studi di Brescia, Italy)

12:40   **Characterization of Mesoplastic on Albanian Beach**
Yannick Claes (Hogeschool UCLL, Belgium); Javier Delgado Gallardo (Flemish Institute for Technological Research, Belgium); Kledisa Çela and Meivis Struga (Environmental and Territorial Management Institute (ETMI), Albania); Andreja Palatinus (National Institute of Chemistry, Slovenia); Milica Velimirovic (Flemish Institute for Technological Research, Belgium)

13:00 - 14:00   *Grand Hotel Bernardin*
LUNCH

14:00 - 15:20   *Grand Hotel Bernardin - Room Europa A*
Session 6.1 - Remote sensing, in-situ surveys, and GIS applications for marine and coastal areas - PART I
Chairs: Mariusz Specht, *Gdynia Maritime University, Poland*
Emanuele Alcaras, *Parthenope University of Naples, Italy*
Andrea Vallario, *Parthenope University of Naples, Italy*

14:00   **A New Approach to the Estimation of Sea State Based on Shipboard Observations - Preliminary Results**
Giovanni Battista Rossi, Giuliano Vernengo, Francesco Crenna, Francesco Soardi and Mohamad Khalil (University of Genova, Italy)

14:20   **Evaluating Tidal and Wave Corrections on Shoreline Extraction From Satellite Imagery in Mediterranean Microtidal Beaches**
Riccardo Angelini and Fabiana Di Ciaccio (University of Florence, Italy); Eduard Angelats (CTTC, Spain); Francesca Ribas (Universitat Politecnica de Catalunya, Italy); Guido Luzi (Centre Tecnologic de Telecomunicacions de Catalunya, Spain); Andrea Masiero (University of Padova, Italy)

14:40   **Field Studies on Sediment Resuspension Induced by Shipping: Vessel Kinematic Measurements and Water Sampling in the Port of Koper**
Jure Srše and Marko Perkovič (University of Ljubljana, Slovenia)

15:00   **Application of Decision Tree Algorithm on Landsat 9 OLI-2 Images for Coastline Extraction**
Pier Paolo Amoroso (Parthenope University of Naples, Italy); Claudio Parente (University of Studies of Naples Parthenope, Italy); Angelo Ciaramella (University of Naples "Parthenope", Italy); Antonino Staiano (University of Parthenope, Italy); Alessio Ferone (Parthenope, USA)

14:00 - 15:40   *Grand Hotel Bernardin - Room Europa C*
Session 6.2 - An Integrated Perspective To Monitor Coastal Environments: Sensors, Methodologies And Analysis Tools - PART III
Chair: Giuseppe Grieco, *National Research Council, Italy*
Silvia Merlino, *National Research Council, Italy*

14:00 **Multi-Layer Approach to Detect and Analyze Coastal Aggregation of Macro-Plastic Litter**
Ferdinando Nunziata (Sapienza Università di Roma, Italy); Francesco Serafino (CNR IREA, Italy); Annamaria Vicari (National Institute of Geophysics and Volcanology, Italy); Maurizio Migliaccio (Universita' Napoli Parthenope, Italy); Andrea Bianco (ISPRA, Italy); Anna Verlanti, Luigi di Michele and Yuri Cotroneo (Università degli Studi di Napoli Parthenope, Italy); Giuseppe Aulicino (Parthenope University of Naples, Italy); Nicola Angelo Famiglietti and Antonino Memmolo (Istituto Nazionale di Geofisica e Vulcanologia, Italy)

14:20 **A Numerical Tool for Non-Buoyant Plastic Debris Short-Term Fate Prediction in the Nearshore Zone**
Claudio Iuppa and Carla Faraci (University of Messina, Italy)

14:40 **Investigating the Dispersion Processes Contributing to the Displacement of Marine Plastic Litter Through Coastal Systems Using Drifter Release Experiments and Lagrangian Tools**
Davide Grande (Università di Pisa, Italy); Daniele Lagomarsino-Oneto (CNR, Italy); Antonio Guarnieri (Istituto Nazionale di Geofisica e Vulcanologia - Sezione di Bologna, Italy); Silvia Merlino (Consiglio Nazionale delle Ricerche, Italy); Marco Bianucci (Istituto di Scienze Marine, Italy); Marco Paterni (IFC-CNR, Italy); Marina Locritani (INGV, Italy); Damiano Delrosso (Istituto Nazionale di Geofisica e Vulcanologia - Sezione di Bologna, Italy)

15:00 **Uncertainty Evaluation of NDIR Spectrometer for Measurement Od CO2 Concentration in Air**
Andraž Janežič (University of Ljubljana, Slovenia)

15:20 **Multipurpos Measurement System for Micro-Environments**
Anton Nino Novak (University of Ljubljana, Slovenia)

14:00 - 15:40   *Grand Hotel Bernardin - Room Europa D*
Session 6.3 - New metrological approaches for monitoring the status of aquatic habitats and its changes - PART III
Chairs: Vittorio Bianco, *National Research Council, Italy*

14:00 **[INVITED] - From Zero to Hero: Detection and Quantification of Microplastic Particles and of Their Associated Microbiomes in the Ocean**
Gianluca Corno (CNR - National Research Council, Italy)

14:20 **Investigation of Marine Phytoplankton by In-Flow Holographic Tomography**
Francesca Borrelli (ISASI-CNR, Italy); Giusy Giugliano (Institute of Applied Sciences and Intelligent Systems "E. Caianiello", National Research Council, Italy); Jaromir Behal (UNINA, Italy); Daniele Pirone (CNR-ISASI, Italy); Leonilde Roselli, Angela Sardo, Emilie Houliez, Valerio Zupo and Maria Costantini (Stazione Zoologica Anton Dohrn, Italy); Lisa Miccio (CNR-ISASI, Italy); Pasquale Memmolo (CNR-ISASI Institute of Applied Sciences & Intelligent Systems, Italy); Vittorio Bianco (CNR-ISASI, Italy); Pietro Ferraro (ISASI CNR, Italy)

14:40 **Multispectral Imaging as a Tool for Identifying Spectral Responses of Different Plastic Materials**
Giovanni Piccolo, Giovanni Bragato, Sofia Marchetto, Simone Marchetti, Rebecca Legnaro and Cinzia Sada (University of Padova, Italy)

15:00   **Deploying the Imaging FlowCytobot in the Mediterranean Sea and Developing a Trait-Based Classifier for High Frequency Screening of Phytoplankton Traits and Dynamics**
Emilie Houliez, Melpomeni Sofia Mente, Diana Sarno, Eleonora Scalco, Teresa Romeo, Augusto Passarelli and Leonilde Roselli (Stazione Zoologica Anton Dohrn, Italy)

15:20   **A Multi-Platform Approach to Investigate the Signals of Atlantification in the Arctic**
Manuel Bensi (National Institute of Oceanography and Applied Geophysics - OGS, Italy); Helene Olsen (University of the Basque Country, Italy); Vedrana Kovacevic (National Institute of Oceanography and Applied Geophysics, OGS, Italy); Patrizia Giordano and Leonardo Langone (National Research Council, Italy)

15:40 - 16:00   *Grand Hotel Bernardin*
COFFEE BREAK - POSTER SESSION #1 (CONTINUE)

16:00 - 17:40   *Faculty of Engineering - University of Ljubljana*
Meeting Point - Grand Hotel Bernardin - Room Europa A
TUTORIAL SESSION

Solar Photovoltaics - From Basics to Marine Applications

Matevž Bokalič, *Faculty of Electrical Engineering, University of Ljubljana*

20:00   *Restaurant Arkade - Hotel Histrion*
GALA DINNER

Technical Program - Wednesday, October 16

09:00 - 12:00	*Grand Hotel Bernardin - Foyer* **REGISTRATIONS**

09:00 - 10:00	*Grand Hotel Bernardin - Room Europa A* **Session 7.1 - Technologies, techniques and methodologies for coastal monitoring - PART I** **Chair:** Giacomo Peruzzi, *University of Padova, Italy*

09:00 **An Integrated Approach to Monitoring the Climate Change Effects in the Faro Lake (Messina) as Area of Concern for Mussel Farming Activities**
Carmen Rizzo (Stazione Zoologica Anton Dohrn, Italy & National Research Council, Institute of Polar Sciences, Italy); Chiara Giommi, Rosario Calogero, Erika Arcadi, Giuseppe Cangemi, Francesco Fabiano, Vittoria Dias, Marilena Sanfilippo and Teresa Romeo (Stazione Zoologica Anton Dohrn, Italy)

09:20 **Enhancing IoT Cloud Infrastructure and Data Visualization for Real-Time Monitoring of the Venice Lagoon With SENSWICH**
Matin Ghalkhani, Federico Marin, Filippo Campagnaro and Michele Zorzi (University of Padova, Italy)

09:40 **Investigation on the Partitioning of Sea Spectra**
Marta Berardengo (Università di Genova, Italy); Giovanni Battista Rossi and Francesco Crenna (University of Genova, Italy)

09:00 - 10:20	*Grand Hotel Bernardin - Room Europa C* **TUTORIAL SESSION**

Photogrammetry for Coastal and Underwater Environments: Techniques, Applications, and Challenges

Silvio Del Pizzo, *Parthenope University of Naples*

09:00 - 10:20	*Grand Hotel Bernardin - Room Europa D* **Session 7.3 - Innovative Approaches in Conservation Strategies For Sedentary Marine Fishes** **Chair:** Marco Spoto, *National Research Council, Italy*

09:00 **Assessment of Innovative Selective Codends in Baltic Cod Fishing**
Pawel Zalewski, Piotr Nowakowski, Jarosław Artyszuk, Krzysztof Berest, Grzegorz Krzemień, Artur Żuliński and Marta Kasprowicz (Maritime University of Szczecin, Poland)

09:20 **Opercular Beat Frequency of Long-Snouted Seahorse, Hippocampus Guttulatus Cuvier 1829**
Marco Spoto (University of Bologna, Italy & National Research Council, Italy); Cataldo Pierri (Università degli Studi di Bari Aldo Moro, Italy); Alessandro Rinaldi (CNR, Italy); Miriam Ravisato (University of Bari, Italy); Maria Chiara Catta (CNR, Italy); Michele Gristina (National Research Council of Italy, Italy)

09:40 **Taxonomic Identification of European Seahorse H. Guttulatus and H. Hippocampus Based on Machine Learning Techniques**
Marco Spoto (University of Bologna, Italy & National Research Council, Italy); Daniele Lagomarsino-Oneto (CNR, Italy); Michele Gristina and Simone Marini (National Research Council of Italy, Italy); Cataldo Pierri (Università degli Studi di Bari Aldo Moro, Italy); Alessandro Rinaldi and Mattia Cavaiola (CNR, Italy)

10:00 **Length-Weight Relationships of Two Syngnathid Species From the Mar Piccolo of Taranto, Southern Italian Coast**
Miriam Ravisato (University of Bari Aldo Moro, Italy); Francesca Gaia Bitetto (Stazione Zoologica Anton Dohrn, Italy); Tamara Lazic (University of Bari Aldo Moro, Italy); Michele Gristina (National Research Council of Italy, Italy); Marco Spoto (University of Bologna, Italy & National Research Council, Italy); Cataldo Pierri (Università degli Studi di Bari Aldo Moro, Italy)

09:00 - 12:20 *Aquatorium area - Faculty of Maritime Studies and Transport - University of Ljubljana*
Meeting Point - Grand Hotel Bernardin - Registration Desk
TUTORIAL SESSION

Hydrographic Drone Workshop

Tutorial provided by CODEVINTED

10:20 - 10:40 *Grand Hotel Bernardin*
COFFEE BREAK - POSTER SESSION #2

PS2-1 **Validation of Reported Strong Currents in Mamaia Bay (Black Sea) Using Sentinel-1 SAR Data**
Muhammad Amjad Iqbal (CEOSpaceTech, Research Center for Spatial Information, Romania & National University of Science and Technology Politehnica of Bucharest, Romania); Andrei Anghel (National University of Science and Technology Politehnica of Bucharest & Center for Spatial Information (CEOSpaceTech), Romania); Mihai Datcu (National University of Science and Technology Politehnica of Bucharest, Romania)

PS2-2 **On the Fine Scale Estimation of Coastal Wind Speed in the Gulf of Salerno Using the Azimuth Cut-Off Approach**
Giovanna Inserra (Consiglio Nazionale delle Ricerche, Italy); Giuseppe Grieco (National Research Council, Italy); Adil Muhammad and Mauro Caccavale (Consiglio Nazionale delle Ricerche, Italy);

Maurizio Migliaccio (Universita' Napoli Parthenope, Italy); Katrin Schroeder (Consiglio Nazionale delle Ricerche, Italy)

PS2-3 **Towed Underwater Drones: Main Operative Problems and Analysis of Stability**
Enrico Petritoli (Università degli Studi "Roma Tre", Italy); Fabio Leccese ("Roma Tre" University, Italy)

PS2-4 **GNSS Interference Observations in Port of Koper**
Matej Bažec and Franc Dimc (University of Ljubljana, Slovenia)

PS2-5 **Passive Absolute Distance Estimation for Maritime Navigation**
Jon Muhovič (University of Ljubljana, Slovenia); Janez Perš (University of Ljubljana, European Union)

PS2-6 **A Significant Wave Height Data-Driven Modeling for Digital Twins of Marine Environment**
Arman Neyestani (University of Sannio, Italy); Daniel M Toma (Technical University of Catalonia, Spain); Ahmad Falahzadeh (Universitat Politecnica de Catalunya (UPC), Spain); Pasquale Daponte (University of Sannio, Italy); Joaquin del Rio (Universitat Politecnica de Catalunya, Spain); Luca De Vito (University of Sannio, Italy)

PS2-7 **Water Laboratory: A Matrix Analysis System**
Enrico Petritoli (Università degli Studi "Roma Tre", Italy); Eduardo De Francesco (SETEL, Italy); Nicola Pio Belfiore (Roma Tre University, Italy); Sara Bobone (Esseodue, Italy); Giuseppe Schirripa Spagnolo (University of "Roma Tre", Italy); Simonetta Tuti and Fabio Leccese ("Roma Tre" University, Italy)

PS2-8 **Hybrid GAN and Fourier Transformation for SAR Ocean Pattern Image Augmentation**
Mobina Keymasi (National University of Science and Technology Politehnica Bucharest, Romania); Omid Ghozatlou (CEOSpaceTech & Reply Technology, Romania); Emmanuel Weridongha Adueze (Constanta Maritime University, Romania); Mihai Datcu (National University of Science and Technology Politehnica of Bucharest, Romania)

PS2-9 **Offshore Wind Power and Aquaculture in the Canary Islands**
Vittoria Puzone (University of Napoli Parthenope, Italy); Daniel Guerra-Medina (University of Las Palmas de Gran Canaria, Spain); Guido Benassai (University Parthenope, Italy); Germán Alejandro Rodríguez (University of Las Palmas de Gran Canaria, Spain)

PS2-10 **Cartographic Representation of the Italian Coasts: Analysis of Deformations Due to the Chosen Map Projection**
Francesca Guastaferro (Almaviva Digitaltec, Italy); Davide Morale (University of Naples Parthenope, Italy); Claudio Parente (University of Studies of Naples Parthenope, Italy); Giuseppina Prezioso (University of Naples Parthenope, Italy); Andrea Vallario (Parthenope University of Naples, Italy)

10:40 - 12:20	*Grand Hotel Bernardin - Room Europa A* **ROUND TABLE** **Moderator:** Filippo Campagnaro, *University of Padova*

Observing platforms for studying climate change and biodiversity in coastal areas and lagoons - a focus on the Venice Lagoon use-case

PANELLISTS
- Dr Filippo Campagnaro
- Dr Davide De Battisti
- Dr Fausto Ferreira
- Dr Mario Sprovieri
- Prof. Andrea D'Alpaos

12:20 - 13:00	*Grand Hotel Bernardin - Room Europa A* **PLENARY SESSION - KEYNOTE SPEAKER** **Chair**: Maurizio Migliaccio, *Parthenope University of Naples, Italy*

What next for ocean sensing and monitoring?

John R. Potter, *Norwegian University of Science and Technology, Norway*

13:20 - 14:00	*Grand Hotel Bernardin* **LUNCH**

14:00 - 15:20	*Grand Hotel Bernardin - Room Europa A* **Session 8.1 - Technologies, techniques and methodologies for coastal monitoring - PART II** **Chair:** Giacomo Peruzzi, *University of Padova, Italy*

14:00 **A Multi-Stage Model for Dissolved Oxygen Monitoring of Coastal Seawater**
Vito Ferri and Sele Okeoghene Thomas (Politecnico di Torino, Italy); Andrea Bordone and Giancarlo Raiteri (ENEA Marine Environment Research Centre of S. Teresa, Italy); Tiziana Ciuffardi (ENEA, Italy); Chiara Lombardi (ENEA Marine Environment Research Centre of S. Teresa, Italy); Chiara Petrioli (WSense & Sapienza University - Computer Engineering Department, Italy); Daniele Spaccini and Petrika Gjanci (University of Rome "La Sapienza", Italy); Francesca Romana Pennecchi (Istituto Nazionale di Ricerca Metrologica - INRIM, Italy); Marco Coisson and Gianfranco Durin (Istituto Nazionale di Ricerca Metrologica, Italy)

14:20 **Energy Harvest With WAVE. at Sea Trials and Preliminary Results**
Lorenzo Bazzarello and Alessandro Collevecchio (Italian Navy, Italy); Davide Cosimo (University of Pisa, Italy); Daniele Di Vito (University of Cassino, Italy); Giuseppe Gillini (Everybotics sr, Italy); Gianluca Antonelli (University of Cassino, Italy); Andrea Caffaz (Graal Tech, Srl, Portugal); Andrea Traverso (UNIGE, Italy)

14:40 **Fear of the Dark: Exploring PV-Powered IoT Nodes for VLC and Energy Harvesting**
Matteo Bertocco, Alessandro Brighente, Giacomo Peruzzi and Alessandro Pozzebon (University of Padova, Italy); Noah Tormena (University of Padua, Italy); Nicola Trivellin (UNIPD, Italy)

15:00 **Comparison of Wave Parameters Using Multitaper Power Spectral Density Estimation and the Welch Method**
Gabriele Nardone (ISPRA, Italy); Giovanni Battista Rossi (University of Genova, Italy); Marco Picone (ISPRA, Centro Nazionale per la Protezione della Fascia Costiera, la Climatologia, Italy); Francesco Crenna (University of Genova, Italy); Carlo Lo Re (ISPRA, Italy); Mohamad Khalil (University of Genova, Italy)

14:00 - 15:20	*Grand Hotel Bernardin - Room Europa C* **Session 8.2 - Remote sensing, in-situ surveys, and GIS applications for marine and coastal areas - PART II** **Chairs:** Mariusz Specht, *Gdynia Maritime University, Poland* Claudio Parente, *Parthenope University of Naples, Italy* Pier Paolo Amoroso, *Parthenope University of Naples, Italy*

14:00 **Application of NDWI and Machine Learning Techniques for Shoreline Extraction**
Oktawia Specht (Gdynia Maritime University, Poland)

14:20 **Developing a GIS Framework for Effective Weather Routing in the Tyrrhenian Sea**
Emanuele Alcaras (Parthenope University of Naples, Italy); Giorgio Budillon (Pathenope University of Naples, Italy); Yuri Cotroneo (Università degli Studi di Napoli Parthenope, Italy); Diana Di Luccio (University Parthenope, Italy); Raffaele Montella (University of Naples Parthenope, Italy); Claudio Parente (University of Studies of Naples Parthenope, Italy)

14:40 **Preliminary Results of TErra NOva Bay Polynya High Resolution Experiment (TENORE) Project**
Giannetta Fusco (Parthenope University of Naples, Italy); Simone Di Palma and Massimiliano Esposito (University of Naples Parthenope, Italy); Giuseppe Aulicino (Parthenope University of Naples, Italy); Giorgio Budillon (Pathenope University of Naples, Italy); Yuri Cotroneo (Università degli Studi di Napoli Parthenope, Italy)

15:00 **GIS Based Analysis and Accuracy Estimation of Sea Surface Temperature From MODIS Thermal Images**
Davide Morale (University of Naples Parthenope, Italy); Ugo Falchi (Parthenope University of Naples, Italy); Paola Mercogliano (Centro Euro-Mediterraneo sui Cambiamenti Climatici, Italy); Claudio Parente (University of Studies of Naples Parthenope, Italy)

14:00 - 15:40	*Grand Hotel Bernardin - Room Europa D* **Session 8.3 - Exploring the Depths: Progress and Challenges in Surveying Underwater Environments** **Chair:** Silvio Del Pizzo, *Parthenope University of Naples, Italy*

14:00 **Metrology for Underwater Acoustics: Rethinking Measurement Strategies for the Assessment of the Environmental Status**

Pier Francesco Moretti (National Research Council of Italy, Italy); Angela Pomaro (Sapienza University of Rome & National Research Council of Italy, Institute of Marine Sciences, Italy); Silvano Buogo (National Research Council of Italy, Institute of Marine Engineering, Italy)

14:20 **Monitoring Fish Diversity: A Case Study Using Remote Underwater Video Surveys in the Aegean Sea**
Jude Hamilton (Queen's University Belfast, United Kingdom (Great Britain)); Nia Stephens (University of Exeter, United Kingdom (Great Britain)); Maurice Calton Seal and Anastasia Miliou (Archipelagos Institute of Marine Conservation, Greece); Laura Macrina (King Abdullah University of Science and Technology (KAUST), Saudi Arabia & KAUST Red Sea Research Center, King Abdullah University of Science and Technology, Saudi Arabia)

14:40 **A Multi-Beam Forward-Looking Sonar Simulator Based on Unity3D**
Alessandro Gentili and Eleonora D'agostino (Università di Pisa, Italy); Caterina Pieri (Univeristà di Pisa, Italy); Matteo Telesca and Lorenzo Pollini (Università di Pisa, Italy); Andrea Caiti (University of Pisa, Italy); Riccardo Costanzi (Università di Pisa, Italy)

15:00 **Smart - PUFFIN Project Smart Positioning Underwater System for Environmental Field Using Artificial Intelligence**
Silvio Del Pizzo (University of Naples Parthenope, Italy); Antonio Angrisano (Messina University, Italy); Fabio Narducci (University of Salerno, Italy); Ciro Gioia (University of Naples "Parthenope", Italy); Benedetto Simone (University of Salerno, Italy); Salvatore Troisi (University of Naples Parthenope, Italy)

15:20 **An Action-Camera Based Stereo System for microROV for Monitoring Coralline Algae in the Mediterranean Sea: Preliminary Assessment**
Silvio Del Pizzo (University of Naples Parthenope, Italy); Erica Nocerino (University of Sassari, Italy); Salvatore Gaglione (University of Naples Parthenope, Italy); Alessio Calantropio and Fabio Menna (University of Sassari, Italy); Salvatore Troisi (University of Naples Parthenope, Italy)

15:40 - 16:00   *Grand Hotel Bernardin*
COFFEE BREAK - POSTER SESSION #2 (CONTINUE)

16:00 - 16:30   *Grand Hotel Bernardin - Room Europa A*
CLOSING AND AWARD CEREMONY