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Welcome Message from the General Chairs

On behalf of the Organizing Committee, we welcome you in Malta! This edition is the first held out of Italy and Malta was selected for its central position in Mediterranean Sea. The *2023 IEEE International Workshop on Metrology for the Sea* (MetroSea 2023) will be held at the University of Malta - Valletta Campus. The Valletta Campus, which is housed in the Old University Building, dates to the founding of the *Collegium Melitense* in 1592. This Campus serves as a prestigious setting for the hosting of international conferences, seminars, short courses, and summer schools.

The conference is jointly organized by IEEE Italy Section and IEEE Malta Section, involving several Chapters: the IEEE Italy OES Chapter, IEEE Italy Instrumentation and Measurement Chapter, IEEE System Council Italy Chapter, IEEE Sensors Council Italy Chapter, IEEE Women in Engineering Italy Section Affinity Group and IEEE Italy Section Young Professional.

It is the first time that the IEEE MetroSea conference is sponsored by the IEEE Oceanic Engineering Society witnessing its value and role in the Society.

The Sea is the cradle of life in planet Earth, it is a constant presence in the human life since its beginning. It is the medium that let people to travel from one continent to another using vessels and even today despite the use of aircraft. It has been acting also as a great reservoir and source of foods for all living beings. However, for many generations it served as a landfill for depositing conventional and nuclear wastes, especially in its seabed and there is a race to exploit minerals and resources, different from foods, encompassed in it. Its heath is a very challenge for the survival of all humanity since it is one the most important environmental components targeted by the global warming.

"*Learning to measure sea health parameters*" is a challenge for the whole humanity. This is underlined by the growing interest for the marine sciences. In this field new technologies and analysis techniques have recently improved the combined use of numerical approach and metrology systems to get more detailed marine data. For example, advances in computer science, data acquisition and modelling, new spectrometric techniques, analysis, and remote sensing have encouraged interactions among these scientific disciplines based on measurement data and marine data interpretations. A multidisciplinary convergence that moves from physical/chemical/biological processes understanding and modelling to advanced digital procedures, i.e. artificial intelligence, and tools, i.e. digital twinning, to contribute to the scientific and operational challenges that the seas and the oceans must deal with.

The benefits of a multidisciplinary approach have reduced the level of uncertainty in marine technical studies. The *2023 IEEE International Workshop on Metrology for the Sea* aims at

gathering people who work in developing instrumentation and measurement methods for the sea. Attention is paid, but not limited to, at new technology for sea environment monitoring, metrology-assisted production in sea industry, ship component measurement, sensors and associated signal conditioning for the sea, and calibration methods for electronic test and measurement for marine applications.

To further emphasize the connections with the IEEE Oceanic Engineering Society a special issue of the IEEE Journal of Oceanic Engineering Special has been established. Authors of all the above contributions are welcome to submit an extended version to the IEEE Journal of Oceanic Engineering Special Issue *IEEE MetroSea 2023, by 4 March 2024*. More details are 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:

- *Emma Woolliams*, National Physical Laboratory - NPL, UK will speak about "*Metrology to support satellite measurements of the ocean*".

- *Kenneth G. Foote*, Woods Hole Oceanographic Institution, WOODS HOLE, MA, USA will report about the "*Active-sonar metrology*".

- *Andrea Buono*, Parthenope University of Naples, Italy, will discuss on "*New trends for synthetic aperture radar marine applications*".

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:

- Special Session on "***Military Metrology for the Sea***", organized by Italian Navy and AFCEA Naples Chapter.

- **Tutorial** on "*SAR remote sensing of coastal areas*", "THEORY + DO IT YOURSELF" SESSION organized by Ferdinando Nunziata, Parthenope University of Naples, Italy.

  - **Technical visits** to Italian Navy Ships *Francesco Mimbelli* (D 561) and *Bruno Gregoretti* (CP 920).

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

With the aim of providing a common ground for research to share their findings on the metrology for the sea, the Workshop has been enhanced by adding a larger number (13) of Special Sessions with respect to past edition. This allows a spontaneous aggregation providing a forum of discussion close to the single research field. We wish to thank the organizers of these Special Sessions for their cooperation and support to the Workshop organization.

We also wish to express our gratitude to people that make every year this workshop happen. We thank all the authors and the reviewers for their precious service, and our sponsors for their financial support.

Finally, we deeply thank all of our patrons, especially the Italian Navy for the presence of the destroyer-missile launcher "*Francesco Mimbelli"*, and the Italian Coast Guard for the presence of *Supply Vessel "Bruno Gregoretti"*, during the workshop.

We all have in common the deep respect towards the Sea, its health and its life. Then, the *2023 IEEE International Workshop on Metrology for the Sea* is about to begin, fair winds and calm seas!

<div align="right">

Sebastiano D'Amico, *University of Malta, Malta*
Pasquale Daponte, *University of Sannio, Italy*
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IEEE MetroSea 2023 **General Chairs**

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IEEE MetroSea 2023 Keynote Speakers

Plenary Session - Wednesday October 4 - H 12:00

Metrology to support satellite measurements of the ocean

Emma **Woolliams**

National Physical Laboratory, UK

ABSTRACT

The continuous, operational measurements of the oceans provided by satellites are essential to understanding and responding to climate change. They also support safe, sustainable, and fair use of the oceans for food, water, energy, and transportation and support disaster-warning applications. Many of the Global Ocean Observing System's (GOOS) essential ocean variables (EOVs), which include the Global Climate Observing System's essential climate variables (ECVs), are measured by satellites.

It is a principle of both GCOS ECVs and GOOS EOVs, as well as of the Quality Assurance framework for Earth Observation (QA4EO), that the data are provided with detailed metadata and come with an associated indicator of quality traceable to reference standards. QA4EO and the 2022 GCOS Implementation Plan require traceability to a community-agreed reference standard: preferably SI. However, there are challenges performing satellite uncertainty analysis. Satellite data are processed through long processing chains involving different engineering and scientific communities, they are inherently multi-dimensional with complex error covariance structures and applications that use information on very different spatial and temporal scales. Finally, satellite data sets are extremely large and traditional metrological approaches may be computationally too expensive or even impossible. For these reasons, satellite observations need specific tools and guidelines on how to apply standard metrological methodologies.

This presentation will discuss the work of a wide range of collaborative projects, where NPL's Climate and Earth Observation group have worked with partner organisations to apply metrological principles both to satellite data products and to in situ observations that are used in the calibration and validation of satellite products. It will discuss applications of sea surface temperature (from infrared radiometric sensors on satellites and boats, and thermometers on buoys), ocean colour (from visible radiometric satellite sensors and in situ measurements), sea level (from altimeters) and sea ice thickness (from altimeters and in situ measurements). The

presentation will introduce the 'five steps to a metrological uncertainty assessment' that have been refined from work on these different applications and present the CoMet software toolkit that supports the rigorous propagation of uncertainties in satellite data.

SPEAKER BIOGRAPHY

Emma Woolliams graduated from Imperial College London in 1998 and has worked at the National Physical Laboratory since then. Her PhD was on the establishment of the UK's primary spectral irradiance scale. In her early career, she worked as a laboratory metrologist specializing in radiometry and conducting international comparisons to ensure SI consistency. This naturally led to work on radiometric satellite sensors - first for pre-flight calibrations, then for assessing uncertainty in level 1 data. She was the lead metrologist on the FIDUCEO project that established methods for considering the uncertainty of historical satellite sensors. Having built a successful team of scientists who focus on applying metrology approaches to a wide range of radiometric sensors, Emma has now switched focus to radar altimeters and other active sensors. Emma Woolliams is also chair of the European Metrology Network for Climate and Ocean Observation and facilitated the BIPM-WMO workshop in September 2022 on Metrology for Climate Action.

Plenary Session - Thursday October 5 - H 11:00

Active-sonar metrology

Kenneth G. **Foote**
Woods Hole Oceanographic Institution, USA

ABSTRACT

Knowing the quality of a measurement is not incidental but fundamental to the scientific method, defining the concern of metrology. In underwater sound scattering, whose quantification involves active sonar, this concern is addressed by calibration. The aim is to enable a measurement of scattering to be expressed in physical units, such as those of volume or area backscattering coefficient and corresponding spectra. Two approaches are described. System-analytic approach: According to the traditional analytic approach, widely practiced by navies, a sonar is viewed as an assembly of sub-systems. The performance of each of these is typically measured separately, either as an electronic measurement in the laboratory or via hydrophone or standard sound source, each requiring its own calibration when the sonar

transducer is involved. An overall measure of performance is determined by combining the several measurements, with consequent compounding of errors. Integral-system approach: According to the standard-target sonar-calibration method, a sonar is viewed as an integral system consisting of transmitter, transducer, and receiver, all as configured and mounted for use at sea. Calibration is accomplished by a single measurement of the echo from a standard target at a known position in the sonar beams. A standard target is defined as a compact object with known scattering properties, e.g., target strength spectrum, over the frequency band of the sonar. The error consists of two parts: that associated with positioning the standard target, and that intrinsic to the determination of the scattering properties of the same, respectively controllable and irreducible. In practice, for standard targets consisting of solid homogeneous elastic spheres, the estimated accuracy is nominally ±0.1 dB over the frequency band of the sonar. Standard targets have been designed for use over sub-bands within the overall frequency range from 1 kHz to several megahertz, with optimization to minimize variations in target strength associated with natural variations in medium sound speed. Advantages of the standard-target method are calibration of the sonar exactly as it is used, including both electronics configuration and physical mounting of the transducer; accuracy; simplicity and relative swiftness in execution, hence cost-effectiveness. If the sonar performance measurement agrees with specification or earlier performance measurements, the sonar can be regarded as ready for use. If the measurement exceeds a pre-defined tolerance, the sonar may require further, more detailed, performance measurement, as by the traditional analytic approach.

SPEAKER BIOGRAPHY
Kenneth Foote is a Senior Scientist at the Woods Hole Oceanographic Institution and an IEEE Fellow.

Plenary Session - Friday October 6 - H 11:40

New trends for synthetic aperture radar marine applications

Andrea **Buono**
Parthenope University of Naples, Italy

ABSTRACT

We are living in the decade of ocean science for sustainable development as promoted by the United Nations according to the "Agenda 2030". If, from one side, this recognizes the global awareness on the relevance of the ocean for the health of human beings and the Earth, on the other side it suggests to the scientific community pushing significant efforts to preserve and protect ocean's health from anthropogenic threats which are inducing irreversible changes.

Under this perspective, microwave remote sensing sensors represent non-cooperative and cost-effective data sources to get continuous information on the marine environment on various temporal and spatial scales and, therefore, to improve our understanding of ocean processes and dynamics. Nowadays, there is a general consensus that to fully explore the potential of microwave remote sensing measurements, advanced theoretical models and algorithms to retrieve the geophysical parameters of interest are needed.

The keynote focus on the potential of synthetic aperture radar (SAR) satellite remote sensing to support ocean monitoring and maritime surveillance. The most recent trends about SAR imaging are presented including the use of SAR sensors onboard of small and "virtual" constellations of satellites and the implementation of polarimetric architectures. They respectively reply to the demand, from users, of extremely dense revisit time satellite imagery in response to natural hazards and the capability of the scientific community to develop advanced added-value products and to enable new applications. However, to get full benefits from such SAR measurements, tailored physical models are needed. All this matter is provided with reference to selected case studies that include marine oil pollution monitoring, the observation of critical infrastructures and the vulnerability mapping of coastal areas.

SPEAKER BIOGRAPHY

Andrea Buono (SM'22) was born in Naples, Italy, in 1984. In 2010 and 2013 he obtained the BSc and MSc degrees, respectively, in Telecommunications Engineering at the "Parthenope" University of Naples, Italy. In 2017 he obtained the European PhD degree in Information Engineering at the "Parthenope" University of Naples, discussing a thesis on "Polarimetric models for PolSAR observation of oceans and coastal areas". Since 2018 he is Assistant Professor in the field of applied electromagnetics at the Engineering Department of the "Parthenope" University of Naples. In 2021 he received the Italian National Scientific Qualification for Associate Professorship. He was involved in several international research projects on microwave remote sensing of the oceans as Principal or Co-Principal Investigator (PI/Co-PI), including the "Dragon" cooperation framework (2017-ongoing) between the European Space Agency and the National Remote Sensing Center of China, the Italian Space Agency project "CSG to monitor sea oil pollution" (2022-ongoing) and the Japanese Aerospace Exploration Agency project "Techniques for ocean wind field estimation" (2022-ongoing).

His research activities deal with the development of microwave electromagnetic models mainly focused on the characterization of complex surfaces and scenarios and on the interpretation and exploitation of polarimetric information. These theoretical studies found their applications in environmental remote sensing mainly regarding the observation of the ocean and coastal areas using multi-polarization and multi-frequency synthetic aperture radar. He developed

novel algorithms at the basis of added-value products for coastal vulnerability and risk mapping, observation of critical infrastructures and natural ocean targets, wind field estimation and marine oil pollution monitoring. His research activity is witnessed by more than 100 works he published on peer-reviewed international journals, refereed international conference proceedings and textbooks.

He was visiting scientist and lecturer at the Shanghai Ocean University (2015), University of Barcelona (2015, 2016), Beihang University (2016, 2020, 2021), Institute of Advanced Studies (2017), Polytechnic University of Bucharest (2019), Beijing University of Technology (2020), University of Cagliari (2022).

He is Associate Editor for the IEEE Geoscience and Remote Sensing Letters (since 2022) and Guest Editor for the MDPI Remote Sensing Journal (since 2020). He was session chairman at the IEEE IGARSS conference (2018, 2021, 2022), the IEEE International Workshop on Metrology for the Sea (2022), the European Space Agency PolInSAR Workshop (2021) and the Remote Sensing Italian Association International conference (2021). He served as member of the Technical Programme Committee for the following IEEE conferences: IGARSS (since 2018), International Forum on Research and Technologies for Society and Industry (since 2018), Young Professionals Conference on Remote Sensing (2018), Mediterranean and Middle-East Geoscience and Remote Sensing Symposium (since 2020), International Workshop on Metrology for the Sea (since 2022).

He was the recipient of the Best Poster Award at the "Dragon" conferences provided by the European Space Agency (2015, 2021), the Best Reviewer Award of the Remote Sensing journal provided by the MDPI Editorial Board (2017, 2018), the Special Mention for the Galileo Galilei Prize for young researchers provided by the Rotary District 2100 (2018), the Best PhD student research activity Award provided by the Italian Society of Electromagnetism (2015) and the Best Remote Sensing Thesis Award provided by the IEEE Geoscience and Remote Sensing Society South Italy Chapter (2014).

IEEE MetroSea 2023 Tutorial

Tutorial Session – Thursday October 5

Tutorial on SAR remote sensing of coastal areas

Ferdinando **Nunziata**
Parthenope University of Naples, Italy

OVERVIEW

The intended audience consists of students (both at MSc and PhD levels) and researchers involved in coastal area applications. The audience is expected to have basic knowledge of remote sensing and familiarity with Matlab. The topics will be addressed by accompanying theoretical aspects (SAR/PolSAR imaging of ocean surface, scattering, target decomposition theorems, polarimetric features) with practicing on real SAR data to: a) show the potentialities of SAR remote sensing of coastal areas to the beginners of SAR who are familiar with coastal applications; b) show the benefits of model-based processing and multi-pol information to address coastal applications in an effective and robust way to SAR users. In addition, contrasting model's predictions with actual features extracted from SAR imagery is expected to improve the effectiveness of the tutorial in demonstrating the benefits of SAR observation of coastal areas. To improve the spreading of SAR imagery within the ocean's community, several permanent "announcement opportunity" issued by world-wide space agencies to get free-of-charge SAR products will be advertised to the audience.

FORMAT

The full-day tutorial is scheduled on 5 October. Attendees are expected to use their own laptop which is expected to be be equipped with Matlab.

It us suggested to download the free available SNAP toolbox. The presenter will provide to the attendees free-available multi-pol SAR imagery to use in the practice sessions. Those data are publicly available and free-of-charge.

The material can be downloaded joining the LinkedIn group "IEEE OES Ocean Remote Sensing Technology Commitee"

Further information are available at https://www.metrosea.org/tutorial

IEEE MetroSea 2023 Venue

IEEE MetroSea 2023 will be held at the
University of Malta - *Valletta Campus* - St Paul Street, Valletta

ADDRESS
St Paul Street
Valletta

Use the QRCode to open the location on *Google Maps*
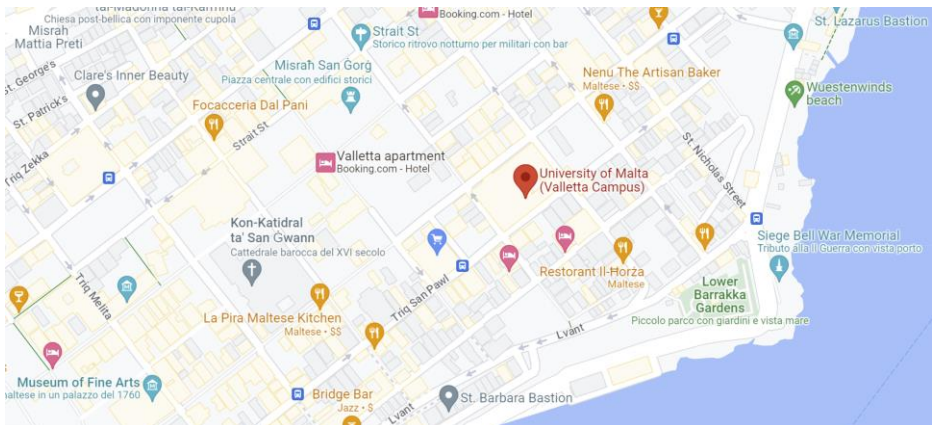
IEEE MetroSea 2023 Social Events

WELCOME PARTY
Wednesday October 4 - H 19:00

The Welcome Party will be held on board of the of the destroyer-missile launcher ship of the Italian Navy "*Francesco Mimbelli*" on **Wednesday, October 4** - 19.00.

The ship will be moored at the "Valletta Gateway Terminals Ltd. - Deep Water Quay".
See on Google Map https://maps.app.goo.gl/oMvBarJR282sHSm39 or use the QR code on the left.
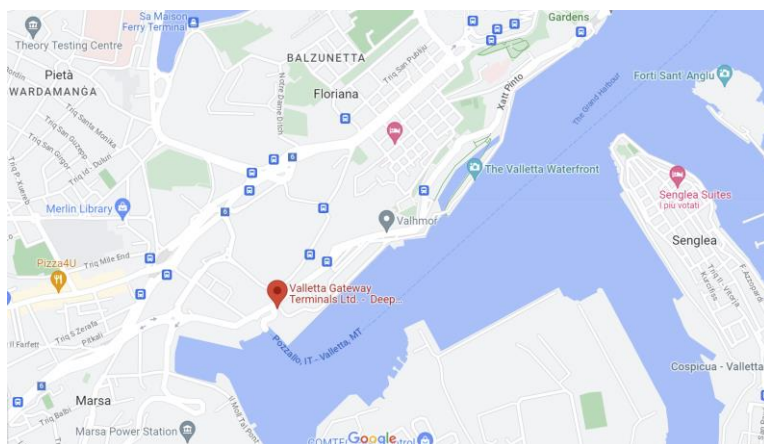
GALA DINNER
Thursday October 5 - H 20:00

The Gala Dinner will be held at "*Mdina Restaurant*" - Holy Cross Str, (Mdina) on **Thursday, October 5** - 20.00.

GUIDED TOUR

Before the dinner, a guided walking tour will be organized.

IEEE MetroSea 2023 Patronages
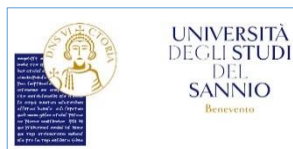
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Program Schedule - Wednesday, October 4

WEDNESDAY, OCTOBER 4, 2023			
09:30 - 10:00	Opening Ceremony - Welcome Addresses		
	Aula Magna	Meeting Room 102	Meeting Room 103
10:00 - 11:40	Session 1.1 - General Session - PART I	Session 1.2 - Special Session #10 - Recent advancements on spaceborne, UAV and floating technologies to implement smart monitoring of coastal seas	Session 1.3 - Special Session #14 - Remote sensing, in-situ surveys, and GIS applications for marine and coastal areas - PART I
11:40 - 12:00	COFFEE BREAK		
12:00 - 13:00	Keynote Speaker - Emma Woolliams, National Physical Laboratory - NPL, UK Metrology to support satellite measurements of the ocean		
13:00 - 14:20	LUNCH		
14:20 - 15:20	**Military Metrology for the Sea - PART I**		
	Aula Magna	Meeting Room 102	Meeting Room 103
15:20 - 16:20	Session 2.1 - Military Metrology for the Sea - PART II	Session 2.2 - Special Session #05 - Benthic Metrosea: Exploration and Monitoring of Marine Habitats	Session 2.3 - Special Session #02 - Towards Transparent Ocean using Underwater Sensor Networks
16:20 - 16:40	COFFEE BREAK		
16:40 - 18:20	Session 3.2 - General Session - PART II	Session 3.3 - Special Session #14 - Remote sensing, in-situ surveys, and GIS applications for marine and coastal areas - PART II	
19:00 - 21:00	WELCOME PARTY - Francesco Mimbelli - Ship of the Italian Navy		

Program Schedule - Thursday, October 5

THURSDAY, OCTOBER 5, 2023			
	Aula Magna	Meeting Room 102	Meeting Room 103
09:00 - 10:40	Session 4.1 - Special Session #01 - Geomatics Techniques for Navigation, Positioning and Monitoring in Coastal Enviroments	Session 4.2 - Special Session #06 - Methodologies, techniques, and ecological indicators for the monitoring of anthropogenic impacts in transitional and coastal waters ecosystems - PART I	Session 4.3 - General Session - PART III
10:40 - 11:00	COFFEE BREAK		
11:00 - 12:00	Keynote Speaker - Kenneth G. Foote, Woods Hole Oceanographic Institution, USA Active-sonar metrology		
12:00 - 13:20	Session 5.1 - Special Session #16 - New Detection and remediation strategies for studying and protecting water environments - PART I	Session 5.2 - Special Session #06 - Methodologies, techniques, and ecological indicators for the monitoring of anthropogenic impacts in transitional and coastal waters ecosystems - PART II	Session 5.3 - Tutorial Part I
13:20 - 14:30	LUNCH		
	Aula Magna	Meeting Room 102	Meeting Room 103
14:30 - 16:10	Session 6.1 - Special Session #16 - New Detection and remediation strategies for studying and protecting water environments - PART II	Session 6.2 - Special Session #04 - Advanced Modelling Analysis on Priority Species, Habitat and Marine Environment - PART I	Session 6.3 - Tutorial Part II
16:10 - 16:40	COFFEE BREAK + POSTER SESSION		
16:40 - 18:00	Session 7.1 - Special Session #17 - Emerging fibre-optic technologies for real-time remote sensing of the ocean environment	Session 7.2 - Special Session #04 - Advanced Modelling Analysis on Priority Species, Habitat and Marine Environment - PART II	Session 7.3 - Tutorial Part III
20:00	SOCIAL DINNER - Mdina Restaurant		

Program Schedule - Friday, October 6

		FRIDAY, OCTOBER 6, 2023	
	Aula Magna	Meeting Room 102	Meeting Room 103
09:30 - 11:10	Session 8.1 - Special Session #13 - Advanced modelling and measurement to reduce risk in port areas	Session 8.2 - Special Session #09 - Generation of added-value Products from Multi-Frequency and Multi-Scale Satellite Remote Sensing Measurements	Session 8.3 - Special Session #11 - Technologies, techniques and methodologies for coastal monitoring
11:10 - 11:40	POSTER SESSION + COFFEE BREAK		
11:40 - 12:40	Keynote Speaker - Andrea Buono, Parthenope University of Naples, Italy New trends for synthetic aperture radar marine applications		
12:40 - 14:00	LUNCH		
	Aula Magna	Meeting Room 102	
14:00 - 15:00	Session 9.1 - Special Session #08 - Geomorphology in the Digital Age	Session 9.2 - General Session	
15:20 - 16:50	CLOSING AND AWARD CEREMONY		

Technical Program - Wednesday, October 4

09:30 - 17:00	*University of Malta - Valletta Campus* **REGISTRATIONS**

09:30 - 10:00	*Aula Magna* **OPENING CEREMONY - WELCOME ADDRESSES**

10:00 - 11:40	*Aula Magna* **Session 1.1 - General Session - PART I** **Chair:** Adam Gauci, *University of Malta, Malta*

10:00 **Exploring the Advantages of a Simulation-Based Mission Planning for Underwater Robotics**
Francesco Cannarsa, University of Pisa, Italy
Lorenzo Bazzarello, University of Pisa, Italy
Giovanni Luca Maglione, CMRE, Italy
Andrea Caiti, University of Pisa, Italy
Riccardo Costanzi, University of Pisa, Italy
Mirko Stifani, Fincantieri Nextech Spa, Italy

10:20 **Estimating Ocean Vertical Velocities Using an Autonomous Multipurpose Profiler**
Jean-Luc Fuda, Mediterranean Institute of Oceanography - CNRS, France
Stéphanie Barrillon, Mediterranean Institute of Oceanography - CNRS, France
Caroline Comby, Aix MArseille University, France
Andrea Doglioli, Aix Marseille University, France
Patrice Le Gal, CNRS-IRPHE, Aix Marseille University, France
Anne Petrenko, Aix Marseille University, France

10:40 **Inter-Laboratory Comparison on a Reference Material for Seawater Spectrophotometric pHT Measurements**
Gaëlle Capitaine, Laboratoire National de Métrologie et d'Essais, Mediterranean Institute of Oceanography, France
Séverine Demeyer, Laboratoire National de Métrologie et d'Essais, Mediterranean Institute of Oceanography, France

Daniela Stoica, LNE, France
Samir Alliouane, LOV, France
Sébastien Petton, IFREMER, France
Peggy Rimmelin-Maury, IUEM, France
Nicolas Savoye, EPOC, France
Thibaut Wagener, MIO, France
Paola Fisicaro, LNE, France

11:00   **Analysis and Modeling of an IMU and a FOG of an Underwater Vehicle Using Allan Variance**
Gherardo Liverani, University of Florence, Italy
Alessandro Bucci, University of Florence, Italy
Alessandro Ridolfi, University of Florence, Italy

11:20   **A Data-Driven Algorithm for Detecting Anomalies in Underwater Sensor-Based Wave Height Measurements**
Valerio Scordamaglia, Mediterranea University of Reggio Calabria, Italy
Alessia Ferraro, Mediterranea University of Reggio Calabria, Italy
Luana Gurnari, Mediterranea University of Reggio Calabria, Italy
Filippo Ruffa, Mediterranea University of Reggio Calabria, Italy
Claudio De Capua, Mediterranea University of Reggio Calabria, Italy
Pasquale Filianoti, Mediterranea University of Reggio Calabria, Italy

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10:00 - 11:40   *Meeting Room 102*
Session 1.2 - Recent advancements on spaceborne, UAV and floating technologies to implement smart monitoring of coastal seas
Chairs: Silvia Merlino, *ISMAR-CNR, Italy*
Giulia Buttazzoni, *University of Trieste, Italy*

10:00   **Monitoring Beached Marine Litter With UAV: Advances in Detection Techniques and Citizen Science Contributions**
Silvia Merlino, ISMAR-CNR, Italy
Marina Locritani, INGV, Italy
Umberto Andriolo, University of Coimbra, Portugal
Gil Goncalves, University of Coimbra, Portugal
Luciano Massetti, IBE-CNR, Italy
Marco Paterni, IFC-CNR, Italy

10:20   **Detection and Classification of Microplastics in Marine Environment Using a Low-Cost, Compact, and Fast Sensor**
Bruno Cocciaro, ICCON-CNR, Italy
Silvia Merlino, ISMAR-CNR, Italy
Marco Bianucci, ISMAR-CNR, Italy
Claudio Casani, University of Pisa, Italy
Roberta Giugliano, Istituto Zooprofilattico Sperimentale, Italy
Vincenzo Palleschi, ICCON-CNR, Italy

10:40   **A Method of Synthesis for Multi-Frequency Smart Antenna Arrays for Coastal Monitoring**
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, University of Trieste, Italy
Massimiliano Comisso, University of Trieste, Italy

11:00   **Low-Cost Drifters: Some Applications for Water Monitoring**
Antonio Guarnieri, Istituto Nazionale di Geofisica e Vulcanologia, Italy
Silvia Merlino, CNR-ISMAR, Italy
Marina Locritani, Istituto Nazionale di Geofisica e Vulcanologia, Italy
Damiano Delrosso, Istituto Nazionale di Geofisica e Vulcanologia, Italy
Marco Bianucci, CNR-ISMAR, Italy
Marco Paterni, CNR-IFC, Italy
Anita Grezio, Istituto Nazionale di Geofisica e Vulcanologia, Italy
Filippo Muccini, Istituto Nazionale di Geofisica e Vulcanologia, Italy
Dmitri Rouwet, Istituto Nazionale di Geofisica e Vulcanologia, Italy
Giancarlo Tamburello, Istituto Nazionale di Geofisica e Vulcanologia, Italy

11:20   **X-Band SAR Measurements to Extract Motion-Related Parameters of Offshore Wind Farms**
Giovanna Inserra, Università Degli Studi di Napoli Parthenope, Italy
Ferdinando Nunziata, Università Degli Studi di Napoli Parthenope, Italy
Armando Marino, The University of Stirling, United Kingdom

10:00 - 11:40   *Meeting Room 103*
Session 1.3 - Remote sensing, in-situ surveys, and GIS applications for marine and coastal areas - PART I
Chairs: Claudio Parente, *Parthenope University of Naples, Italy*
Mariusz Specht, *Gdynia Maritime University, Poland*
Emanuele Alcaras, *Parthenope University of Naples, Italy*

10:00   **Detection and Monitoring of Maltese Shoreline Changes Using Sentinel-2 Imagery**
Asma Fejjari, University of Malta, Malta
Gianluca Valentino, University of Malta, Malta
Johann A. Briffa, University of Malta, Malta
Sebastiano D'Amico, University of Malta, Malta

10:20   **The Impact of the NDVI Index on Marine Algae Monitoring-Polish Case Study**
Oktawia Lewicka, Gdynia Maritime University, Poland

10:40   **GIS Analysis for Defining Sea Level Rise Effects on Sicily Coasts for the End of the 21st Century**
Emanuele Alcaras, Parthenope University of Naples, Italy
Paola Mercogliano, Centro Euro-Mediterraneo sui Cambiamenti Climatici, Italy

Davide Morale, Centro Euro-Mediterraneo sui Cambiamenti Climatici, Italy
Claudio Parente, Parthenope University of Naples, Italy

11:00 **Investigating Actual and Future Trends of Thermal Characteristics With Satellite Images and Artificial Neural Networks Approach**
Yasir Hassan Khachoo, Parthenope University of Naples, Italy
Matteo Cutugno, University of Benevento Giustino Fortunato, Italy
Umberto Robustelli, Parthenope University of Naples, Italy
Giovanni Pugliano, University of Naples Federico II, Italy

11:20 **Acoustic Monitoring of Cetaceans Using Static and Dynamic Devices in the Central Mediterranean Sea**
Francesco Caruso, Stazione Zoologica Anton Dohrn, Italy
Sara Ferri, Stazione Zoologica Anton Dohrn, Italy
Anaelle Evrard, Universitè de Bretagne Occidentale, France
Augusto Passarelli, Stazione Zoologica Anton Dohrn, Italy
Teresa Romeo, Stazione Zoologica Anton Dohrn, Italy
Silvestro Greco, Stazione Zoologica Anton Dohrn, Italy
Simonepietro Canese, Stazione Zoologica Anton Dohrn, Italy

11:40 - 12:00   *University of Malta - Valletta Campus*
COFFEE BREAK

12:00 - 13:00   *Aula Magna*
PLENARY SESSION - KEYNOTE SPEAKER
Chair: Sebastiano D'Amico, *University of Malta*

Metrology to support satellite measurements of the ocean

Emma Woolliams, *National Physical Laboratory - NPL, UK*

13:00 - 14:20   *University of Malta - Valletta Campus*
LUNCH

14:20 - 15:20   *Aula Magna*
Military Metrology for the Sea - PART I
Chair: Giovanni Savoldelli Pedrocchi, *AFCEA Chapter Naples*

14:20 **Welcome Addresses**
B. Gen. Giovanni Savoldelli Pedrocchi, *President, Afcea Chapter Naples*

14:30 **The National Maritime Single Window and the environment**
Capt. Matteo Prantner, *Italian Navy - Italian Coast Guard*

14:55 **Hydro-oceanographic measurements of the Italian Hydrographic Institute**
Matteo Guideri, *Italian Hydrographic Institute*

15:20 - 16:20 *Aula Magna*
Session 2.1 - Military Metrology for the Sea - PART II
Chair: B.Gen. Giovanni Savoldelli Pedrocchi, *AFCEA Chapter Naples*

15:20 **Underwater communication: a cetacean's perspective**
Patrizia Patti, *EcoMarine Malta*

15:40 **Fast deployment system to monitor critical marine, river and lake infrastructures, using an autonomous amphibious Rover**
Eduardo De Francesco, *SeTeL Group*

16:00 **IMO/MARPOL Regulation: 3E, Environmental, Ethical & Economical**
Carmelita Guarrera, *ECO.MAR.SOL. Ltd*

15:20 - 16:20 *Meeting Room 102*
Session 2.2 - Benthic Metrosea: Exploration and Monitoring of Marine Habitats
Chair: Giovanni Chimienti*, University of Bari, Italy*

15:20 **Italian Macroinvertebrates Interlaboratory Comparisons on Taxonomical Identification and Counting of Marine Soft Bottom Invertebrates**
Monica Targusi, ISPRA - Institute for Environmental Protection and Research, Italy
Veronica Marusso, ISPRA - Institute for Environmental Protection and Research, Italy
Salvatore Porrello, ISPRA - Institute for Environmental Protection and Research, Italy
Fabio Bertasi, ISPRA - Institute for Environmental Protection and Research, Italy
Tiziano Bacci, ISPRA - Institute for Environmental Protection and Research, Italy
Loretta Lattanzi, ISPRA - Institute for Environmental Protection and Research, Italy
Danilo Vani, ISPRA - Institute for Environmental Protection and Research, Italy
Barbara Laporta, ISPRA - Institute for Environmental Protection and Research, Italy
Paolo Tomassetti, ISPRA - Institute for Environmental Protection and Research, Italy

15:35 **A New Method for the Transplanting of the Seagrass Posidonia Oceanica**
Giovanni Chimienti, University of Bari Aldo Moro, Italy
Andrea Tursi, University of Bari Aldo Moro, Italy
Luca Saponari, The Oceancy MTÜ, Estonia
Valentina Lovat, Intergovernamental Oceanographic Commission of UNESCO, Italy
Francesca Santoro, Intergovernamental Oceanographic Commission of UNESCO, Italy
Francesco Mastrototaro, University of Bari Aldo Moro, Italy

15:50 **Preliminary Assessment of Cladocora Caespitosa Population at Tremiti Islands Marine Protected Area (Southern Adriatic Sea)**
Francesco Mastrototaro, University of Bari Aldo Moro, Italy
Andrea Tursi, University of Bari Aldo Moro, Italy
Alessia Logrieco, University of Bari Aldo Moro, Italy
Giovanni Chimienti, University of Bari Aldo Moro, Italy

16:05 **Reducing Fishery Impact on Benthic Community: New Data by the Use of Guarding Nets From the Marine Protected Area of Egadi Islands**
Manfredi Madia, Stazione Zoologica Anton Dohrn, Italy
Massimiliano Bottaro, Stazione Zoologica Anton Dohrn, Italy
Andrea Li Vorsi, Stazione Zoologica Anton Dohrn, Italy
Maria Rita Amico, Stazione Zoologica Anton Dohrn, Italy
Michele Gristina, National Research Council of Italy, Italy
Sergio Bizzarri, Stazione Zoologica Anton Dohrn, Italy
Teresa Maggio, ISPRA, Italy
Tiziana Cillari, ISPRA, Italy
Roberto D'Ambra, AGEI, Italy
Enrico Casola, Istituto Cooperativo di Ricerca, Italy
Mauro Sinopoli, Stazione Zoologica Anton Dohrn, Italy

15:20 - 16:20 *Meeting Room 103*
Session 2.3 - Towards Transparent Ocean using Underwater Sensor Networks
Chair: Nazila Fough*, Robert Gordon University , UK*

15:20 **Experimental Verification of Underwater 2-Ch Bilateral Controller With Disturbance Observer**
Naoki Motoi, Kobe University, Japan
Taiga Okada, Kobe University, Japan
Masato Kobayashi, Osaka University, Japan

15:40 **BlueLink: A Bidirectional Optical Modem for High-Speed Underwater Communication**
Ivar Bjørgo Saksvik, Oslo Metropolitan University, Norway
Vahid Hassani, Oslo Metropolitan University, Norway
Antonio Pascoal, University of Lisbon, Portugal
Alex Alcocer, Oslo Metropolitan University, Norway

16:00 **Performance and Energy Modelling for a Low Energy Acoustic Network for the Underwater Internet of Things**
Craig Stewart, Robert Gordon University, United Kingdom
Nazila Fough, Robert Gordon University, United Kingdom
Nuh Erdogan, Robert Gordon University, United Kingdom
Radhakrishna Prabhu, Robert Gordon University, United Kingdom

| 16:20 - 16:40 | *University of Malta - Valletta Campus* |
| | **COFFEE BREAK** |

16:40 - 18:20	*Aula Magna*
	Session 3.2 - General Session - PART II
	Chairs: Fabiana Di Ciaccio*, University of Florence, Italy*
	Paolo Russo*, Sapienza University of Rome, Italy*

16:40   **Comparative Analysis of Machine Learning Algorithms for the Classification of Underwater Marine Debris**
Bushra Jalil, Scuola Superiore Sant Anna, Italy
Luca Maggiani, Sma-rty Italia, Italy
Luca Valcarenghi, Scuola Superiore Sant'Anna, Italy

17:00   **Predicting and Identifying Antimicrobial Resistance in the Marine Environment Using AI & Machine Learning Algorithms**
Faranak Fough, Robert Gordon University, United Kingdom
Ghalib M W Janjua, Robert Gordon University, United Kingdom
Yafan Zhao, Robert Gordon University, United Kingdom
Aakash Welgamage Don, Robert Gordon University, United Kingdom

17:20   **Recent Advances in AI for Enhanced Environmental Monitoring and Preservation**
Paolo Russo, University of Rome La Sapienza, Italy
Fabiana Di Ciaccio, University of Florence, Italy

17:40   **Pattern Recognition for Imputation of Missing Radial Surface Current Data - a Malta-Sicily Channel Case Study**
Leon Ćatipović, University of Split, Croatia
Hrvoje Kalinić, University of Split, Croatia
Frano Matić, University of Split, Croatia
Adam Gauci, University of Malta, Malta
Joel Azzopardi, University of Malta, Malta

18:00   **Proficiency Test on Grain Size Measurements of Marine Sediments**
Maria Celia Magno, ISPRA, Italy
Sabrina Barbizzi, ISPRA, Italy
Paolo de Zorzi, ISPRA, Italy
Alessandra Pati, ISPRA, Italy
Patrizia Leone, ISPRA, Italy
Teresa Guagnini, ISPRA, Italy
Giancarlo Pierfranceschi, ISPRA, Italy

16:40 - 18:20	*Meeting Room 102*
	Session 3.3 - Remote sensing, in-situ surveys, and GIS applications for marine and coastal areas - PART II
	Chairs: Mariusz Specht, *Gdynia Maritime University, Poland*
	Andrea Vallario, *Parthenope University of Naples, Italy*
	Emanuele Alcaras, *Parthenope University of Naples, Italy*

16:40 **Application of UAV and USV Vehicles for Bathymetric Monitoring of Waterbodies With High Variability of the Seabed Topography**
Mariusz Specht, Gdynia Maritime University, Poland

17:00 **The Influence of Interpolation Methods and Point Density on the Accuracy of a Bathymetric Model**
Pier Paolo Amoroso, Parthenope University of Naples, Italy
Ugo Falchi, Parthenope University of Naples, Italy
Francesco Giuseppe Figliomeni, Parthenope University of Naples, Italy
Andrea Vallario, Parthenope University of Naples, Italy

17:20 **A New Technical Approach to Automatically Detect the Thermal Drop in Seawater Associated to the Occurrence of Medicane Events**
Alok Kushabaha, University of Bari Aldo Moro, Italy
Giovanni Scardino, University of Bari Aldo Moro, Italy
Gaetano Sabato, University of Bari Aldo Moro, Italy
Sebastiano Tarascio, University of Catania, Italy
Giovanni Scicchitano, University of Bari Aldo Moro, Italy

17:40 **A New Water Index Proposal for Coastline Extraction From Landsat 9 OLI Images**
Pier Paolo Amoroso, Parthenope University of Naples, Italy
Francesco Giuseppe Figliomeni, Parthenope University of Naples, Italy
Claudio Parente, Parthenope University of Naples, Italy

18:00 **Multi-Technique Surveys and GIS Analysis for the Roman Palaeo-Landscape Reconstruction of Campi Flegrei Volcanic Area**
Gaia Mattei, Parthenope University of Naples, Italy
Lucio Amato, Tecno-In S.p.A. - Engineering Service, Italy
Claudia Caporizzo, Parthenope University of Naples, Italy
Aldo Cinque, University of Naples Federico II, Italy
Gerardo Pappone, Parthenope University of Naples, Italy
Alessia Sorrentino, Parthenope University of Naples, Italy
Paolo Stocchi, Utrecht University, The Netherlands
Salvatore Troisi, Parthenope University of Naples, Italy
Pietro P. C. Aucelli, Parthenope University of Naples, Italy

19:00 - 21:00	*Francesco Mimbelli - Ship of the Italian Navy*
	WELCOME PARTY

Technical Program - Thursday, October 5

09:00 - 17:00	*University of Malta - Valletta Campus* **REGISTRATIONS**

09:00 - 10:40	*Aula Magna* **Session 4.1 - Geomatics Techniques for Navigation, Positioning and Monitoring in Coastal Enviroments** **Chairs**: Salvatore Gaglione, *Parthenope University of Naples, Italy* Silvio Del Pizzo*, Parthenope University of Naples, Italy*

09:00 **Incidence of Parametrized Methods for Spectral Analysis of Ship Motion**
Silvia Ascione, Parthenope University of Naples, Italy
Salvatore Gaglione, Parthenope University of Naples, Italy
Vincenzo Piscopo, Parthenope University of Naples, Italy
Antonio Scamardella, Parthenope University of Naples, Italy

09:20 **Enhancing Navigation Solution With Galileo HAS**
Gabriele Portelli, Parthenope University of Naples, Italy
Antonio Angrisano, University of Messina, Italy
Giovanni Cappello, Parthenope University of Naples, Italy
Silvio Del Pizzo, Parthenope University of Naples, Italy
Ciro Gioia, ISPRA, Italy
Salvatore Troisi, Parthenope University of Naples, Italy
Salvatore Gaglione, Parthenope University of Naples, Italy

09:40 **MANATEE Project: Monitoring and Mapping of Marine Habitat With Integrated Geomatics Technologies**
Erica Nocerino, University of Sassari, Italy
Silvio Del Pizzo, Parthenope University of Naples, Italy
Alessandro Lambertini, University of Bologna, Italy
Salvatore Troisi, Parthenope University of Naples, Italy
Luca Vittuari, University of Bologna, Italy

10:00   Coastal Monitoring Assessment Using a Low-Cost PPK-UAV Setup for Photogrammetric Survey
Silvio Del Pizzo, Parthenope University of Naples, Italy
Antonio Angrisano, University of Messina, Italy
Pietro P. C. Aucelli, Parthenope University of Naples, Italy
Giovanni Cappello, Parthenope University of Naples, Italy
Gaia Mattei, Parthenope University of Naples, Italy
Salvatore Troisi, Parthenope University of Naples, Italy

10:20   Analysis of the Performance of a Low-Cost V-Slam Device in GNSS-Denied Environment
Nicola Crocetto, Università Della Campania Luigi Vanvitelli, Italy

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09:00 - 10:20   Meeting Room 102
Session 4.2 - Methodologies, techniques, and ecological indicators for the monitoring of anthropogenic impacts in transitional and coastal waters ecosystems - PART I
Chairs: Antonella Petrocelli, *CNR-IRSA, Italy*
Matilda Mali, *Politecnico di Bari, Italy*
Pasquale Ricci, *University of Bari, Italy*

09:00   Enhancing Coastal Resilience: Innovative Remote Techniques for Shoreline Detection, and Citizen Based Monitoring in the Apulian Region (Italy)
Yasser Assaf, Politecnico di Bari, Italy
Stefano Marino, Politecnico di Bari, Italy
Nico Valentini, University of Montpellier, France
Leonardo Damiani, Politecnico di Bari, Italy
Alessandra Saponieri, University of Salento, Italy

09:20   Smart Design of Biodiversity Monitoring Systems in Coastal Area
Daniela Malcangio, Politecnico di Bari, Italy
Daniele Celli, University of L'Aquila, Italy
Umberto Fratino, Politecnico di Bari, Italy
Marcello Di Risio, University of L'Aquila, Italy

09:40   The Ecological Status of Relict Posidonia Oceanica (Linnaeus) Delile Meadows: The Case of Cala San Giacomo (Apulia, Adriatic Sea)
Giuseppe Denti, Water Research Institute - CNR, Italy
Fernando Rubino, Water Research Institute - CNR, Italy
Loredana Papa, Water Research Institute - CNR, Italy
Antonella Petrocelli, Water Research Institute - CNR, Italy
Giovanni Fanelli, Water Research Institute - CNR, Italy

10:00   Pattern Recognition for Spatial Distribution of Heavy Metals and Hydrocarbons in a Polluted Marine Basin
Matilda Mali, Politecnico di Bari, Italy
Francesco Paolo Buonocunto, ISMAR - CNR, Italy

Alfonsa Milia, ISMAR - CNR, Italy
Antonella Di Leo, IRSA - CNR, Italy
Rosa Ragone, Politecnico di Bari, Italy
Lucia Spada, IRSA - CNR, Italy
Santina Giandomenico, IRSA - CNR, Italy

09:00 - 10:20   *Meeting Room 103*
    Session 4.3 - General Session - PART III
    Chair: Adam Gauci, *University of Malta*

09:00   **Toxicological Impact of Rare Earth Elements (REEs) to Marine Copepods Tigriopus Fulvus**
Francesca Biandolino, IRSA-CNR, Italy
Isabella Parlapiano, IRSA-CNR, Italy
Asia Grattagliano, University of Rome Tor Vergata, Italy
Giovanni Libralato, University of Naples Federico II, Italy
Ermelinda Prato, IRSA-CNR, Italy

09:20   **Impacts of Some Recyclable Plastic on Marine Key Species**
Isabella Parlapiano, IRSA-CNR, Italy
Ermelinda Prato, IRSA-CNR, Italy
Giovanni Libralato, University of Naples Federico II, Italy
Francesca Biandolino, IRSA-CNR, Italy

09:40   **Metrology for Marine Monitoring: Cooperation Between INRiM and ENEA**
Francesca Rolle, INRiM - Istituto Nazionale di Ricerca Metrologica, Italy
Francesca Durbiano, INRiM - Istituto Nazionale di Ricerca Metrologica, Italy
Stefano Pavarelli, INRiM - Istituto Nazionale di Ricerca Metrologica, Italy
Francesca Romana Pennecchi, INRiM - Istituto Nazionale di Ricerca Metrologica, Italy
Marco Coisson, INRiM - Istituto Nazionale di Ricerca Metrologica, Italy
Gianfranco Durin, INRiM - Istituto Nazionale di Ricerca Metrologica, Italy
Chiara Lombardi, ENEA, Italy
Giancarlo Raiteri, ENEA, Italy
Andrea Bordone, ENEA, Italy
Chiara Petrioli, WSense, Sapienza University of Rome, Italy
Michela Sega, INRiM - Istituto Nazionale di Ricerca Metrologica, Italy

10:00   **Testing of High Resolution Methods for the Estimation of Directional Spectra of Sea Waves**
Giovanni Battista Rossi, University of Genova, Italy
Gabriele Nardone, ISPRA, Italy
Marco Picone, ISPRA, Italy
Giulio Settanta, ISPRA, Italy
Francesco Crenna, University of Genova, Italy
Marta Berardengo, University of Genova, Italy

10:40 - 11:00   *University of Malta - Valletta Campus*
    COFFEE BREAK

11:00 - 12:00	*Aula Magna* **PLENARY SESSION - KEYNOTE SPEAKER** **Chair**: Maurizio Migliaccio, *Parthenope University of Naples, Italy*

Active-sonar metrology

Kenneth G. Foote, *Woods Hole Oceanographic Institution, USA*

12:00 - 13:20	*Aula Magna* **Session 5.1 - New Detection and remediation strategies for studying and protecting water environments - PART I** **Chairs**: Stefania Federici, *University of Brescia, Italy* Pietro Ferraro, *National Research Council, Italy*

12:00 **Towards Environmentally Relevant Particles in Microplastic Research**
Gabriela Kalčikova, University of Ljubljana, Slovenia

12:20 **Exploring Fragmentation Techniques for the Preparation of Test Microplastics**
Serena Ducoli, University of Brescia and INSTM, Italy
Monika Rani, University of Brescia and INSTM, Italy
Claudio Marchesi, University of Brescia and INSTM, Italy
Stefania Federici, University of Brescia and INSTM, Italy
Laura Eleonora Depero, University of Brescia and INSTM, Italy

12:40 **Diatoms as Bio-Sentinels to Probe the Dose-Dependent Impact of Copper on Aquatic Environment: A Multi-Scale Fractal Analysis in Fourier Ptychographic Microscopy**
Vittorio Bianco, National Research Council, Italy
Daniele Pirone, National Research Council, Italy
Lisa Miccio, National Research Council, Italy
Elena Cavalletti, Stazione Zoologica Anton Dohrn, Italy
Jaromir Behal, National Research Council, Italy
Pasquale Memmolo, National Research Council, Italy
Angela Sardo, Stazione Zoologica Anton Dohrn, Italy
Pietro Ferraro, National Research Council, Italy

13:00 **Recycling Approach of Marine Plastic Litter: Highly Filled Composites Obtained by Loading Waste Fishing Nets Fiber Into Fluidified Recycled Polystyrene and Acrylonitrile Butadiene Styrene**
Immacolata Liotta, National Research Council, Italy
Roberto Avolio, National Research Council, Italy
Rachele Castaldo, National Research Council, Italy
Gennaro Gentile, National Research Council, Italy
Maria Emanuela Errico, National Research Council, Italy
Mariacristina Cocca, National Research Council, Italy

12:00 - 13:20	Meeting Room 102
	Session 5.2 - Methodologies, techniques, and ecological indicators for the monitoring of anthropogenic impacts in transitional and coastal waters ecosystems - PART II
	Chairs: Antonella Petrocelli, *CNR-IRSA, Italy*
	Matilda Mali, *Politecnico di Bari, Italy*
	Pasquale Ricci, *University of Bari, Italy*

12:00 **Microbiological and Chemical Analysis of Macroalgae Biomasses in an Integrated Mariculture System**
Loredana Stabili, IRSA - CNR, Italy
Maria Immacolata Acquaviva, IRSA - CNR, Italy
Rosa Anna Cavallo, IRSA - CNR, Italy
Ester Cecere, IRSA - CNR, Italy
Santina Giandomenico, IRSA - CNR, Italy
Margherita Licciano, University of Salento, Italy
Antonella Petrocelli, IRSA - CNR, Italy
Giuseppe Portacci, IRSA - CNR, Italy
Tiziano Verri, University of Salento, Italy
Elisa Quarta, University of Salento, Italy

12:20 **Legacy Organochlorine Pesticides and PCBs in the Seafloor Sediments Offshore the Sarno Plain (Gulf of Naples, Eastern Tyrrhenian Sea): Preliminary Results**
Francesco Paolo Buonocunto, ISMAR - CNR, Italy
Santina Giandomenico, IRSA - CNR, Italy
Serena Gherardi, ISMAR - CNR, Italy
Alfonsa Milia, ISMAR - CNR, Italy
Antonella Di Leo, IRSA - CNR, Italy
Lucia Spada, IRSA - CNR, Italy
Matilda Mali, Politecnico di Bari, Italy

12:40 **Niche Overlap Between Monk Seal (Monachus Monachus) and Small-Scale Fishery Fleet of Marathokampos Bay in Samos Island (North Aegean Sea, Greece)**
Maurizio Ingrosso, University of Bari, Italy
Beatriz Tintoré, Archipelagos Institute of Marine - Conservation Brunel University London, Greece
Laura Macrina, King Abdullah University of Science and Technology, KAUST Red Sea Research Center, Saudi Arabia
Giulia Cipriano, University of Bari, Italy
Thodoris Tsimpidis, Archipelagos Institute of Marine Conservation, Greece
Anastasia Miliou, Archipelagos Institute of Marine Conservation, Greece
Roberto Carlucci, University of Bari, Italy
Guido Pietroluongo, University of Padova, Italy

13:00 **Microplastic Pollution in Italian South Adriatic Harbor Areas**
Valentina Petrelli, Politecnico di Bari, Italy
Alberto Ferraro, Politecnico di Bari, Italy

Umberto Fratino, Politecnico di Bari, Italy
Matilda Mali, Politecnico di Bari, Italy
Danilo Spasiano, Politecnico di Bari, Italy
Maria Michela Dell'Anna, Politecnico di Bari, Italy

12:00 - 13:20	*Meeting Room 103*
	Session 5.3 - Tutorial on SAR remote sensing of coastal areas - PART I
	Organized by Ferdinando Nunziata, *Parthenope University of Naples, Italy*

13:20 - 14:30	*University of Malta - Valletta Campus*
	LUNCH

14:30 - 16:10	*Aula Magna*
	Session 6.1 - New Detection and remediation strategies for studying and protecting water environments - PART II
	Chairs: Vittorio Bianco, *National Research Council, Italy*
	Pietro Ferraro, *National Research Council, Italy*

14:30   **Particle Imaging Flow Cytometry for Metrology in Sea Applications**
Julia Sophie Böke, Leibniz-Institute of Photonic Technology, Germany
Mark Kielpinski, Institute of Photonic Technology, Germany
Thomas Henkel, Leibniz-Institute of Photonic Technology, Germany

14:50   **Hierarchically Porous Materials for the Removal of Emerging Organic Contaminants From Aquatic Environments**
Rachele Castaldo, National Research Council, Italy
Roberto Avolio, National Research Council, Italy
Mariacristina Cocca, National Research Council, Italy
Maria Emanuela Errico, National Research Council, Italy
Federico Olivieri, National Research Council, Italy
Gennaro Gentile, National Research Council, Italy

15:10   **Micro- and Nano-Particles Release From Disposable Plastic Face Masks Under Simulated UV Weathering**
Nina Maria Ainali, Aristotle University of Thessaloniki, Greece
Javier Delgado Gallardo, Flemish Institute for Technological Research, Belgium
Artem Glukharev, Flemish Institute for Technological Research, Belgium
Dimitra Lambropoulou, Aristotle University of Thessaloniki, Greece
Dimitrios N. Bikiaris, Aristotle University of Thessaloniki, Greece
Kristof Tirez, Flemish Institute for Technological Research, Belgium
Milica Velimirovic, Flemish Institute for Technological Research, Belgium

15:30   **A Digital Holographic Analysis on Tetraselmis Sensitivity to Copper**

Giusy Giugliano, National Research Council, Italy
Marika Valentino, National Research Council, Italy
Elena Cavalletti, Stazione Zoologica Anton Dohrn, Italy
Daniele Gaetano Sirico, National Research Council, Italy
Pasquale Memmolo, National Research Council, Italy
Angela Sardo, , National Research Council, Stazione Zoologica Anton Dohrn, Italy
Lisa Miccio, National Research Council, Italy
Pietro Ferraro, National Research Council, Italy
Vittorio Bianco, National Research Council, Italy

15:50   **Resonance-Based Microwave Transducer for Contactless Salinity Detection**

Giovanni Gugliandolo, University of Messina, Italy
Giovanni Crupi, University of Messina, Italy
Luigi Calabrese, University of Messina, Italy
Daniela Iannazzo, University of Messina, Italy
Mariangela Latino, University of Messina, Italy
Antonino Quattrocchi, University of Messina, Italy
Nicola Donato, University of Messina, Italy

14:30 - 16:10   *Meeting Room 102*
Session 6.2 - Advanced Modelling Analysis on Priority Species, Habitat and Marine Environment - PART I
Chairs: Giulia Cipriano, *University of Bari, Italy*
Rosalia Maglietta, *National Research Council, Italy*
Clara Monaco, *University of Catania, Italy*

14:30   **Machine Learning to Predict Cetacean Behaviour Using Social and Environmental Features**

Carla Cherubini, University of Bari, Italy
Leonardo Saccotelli, CMCC, Italy
Rocco Caccioppoli, CMCC, Italy
Carmelo Fanizza, Jonian Dolphin Conservation, Italy
Francesca Cornelia Santacesaria, Jonian Dolphin Conservation, Italy
Rita Lecci, CMCC, Italy
Salvatore Causio, CMCC, Italy
Ivan Federico, CMCC, Italy
Giulia Cipriano, University of Bari, Italy
Giovanni Dimauro, University of Bari, Italy
Giovanni Coppini, CMCC, Italy
Stefano Bellomo, Jonian Dolphin Conservation, Italy
Roberto Carlucci, University of Bari, Italy
Rosalia Maglietta, CNR-STIIMA, Italy

14:50   **Estuary Salinity Prediction Using a Support Vector Machine Based Approach: A Case Study of the Po di Goro Estuary**
Leonardo Saccotelli, CMCC, Italy
Giorgia Verri, CMCC, Italy
Alessandro De Lorenzis, CMCC, Italy
Rocco Caccioppoli, CMCC, Italy
Carla Cherubini, University of Bari, Italy
Giovanni Dimauro, University of Bari, Italy
Giovanni Coppini, CMCC, Italy
Rosalia Maglietta, CNR-STIIMA, Italy

15:10   **An Initial Investigation of the Lunar Cycle on the Bottlenose Dolphins of Montenegrin Coastal Waters**
Charlotte O Smith, DMAD - Marine Mammals Research Association, Turkey
Evie White, DMAD - Marine Mammals Research Association, Turkey
Jessica Roberts, DMAD - Marine Mammals Research Association, Turkey
Aylin Akkaya, DMAD - Marine Mammals Research Association, Turkey

15:30   **Investigating the Spatial Interactions Between Marine Traffic and Bottlenose Dolphins (Tursiops Truncatus) Within the Coastal Waters of Montenegro, South Adriatic Sea**
Evie White, DMAD - Marine Mammals Research Association, Turkey
Antony Knights, University of Plymouth, United Kingdom
Robbie Brazier, DMAD - Marine Mammals Research Association, Turkey
Aylin Akkaya, DMAD - Marine Mammals Research Association, Turkey

15:50   **Presence of Marine Floating Litter and Vulnerable Species in the Central Mediterranean Sea**
Clara Monaco, University of Catania, Italy
Alessandra Raffa, University of Catania, Italy
Enrico Giarrusso, University of Catania, Italy
Antonella Arcangeli, ISPRA, Italy
Carla Tumino, University of Catania, Italy

14:30 - 16:10   *Meeting Room 103*
Session 6.3 - Tutorial on SAR remote sensing of coastal areas - PART II
Organized by Ferdinando Nunziata, *Parthenope University of Naples, Italy*

16:10 - 16:30   *University of Malta - Valletta Campus*
COFFEE BREAK

16:30 - 17:50	*Aula Magna*
	Session 7.1 - Emerging fibre-optic technologies for real-time remote sensing of the ocean environment
	Chairs: John Potter, *Norwegian University of Science and Technology*
	Susann Weinecke, *Alcatel Submarine Networks*

16:30   **New Advances in Fiber Optic Technology for Environmental Monitoring, Safety, and Risk Management Applications**
Susann Wienecke, Alcatel Submarine Networks, NTNU, Norway
Jan Kristoffer Brenne, Alcatel Submarine Networks, NTNU, Norway

16:50   **Borehole Fiber-Optic Cables for Monitoring Ocean Dynamics: Case Study From Australia**
Evgenii Sidenko, Curtin University, Australia
Stanislav Glubokovskikh, Lawrence Berkley National Laboratory, USA
Boris Gurevich, Curtin University, Australia
Konstantin Tertyshnikov, Curtin University, Australia
Pavel Shashkin, Curtin University, Australia
Christine Erbe, Curtin University, Australia
Roman Pevzner, Curtin University, Australia

17:10   **Monitoring Water Column and Sediments Using DAS**
Menno Buisman, Delft University of Technology, Port of Rotterdam, The Netherlands

17:30   **Ship Noise Characterization for Marine Traffic Monitoring Using Distributed Acoustic Sensing**
Lukas Thiem, Norwegian University of Science and Technology, Norway
Susann Wienecke, Alcatel Submarine Networks, Norway
Kittinat Taweesintananon, Norwegian University of Science and Technology, Norway
Melvin Vaupel, Norwegian University of Science and Technology, Norway
Martin Landrø, Norwegian University of Science and Technology, Norway

16:30 - 17:30	*Meeting Room 102*
	Session 7.2 - Advanced Modelling Analysis on Priority Species, Habitat and Marine Environment - PART II
	Chairs: Giulia Cipriano, *University of Bari, Italy*
	Rosalia Maglietta, *Politecnico di Bari, Italy*
	Clara Monaco, *University of Catania, Italy*

16:30   **Individuals Size Estimations of the Sperm Whales From the Gulf of Taranto (Northern Ionian Sea, Central Mediterranean Sea) Employing Clicks' Inter-Pulse-Interval (IPI) Measurements**
Marta Azzolin, University of Torino, Italy
Stefano Bellomo, Jonian Dolphin Conservation, Italy
Alessia Bono, University of Torino, Italy

Giulia Cipriano, University of Bari, Italy
Roberto Crugliano, Jonian Dolphin Conservation, Italy
Carmelo Fanizza, Jonian Dolphin Conservation, Italy
Veronica Frassa, University of Torino, Italy
Martina Pelagatti, IAS-CNR, Italy
Guido Pietroluongo, University of Padova, Italy)
Pasquale Ricci, University of Bari, Italy
Francesca Cornelia Santacesaria, Jonian Dolphin Conservation, Italy
Roberto Carlucci, University of Bari, Italy

16:50   The Comparison of Whistle Characteristics of Bottlenose Dolphins (Tursiops Truncatus) in the Coast of Montenegro and the Eastern Mediterranean Sea of Turkey: A Preliminary Study
Yarnick Herben, DMAD - Marine Mammals Research Association, Turkey
Evie White, DMAD - Marine Mammals Research Association, Turkey
Irna Huisjes, DMAD - Marine Mammals Research Association, Turkey
Leyla Israpilova, DMAD - Marine Mammals Research Association, Turkey
Aylin Akkaya, DMAD - Marine Mammals Research Association, Turkey

17:10   Modeling Impacts of Climate Change and Anthropogenic Factors on Cetacean Biodiversity in the Adriatic and Ionian Sea as a Premise for Enabling Future Open-World Virtual Exploration
Qi-fan Wu, Gaia Research Institute, Italy
Antonella Arcangeli, ISPRA, Italy
Matteo Costantino, University of Torino, Italy
Livio Favaro, University of Torino, Italy
Marco Gamba, University of Torino, Italy
Cristina Giacoma, University of Torino, Italy
Guido Pietroluongo, University of Padova, Italy
Marta Azzolin, University of Torino, Italy

16:30 - 17:50   Meeting Room 103
Session 7.3 - Tutorial on SAR remote sensing of coastal areas - PART III
Organized by Ferdinando Nunziata, *Parthenope University of Naples, Italy*

20:00 - 23:00   Mdina Restaurant
GALA DINNER

Technical Program - Friday, October 6

09:30 - 12:00	*University of Malta - Valletta Campus* **REGISTRATIONS**

09:30 - 11:10	*Aula Magna* **Session 8.1 - Advanced modelling and measurement to reduce risk in port areas** **Chairs**: Luca Cavallaro, *University of Catania, Italy* Federico Roman*, University of Trieste, Italy*

09:30 **Boat Monitoring and Classification System Utilizing Infrared and Visual Data Streams for Port Safety Enhancement**
Luca Patanè, University of Messina, Italy
Fabrizio Corriera, University of Messina, Italy
Antonino Maio, University of Messina, Italy
Salvatore Graziani, University of Catania, Italy
Maria Gabriella Xibilia, University of Messina, Italy

09:50 **Model Transferability for Wave Height Prediction**
Luca Patanè, University of Messina, Italy
Claudio Iuppa, University of Messina, Italy
Luciano Canduci, University of Messina, Italy
Carla Faraci, University of Messina, Italy
Maria Gabriella Xibilia, University of Messina, Italy

10:10 **Numerical Monitoring of Oil Spill Scenarios in Augusta Harbour**
Federico Roman, University of Trieste, Italy
Francesco De Leo, University of Genova, Italy
Luca Cavallaro, University of Catania, Italy

10:30 **Evaluation of Port Manoeuvring Efficiency Using Data Envelopment Analysis**
Roberto Gueli, EHT SCpA, Italy
Alessio Barbaro Chisari, EHT SCpA, Italy
Otmane Mounouar, EHT SCpA, Italy
Wladimiro Carlo Patatu, EHT SCpA, Italy
Rosaria Ausilia Giandolfo, EHT SCpA, Italy
Emanuele Spampinato, EHT SCpA, Italy

10:50 **Agent-Based Model for Realistic Vessel Route Simulation in Port Areas**
Roberto Gueli, EHT SCpA, Italy
Antonio Amatore, EHT SCpA, Italy
Emanuele Salvatore Accardo, EHT SCpA, Italy
Miriam Raccuglia, EHT SCpA, Italy
Rosaria Ausilia Giandolfo, EHT SCpA, Italy
Emanuele Spampinato, EHT SCpA, Italy

09:30 - 11:10   *Meeting Room 102*
Session 8.2 - Generation of added-value Products from Multi-Frequency and Multi-Scale Satellite Remote Sensing Measurements
Chairs: Giuseppe Grieco, *National Research Council, Italy*
Andrea Buono, *Parthenope University of Naples, Italy*

09:30 **SeaWinds-Derived Winds in Coastal Areas**
Giuseppe Grieco, National Research Council, Italy
Ad Stoffelen, Koninklijk Nederlands Meteorologisch Instituut, The Netherlands
Anton Verhoef, Koninklijk Nederlands Meteorologisch Instituut, The Netherlands
Jur Vogelzang, Koninklijk Nederlands Meteorologisch Instituut, The Netherlands
Marcos Portabella, Institut de Ciències del Mar - CSIC, Spain

09:50 **Multi-Frequency and Multi-Mission SAR Imagery for Maritime Surveillance by Deep Learning**
Roberto Del Prete, University of Naples Federico II, Italy
Maria Daniela Graziano, University of Naples Federico II, Italy
Gennaromaria Crispino, University of Naples Federico II, Italy
Lorenzo Ostrogovich, University of Naples Federico II, Italy
Alfredo Renga, University of Naples Federico II, Italy

10:10 **A Spatio-Temporal Variability Assessment of the C33 Iceberg Using Multi-Polarisation C-Band SAR Satellite Data**
Mozhgan Zahriban Hesari, Parthenope University of Naples, Italy
Giovanna Inserra, Parthenope University of Naples, Italy
Giuseppe Aulicino, Parthenope University of Naples, Italy
Maurizio Migliaccio, Parthenope University of Naples, Italy

10:30 **On the Incidence Angle Dependence of Synthetic Aperture Radar Co-Polarisation Sea Surface Signature**
Muhammad Adil, Parthenope University of Naples, Italy
Farah Rasheed Abbasi, Parthenope University of Naples, Italy
Maurizio Migliaccio, Parthenope University of Naples, Italy

10:50 **Observing Inland Water Bodies by Means of X-Band Polarimetric SAR Imagery From Second Generation COSMO-SkyMed Constellation**
Giovanna Inserra, Parthenope University of Naples, Italy
Andrea Buono, Parthenope University of Naples, Italy
Ferdinando Nunziata, Parthenope University of Naples, Italy

Maria Virelli, Italian Space Agency, Italy
Maurizio Migliaccio, Parthenope University of Naples, Italy

09:30 - 11:10	*Meeting Room 103*
	Session 8.3 - Technologies, techniques and methodologies for coastal monitoring
	Chair: Giacomo Peruzzi, *University of Padova*, *Italy*

09:30 **A Non-Invasive Laboratory Technique for Wave-Driven Plastic Debris Motion Detection**
Claudio Iuppa, University of Messina, Italy
Giovanni Passalacqua, University of Messina, Italy
David R. Fuhrman, Technical University of Denmark, Denmark
Carla Faraci, University of Messina, Italy

09:50 **Ice Cover Delineation Over Devon Iceland Using Sentinel Polarimetric SAR and Optical Data**
Muhammad Amjad Iqbal, University Politehnica of Bucharest, CEO SpaceTech, Romania
Andrei Anghel, University Politehnica of Bucharest, CEO SpaceTech, Romania
Mihai Datcu, German Aerospace Center, Germany

10:10 **A LoRaWAN Network for the Real-Time Monitoring of the Venice Lagoon: Preliminary Tests**
Matin Ghalkhani, University of Padova, Italy
Filippo Campagnaro, University of Padova, Italy
Alessandro Pozzebon, University of Padova, Italy
Davide De Battisti, University of Padova, Italy
Mauro Biagi, Sapienza University of Rome, Italy
Michele Zorzi, University of Padova, Italy

10:30 **Machine Learning Techniques Applied to RFID-Based Marine Sediment Tracking**
Matteo Bertocco, University of Padova, Italy
Duccio Bertoni, University of Pisa, Italy
Giacomo Peruzzi, University of Padova, Italy
Alessandro Pozzebon, University of Padova, Italy
Giovanni Sarti, University of Pisa, Italy

10:50 **A Technique for the Measurement of the Morphological Evolution of Marine Pebbles**
Duccio Bertoni, University of Pisa, Italy
Gabriele Di Renzone, University of Pisa, Italy
Gabor Domokos, Budapest University of Technology and Economics, Hungary
Chiara Favaretto, University of Padova, Italy
Alessandro Pozzebon, University of Padova, Italy
Giovanni Sarti, University of Pisa, Italy

![MetroSea Malta 2023 logo]

11:10 - 11:40   *University of Malta - Valletta Campus*
COFFEE BREAK / POSTER SESSION

PS-1 **Power Management and Reliability Analysis of Albacore: An AUV for Shallow Waters**
Enrico Petritoli, Università degli Studi "Roma Tre", Italy
Fabio Leccese, Università degli Studi "Roma Tre", Italy

PS-2 **Field monitoring in coastal basin to detect annual trends of hydrodynamics and physical parameters**
Francesca De Serio, Polytechnic University of Bari, Italy
Diana De Padova, Polytechnic University of Bari, Italy
Michele Mossa, Polytechnic University of Bari, Italy
Mouldi Ben Meftah, Polytechnic University of Bari, Italy

PS-3 **Artificial Intelligence-Based Machine Learning Data Classification for the Analysis of Underwater Noise of Ship Traffic and Bottlenose Dolphin Sounds**
Attila Aradi, University of Miskolc, Hungary
Attila Károly Varga, University of Miskolc, Hungary

PS-4 **Phenological Monitoring of Cymodocea Nodosa (Tracheophyta, Alismatales) in the Transitional System Mar Piccolo of Taranto for the Detection of Anthropogenic Impact**
Antonella Petrocelli, Water Research Institute - National Research Council, Italy
Ester Cecere, Water Research Institute - National Research Council, Italy
Giovanni Fanelli, Water Research Institute - National Research Council, Italy
Fernando Rubino, Water Research Institute - National Research Council, Italy
Giuseppe Denti, Water Research Institute - National Research Council, Italy

PS-5 **Do Hydrodynamic Changes Affect Abundances of the Striped Venus Clam? A Preliminary Analysis in the Southern Adriatic Sea**
Daniela Cascione, Polytechnic University of Bari, Italy
Diana De Padova, Polytechnic University of Bari, Italy
Michele Mossa, Polytechnic University of Bari, Italy
Vittoria Dragone, National Research Council, Italy
Giulia Cipriano, University of Bari, Italy
Maurizio Ingrosso, University of Bari, Italy
Roberto Carlucci, University of Bari, Italy
Pasquale Ricci, University of Bari, Italy

PS-6 **Monitoring Sandy Shorelines Using SAR Imagery and LiDaR Measurements**
Giovanna Inserra, Parthenope University of Naples, Italy
Emanuele Ferrentino, Istituto Nazionale di Geofisica e Vulcanologia, Italy
Andrea Buono, Parthenope University of Naples, Italy
Nicola Angelo Famiglietti, Istituto Nazionale di Geofisica e Vulcanologia, Italy
Annamaria Vicari, Istituto Nazionale di Geofisica e Vulcanologia, Italy
Raffaele Moschillo, Istituto Nazionale di Geofisica e Vulcanologia, Italy
Luigi Falco, Istituto Nazionale di Geofisica e Vulcanologia, Italy
Antonino Memmolo, Istituto Nazionale di Geofisica e Vulcanologia, Italy

Felice Minichiello, Istituto Nazionale di Geofisica e Vulcanologia, Italy
Gerardo Colangelo, Protezione Civile della Regione Basilicata, Italy

PS-7 Evaluation of a Clustering Algorithm to Enhance the Nearshore Wave Prediction System
Elisa Castro, University of Catania, Italy
Claudio Iuppa, University of Messina, Italy
Rosaria Musumeci, University of Catania, Italy
Luca Cavallaro, University of Catania, Italy
Maria Gabriella Xibilia, University of Messina, Italy
Luca Patanè, University of Messina, Italy
Enrico Foti, University of Catania, Italy

PS-8 Waste Based Solutions for Preventing Water Pollution by Nitroarenes
Piero Mastrorilli, Politecnico di Bari, Italy
Maria Stella Leone, Politecnico di Bari, Italy
Carlo Porfido, Università degli Studi di Bari, Italy
Roberto Terzano, Università degli Studi di Bari, Italy
Matilda Mali, Politecnico di Bari, Italy
Maria Michela Dell'Anna, Politecnico di Bari, Italy

PS-9 Study of Heavy Metal Effects on Skeletonema Sp. Diatoms
Maria Antonietta Ferrara, ISASI-CNR, Italy
Elena Cavalletti, Stazione Zoologica Anton Dohrn, Italy
Vittorio Bianco, ISASI-CNR, Italy
Lisa Miccio, ISASI-CNR, Italy
Giuseppe Coppola, ISASI-CNR, Italy
Pietro Ferraro, ISASI-CNR, Italy
Angela Sardo, Stazione Zoologica Anton Dohrn, Italy

PS-10 Comparing Meanshift/SVM and Mask-RCNN algorithms for beach litter detection on UAVs images
Angelo Sozio, University of Bari Aldo Moro, Italy
Vincenzo M Scarrica, Parthenope University of Naples, Italy
Pietro P. C. Aucelli, Parthenope University of Naples, Italy
Giovanni Scicchitano, University of Bari Aldo Moro, Italy
Antonino Staiano, Parthenope University of Naples, Italy
Angela Rizzo, University of Bari Aldo Moro, Italy

PS-11 A GIS-Based Geostatistical Approach for Palaeo-Environmental Reconstructions of Coastal Areas: The Case of the Cilento Promontory (Southern Italy)
Alessia Sorrentino, Parthenope University of Naples, Italy
Antonio Maratea, Parthenope University of Naples, Italy
Gaia Mattei, Parthenope University of Naples, Italy
Gerardo Pappone, Parthenope University of Naples, Italy
Maria Francesca Tursi, Parthenope University of Naples, Italy
Pietro P. C. Aucelli, Parthenope University of Naples, Italy

PS-12 **GIS Applications to Support Coastal Erosion Analysis: The Case Study of the Domitian Littoral**
Emanuele Alcaras, Parthenope University of Naples, Italy
Chiara Camerota, Parthenope University of Naples, Italy
Claudio Parente, Parthenope University of Naples, Italy

11:40 - 12:40 *Aula Magna*
PLENARY SESSION - KEYNOTE SPEAKER

New trends for synthetic aperture radar marine applications

Andrea Buono, *Parthenope University of Naples, Italy*

12:40 - 14:00 *University of Malta - Valletta Campus*
LUNCH

14:00 - 15:20 *Aula Magna*
Session 9.1 - Geomorphology in the Digital Age
Chair: Giovanni Randazzo, *University of Messina, Italy*

14:00 **Assessment of Medicane Helios Meteo-Marine Parameters Using a Machine Learning Approach**
Giovanni Scardino, University of Bari Aldo Moro, Italy
Alok Kushabaha, University of Bari Aldo Moro, Italy
Gaetano Sabato, University of Bari Aldo Moro, Italy
Sebastiano Tarascio, University of Catania, Italy
Giovanni Scicchitano, University of Bari Aldo Moro, Italy

14:20 **Geomorphology in the Digital Age: A Case Study Project of Quantitative Geomorphology From Images**
Anselme Muzirafuti, University of Messina, Italy
Stefania Lanza, Geologis srl, Italy
Diego Paltrinieri, CoReMa Spiagge srl, Italy
Giancarlo Faina, CoReMa Spiagge srl, Italy
Mohammed El Hafyani, Moulay Ismail University, Morocco
Giovanni Randazzo, University of Messina, Italy

14:40 **Integrated Geomorphological and Structural Analysis of Coastal Cliffs: The Case Study of Capo Faro Promontory, NE Salina, Aeolian Islands, Italy**
Mauro Bonasera, Italian Institute for Environmental Protection and Research, Italy
Alessandro Petroccia, University of Turin, Italy
Fabiola Caso, University of Milan, Italy
Ciro Cerrone, Ca' Foscari University of Venice, Italy
Francesco Gregorio, University of Messina, Italy

15:00 **Deep Learning-Based Segmentation Techniques for Coastal Monitoring and Seagrass Banquette Detection**
Gaetano Sabato, University of Bari Aldo Moro, Italy
Giovanni Scardino, University of Bari Aldo Moro, Italy
Alok Kushabaha, University of Bari Aldo Moro, Italy
Marco Chirivì, CETMA Centro di Ricerca Europeo di Tecnologie Design e Materiali, Italy
Antonio Luparelli, CETMA Centro di Ricerca Europeo di Tecnologie Design e Materiali, Italy
Giovanni Scicchitano, University of Bari Aldo Moro, Italy

14:00 - 15:20	*Meeting Room 102*
	Session 9.2 - General Session - PART IV
	Chair: Sebastiano D'Amico, *University of Malta*

14:00 **Early Detection of Partially Emerged Large Scale Marine Debris Based on Laser Pulses**
Marco Marcon, Politecnico di Milano, Italy
Carlo Pezzoli, Politecnico di Milano, Italy
Marco Compagnoni, Politecnico di Milano, Italy
Marco Brando Mario Paracchini, Politecnico di Milano, Italy
Giancarlo Bernasconi, Politecnico di Milano, Italy
Claudia Nicastro, Sapienza University of Rome, Italy
Stefano Tubaro, Politecnico di Milano, Italy

14:20 **Comparison of Passive Acoustic Monitoring Sensors for Direction of Arrival Estimation of Underwater Acoustic Sources**
Alessandro Gentili, University of Pisa, Italy
Alessia Biondi, University of Pisa, Italy
Andrea Caffaz, Graal Tech Srl, Italy
Andrea Caiti, University of Pisa, Italy
Riccardo Costanzi, University of Pisa, Italy
Marco Gambetta, Graal Tech Srl, Italy
Andrea Munafò, University of Pisa, Italy

14:40 **SAR Beyond the Spatial Resolution Limit**
Maurizio Migliaccio, Parthenope University of Naples, Italy
Giovanna Inserra, Parthenope University of Naples, Italy
Anna Verlanti, Università Degli Studi di Cagliari, Italy
Farah Rasheed Abbasi, Parthenope University of Naples, Italy
Mozhgan Zahriban Hesari, Parthenope University of Naples, Italy
Andrea Buono, Parthenope University of Naples, Italy

15:00 **Navigation and Control Systems for a Reconfigurable Underwater Vehicle for Inspection, Free-Floating Intervention and Survey Tasks**
Mirco Vangi, University of Florence, Italy
Edoardo Topini, University of Florence, Italy
Gherardo Liverani, University of Florence, Italy

Alessandro Ridolfi, University of Florence, Italy
Benedetto Allotta, University of Florence, Italy

15:20 - 15:50	*Aula Magna*
	CLOSING AND AWARD CEREMONY