MARINA MILITARE

IMEKO TC-19 INTERNATIONAL WORKSHOP ON

METROLOGY FOR THE SEA

Learning to measure sea health parameters

MetroSea #Naples2020

Virtual Conference

MetroSea2020

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WORKSHOP PROGRAM

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MetroSea 2020 - Welcome Message

On behalf of the Organizing Committee, we cordially welcome you to the **2020 IMEKO International Workshop on Metrology for the Sea** (*MetroSea 2020*).

The Sea is the medium that allowed 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.

The benefits of a multidisciplinary approach have reduced the level of uncertainty in marine technical studies. The 2020 IMEKO International Workshop on Metrology for the Sea aims to gather 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.

This edition of MetroSea was originally planned to be held in Naples (Italy) hosted by the Università degli Studi di Napoli "Parthenope" as part of the celebrations for the 100th anniversary of its foundation; however, due to the COVID-19 emergency, we were forced to organize this 4th edition as a virtual conference. We do hope that, soon, there will be another chance to host you all in Naples. The virtual Workshop has been planned in order to make an online conference not so different from a live event. It was challenging to set up a web platform to maintain live the presentations and we thank the colleagues of the organizing team, who professionally addressed this issue.

Despite the COVID-19 occurrence, we received 60 extended abstracts from all over the world. Due to the time limits of the workshop, only 45 papers have been selected after a meticulous activity of the program committee and additional reviewers. We like to thank all people who contributed to this process with opinions, comments, and suggestions to choose the best papers and improve their quality.

Authors of all the above contributions are also welcome to submit an extended version to the Special Issues on ACTA IMEKO Journal, MDPI Geosciences, MDPI Sensors and MDPI Journal of Marine Science and Engineering.

The Workshop Technical Program consists of 15 oral sessions 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.

The keynote speeches will be held by experts in the field of metrology for the sea. Cosimo Solidoro and Rajesh Nair, both from National institute for Oceanography and Applied Geophysics OGS, Italy, will speak about "*Filling a gap: metrology in marine observation and data*". Marcos Portabella, Institut de Ciències del Mar (ICM-CSIC), Spain, will present "*Scatterometer-derived stress-equivalent wind fields: retrievals and applications*". We are honored to have them as plenary speakers and thank them in advance for coming to our conference to share their knowledge and experiences with us.

This edition of the Workshop includes:

- "**Military Metrology for the Sea**", organized by Italian Navy and AFCEA Naples Chapter, October 5, 09:30 CET
- **Tutorials** offering three subjects:
  - "Integrated remote coastal and seabed mapping", S.V.T. Luca Labella, Italian Navy;
  - "Multidimensional marine geophysical data acquisition using Autonomous Surface Vehicles", Dr Luca Gasperini, Institute of Marine Science - National Research Council, Italy
  - "Satellite remote sensing of the ocean: applications in temperate and polar regions", Dr Giuseppe Aulicino, University of Naples "Parthenope", Italy

Several Awards offered by International Institution and Companies will be assigned, in particular to young researchers.

With the aim of providing a common ground for researches to share their findings on the metrology for the sea, the Workshop was improved by adding a significant number of Special Sessions. 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.

The 2020 IMEKO International Workshop on Metrology for the Sea is about to begin.

Giorgio Budillon, *Parthenope University of Naples, Italy*
Pasquale Daponte, *University of Sannio, Italy*
Luigi Sinapi, *Italian Navy, Italy*

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MetroSea 2020 Plenary Speakers

Tuesday, October 6, 2020 - 09.30 CET

Filling a gap: Metrology in Marine Observation and Data

Cosimo Solidoro, Rajesh Nair
National Institute of Oceanography and Applied Geophysics, Italy

ABSTRACT

The European Union's Marine Strategy Framework Directive (2008) states that "Provision should be made for the adoption of methodological standards for the assessment of the status of the marine environment, monitoring, environmental targets and the adoption of technical formats for the purposes of transmission and processing of data […]". In its 2010 Communication to the European parliament and Council on the Marine Knowledge 2020 initiative within the framework of the European Union's Integrated Maritime Policy, the European Commission highlighted that "Fragmented standards, formats and nomenclature, lack of information on precision and accuracy, the pricing policy of some providers and insufficient temporal or spatial resolution are further barriers [to the exploitation of collected data in developing new products and services]".

The above institutional excerpts are testimony to the pressing need to begin building a strong metrological basis for marine measurements in Europe, making it an integral part of the region's marine observing and data management sectors. The metrological approach represents an established way to assure traceability of measurements to the Système International d'Unités (SI) and achieve true inter-comparability of data at the transnational level. Such traceability is essential to ensure:

- the relation of acquired measurements to recognized standards;
- the conformity of measurement practices amongst laboratories to acknowledged guidelines at both the national and international levels;
- the provision of documentation to handle sensors and data properly.

However, metrology is rarely discussed in marine observing circles and in the marine data management community despite its intimate link to sensor performance, data quality and data usability issues. This disregard arises from ignorance concerning the rigor required of modern measuring activity and the complexity of the underlying metrological system supporting it. It must be said that the situation is also a heritage of the historical evolution of marine observing activity, which developed outside the umbrellas of national metrological institutions (NMIs) and formally recognized international metrological frameworks. Unfortunately, in today's reality, where marine measurements and data are no longer viewed solely as a scientific tool but also as a valuable multiple-use commercial commodity and a resource for social change, this state of affairs is no longer tenable and needs to be addressed.

At the present time, there are very few scientists working formally in the field of metrology applied expressly to marine measurements (perhaps even < 10 persons per country in Europe). But, over the past few years, these small groups are beginning to work together to try to lay the foundation for a pan-European marine calibration grid in coordination with the system of NMIs and industry. Most of this activity is being, or has been, attempted indirectly, and only in small ways, within the framework of European projects and programmes, most notably, ENV05, JERICO, JERICO-NEXT and JPI-Oceans. There is a strong necessity to inform the marine observing community and the European Commission of the need for specific attention and investments on this topic as it will be fundamental to fulfilling central European policy goals such as the Marine Strategy Framework Directive and Blue Growth.

SPEAKERS BIOGRAPHY

Cosimo Solidoro is research director and currently head of the Oceanography Section of the National institute for Oceanography and Applied Geophysics OGS . Research activities include developments, analysis and use of a variety of numerical methodologies, ecological models and ocean models of different complexity. Recent research activities expand further over the human dimensions and the integration among different components of marine systems. Scientific Coordinator of Sharemd, a EU project on pollution and environmental threats and of ICCC, a PRIN project on pollutants and biogeochemical cycles in a changing climate. President of the International Society of Ecological Modelling - European Chapter, member of the executive board of the european consortium EUROCEANS.

Rajesh Nair (male) has nearly 30 years of experience in Oceanography and the Marine Sciences, with a strong experimental background, extensive field skills and "hands-on" knowledge of a wide variety of marine instrumentation. As part of the permanent staff of the Centro di Taratura e Metrologia Oceanografica (CTMO), the oceanographic calibration facility of the INOGS which he helped set up in 2002, his present activities and interests focus on marine observing technologies, including calibration, control and testing of instrumentation, and the application of metrological principles to measurement quality assurance both in the laboratory and in the field. Mr. Nair is actively involved in marine research at both the national and EU levels, and internationally. He co-led Work Package 2 ("Harmonization of technologies and methodologies - technical strategy) of the EU H2020 project, JERICO-NEXT (Joint European Research Infrastructure network for Coastal Observatory - Novel European eXpertise for coastal observaTories; 2015 - 2019), and was the leader of Work Package 5 ("Data management and distribution") of the EU FP7 project, JERICO (Towards a Joint European Research Infrastructure network for Coastal Observatories, 2011 - 2015). Mr. Nair currently co-chairs the Technology Panel Working Group (TPWG) of the European Global Ocean Observing System (EuroGOOS), the European component of the Global Ocean Observing System (GOOS), and is also a National Representative in the EU's JPI Oceans (Joint Programming Initiative - Healthy and Productive Seas and Oceans) European Marine Sensor Calibration Network Joint Action.

Wednesday, October 7, 2020 - 09:30 CET

Scatterometer-derived stress-equivalent wind fields: retrievals and applications

Marcos Portabella
Institut de Ciències del Mar (ICM-CSIC), Spain

ABSTRACT

Spaceborne scatterometers (real-aperture radars) are known for their near-surface wind sensing capabilities over the ocean. Their derived stress-equivalent wind field observations are increasingly used in a wide variety of atmospheric, oceanographic and climate applications. An introduction to the physical principles of scatterometry, followed by an overview of the wind retrieval processing chain will be presented and discussed. The radar antenna geometry, the measurement noise, as well as non-linearities in the relationship between the measurements and the wind vector complicate the wind retrieval process. In addition, scatterometers are sensitive to geophysical phenomena other than wind, such as confused sea state, rain, and land/ice contamination of the radar footprint. These phenomena can distort the wind signal, leading to poor quality retrieved winds. As such, elimination of poor quality data is a prerequisite for the successful use of the retrieved winds. The differences between sea-surface C-band and Ku-band radar signatures will also be discussed in the context of sensor inter-calibration efforts.

The main applications of the scatterometer-derived stress-equivalent winds will also be presented. Besides the obvious atmospheric applications, such as nowcasting and global and regional Numerical Weather Prediction (NWP) data assimilation, scatterometer winds can provide very useful information on NWP model errors. They are also used to well characterize the extreme wind stress divergence and vorticity (missed by NWP models) associated to extreme rain events in the tropics. In addition, these observations are also required to drive ocean circulation, wave and surge models, and are used to compute sea surface currents and air-sea fluxes. Recent developments show that a modified NWP output using scatterometer-based corrections can introduce true smaller scale signal into the model output, which corresponds to the physical processes absent or misrepresented by the model, e.g., strong current effects (such as WBCS, highly stationary), wind effects associated with the ocean mesoscales (SST), coastal effects (land see breezes, katabatic winds), parameterization errors, and large-scale circulation effects, e.g., at the ITCZ. Finally, recent efforts to consolidate an in situ high and extreme wind reference for improving current and future scatterometer extreme wind calibration and validation will be discussed in the context of improved monitoring and prediction of extreme wind events, such as tropical and extra-tropical cyclones, and polar lows.

SPEAKER BIOGRAPHY

Marcos Portabella was born in Barcelona, Spain, in 1970. He received the B.Sc. degree in physics from the University of Barcelona, Barcelona, Spain, in 1994, the M.Sc. degree in remote sensing from the Institute of Space Studies of Catalonia, Barcelona, in 1995, and the Ph.D. degree in physics from the University of Barcelona. He is currently with the Institut de Ciències del Mar (ICM-CSIC), Barcelona, where he leads the Satellite Winds Group. He is involved in satellite remote sensing, and in particular, scatterometry and L-band radiometry.

MetroSea 2020 Tutorials

Monday, October 5, 2020 - 15.30 CET

Integrated remote coastal and seabed mapping

Luca Labella
Italian Navy – Marina Militare Italiana

ABSTRACT

Different in-situ methods and satellite multispectral images represent a sustainable tool to connect the data requirements in coastal applications, in terms of resolution, accuracy, and time consuming. Moreover, remote sensing technology, together with some ground truth points, can be decisive in the acquisition of large-scale information, saving in this way the available economic resources as well. In the presentation, theorical concept on remote sensing through passive sensors, that may be installed on planes, unmanned aerial vehicle (UAV) or satellites, are described to better introduce the workflow, issued by GEBCO, and approved by hydrographic offices, to extract bathymetry from satellite and aerial images. In this tutorial, in fact, we see firstly how to get self-confident using all the required GIS software tool, in order to well menage the different layers of a multispectral satellite or aerial image. Then, we present how, through multispectral satellite images and ground truth points at sea it is effectively possible to develop a morpho-bathymetric model of a coastal strip. These products highlight how, with a proper accuracy, is possible to obtain information about depth of extended area without employing any crew on field.

These capabilities represent a noticeable step forward in the standard observation methodologies that, for many years, were conducted by only “in situ” measures with traditional instruments.

SPEAKER BIOGRAPHY

Lieutenant Luca LABELLA (IT Navy) in 2016 graduated at Italian Naval Academy in “Maritime and Naval Sciences”. In 2017, was employed for the following two years in the hydro-oceanographic team on board ITS Ammiraglio Magnaghi, the Italian Navy hydro-oceanographic Ship. Since 2018, he has been employed at the Hydrographic Institute of the Navy, attending the master’s degree in "Hydrography and Oceanography" - course held by the Italian Hydrographic Institute of the Navy and the University of Genova - for the subsequent Category “A” certificate released by the International Hydrographic Organization (IHO).

During the last two years he took part in the scientific team in both High North19 and High North20, the marine geophysical campaigns led by the Italian Navy in Arctic Ocean. During the last two years he decided to focus his efforts on this branch and write his master's degree thesis on the remote sensing application during High North20. Different technical aspects of the cited thesis are contained in the training tutorial arranged for the MetroSea 2020 virtual meeting.

Tuesday, October 6, 2020 - 14.30 CET

Multidimensional marine geophysical data acquisition using Autonomous Surface Vehicles

Luca Gasperini
Institute of Marine Science - National Research Council, Italy

ABSTRACT

Natural or artificial shallow-water environments, such as harbors, coastal areas, waterways, lakes and lagoons, are in general affected by anthropogenic pressures. For this reason, they would require periodic monitoring, to mitigate the effects of environmental crises caused by human activity or natural processes. Being close to modern and/or ancient settlements, they are also important for archeological, paleoanthropological and paleoenvironmental studies, which often find in such environments well preserved and continuous stratigraphic records. Due to several reasons, geophysical studies in shallow-water areas (shallower than a few meters) are not a consolidated practice to date. However, their economic and social importance calls for the development of new technologies and methods offered to a wider range of researchers. The recent progresses and developments in the field of marine robotics (Remote Operating Vehicles, Autonomous Surface Vehicles, etc.) are an interesting opportunity in this sense, and open the door to multidimensional/multiparametric acquisition and analysis of marine geophysical data (Stanghellini et al., 2020). Particularly effective for geological studies of the shallow-water environments are the chirp-sonar seismic reflection surveys. In fact, the highly-repeatable frequency-modulated signal generated by these seismic sources enable to accurately estimate the seafloor reflectivity, and could be used to compile sediment distribution maps. Moreover, taking advantage from the shallow water and the close-spaced grids that could be eventually collected using autonomous vehicles, pseudo-3D techniques could be successfully employed to determine lateral changes in the acoustic facies of the sedimentary sequence.

In this tutorial, we present several case-studies dealing with application of such techniques to data processed using the open software SeisPrho (Gasperini and Stanghellini, 2009), and show how they can

be effective in highlighting geological properties of the seafloor and sub-seafloor. They include compilation of "flattened" versions of seismic sections by using a special function of SeisPrho, which consist in time-shifting the seafloor reflector (and the entire seismogram), to a horizontal reference level at each shot point. In this way, the "flattened" grid could be subsequently sampled by using the Time-Slice function of SeisPrho, allowing for integrating seismic amplitudes within a given time window. The cumulative amplitude value determined at each shot could then be employed as an estimate of the lateral reflector coherence, assuming that well layered beddings give higher values of this coefficient.

All such parameters derived from single or multiple datasets could be used to compile thematic maps which include 2D, pseudo-3D, 3D or 4D (repeated in time) geological information over any given study area.

SPEAKER BIOGRAPHY

Luca Gasperini is Senior Scientist at Istituto di Scienze Marine, ISMAR, Italian National Research Council, Bologna (Italy), and Adjunct Professor at University of Bologna (Italy). Main interests include: Geophysical methods; Structural Geology; Seismic Stratigraphy; Submarine Paleoseismology; Marine Technologies.

Wednesday, October 7, 2020 - 12.20 CET

Satellite remote sensing of the ocean: applications in temperate and polar regions

Giuseppe Aulicino
University of Naples "Parthenope", Italy

ABSTRACT

In-situ observations and satellite remote sensing together need to be viewed as an integrated system to improve our knowledge of the physical and biogeochemical characteristics of the ocean and to provide observational data required by routine operational ocean modelling and forecasting on timescales of days to seasonal. Modelling and forecasting requires sustained observations for initializations and validation, for keeping the models on the correct trajectory, and in the development phase also for model testing and calibration.

The complementarity between different in-situ methods and several satellite observations represent a valid tool to meet the data requirements of global, regional, and coastal applications, in terms of resolution, accuracy, and variables needed.

Earth Observation systems already demonstrated a unique capability to enhance our understanding and managing of the ocean environment at both temperate and polar latitudes. Spatial and temporal coverage of satellite remote sensing is emerging to address major concerns (global monitoring, disaster management support, climate change issues) but significant improvements are still needed to ensure that its contribution will be more pervasive, in science, in industry, as well as in the improvements of health and social welfare.

Among others, the not trivial issue of observing from space a three-dimensional ocean characterized by a multi-scales dynamics and an impressive variability of physical and biogeochemical characteristics.

In this context, several examples of satellite applications to ocean monitoring will be introduced and discussed, also presenting snapshot comparisons to in situ and model data.

SPEAKER BIOGRAPHY

Dr Giuseppe Aulicino PhD has a strong background in oceanography and remote sensing of the ocean with prevalent interests in the Polar Oceans and the Mediterannean Sea. His research activities mainly focused on operational oceanography, AUV monitoring, waves in ice, ocean-ice-atmosphere exchanges, polynyas and ice shelves, mesoscale dynamics and eddies, new strategies for multiplatform and hierarchical monitoring, teleconnections. Previous studies also included the collection, quality control and analysis of big ocean datasets collected through TSGs, CTDs, moorings, gliders, drifters and wave buoys, as well as the processing and analysis of satellite observations, from raw data to geophysical products, retrieved through a large set of sensors. To date, he is RTD-A researcher at Università degli Studi di Napoli Parthenope.

Military Metrology for the Sea

Monday, October 5, 2020 - 09.30 CET

Military Metrology for the Sea is a parallel event of IMEKO TC-19 International Workshop on Metrology for the Sea.
The event is organized by **Italian Navy - Marina Militare** and **AFCEA Naples Chapter**.

MARINA MILITARE

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MILITARY METROLOGY FOR THE SEA	
09:30 - 09:40 CET	**Welcome Addresses** B.Gen. (r) Dario Nicolella*, President of AFCEA Chapter of Naples, Italy*
09:40 - 10:10 CET	**Opening Remarks** C.V. Marco Grassi, *Italian Navy Hydrographic Institute*
10:10 - 10:40 CET	**Capabilities and potential of Remote Operate Underwater vehicle (R.O.V.)** Gen. Giovanni Savoldelli Pedrocchi
10:40 - 11:10 CET	**New technologies are boosting predictive maintenance by increasing operational availability** Eng. Eduardo De Francesco, SeTel Group, Italy
11:10 - 11:40 CET	**Optical fibre sensors for structural and underwater applications** Prof. Antonello Cutolo, University of Naples 'Federico II', Italy
11:40 - 12:10 CET	**NATO VLF MSK BCA** Ing. Gino Carelli, Sirti
12:10 - 12:40 CET	**Underwater Acoustic Signature: improvement of Test & Evaluation Capability of the Naval Support and Experimentation Centre of the Italian Navy** Commander Mirko Stifani, *Italian Navy Naval Support and Experimentation Centre*

MetroSea 2020 Awards

Best Conference Paper Award

The **Best Conference Paper Award** is sponsored by Sensors Journal. The award will consist of a certificate and a prize money amounting to 500 CHF.

The **Giuseppe Bottiglieri Shipping Company S.p.A.** dedicates the **Best Paper Award** to the memory of ***Prof. Felice Cennamo***.The award consists of a model of one of Giuseppe Bottiglieri Shipping Company S.p.A. naval vessels type Post-Panama bulkcarrier (cargo ships of 94000 tons capacity that may to transit through the new Panama Canal).

The Best Paper Award dedicated to the memory of Prof. Felice Cennamo will consist in the painting "*Vesuvio*" by Antonio Del Prete.

Best Paper Presented by a Young Researcher

A certificate will be given for the **two best papers authored and presented by researchers** younger than 35 years in age.

The Best Paper Presented by a Young Researcher is sponsored by **Geosciences Journal**. The award will consist of a certificate and a prize money amounting to **300 CHF**.

Two papers will be awarded during the Closing Ceremony.

Best Paper presented by a Woman

A certificate will be given for the best paper authored and presented by a woman.

The **Best Paper Authored and Presented by a Woman** is sponsored by **Journal of Marine Science and Engineering Journal**. The award will consist of a certificate and the waiver on the publication fees for JMSE.

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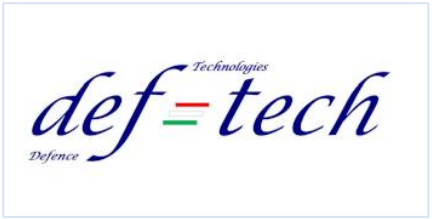

Program Schedule - October 5, 2020

MONDAY, OCTOBER 5, 2020		
09:30 - 12:40 CET	**Military Metrology for the Sea**	
15:00 - 15:30 CET	**OPENING CEREMONY**	
15:30 - 16:20 CET	**TUTORIAL - SESSION #1** **Integrated remote coastal and seabed mapping** S.T.V. Luca Labella, Italian Navy	
	Virtual Room #1	Virtual Room #2
16:30 - 17:50 CET	SESSION 1.1 - General Session - PART 1	SESSION 1.1 - Special Session on Facing Emerging Marine Environmental Challenges Using Remote Sensing

Program Schedule - October 6, 2020

TUESDAY, OCTOBER 6, 2020		
09:30 - 10:20 CET	**PLENARY SESSION** **Filling a gap: metrology in marine observation and data** Cosimo Solidoro, Rajesh Nair, *National Institute of Oceanography and Applied Geophysics*	
	Virtual Room #1	Virtual Room #2
10:30 - 11:50 CET	SESSION 1.2 - General Session - Part 2	SESSION 2.2 - Special Session on Advanced Techniques and Emerging Trends in Ecoinformatics Applied to Data Analysis for Marine Tutles, Cetaceans, Seahorses and Pipefishes – PART 1
12:00 - 13:20 CET	SESSION 1.2 - General Session - Part 3	SESSION 2.3 - Special Session on Advanced Techniques and Emerging Trends in Ecoinformatics Applied to Data Analysis for Marine Tutles, Cetaceans, Seahorses and Pipefishes – PART 2
14:30 - 15:20 CET	**TUTORIAL - SESSION #2** **Multidimensional marine geophysical data acquisition using Autonomous Surface Vehicles** Luca Gasperini, *Institute of Marine Science - National Research Council, Italy*	
	Virtual Room #1	Virtual Room #2
15:30 - 17:10 CET	SESSION 1.4 - Special Track on Measuring the Sea: the Contribution of Marine Geological Research	SESSION 2.4 - Special Session on Advanced Techniques and Emerging Trends in Ecoinformatics Applied to Data Analysis for Marine Tutles, Cetaceans, Seahorses and Pipefishes – PART 3

Program Schedule - October 7, 2020

WEDNESDAY, OCTOBER 7, 2020		
09:30 - 10:20 CET	**PLENARY SESSION** **Scatterometer-derived stress-equivalent wind fields: retrievals and applications** Marcos Portabella, *Institut de Ciències del Mar (ICM-CSIC), Spain*	
	Virtual Room #1	Virtual Room #2
10:20 - 12:20 CET	SESSION 1.5 - Special Session on Measurements for Past and Present Sea Level Changes	SESSION 2.5 - Special Session on Improved Geomatic and Ship Motion Measurements to Enhance the Safety of Navigation
12:20 - 13:00 CET	**TUTORIAL - SESSION #3** **Satellite remote sensing of the ocean: applications in temperate and polar regions** Giuseppe Aulicino, *University of Naples "Parthenope", Italy*	
13:00 - 13:30 CET	**CLOSING AND AWARD CEREMONY**	

Technical Sessions - Monday, October 5

09:30 - 12:40 CET
MILITARY METROLOGY FOR THE SEA
Room: *Virtual Room #1*

09:30 **Welcome Addresses**
B.Gen. (r) Dario Nicolella, *President of AFCEA Chapter of Naples, Italy*

09:40 **Opening Remarks**
C.V. Marco Grassi, *Italian Navy Hydrographic Institute*

10:10 **Capabilities and potential of Remote Operate Underwater vehicle (R.O.V.)**
B.Gen. Giovanni Savoldelli Pedrocchi

10:40 **New technologies are boosting predictive maintenance by increasing operational availability**
Eng. Eduardo De Francesco, *SeTel Group, Italy*

11:10 **Optical fibre sensors for structural and underwater applications**
Prof. Antonello Cutolo, *University of Naples 'Federico II', Italy*

11:40 **NATO VLF MSK BCA**
Eng. Gino Carelli, *Sirti*

12:10 **Underwater Acoustic Signature: improvement of Test & Evaluation Capability of the Naval Support and Experimentation Centre of the Italian Navy**
Cdr Mirko Stifani, *Italian Navy Naval Support and Experimentation Centre*

15:00 - 15:30 CET
OPENING SESSION
Room: *Virtual Room #1*

15:30 - 16:20 CET
TUTORIAL - Session #1
Room: *Virtual Room #1*
Chair: Claudio Parente, *Parthenope University of Naples, Italy*

Integrated remote coastal and seabed mapping

S.T.V. Luca Labella, *Italian Navy*

16:30 - 17:50 CET
SESSION 1.1 - General Session - PART 1
Room: *Virtual Room #1*
Chair: Francesca Rolle, *INRiM, Italy*

16:30 The European Metrology Network for Climate and Ocean Observation: updates and perspectives
Francesca Rolle, INRiM, Italy
Michela Sega, INRiM, Italy
Paola Fisicaro, LNE, France
Emma Woolliams, NPL, UK
Miruna Dobre, SMD, Belgium
Steffen Seitz, PTB, Germany

16:50 Critical marine environment observation: measurement problems, technological solutions and procedural methods

R. Ferretti, CNR, UniFe, Italy
M. Bibuli, CNR, Italy
G. Bruzzone, CNR, Italy
M. Caccia, CNR, Italy
A. Odetti, CNR, Italy
E. Cimenti, Italian Hydrographic Institute, Italy
M. Demarte, Italian Hydrographic Institute, Italy
R. Ivaldi, Italian Hydrographic Institute, Italy
M. Marro, Italian Hydrographic Institute, Italy
R. Nardini, Italian Hydrographic Institute, Italy
A. Saroni, UniFe, Italy
M. Coltorti, UniFe, Italy

17:10 Triggering Cyber electronic Attacks in Naval Radar Systems

Walmor Cristino Leite Junior, Brazilian Naval War College, Admiral Wandenkolk Instruction Center, Brasil
Alan Oliveira de Sà, Brazilian Naval War College, Admiral Wandenkolk Instruction Center, Brasil

17:30 Reliability and Availability Evaluation of an Autonomous Remote Video Monitoring System for Offshore Sea Farms

David Baldo, University of Siena, Italy
Ada Fort, University of Siena, Italy
Marco Mugnaini, University of Siena, Italy
Giacomo Peruzzi, University of Siena, Italy
Alessandro Pozzebon, University of Siena, Italy
Valerio Vignoli, University of Siena, Italy

16:30 - 17:50 CET
SESSION 2.1 - Special Session on Facing Emerging Marine Environmental Challenges Using Remote Sensing
Room: *Virtual Room #2*
Chairs: Giampaolo Ferraioli*, Università di Napoli Parthenope, Italy*
Hossein Aghababaei*, University of Twente, Netherlands*
Ferdinando Nunziata*, Università di Napoli Parthenope, Italy*

16:30 Preserving natural ecosystems: atolls observed by partially polarimetric SAR satellite imagery
Andrea Buono, Università degli Studi di Napoli Parthenope, Italy
Emanuele Ferrentino, Università degli Studi di Napoli Parthenope, Italy
Ferdinando Nunziata, Università degli Studi di Napoli Parthenope, Italy
Maurizio Migliaccio, Università degli Studi di Napoli Parthenope, Italy

16:50 An integrated approach of in-situ data, remote sensing measurements and numerical simulations to study storm events in the Ligurian Sea
Diana Di Luccio, Università degli Studi di Napoli Parthenope, Italy
Andrea Buono, Università degli Studi di Napoli Parthenope, Italy
Valeria Corcione, Università degli Studi di Napoli Parthenope, Italy
Maurizio Migliaccio, Università degli Studi di Napoli Parthenope, Italy
Guido Benassai, Università degli Studi di Napoli Parthenope, Italy

17:10 Exploiting the Deep Learning Potential for Sea Plastic Detection
Sergio Vitale, Università degli Studi di Napoli Parthenope, Italy
Giampaolo Ferraioli, Università degli Studi di Napoli Parthenope, Italy
Vito Pascazio, Università degli Studi di Napoli Parthenope, Italy

17:30 Integrating AIS and SAR to monitor fisheries: a pilot study in the Adriatic Sea
Alessandro Galdelli, Università Politecnica delle Marche, Italy
Adriano Mancini, Università Politecnica delle Marche, Italy
Carmen Ferrà, CNR-IRBIM, Italy
Anna Nora Tassetti, CNR-IRBIM, Italy

Technical Sessions - Tuesday, October 6

09:30 - 10:20 CET
PLENARY SESSION
Room: *Virtual Room #1*
Chair*:* Giorgio Budillon*, Parthenope University of Naples, Italy*

Filling a gap: metrology in marine observation and data

Cosimo Solidoro, Rajesh Nair
National Institute of Oceanography and Applied Geophysics, Italy

10:30 - 11:50 CET
SESSION 1.2 - General Session - Part 2
Room: *Virtual Room #1*
Chair*:* Enrico Primo Tomasini, *Università Politecnica delle Marche, Italy*

10:30 Uncalibrated Multibeam Echosounder capabilities for fish schools measuring and tracking. An application in the nearby of an Adriatic offshore structure
Annalisa Minelli, CNR IRBIM, Italy
Anna Nora Tassetti, CNR IRBIM, Italy
Gianna Fabi, CNR IRBIM, Italy

10:50 Analysis of multi-sensor sea level measurements in the Adriatic Sea
Gabriele Nardone, ISPRA, Italy
Saverio Devoti, ISPRA, Italy
Arianna Orasi, ISPRA, Italy
Luca Parlagreco, ISPRA, Italy
Marco Picone, ISPRA, Italy

11:10 A research laboratory for field testing of marine energy converters
P. Filianoti, University Mediterranea of Reggio Calabria, Italy
C. De Capua, University Mediterranea of Reggio Calabria, Italy
L. Gurnari, University Mediterranea of Reggio Calabria, Italy
R. Morello, University Mediterranea of Reggio Calabria, Italy
F. Ruffa, University Mediterranea of Reggio Calabria, Italy
G. Fulco, University Mediterranea of Reggio Calabria, Italy

11:30 Design and verification of a "Fixed Point" spar buoy scale model for a "Lab on Sea" unit
Damiano Alizzio, University of Messina, Italy
Marco Bonfanti, University of Catania, Italy
Nicola Donato, University of Messina, Italy
Carla Lucia Faraci, University of Messina, Italy
Giovanni Maria Grasso, University of Catania, Italy
Fabio Raffaele Emilio Lo Savio, University of Catania, Italy
Roberto Montanini, University of Messina, Italy
Antonino Quattrocchi, University of Messina, Italy

10:30 - 11:50 CET
SESSION 2.2 - Special Session on Advanced Techniques and Emerging Trends in Ecoinformatics Applied to Data Analysis for Marine Tutles, Cetaceans, Seahorses and Pipefishes – PART 1
Room: *Virtual Room #2*
Chairs*:* Roberto Carlucci*, University of Bari, Italy*
Rosalia Maglietta*, National Research Council, Italy*

10:30 INVITED TALK - Recent advances in the photo-identification of Risso's dolphins: from manual approaches to deep learning techniques
Vito Renò, National Research Council, Italy

10:50 NNPool in SPIR pipeline for Risso's dolphins identification

Rosalia Maglietta, National Research Council, Italy
Vito Renò, National Research Council, Italy
Rocco Caccioppoli, University of Bari, Italy
Stefano Bellomo, Jonian Dolphin Conservation, Italy
Francesca Cornelia Santacesaria, Jonian Dolphin Conservation, Italy
Giulia Cipriano, University of Bari, Italy
Ettore Stella, National Research Council, Italy
Karin Hartman, Nova Atlantis Foundation, Portugal
Carmelo Fanizza, Jonian Dolphin Conservation, Italy
Giovanni Dimauro, University of Bari, Italy
Roberto Carlucci, University of Bari, Italy

11:10 Lightweight and efficient convolutional neural networks for recognition of dolphin dorsal fins

Gianvito Losapio, Polytechnic University of Bari, Italy
Rosalia Maglietta, CNR STIIMA, Italy
Tiziano Politi, Polytechnic University of Bari, Italy
Ettore Stella, CNR STIIMA, Italy
Carmelo Fanizza, Jonian Dolphin Conservation, Italy
Karin Hartman, Nova Atlantis Foundation, Portugal
Roberto Carlucci, University of Bari, Italy
Giovanni Dimauro, University of Bari, Italy
Vito Renò, CNR STIIMA, Italy

11:30 Top down cascading effects driven by the odontocetes in the Gulf of Taranto (Northern Ionian Sea, Central Mediterranean Sea)

Pasquale Ricci, University of Bari, CoNISMa, Italy
Maurizio Ingrosso, University of Bari, Italy
Giulia Cipriano, University of Bari, CoNISMa, Italy
Carmelo Fanizza, Jonian Dolphin Conservation, Italy
Rosalia Maglietta, National Research Council, Italy
Vito Renò, National Research Council, Italy
Angelo Tursi, University of Bari, CoNISMa, Italy
Roberto Carlucci, University of Bari, CoNISMa, Italy

12:00 - 13:20 CET
SESSION 1.3 - General Session - Part 3
Room: *Virtual Room #1*
Chair: Giuseppe Grieco*, Royal Dutch Meteorological Institute, Netherlands*

12:00 A Brief Survey on Underwater Optical Wireless Communications
Giuseppe Schirripa Spagnolo, Università degli Studi "Roma Tre", Italy
Lorenzo Cozella, Università degli Studi "Roma Tre", Italy
Fabio Leccese, Università degli Studi "Roma Tre", Italy

12:20 New advances in the calibration of Doppler current-meters and current profilers
Marc Le Menn, SHOM, France
Steffen Morvan, ENSEEIHT, France
André Lusven, SHOM, France

12:40 A Digital Procedure to Validate Algorithms for the Calculation of Directional Wave Spectra
Filippo Ruffa, University Mediterranea of Reggio Calabria, Italy
Pasquale G. Fabio Filianoti, University Mediterranea of Reggio Calabria, Italy
Luana Gurnari, University Mediterranea of Reggio Calabria, Italy
Claudio De Capua, University Mediterranea of Reggio Calabria, Italy
Gaetano Fulco, University Mediterranea of Reggio Calabria, Italy

13:00 Albacore: A Sub Drone for Shallow Waters A preliminary study
Enrico Petritoli, Università degli Studi "Roma Tre", Italy
Fabio Leccese, Università degli Studi "Roma Tre", Italy

12:00 - 13:40 CET
SESSION 2.3 - Special Session on Advanced Techniques and Emerging Trends in Ecoinformatics Applied to Data Analysis for Marine Tutles, Cetaceans, Seahorses and Pipefishes – PART 2
Room: *Virtual Room #2*
Chairs: Roberto Carlucci*, University of Bari, Italy*
Rosalia Maglietta*, National Research Council, Italy*

12:00 Quantifying the dolphins fishery competition in the Gulf of Taranto (Northern Ionian Sea, Central Mediterranean Sea)

Pasquale Ricci, University of Bari, Italy
Maurizio Ingrosso, University of Bari, Italy
Roberto Carlucci, University of Bari, Italy
Carmelo Fanizza, Jonian Dolphin Conservation, Italy
Rosalia Maglietta, National Research Council, Italy
Cornelia Santacesaria, Jonian Dolphin Conservation, Italy
Angelo Tursi, University of Bari, Italy
Giulia Cipriano, University of Bari, Italy

12:20 Comparison of acoustic patterns recorded for the sperm whale (Physeter macrocephalus) in the Northern Ionian Sea (Central Mediterranean Sea) and in the North-western Levantine Sea (Eastern Mediterranean Sea)

Aylin Akkaya, DMAD-Marine Mammals Research Association, Turkey
Tim Awbery, DMAD-Marine Mammals Research Association, Turkey
Patrick Lyne, DMAD-Marine Mammals Research Association, Turkey
Giulia Cipriano, University of Bari, Italy
Rosalia Maglietta, National Research Council, Italy
Vito Reno, National Research Council, Italy
Carmelo Fanizza, Jonian Dolphin Conservation, Italy
Roberto Carlucci, University of Bari, Italy

12:40 Occurrence of Physeter macrocephalus and Ziphius cavirostris in the North Ikaria Basin, Aegean Sea

Patrice Hostetter, Archipelagos Institute of Marine Conservation, Greece
Alexandra Koroza, Archipelagos Institute of Marine Conservation, Greece
Thodoris Tsimpidis, Archipelagos Institute of Marine Conservation, Greece
Guido Pietroluongo, Archipelagos Institute of Marine Conservation, Greece
Roberto Carlucci, University of Bari, Italy
Giulia Cipriano, University of Bari, Italy

13:00 Habitat use of Delphinus delphis (Linnaeus, 1758) in the southern waters of Samos island (Aegean Sea, Greece)
Sebastien Saintignan, Gaia Research Institute Onlus, Italy
Matteo Costantino, Gaia Research Institute Onlus, Italy
Anastasia Milou, Archipelagos Institute of Marine Conservation, Greece
Sarah Moscatelli, Archipelagos Institute of Marine Conservation, Greece
Guido Pietroluongo, Archipelagos Institute of Marine Conservation, Greece
Marta Azzolin, Gaia Research Institute Onlus, Italy

13:20 Mediterranean monk seals increased detection in the Gulf of Corinth (Greece) during CoViD 19 lockdown
Marta Azzolin, Gaia Research Institute Onlus, Greece, University of Turin, Italy
Matteo Costantino, Gaia Research Institute Onlus, Greece
Sebastien Saintignan, Gaia Research Institute Onlus, Greece
Guido Pietroluongo, Gaia Research Institute Onlus, Greece

14:30 - 15:20 CET
TUTORIAL - Session #2
Room: *Virtual Room #1*
Chair: Donatella Insinga*, ISMAR-CNR, Italy*

Multidimensional marine geophysical data acquisition using Autonomous Surface Vehicles

Luca Gasperini, *Institute of Marine Science - National Research Council, Italy*

15:30 - 17:10 CET
SESSION 1.4 - Special Track on Measuring the Sea: the Contribution of Marine Geological Research
Room: *Virtual Room #1*
Chairs: Luca Gasperini, *ISMAR-CNR, Italy*
Fabio Matano, *ISMAR-CNR, Italy*

15:30 An updated reporting of rhodolith deposits in the offshore of Ischia (Gulf of Naples, Italy)
Gemma Aiello, CNR-ISMAR, Italy

15:55 High Resolution Volume Magnetic susceptibility correlation as a powerful tool for cryptotephra recognition in marine sediments
Marina Iorio, CNR-ISMAR, Italy
Francesca Budillon, CNR-ISMAR, Italy
Donatella D. Insinga, CNR-ISMAR, Italy

16:20 The present-day nearshore submerged depositional terraces off the Campania coast: an analysis of their morpho-bathymetric variability
F. Budillon, CNR-ISMAR, Italy
S. Amodio, Università Parthenope, Italy
P. Contestabile, Università "L. Vanvitelli", Italy
I. Alberico, CNR-ISMAR, Italy
S. Innangi, CNR-ISMAR, Italy
F. Molisso, CNR-ISMAR, Italy

16:45 Tsunamigenic mass-failure scenarios in the Palinuro volcano chain
Glauco Gallotti, University of Bologna, Italy
Guido Ventura, National Institute of Geophysics and Volcanology, Italy
Alberto Armigliato, University of Bologna, Italy
Filippo Zaniboni, University of Bologna, Italy
Gianluca Pagnoni, University of Bologna, Italy
Liang Wang, University of Bologna, Italy
Salvatore Passaro, CNR-ISMAR, Italy
Marco Sacchi, CNR-ISMAR, Italy
Stefano Tinti, University of Bologna, Italy

15:30 - 17:10 CET

SESSION 2.4 - Special Session on Advanced Techniques and Emerging Trends in Ecoinformatics Applied to Data Analysis for Marine Tutles, Cetaceans, Seahorses and Pipefishes – PART 3

Room: *Virtual Room #2*

Chairs*:* Roberto Carlucci*, University of Bari, Italy*
Cataldo Pierri, *University of Bari, Italy*

15:30 Satellite tracking of loggerheads sea turtles (Caretta caretta) in the Gulf of Taranto (Northern Ionian Sea, Central Mediterranean Sea)

C. Fanizza, Jonian Dolphin Conservation
R. Colella, CNR, Italy
R. Crugliano, Jonian Dolphin Conservation
G. Cirelli, Sea Turtle Rescue Center WWF, Italy
A. Colucci, Sea Turtle Rescue Center WWF, Italy
A. Pisto, Sea Turtle Rescue Center WWF, Italy
G. Cipriano, University of Bari, Italy
P. Ricci, University of Bari, Italy
R. Maglietta, CNR, Italy
R. Carlucci, University of Bari, Italy

15:50 Occurrence of zoonotic parasites in free-ranging dolphins and sea turtles in the Gulf of Taranto (Northern Ionian Sea, Central-eastern Mediterranean Sea)

Marianna Marangi, University of Foggia, Sea Turtle Research, Italy
Piero Carlino, Sea Turtle Research, Italy
Carmelo Fanizza, Jonian Dolphin Conservation, Italy
Gianluca Cirelli, Turtle Rescue Centre Policoro, Italy
Annachiara Pisto, Turtle Rescue Centre Policoro, Italy
Rosalia Maglietta, National Research Council, Italy
Giulia Cipriano, University of Bari, Italy
Roberto Carlucci, University of Bari, Italy

16:10 Head injuries in Loggerheads (Caretta caretta): new threat in the Gulf of Taranto?

E. Ottone, Sea Turtle Rescue Center WWF, Italy
A. Pisto, Sea Turtle Rescue Center WWF, Italy
G. Cirelli, Sea Turtle Rescue Center WWF, Italy
F. Catucci, Sea Turtle Rescue Center WWF, Italy
V. Aquaro, Sea Turtle Rescue Center WWF, Italy
A. Colucci, Sea Turtle Rescue Center WWF, Italy
N. Tragni, CNR IMAA, Italy
S. Ciccarelli, Sea Turtle Clinic, Italy
R. Maglietta, National Research Council, Italy
C. Fanizza, Jonian Dolphin Conservation, Italy
R. Carlucci, University of Bari, Italy

16:30 What goes in, must come out: Evaluation of the DNA metabarcoding approach to analyse diet of threatened seahorses

Tamara Lazic, University of Bari, CoNISMa, Italy
Giuseppe Corriero, University of Bari, Italy
Bachir Balech, CNR, Italy
Frine Cardone, Zoological Station Anton Dohrn, Italy
Michele Deflorio, University of Bari, Italy
Bruno Fosso, CNR, Italy
Carmela Gissi, CNR, University of Bari, Italy
Marinella Marzano, CNR, Italy
Graziano Pesole, CNR, University of Bari, Italy
Monica Santamaria, CNR, Italy
Michele Gristina, CNR, Italy
Cataldo Pierri, University of Bari, Italy

16:50 Evaluation of environmental stressors for a population of the long-snouted seahorse Hippocampus guttulatus through an innovative Citizen Science approach

Michele Gristina, CNR, Italy
Tamara Lazic, University of Bari, Italy
Federico Quattrocchi, CNR, Italy
Giuseppe Corriero, University of Bari, Italy
Frine Cardone, Stazione Zoologica Anton Dohrn, Italy
Cataldo Pierri, University of Bari, Italy

Technical Sessions - Wednesday, October 7

09:30 - 10:20 CET
PLENARY SESSION
Room: *Virtual Room #1*
Chair: Salvatore Gaglione, *Parthenope University of Naples, Italy*

Scatterometer-derived stress-equivalent wind fields: retrievals and applications

Marcos Portabella, *Institut de Ciències del Mar (ICM-CSIC), Spain*

10:20 - 12:20 CET
SESSION 1.5 - Special Session on Measurements for Past and Present Sea Level Changes
Room: *Virtual Room #1*
Chairs: Marco Anzidei, *INGV, Italy*
Pietro Patrizio Ciro Aucelli, *Università di Napoli Parthenope, Italy*
Giuseppe Mastronuzzi, *Università degli studi di Bari Aldo Moro, Italy*
Gaia Mattei, *Università di Napoli Parthenope, Italy*

10:20 Estimating RSL changes in the Northern Bay of Càdiz (Spain) during the late Holocene
Claudia Caporizzo, Università degli Studi di Napoli "Parthenope", Italy
Pietro Patrizio Ciro Aucelli, Università degli Studi di Napoli "Parthenope", Italy
Ignacio Galàn Ruffoni, Universidad de Càdiz, Spain
Francisco Javier Gracia Prieto, Universidad de Càdiz, Spain
Celia Martín Puertas, Royal Holloway University of London, UK
Gaia Mattei, Università degli Studi di Napoli "Parthenope", Italy
Paolo Stocchi, NIOZ - Royal Netherlands Institute for Sea Research, The Netherlands

10:40 Risk assessment and management strategies to sea level rise along the Sele River mouth (southern Italy)

Gianluigi Di Paola, Università degli Studi di Bologna, Italy
Pietro Patrizio Ciro Aucelli, Università degli Studi di Napoli "Parthenope", Italy
Fabio Matano, CNR ISMAR, Italy
Angela Rizzo, REMHI, Italy
Ettore Valente, Università degli studi di Napoli "Federico II", Italy

11:00 Morphological responses to relative sea-level changes along Procida coast (Gulf of Naples, Italy) during the last 6.5 Ky

P.P.C. Aucelli, Università degli Studi di Napoli "Parthenope", Italy
E. Gagliardi, Università degli studi di Napoli "Federico II", Italy
G. Mattei, Università degli Studi di Napoli "Parthenope", Italy
F. Napolitano, Università degli studi di Napoli "Federico II", Italy
G. Pappone, Università degli Studi di Napoli "Parthenope", Italy
M. Pennetta, Università degli studi di Napoli "Federico II", Italy
M.F. Tursi, Università degli Studi di Napoli "Parthenope", Italy

11:20 Assessment of shoreline detection using UAV

Silvio Del Pizzo, Università degli Studi di Napoli "Parthenope", Italy
Antonio Angrisano, University of Benevento "G. Fortunato", Italy
Salvatore Gaglione, Università degli Studi di Napoli "Parthenope", Italy
Salvatore Troisi, Università degli Studi di Napoli "Parthenope", Italy

11:40 Sea-Level Variability in the Gulf of Naples and the "Acqua Alta" Episodes in Ischia from Tide-Gauge Observations in the Period 2002–2019

Berardino Buonocore, Parthenope University of Naples, Italy
Yuri Cotroneo, Parthenope University of Naples, Italy
Vincenzo Capozzi, Parthenope University of Naples, Italy
Giuseppe Aulicino, Parthenope University of Naples, Italy
Giovanni Zambardino, Parthenope University of Naples, Italy
Giorgio Budillon, Parthenope University of Naples, Italy

12:00 Reconstructing past sea level through notches: Orosei Gulf
Nikos Georgiou, University of Patras, Greece
Paolo Stocchi, NIOZ - Royal Netherlands Institute for Sea Research, The Netherlands
Alessio Rovere, ZMT, University of Bremen, Germany
Elisa Casella, ZMT, Germany

10:20 - 12:20 CET
SESSION 2.5 - Special Session on Improved Geomatic and Ship Motion Measurements to Enhance the Safety of Navigation
Room: *Virtual Room #2*
Chairs: Francesco Crenna, *University of Genova, Italy*
Silvio Del Pizzo, *Università di Napoli Parthenope, Italy*
Vincenzo Piscopo, *Università di Napoli Parthenope, Italy*

10:20 Developing a low-cost GNSS/IMU data fusion platform for boat navigation
Matteo Cutugno, Parthenope University of Naples, Italy
Giovanni Pugliano, Parthenope University of Naples, Italy
Umberto Robustelli, Parthenope University of Naples, Italy

10:40 Performance assessment of GNSS single point positioning with recent smartphones
Jacek Paziewski, University of Warmia and Mazury in Olsztyn, Poland
Giovanni Pugliano, Parthenope University of Naples, Italy
Umberto Robustelli, Parthenope University of Naples, Italy

11:00 Sea state monitoring based on ship motion measurements onboard an icebreaker in the Antarctic waters
Silvia Pennino, Parthenope University of Naples, Italy
Antonio Angrisano, University of Benevento "G. Fortunato", Italy
Salvatore Gaglione, Parthenope University of Naples, Italy
Anna Innac, Parthenope University of Naples, Italy
Vincenzo Piscopo, Parthenope University of Naples, Italy
Antonio Scamardella, Parthenope University of Naples, Italy

11:20 Data processing for the accurate evaluation of combined wind sea and swell spectra
Giovanni Battista Rossi, University of Genova, Italy
Francesco Crenna, University of Genova, Italy
Marta Berardengo, University of Genova, Italy
Vincenzo Piscopo, Parthenope University of Naples, Italy
Antonio Scamardella, Parthenope University of Naples, Italy

11:40 DANAE: a denoising autoencoder for underwater attitude estimation
Paolo Russo, University of Rome La Sapienza, Italy
Fabiana Di Ciaccio, Parthenope University of Naples, Italy
Salvatore Troisi, Parthenope University of Naples, Italy

12:00 Kriging interpolation of bathymetric data for 3D model of the Bay of Pozzuoli (Italy)
Emanuele Alcars, University of Naples "Parthenope", Italy
Claudio Parente, University of Naples "Parthenope", Italy
Andrea Vallario, University of Naples "Parthenope", Italy

12:20 - 13:00 CET
TUTORIAL - Session #3
Room: *Virtual Room #1*
Chair: Yuri Cotroneo*, Parthenope University of Naples, Italy*

Satellite remote sensing of the ocean: applications in temperate and polar regions

Giuseppe Aulicino, *University of Naples "Parthenope", Italy*

13:00 - 13:30 CET
CLOSING AND AWARD CEREMONY
Room: *Virtual Room #1*