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## Welcome Message

On behalf of the Organizing Committee, we cordially welcome you to the *2019 IMEKO International Workshop on Metrology for the Sea (MetroSea 2019)*.

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 health is a very challenge for the survival of all humanity since it is one of 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 *2019 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 will be held at University of Genoa. Genoa is the capital city of Liguria region. It is well known as a port and University City. We are sure that the universally recognized beauty of Genoa will be a perfect frame for this prestigious workshop. It is, in fact, a further occasion, not only to meet old friends and new people from all over the world, but, moreover, to engage with them a continuous comparison directed to make wider the views on the technological progress of Metrology for the Sea.

The MetroSea organization was a complex task due to the large and increasing interest of our research and application areas. Efforts from many people were

required to shape the technical program, arrange accommodation, manage the administrative aspects, and set up the social functions. We like to take this opportunity to thank all and each of them. We like also to thank the public and private organizations that supported the meeting in different ways.

Special thanks go to the Italian Navy for the official support to the event. Metrosea2019 received the full support of the Italian Hydrographic Institute, the possibility to organize some events on the Survey Vessel Ammiraglio Magnaghi, the attendance of Italian Navy experts to the Technical Program, and technical visits on board Ammiraglio Magnaghi and the Tide Gauge at Ponte Morosini.

Furthermore, attendees have the possibility to follow a day of seminars on board Ammiraglio Magnaghi on Military Metrology for the Sea, promoted by AFCEA Chapter of Naples.

A special panel on "Containers' Track & Tracing: problems and solutions" was organized by Propeller Club - Port of Genoa.

Inside MetroSea2019, *Greentech Solution* promotes the GLOBAL CHALLENGE "KEEP THE SEA PLASTIC FREE". It is open to teams of students who will compete with LITTER HUNTER Edu. The challenge consists of assembling the marine drone, by using the LITTER HUNTER Edu kit provided to each team, completing parts of the code to allow the self-driving drone to reach one or more fixed targets (which emulate dispersed plastic objects at sea) and return to the starting point. The team able to collect more plastic objects in the shortest time will win the challenge. This initiative is supported by AFCEA Naples Chapter - Young AFCEANs, and Feyla Preservation of Life O.n.I.u.s. Today, the plastic is the first cause of marine pollution, being the 95% of waste dumped at sea. Large pieces of plastic injure and often cause the death of animals, including both protected and endangered species such as sea marine turtles. To this reason MetroSea2019 is a "plastic free event". The Organizers tried to avoid the use of plastic objects for attendees and the social activities.

The MetroSea Technical Program consists of 14 oral and poster sessions scheduled over two 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.

Thanks to all of the Technical Program Committee members and the reviewers who have contributed to make this outstanding program possible. We wish to highlight that the papers published on the Proceedings of the Workshop will be included in Scopus and Compendex data bases. All contributions have been peer reviewed on the basis of an abstract and acceptance was based on quality, originality and relevance. Accepted papers have been published in the Workshop Proceedings and



expanded versions of presented papers are eligible for publication on; MBDI Sensors Journal, Geosciences, Journal of Marine Science and Engineering, and Acta IMEKO. The keynote speeches will be held by experts in the field of metrology for the sea; Frédérique Leclerc, from Université de Nice Sophia Antipolis, France, will speak about "Submarine earthquake geology: mapping and quantifying a surface rupture", Roberta Ivaldi, from Italian Hydrographic Institute will present "Measuring the Ocean in the High North". We are honoured to have them as plenary speakers and thank them in advance for coming to our conference to share their knowledge and experiences with us.

Furthermore, attendees have the possibility to follow tutorials about the role of measurements for the sea that will be held on October 3. In particular, two sessions will be offered on:

- *UNCERTAINTY EVALUTION BASED ON MEASUREMENT MODELLING*, Giovanni Battista Rossi, *University of Genoa, Italy*
  - *MARINE LITTER BUSINESS PROJECT*, Emanuele Della Volpe, *Green Tech Solution*
- 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 about the metrology for the sea, the conference includes a significant number of Special Sessions. A first reason is that so many are the application fields of the metrology for the sea that a single track could have been too much dispersive. A second reason is that, in spite of a centralized research address definition, a spontaneous aggregation of well-focused themes has been gathered, with specific aim of providing a forum of dedicated debate very close to the single research field. Therefore, some application-oriented Special Sessions have been organized. We wish to thank the organizers of these Special Sessions for their cooperation and support to the conference organization.

The 2019 IMEKO International Workshop on Metrology for the Sea is about to begin. You are now in a position to enjoy the fellowship of colleagues and experts and to pass free time in natural and artistic beauties. It is up to you to appreciate the conference worth! Be critical! We, metrologists, sea experts, engineers, colleagues, and friends, all know that this is the best way to improve quality, and to achieve lasting excellences.

*Pasquale Daponte  
Luigi Sinapi*

## Committee

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### **LOCAL COMMITTEE**

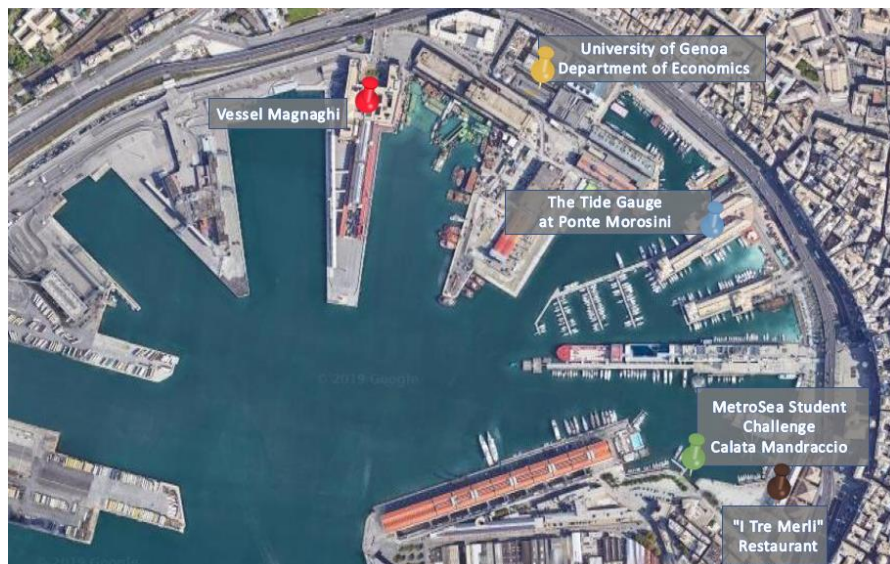
Giorgio Bavassano, *University of Genoa, Italy*  
Francesco Crenna, *University of Genova, Italy*  
Francesco Vitellaro, *University of Genoa, Italy*  
Veronica Asta, *University of Genoa, Italy*

### **LOCAL ARRANGEMENTS**





## Location



### **Vessel Magnaghi, Port of Genoa**

#### **Thursday, October 3**

Military Metrology for the Sea – H 09:30

Technical Visit – H 18:00

#### **Friday, October 4**

MetroSea Student Challenge – H 09:30 – 15:00

Special Session on Metrology in Marine Geology: applications in shallow and deep waters – H 11:00

Technical Visit – H 17:15

MetroSea Student Challenge – Award Ceremony – H 18:00

MetroSea 2019 Photo Group – 18:30



**University of Genoa, Department of Economics**

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**Thursday, October 3**

Tutorials – H 15:30

Welcome Party – H 18:30

**Friday, October 4**

MetroSea 2019 Technical Session – H 09:00

**Saturday, October 5**

MetroSea 2019 Technical Session – H 09:30

**The Tide Gauge at Ponte Morosini**

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**Friday, October 4**

Technical Visit – H 16:30

**Saturday, October 5**

Technical Visit – H 12:40

**Calata Mandraccio**

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**Friday, October 4**

MetroSea Student Challenge – H 15:00 – 17:30

**“I Tre Merli” Restaurant**

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**Friday, October 4**

Gala Dinner – H 20:00



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## Technical Visits

### Vessel Magnaghi

#### **Admiral Giovan Battista Magnaghi**

**Identification:** Pennant number: A 5303

**Displacement:** 1.744 t (1.716 long tons) full load

**Length:** 82.7 m (271 ft) LOA

**Beam:** 13.7 m (45 ft)

**Draught:** 3.1 m (10 ft)



*The Technical Visit - Vessel Magnaghi - will be held on*

***Thursday, October 3, 2019 - H 18:00***

***Friday, October 4, 2019 - H 17:15***

The Magnaghi is the first survey vessel ever to be designed and built completely in Italy for the Italian Navy. Delivered to the Italian Navy in 1975, the Magnaghi has been in service for almost 40 years. It has been regularly modernized and constantly upgraded. It is fitted with single-beam echo sounders, 33 and 210 KHz, and 12, 38 and 200 KHz, multi-beam echo sounder (50 KHz), two side scan sonars (hull-mounted and towed), differential and RTK satellite positioning systems, geodimeter, portable tide gauge, XBT bathythermograph, CTD profiler with rosette system used for water sampling at different depths, one ROV with closed circuit TV system, one core barrel, current meters, Van Veen buckets and a weather station. The ship is equipped with suitable digital data logging and processing systems interfaced with oceanographic and hydrographic sensors.

The ship is equipped with three survey motor boats for coastal and shallow water surveys, fitted with single beam and multi-beam echo sounders, and with a harbour survey motor launch and two dinghies.

Her crest has at its centre Admiral Magnaghi's face, from the picture hung in the Institute conference room, and the ship in the background; the ship's name is along the bottom and the motto, "Nauta pro nautis" – "a sailor for sailors" – along the top.

## The Tide Gauge at Ponte Morosini

*The Technical Visit - The tide gauge at Ponte Morosini - will be held on*

**Friday, October 4, 2019 - H 16:30**

**Saturday, October 5, 2019 - H 12:40**

Sea level data started to be collected in Genoa in 1884. Since 1954 sea level measurements at the Old Harbour have been used to calculate the mean sea level (averaging out tide measurements over a period of time), which is used as a standard to calculate heights and elevations throughout Italy.

Obviously, the equipment used to record tides improved greatly, since 1884. In 1910 the tide gauge was moved to its current location, at Ponte Morosini.

The IIM tide gauge at Ponte Morosini consists of a float operating in a stilling well, to dampen oscillations due to waves, which would affect the results.

In the first tide gauge used in the port of Genoa, the float was connected to a pen, recording any variations of the sea level on a roll of paper which turned tanks to a spring mechanism similar to that of a clock. In the last 20 years, more modern equipment has been introduced, using pressure and radar sensors.





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## MetroSea Student Challenge



**Place:** *Vessel Magnaghi*

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- 09:30 - 10:30** Introduction - "Litter Hunter EDU" Presentation
- 10:30 - 11:00** Challenge Preparation
- 11:00 - 12:00** System integration of the mechanical and electronic components
- 12:00 - 12:30** Receiver 433 MHz device test and baud rate evaluation
- 12:30 - 13:00** GPS Integration and 3-axis calibration
- 13:00 - 13:30** Implementation of the AUTO-MANUAL MODE for water tests
- 13:30 - 14:30** **LUNCH BREAK**

**Place:** *Calata Mandraccio, Port of Genoa*

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- 15:00 - 15:30** Control Test in MANUAL MODE
- 15:30 - 16:30** AUTO MODE Test with performance evaluation of Automatic Navigation
- 16:30 - 17:30** Implementation of Self-Piloting mission

**Place:** *Vessel Magnaghi*

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- 18:00** Award Ceremony



Young AFCEANs



## MetroSea 2019 – Keynote Speakers

Keynote Friday, October 4, 2019

### Submarine earthquake geology: mapping and quantifying a surface rupture

Frédérique Leclerc

*Université de Nice Sophia Antipolis, France*

**ABSTRACT.** On Earth, more than 70% of the seismicity occurs offshore. Submarine ruptures that reach the seafloor (i.e. the Earth' surface) take part in the submarine landscape evolution on long time scales, while they can trigger devastating tsunami waves, on short time scales. Yet, the detailed characterization of a submarine rupture has never been accomplished owing to the limitations imposed by the submarine environment itself, the technological requirements to conduct detailed fieldwork, and the lack of observations prior to seismic events to identify the coseismic ruptures.

In this talk, I will present the work conducted along the submarine normal Roseau fault that broke into a Mw6.3 earthquake in the French West Indies (Les Saintes archipelago), on November 21, 2004. This work is performed in collaboration with J. Escartín, J. Billant, K. Istenic, N. Gracias, R. García, A. Arnaubec, D. Deplus, N. Feuillet, and the SUBSAINTES Science party.

This seismic event generated a tsunami wave that inundated the nearby islands' coasts, with a maximum run-up of 3.5 m, indicating that the rupture reached the seafloor. Here, we aim at fully characterizing the submarine rupture characteristics: namely its geometry, displacement, but also to understand its link with surrounding erosion and sedimentation processes.

By combining AUV microbathymetry surveys and ROV observations acquired during the 2013 and 2017 ODEMAR-Saintes and SUBSAINTES oceanographic cruises, we document clearly the coseismic rupture at the base of the cumulative scarp. We also developed and applied Structure from Motion techniques specific to submarine environments in order to generate scaled 3D video reconstructions with image texture of the underwater outcrops, and quantify both the vertical and horizontal coseismic displacement.

This study demonstrates that detailed submarine field work using deep-sea vehicles can be conducted at spatial scales and resolutions similar to those on-land. It also opens the door to a systematic and detailed study of submarine ruptures elsewhere.



## SHORT BIOGRAPHY



Since 2016, I am Assistant Professor at Université Nice Sophia Antipolis in the laboratory of Géoazur (CNRS, IRD, OCA). My research focuses on the characterization of the tectonic deformation of the Earth's crust in the vicinity of converging plate boundaries. These plate boundaries produce the largest earthquakes and tsunamis, and promote vertical deformation of the crust (uplift or subsidence) that can increase the actual relative sea level rise in these areas that host more than 500 millions of people. Identifying and quantifying the tectonic deformation is therefore important and impose to look for geological markers both onland and offshore.

I started working offshore during my PhD thesis at Institut de Physique du Globe de Paris, and then during a 2 year postdoctorate at the Earth Observatory of Singapour. My work focused on the recent tectonic deformation of the Lesser Antilles arc, in the Caribbean, and of Eastern Indonesia. Markers of the deformation as faults or reefs were investigated offshore thanks to marine geophysical data including seismic reflection, bathymetry and back-scatter imagery.

Recently, I was part of the SUBSAINTES cruise (PI: J. Escartin, subsaintes2017.weebly.com), during which we investigated a normal fault that broke into a Mw6.3 earthquake in 2004, followed by a tsunami. With the ROV Victor (IFREMER) we were able to image the surface rupture of the submarine earthquake along >20 km, at a depth of 1200 m. Photogrammetry techniques applied to the ROV videos (technique developed in the framework of ANR Sersurf project) allowed us to reconstruct in 3D the seafloor, map and measure the surface rupture at an unprecedented resolution of a few mm.

## Keynote Saturday, October 5, 2019

### Measuring the Ocean in the High North

Roberta Ivaldi

*Italian Hydrographic Institute*

**ABSTRACT.** In 2017, in line with the National Strategy for the Arctic, the Italian Navy – acting as national marine focal point for Arctic research activities – with the scientific support of the Italian Hydrographic Institute, launched the Pluriannual Joint Research Program 2017-2019, named High North. The aim of this program is to contribute to Oceans' knowledge, collecting marine data in a very sensitive, fragile and remote area subjected to rapid changes. Five are the main benchmarks of the Program: ocean knowledge, exploration, new technology, education and monitoring, with different activities such as bottom mapping, water column & seabed features, sub-bottom profiling, acoustic imaging, optical imaging and ocean remote sensing. These have been carried out – mainly – in unsurveyed areas and up to the Arctic ice edge. To these, we should add a seventh activity, observation, which will modify the mapping of the surveyed areas from three dimensions to four dimensions. The Arctic Marine Geophysical Campaigns (High North17 and High North18) are the core of this pluriannual program. We present the preliminary results of these marine geophysical cruises, collected using several platforms from satellite to subbottom. The research activities have been focused on the Yermak Plateau, Eastern Fram Strait and the Western Svalbard, taking place also at the arctic sea ice up to latitude 82° N, to test new integrated technologies. In particular, the exploration has been the key element of the High North 18 campaign, due to the extensive unsurveyed areas that were covered in this campaign and will be covered during the next. The loss of sea ice and the melting ice have created new open water easier to survey and explore. The collection of new hydro-oceanographic data will also improve knowledge of Arctic depths and water masses, leading to new models of seabed mapping and water mass circulation. All these new data will be shared with Norwegian Hydrographic Office for the update of the official nautical documents, and with General Bathymetric Chart of the Oceans – International Bathymetric Chart of the Arctic Ocean (GEBCO IBCAO) and GEBCO Seabed 2030 for increasing the knowledge of the High North.



## SHORT BIOGRAPHY



Roberta Ivaldi, PhD degree in Environmental Science, Sea Science, (Trieste University, 1997) and MSc degree in Geological Science (Genoa University, 1993), has been Associate Professor in Marine Geology at the Italian Hydrographic Institute since 2008, member of GEBCO - SCUFN (General Bathymetric Chart of the Oceans - Sub Committee on Undersea Feature Names) as IHO (International Hydrographic Organization) representative since 2016, member of the "Tavolo Artico" of Ministry of Foreign Affairs and International Cooperation as It Navy representative since 2016, member of the GEBCO - IBCAO (General Bathymetric Chart of the Oceans - International Bathymetric Chart of the Arctic Ocean) Editorial Board since 2018.

She participated in several oceanographic cruises and research activities in the Mediterranean Sea, Northern Atlantic, Antarctica and Arctic. Last two summers she was the scientist in charge (SIC) of the Arctic Marine Geophysical Campaign High North17 and High North18 in the aim of IT Navy High North Research Program. Her research focuses on 3D integrated mapping, seabed mapping, high resolution seismic stratigraphy, physical - mechanical properties and microstructures of sediments.



## Tutorials

**SESSION 1** - October 3, 2019 - H. 15:30 - 16:15

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### Uncertainty Evaluation based on Measurement Modelling

**Giovanni Battista Rossi**, *University of Genoa, Italy*



Uncertainty evaluation is a major task for quality assured measurement. A systematic approach to such an evaluation, based on measurement modelling, is presented. Three main architectures for practical measurements – the device, the measuring chain and the multichannel measurement system – are considered and a general model expressed by block diagrams is developed, where uncertainty sources are represented by probabilistic variables. The solution of the uncertainty evaluation problem naturally outcomes by solving such a model in respect of the variable of interest, without the need of referring to specific statistic-probabilistic school of thought, such as the Bayesian or the frequentistic one. The standpoints of the designer/manufacturer and of the user of the measurement system are outlined and discussed. The application of the method is demonstrated by fully working out uncertainty evaluation for an experimental test case, purposely designed and performed to outline common important issues, such as the use of repeated observations, the compensation of systematic effects and the inclusion of calibration data.

It is suggested that this model-based approach may have advantages in education and in the development of recommended practices in measurement, and a recent proposal for a more user-oriented approach in the revision of the Guide to the expression of measurement uncertainty (GUM) is also mentioned.

**SESSION 2** - October 3, 2019 - H. 16:15 - 17:00

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### Marine Litter Business Project

**Emanuele Della Volpe**, *Green Tech Solution*



The Green Tech Solution innovative technology concerns a new conception of the use of automatic technologies enslaved to the needs of the human being for the applications of environmental safeguard, industrial maintenance, and safety areas. Given the growing need for efficient processes, automatic technologies, in their broadest sense, find more and more space in all those areas where an operation is carried out in a systematic and repetitive manner. This approach, characteristic of industry 4.0, integrates new sensor and telecommunication technologies in production processes, to improve working conditions, increase productivity and,



MARINA MILITARE

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through greater knowledge of the state of the plants, increase the production quality and therefore processes efficiency. In recent years, in particular, also the self-piloting technologies for civil purposes have had a significant growth in terms of performance and functionality which has made them a possible tools for the automation chain in any type of process, like territorial and industrial monitoring and control. The self-piloting technologies, albeit with high costs, have long demonstrated the potential of automatic missions carried out by the mobile units on which they are installed and have increasingly been linked to the robotics field. The environments in which they can operate are air, land and sea with many possible configurations depending on the specific functionality and with different levels of automation. In various application areas, efficiency through automation increasingly concerns the need for unit movement and displacement of all kinds, from the transport of objects in the warehouse, to the transport of cameras for monitoring, to the movement of equipment for the tillage in the areas of precision agriculture, for using pollution sensors in the field of water monitoring, for the chase of an illegal intruder in the areas of safety, etc.

## 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**.



**sensors**  
an Open Access Journal by MDPI

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).



### Best Paper Presented by a Young Researcher

**Description:** An exclusive plaque will be given for the best paper authored and presented by a researcher younger than 35 years in age.



**geosciences**  
an Open Access Journal by MDPI

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 500 CHF**.

**Basis for Judging:** Technical merit, originality, potential impact on the field, clarity of the written paper, and quality of the oral or other presentation.

### Best Paper 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**.



**Journal of  
Marine Science  
and Engineering**  
an Open Access Journal by MDPI

**Basis for Judging:** Technical merit, originality, potential impact on the field, clarity of the written paper, and quality of the oral or other presentation.

### Best Poster

**Description:** An exclusive plaque will be given for the best poster presented.

**Basis for Judging:** Technical merit, originality, potential impact on the field, clarity of the written paper, and quality of the poster presentation.



### MetroSea Student Challenge Award

The team that has achieved the highest score during the MetroSea Student Challenge will be the winner of the competition. The **MetroSea Student Challenge Award** is sponsored by *Feyla*. The award will consist of a certificate and a **prize money amounting to 200 EUR**.





MARINA MILITARE

## Planimetry - University of Genoa



## Social Events

### Welcome Party

The Welcome Party will be held at **Department of Economics of University of Genova**, *October 3, H 18.30*



### Gala Dinner

The Gala Dinner will be held at **"I Tre Merli" Restaurant**, *October 4 - H 20:00.*



#### Address

Calata Cattaneo, 17  
16128 - Genova GE



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## Patronages



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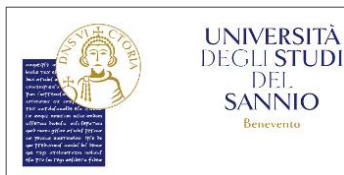
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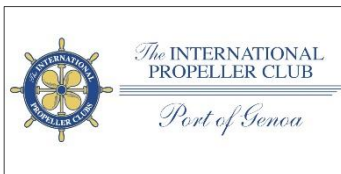
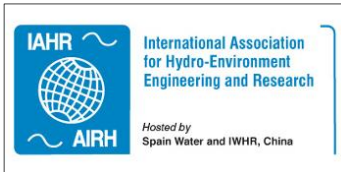
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## Program Schedule – October 3, 2019

THURSDAY, OCTOBER 3	
09:30 - 13:30	<b>MILITARY METROLOGY FOR THE SEA</b> <b>Room:</b> <i>Vessel Magnaghi, Port of Genoa</i>

THURSDAY, OCTOBER 3	
15:30 - 17:00	<b>TUTORIALS</b> <b>Room:</b> <i>Aula Fieschi, University of Genoa</i>
15:30 - 16:15	<b>TUTORIAL - Session 1</b>  UNCERTAINTY EVALUATION BASED ON MEASUREMENT MODELLING <b>Giovanni Battista Rossi</b> - <i>University of Genoa, Italy</i>
16:15 - 17:00	<b>TUTORIAL - Session 2</b>  MARINE LITTER BUSINESS PROJECT <b>Emanuele Della Volpe</b> - <i>Green Tech Solution SRL, Italy</i>

18:00 - 18:30	<b>TECHNICAL VISIT</b> <i>Vessel Magnaghi - Port of Genoa</i>
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18:30 - 21:00	<b>WELCOME PARTY</b> <i>University of Genoa - Department of Economics</i> <i>Via Francesco Vivaldi, 5</i>
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## Program Schedule – October 4, 2019

FRIDAY, OCTOBER 4					
08:30 - 17:30	REGISTRATION				
09:00 - 09:30	WELCOME ADDRESSES Room: Aula Guglielmo Embriaco, University of Genoa				
09:30 - 10:20	INVITED SPEECH - Frédérique Leclerc Submarine earthquake geology: mapping and quantifying a surface rupture Room: Aula Guglielmo Embriaco, University of Genoa				
10:20 - 10:40	COFFEE BREAK				
	Aula Fieschi University of Genoa	Aula Spinola University of Genoa	Vessel Magnaghi Port of Genoa	Aula Guglielmo Embriaco University of Genoa	
10:40 - 12:20	General Session PART I	Special Session - Interdisciplinary crossover for Marine Mammals and Sea-turtles conservation	Special Session - Metrology in Marine Geology: applications in shallow and deep waters PART I	Panel Containers' Track & Tracing: problems and solutions	
12:20 - 13:50	LUNCH				
13:50 - 15:10	Special Session - Geomatic and Measurements for Sea Conditions and Navigation PART I	Special Session - High-Tech Flexible Networks of Augmented Observatories for the Monitoring of Marine Ecosystems PART I	Special Session - Metrology in Marine Geology: applications in shallow and deep waters PART II	METROSEA STUDENT CHALLENGE	
15:10 - 15:30	COFFEE BREAK				
15:30 - 16:30	Special Session - Geomatic and Measurements for Sea Conditions and Navigation PART II	Special Session - High-Tech Flexible Networks of Augmented Observatories for the Monitoring of Marine Ecosystems PART II	Special Session - Metrology in Marine Geology: applications in shallow and deep waters PART III		
16:30 - 17:15	TECHNICAL VISIT "THE TIDE GAUGE AT PONTE MOROSINI"				
17:15 - 18:00	TECHNICAL VISIT "VESSEL MAGNAGHI"				
18:00 - 18:30	AWARD CEREMONY - MetroSea Student Challenge Room: Vessel Magnaghi				
18:30	MetroSea 2019 Photo Group - Vessel Magnaghi				
20:00 - 23:00	GALA DINNER "I Tre Merli" Restaurant Calata Cattaneo 17				



## Program Schedule – October 5, 2019

SATURDAY, OCTOBER 5			
08:30 - 15:00	REGISTRATION		
09:30 - 10:20	INVITED SPEECH - Roberta Ivaldi <i>Measuring the Ocean in the High North</i> <b>Room: Aula Guglielmo Embriaco, University of Genoa</b>		
10:20 - 10:40	COFFEE BREAK		
	Aula Fieschi University of Genoa	Aula Spinola University of Genoa	Foyer University of Genoa
10:40 - 12:40	Special Session - Marine Metrology and Oceanographic Measurements: procedures for ocean observing systems	Special Session - Experimental laboratories for shipbuilding	P O S T E R
12:40 - 13:10	<b>POSTER SESSION - Foyer, University of Genoa</b> <b>TECHNICAL VISIT "THE TIDE GAUGE AT PONTE MOROSINI"</b>		S E S S I O N
13:10 - 14:20	LUNCH		
14:20 - 15:40	Special Session - Underwater Measurement for 3D Characterization of Subsea Objects	General Session - PART II	
15:40 - 16:00	CLOSING AND AWARD CEREMONY		

## TECHNICAL SESSIONS - Thursday, October 3, 2019

### Military Metrology for the Sea

**09:30 – 13:30**

**Room:** *Vessel Magnaghi, Port of Genoa*

**09:30 Welcome Addresses - Introduction**

B. Gen. (a) Dario NICOLELLA, *President of AFCEA Chapter of Naples, Italy*  
Rear Admiral Luigi Sinapi, *Italian Navy, Italian Hydrographic Institute*  
C.F. Roberto Rossini, *Navy Commander - Italian Navy - Vessel Magnaghi*

**10:00 Underwater Acoustic Signature – Test & Evaluation Capabilities of the Naval Support and Experimentation Centre of the Italian Navy**

C.F. Mirko Stifani, *Naval Experimentation and Support Centre, Italian Navy*

**10:30 COFFEE BREAK**

**11:00 Dual use, new generation, Sea/Land Amphibious Unmanned Vehicle**

Eduardo De Francesco, *SeTel Group, Italy*

**11:30 Software Defined Instrumentation for Naval Applications; from structural monitoring to the performance analysis**

Stefano Stablum, *National Instruments*

**12:00 Dual Band Radar performances at NOFO Oil-on-water 2018 exercise**

Roberto Trevisani, *GEM elettronica srl*

**12:30 ATENA, the value of an Association. The professional experience of its Members**

Alberto Moroso, *ATENA, Associazione Italiana di Tecnica Navale*

**13:00 Technical Visit - Vessel Ammiraglio Magnaghi**



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## Tutorials

**15:30 – 17:00**

**Room:** *Aula Fieschi, University of Genoa*

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### **SESSION 1 – H 15:30 – 16:15**

#### **Uncertainty Evaluation based on Measurement Modelling**

Giovanni Battista Rossi, *University of Genoa, Italy*

### **SESSION 2 – H 16:15 – 17:00**

#### **Marine Litter business project**

Emanuele Della Volpe, *Green Tech Solution SRL, Italy*

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**18:00 - 18:30**

**TECHNICAL VISIT** - *Vessel Magnaghi*

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## Welcome Party

**18:30 - 21:00**

*University of Genoa - Department of Economics*

*Via Francesco Vivaldi, 5*

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## TECHNICAL SESSIONS - Friday, October 4, 2019

**08:30 – 17:30**

### **REGISTRATIONS**

**Room:** *Foyer, University of Genoa*

**09:00 – 09:30**

### **WELCOME ADDRESSES**

**Room:** *Aula Guglielmo Embriaco, University of Genoa*

**09:30 – 10:20**

### **INVITED TALK**

**Room:** *Aula Guglielmo Embriaco, University of Genoa*

**Chairs:** *Maria Rosaria Senatore, University of Sannio, Italy*

*Francesco Latino Chiocci, University of Rome "Sapienza", Italy*

**Frédérique Leclerc, Université de Nice Sophia Antipolis, France**

**Submarine earthquake geology:  
mapping and quantifying a surface rupture**

**10:20 – 10:40**

### **COFFEE BREAK**

**Room:** *Foyer, University of Genoa*



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**10:40 – 12:20**

**Panel: Containers' Track & Tracing: problems and solutions**

**Room:** *Aula Guglielmo Embriaco, University of Genoa*

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**Dr Filippo Gallo**

*President of "Centro Internazionale Studi Containers (Cisco)" - Vice President Assagenti*

**Prof. Giorgia Boi**

*President of Propeller Club - Port of Genoa*

**Dr Giordano Bruno Guerrini**

*President of Bureau International des Containers et du Transpot Intermodal (BIC)*

**Prof. Anna Sciomachen**

*Full Professor of Operational Research – Department of Economics (DIEC), University of Genoa*

**Cap. Andrea Gregori**

*Project Manager Zanatek Spa*

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**10:40 – 12:20**

**GENERAL SESSION – PART I**

**Room:** *Aula Fieschi, University of Genoa*

**Chair:** *Giovanni Battista Rossi, University of Genoa, Italy*

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**10:40 Making data management practices compliant with Essential Variables frameworks: A practical approach in the marine biological domain**

*Martina Zilioli, CNR, Institute for Electromagnetic Sensing of Environment, Italy*

*Alessandro Oggioni, CNR, Institute for Electromagnetic Sensing of Environment, Italy*

*Paolo Tagliolato, CNR, Institute for Electromagnetic Sensing of Environment, Italy*

*Cristiano Fugazza, CNR, Institute for Electromagnetic Sensing of Environment, Italy*

*Caterina Bergami, CNR, Institute of Marine Sciences, Italy*

*Alessandra Pugnetti, CNR, Institute of Marine Sciences, Italy*

*Paola Carrara, CNR, Institute for Electromagnetic Sensing of Environment, Italy*



### **11:00 Metrological aspects of the Tombolo effect investigation – Polish case study**

Cezary Specht, *Gdynia Maritime University, Poland*

Janusz Mindykowski, *Gdynia Maritime University, Poland*

Paweł Dąbrowski, *Gdynia Maritime University, Poland*

Romuald Masnicki, *Gdynia Maritime University, Poland*

Łukasz Marchel, *Polish Naval Academy, Poland*

Mariusz Specht, *Gdynia Maritime University, Poland*

### **11:20 Characterization of Seawaters by Ion Chromatography – Comparison of ionic patterns and balances**

Bárbara Anes, *Universidade de Lisboa, Portugal*

Cristina Oliveira, *Universidade de Lisboa, Portugal*

Ricardo J. N. Bettencourt da Silva, *Universidade de Lisboa, Portugal*

M. Filomena Camões, *Universidade de Lisboa, Portugal*

### **11:40 Microplastic detection and Lagrangian modelling in the Tyrrhenian Sea**

Agnese Pini, *University of Rome "La Sapienza", Italy*

Paolo Tomassetti, *ISPRA, Italian Institute for Environmental Protection and Research, Italy*

Marco Matiddi, *ISPRA, Italian Institute for Environmental Protection and Research, Italy*

Giuseppe Andrea de Lucia, *CNR - Institute for Coastal Marine Environment, Italy*

Paolo Bello, *University of Rome "La Sapienza", Italy*

Simone Zazzini, *University of Rome "La Sapienza", Italy*

Giovanni Leuzzi, *University of Rome "La Sapienza", Italy*

Paolo Monti, *University of Rome "La Sapienza", Italy*

### **12:00 Evidences of atmospheric pressure drop and sea level alteration in the Ligurian Sea**

Diana Di Luccio, *University of Naples "Parthenope", Italy*

Guido Benassai, *University of Naples "Parthenope", Italy*

Massimo De Stefano, *University of Naples "Parthenope", Italy*

Raffaele Montella, *University of Naples "Parthenope", Italy*



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**10:40 – 12:20**

**Special Session - Interdisciplinary crossover for Marine Mammals and Sea-turtles conservation**

**Room:** *Aula Spinola, University of Genoa*

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

Giulia Cipriano, *University of Bari, Italy*

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**10:40 Long-term residency of *Tursiops truncatus* in the Gulf of Taranto (Northern Ionian Sea, Central-eastern Mediterranean Sea)**

Francesca Cornelia Santacesaria, *Jonian Dolphin Conservation*

Stefano Bellomo, *Jonian Dolphin Conservation*

Carmelo Fanizza, *Jonian Dolphin Conservation*

Rosalia Maglietta, *National Research Council, Italy*

Vito Renò, *National Research Council, Italy*

Giulia Cipriano, *University of Bari, Italy*

Roberto Carlucci, *University of Bari, Italy*

**11:00 Photo-identification of *Physeter macrocephalus* in the Gulf of Taranto (Northern Ionian Sea, Central-eastern Mediterranean Sea)**

Stefano Bellomo, *Jonian Dolphin Conservation*

Francesca Cornelia Santacesaria, *Jonian Dolphin Conservation*

Carmelo Fanizza, *Jonian Dolphin Conservation*

Giulia Cipriano, *University of Bari, Italy*

Vito Renò, *National Research Council, Italy*

Roberto Carlucci, *University of Bari, Italy*

Rosalia Maglietta, *National Research Council, Italy*

**11:20 Habitat suitability for loggerhead turtle nesting sites along the Southern Adriatic and Northern Ionian (Central Mediterranean Sea)**

Cataldo Pierri, *University of Bari Aldo Moro, Italy*

Manuél Marra, *University of Bari Aldo Moro, Italy*

Paolo Colangelo, *Research Institute on Terrestrial Ecosystems*

Roberto Carlucci, *University of Bari Aldo Moro, Italy*

Gianluca Cirelli, *CRTM WWF Policoro*

Annachiara Pisto, *CRTM WWF Policoro*

Giuseppe Corriero, *University of Bari Aldo Moro, Italy*

Giovanni Scillitani, *University of Bari Aldo Moro, Italy*

**11:40 Striped dolphin Home Ranges within the IMMA and Natura 2000 Area "Gulf of Corinth"(Greece)**

Matteo Costantino, *Gaia Research Institute Onlus, Turin, Italy*

Andrea Giovannini, *Gaia Research Institute Onlus, University of Turin, Italy*

Guido Pietroluongo, *Archipelagos Institute of Marine Conservation*

Sebastien Saintignan, *Gaia Research Institute Onlus, Turin, Italy*

Arianna Zampollo, *Gaia Research Institute Onlus, Turin, Italy*

Cristina Giacoma, *University of Turin, Italy*

Marta Azzolin, *Gaia Research Institute Onlus, University of Turin, Italy*

**12:00 Extent of Occurrence, Area of Occupancy, and Species Distribution Model of striped dolphin within the Gulf of Corinth (Greece)**

Sebastien Saintignan, *Gaia Research Institute Onlus, Turin, Italy*

Matteo Costantino, *Gaia Research Institute Onlus, Turin, Italy*

Andrea Giovannini, *Gaia Research Institute Onlus, University of Turin, Italy*

Guido Pietroluongo, *Archipelagos Institute of Marine Conservation, Greece*

Arianna Zampollo, *Gaia Research Institute Onlus, Turin, Italy*

Cristina Giacoma, *University of Turin, Italy*

Marta Azzolin, *Gaia Research Institute Onlus, University of Turin, Italy*

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**11:00 – 13:10**

**Special Session - Metrology in Marine Geology: applications in shallow and deep waters - PART I**

**Room:** *Vessel Magnaghi, Port of Genoa*

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**11:00 Welcome Addresses**

CF Roberto Rossini, *Navy Commander - Italian Navy - Vessel Magnaghi*

CV Massimiliano Nannini, *Italian Navy, Italian Hydrographic Institute*

**11:10 Invited Talk**

Francesco Latino Chiocci, *University of Rome "Sapienza", Italy*



#### **11.45 Marine surveys techniques for geo-archaeological research: the case of Naples harbor**

Lucio Amato, *Tecno In SpA, Italy*

Giovanni de Alteriis, *Istituto Scienze Marine - CNR, Next Geosolutions Spa, Italy*

Alessandro Scuotto, *DeepSeaTechnology srl, Italy*

#### **12:10 Combined geophysical measurements off Ischia Island (Southern Tyrrhenian Sea) as a contribution to the natural hazard assessment**

V.Di Fiore, *ISMAR - CNR, Italy*

F. Lirer, *ISMAR - CNR, Italy*

F. Budillon, *ISMAR - CNR, Italy*

N. Pelosi, *ISMAR - CNR, Italy*

M. Punzo, *ISMAR - CNR, Italy*

G. Zeni, *IREA - CNR, Italy*

M. Iavarone, *ISMAR - CNR, Italy*

P. Scotto di Vettimo, *ISMAR - CNR, SPIN-CNR, Italy*

#### **12:35 Cost-effective and relocatable monitoring of hydrocarbon seepage in offshore environments**

Marzia Rovere, *Istituto di Scienze Marine - CNR, Italy*

Alessandra Mercorella, *Istituto di Scienze Marine - CNR, Italy*

Federico Spagnoli, *Istituto per le Risorse Biologiche e le Biotecnologie Marine - CNR, Italy*

Emanuela Frapiccini, *Istituto per le Risorse Biologiche e le Biotecnologie Marine - CNR, UNIVPM, Italy*

Valerio Funari, *Istituto di Scienze Marine - CNR, BiGeA - Università di Bologna, Italy*

Claudio Pellegrini, *Istituto di Scienze Marine - CNR, Italy*

Andree Soledad Bonetti, *DGS UNMIG Ministero dello Sviluppo Economico, ENVIRONMENT PARK S.P.A., Italy*

Marcello Dell'Orso, *DGS UNMIG Ministero dello Sviluppo Economico, Italy*

Marco Mastroianni, *DGS UNMIG Ministero dello Sviluppo Economico, Italy*

Tiziana Veneruso, *DGS UNMIG Ministero dello Sviluppo Economico, Italy*

Francesco Ciccone, *Istituto di Scienze Marine - CNR, DGS UNMIG Ministero dello Sviluppo Economico, Italy*

Ilaria Antoncicchi, *DGS UNMIG Ministero dello Sviluppo Economico, Ricerca sul Sistema Energetico, Italy*

Anna Nora Tassetti, *Istituto per le Risorse Biologiche e le Biotecnologie Marine - CNR, Italy*

Giordano Giuliani, *Istituto per le Risorse Biologiche e le Biotecnologie Marine - CNR, Italy*

Rocco De Marco, *Istituto per le Risorse Biologiche e le Biotecnologie Marine - CNR, Italy*

Gianna Fabi, *Istituto per le Risorse Biologiche e le Biotecnologie Marine - CNR, Italy*

**13:00 POSTER PRESENTATION - Seismic exploration of the deep structure and seismogenic faults in the Ligurian Sea by joint MCS and OBS acquisition: preliminary results of the SEFASILS cruise**

Jean-Xavier Dessa, *Geoazur, France*

Marie-Odile Beslier, *Geoazur, France*

Laure Schenini, *Geoazur, France*

SEFASILS Scientific Team

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**12:20 – 13:50**

**LUNCH**

**Room:** *Foyer, University of Genoa*

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**13:50 – 15:10**

**Special Session - Geomatic and Measurements for Sea Conditions and Navigation - PART I**

**Room:** *Aula Fieschi, University of Genoa*

**Chairs:** *Francesco Crenna, University of Genova, Italy*

*Salvatore Gaglione, Parthenope University of Naples, Italy*

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**13:50 Data processing for the accurate evaluation of sea-waves parameters**

Giovanni Battista Rossi, *University of Genova, Italy*

Francesco Crenna, *University of Genova, Italy*

Vincenzo Piscopo, *University of Naples "Parthenope", Italy*

Antonio Scamardella, *University of Naples "Parthenope", Italy*

**14:10 GPS precise positioning techniques for remote marine applications**

Anna Innac, *Parthenope University of Naples, Italy*

Antonio Angrisano, *G. Fortunato University, Benevento, Italy*

Salvatore Gaglione, *Parthenope University of Naples, Italy*

Nicola Crocetto, *Luigi Vanvitelli University of Campania, Italy*



**14:30 Absolute sea spectrum resampling from encounter wave time history**

Salvatore Gaglione, *University of Naples "Parthenope", Italy*

Silvia Pennino, *University of Naples "Parthenope", Italy*

Vincenzo Piscopo, *University of Naples "Parthenope", Italy*

Antonio Scamardella, *University of Naples "Parthenope", Italy*

**14:50 Testing a GNSS software receiver for end-user utilization**

Matteo Cutugno, *Parthenope University of Naples, Italy*

Umberto Robustelli, *Parthenope University of Naples, Italy*

Giovanni Pugliano, *Parthenope University of Naples, Italy*

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**13:50 – 15:10**

**Special Session - High-Tech Flexible Networks of Augmented Observatories  
for the Monitoring of Marine Ecosystems - PART I**

**Room:** *Aula Spinola, University of Genoa*

**Chairs:** *Jacopo Aguzzi, Instituto de Ciencias del Mar - CSIC, Spain*

*Simone Marini, CNR-ISMAR, Italy*

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**13:50 Stepped water warming effects on coastal ecosystem dynamics as  
monitored from fixed mooring stations in NW Mediterranean Sea**

Nixon Bahamon, *CSIC, Barcelona, Spain*

Jacopo Aguzzi, *Instituto de Ciencias del Mar - CSIC, Spain*

Miguel Ángel Ahumada-Sempoal, *Universidad del Mar (Mexico) - CSIC, Mexico*

Joan Baptista Company, *Instituto de Ciencias del Mar - CSIC, Spain*

Charlotte Reuschel, *Fresenius University of Applied Sciences, Germany*

Francesc Peters, *Instituto de Ciencias del Mar - CSIC, Spain*

Raffaele Bernardello, *Barcelona Supercomputing Center, Spain*

Joan Navarro, *Instituto de Ciencias del Mar - CSIC, Spain*

Zoila Velásquez, *Oceans.cat, Blanes, Spain*

Antonio Cruzado, *Oceans.cat, Blanes, Spain*

**14:10 NEREA, the Naples Ecological REsearch for Augmented observatories:  
Towards an end-to-end transdisciplinary approach for the study of  
marine ecosystems**

Emanuela Fanelli, *Polytechnic University of Marche, Stazione Zoologica Anton Dohrn,  
Italy*

Jacopo Aguzzi, *Instituto de Ciencias del Mar – CSIC, Spain , Stazione Zoologica Anton*

*Dohrn, Italy*

*Raffaella Casotti, Stazione Zoologica Anton Dohrn, Italy*

*Fabio Conversano, Stazione Zoologica Anton Dohrn, Italy*

*Domenico D'Alelio, Stazione Zoologica Anton Dohrn, Italy*

*Daniele Iudicone, Stazione Zoologica Anton Dohrn, Italy*

*Simone Marini, Institute of Marine Sciences – CNR, Stazione Zoologica Anton Dohrn, Italy*

*Sergio Stefanni, Stazione Zoologica Anton Dohrn, Italy*

#### **14:30    Transmission of classified and varying quality underwater maps over constrained networks**

*Nikolla Gjerci, On AIR s.r.l., Italy*

*Shashank Govindaraj, Space Applications Services NV/SA, Belgium*

*Sander Coene, Space Applications Services NV/SA, Belgium*

*Alexandru But, Space Applications Services NV/SA, Belgium*

*Ennio Ottaviani, On AIR s.r.l., Italy*

#### **14:50    A flexible autonomous bottom resident infrastructure for benthopelagic monitoring**

*H. Wehde, Institute of Marine Research, Norway*

*L. Thomsen, iSeaMC, Germany*

*O. Pfannkuche, iSeaMC, Germany*

*J. Albiez, Kraken Robotik, Germany*

*S. Flögel, GEOMAR, Germany*

*O.R. Godø, Metas, Norway*

*T. Torkelsen, Metas, Norway*

*J. Valencia, Deusto Sistemas, Vitoria, Spain*

*E. Rodriguez, Deusto Sistemas, Vitoria, Spain*

*V. Lopez, Deusto Sistemas, Vitoria, Spain*

*S. Marini, CNR-ISMAR, Italy*

*E. Grimsbø, Institute of Marine Research, Norway*

*G. Zhang, Institute of Marine Research, Norway*

*J. Aguzzi, Instituto de Ciencias del Mar (ICM-CSIC), Spain*



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**14:00 – 15:10**

**Special Session - Metrology in Marine Geology: applications in shallow and deep waters - PART II**

**Room:** *Vessel Magnaghi, Port of Genoa*

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**14:00 POSTER PRESENTATION - UAV multispectral images for bathymetry estimation**

Lorenzo Rossi, *GeoCoste, GNRAC, Italy*

Irene Mammi, *GeoCoste, GNRAC, Italy*

Filippo Pelliccia, *GeoCoste, GNRAC, Italy*

**14:05 Coasts, ports, inland waters, ponds...: hydrographic surveys by drone help the management of hydrogeological instability**

A. Faccioli, *Codevintec Italiana, Milano, Italy*

M. Fumanti, *Codevintec Italiana, Milano, Italy*

**14:25 Shallow water bathymetry by satellite image: a case study on the coast of San Vito Lo Capo Peninsula, Northwestern Sicily, Italy**

Anselme Muzirafuti, *Interreg Italia – Malta, Italy*

Antonio Crupi, *GEOLOGIS s.r.l, Interreg Italia – Malta, Italy*

Stefania Lanza, *GEOLOGIS s.r.l, Interreg Italia – Malta, Italy*

Giovanni Barreca, *Interreg Italia – Malta, Italy*

Giovanni Randazzo, *University of Messina, GEOLOGIS s.r.l, Interreg Italia – Malta, Italy*

**14:45 Evaluation of HF-radar wave measures in the Gulf of Naples**

Francesco De Leo, *University of Genoa, Italy*

Giovanni Besio, *University of Genoa, Italy*

Simona Saviano, *University of Naples Parthenope, CoNISMa, Italy*

Enrico Zambianchi, *University of Naples Parthenope, Stazione Zoologica Anton Dohrn, Italy*

Marco Uttieri, *CoNISMa, Stazione Zoologica Anton Dohrn, Italy*

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**15:10 – 15:30**

**COFFEE BREAK**

**Room:** *Foyer, University of Genoa*

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**15:30 – 16:10**

**Special Session - Geomatic and Measurements for Sea Conditions and Navigation - PART II**

**Room:** *Aula Fieschi, University of Genoa*

**Chairs:** Salvatore Gaglione, *Parthenope University of Naples, Italy*  
Vincenzo Piscopo, *Parthenope University of Naples, Italy*

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**15:30 SINDBAD: a new operational service for a safer leisure and boating navigation**

Ennio Ottaviani, *On AIR s.r.l., Italy*

Nikolla Gjerci, *On AIR s.r.l., Italy*

Antonio Novellino, *ETT S.p.A., Italy*

Paolo D'Angelo, *ETT S.p.A., Italy*

Marco Alba, *ETT S.p.A., Italy*

Paolo Brotto, *PM\_TEN s.r.l., Italy*

Francesco De Leo, *University of Genova, Italy*

Francesco Ferrari, *University of Genova, Italy*

Giovanni Besio, *University of Genova, Italy*

Andrea Mazzino, *University of Genova, Italy*

Massimo Figari, *University of Genova, Italy*

Raphael Zaccone, *University of Genova, Italy*

Lorenzo Corgnati, *Consiglio Nazionale delle Ricerche - Istituto di Scienze Marine, Italy*

Carlo Mantovani, *Consiglio Nazionale delle Ricerche - Istituto di Scienze Marine, Italy*

Maristella Berta, *Consiglio Nazionale delle Ricerche - Istituto di Scienze Marine, Italy*

Marcello Magaldi, *Consiglio Nazionale delle Ricerche - Istituto di Scienze Marine, Italy*

**15:50 Analysis of the 29 October 2018 sea-storm in the Ligurian sea**

Antonio Iengo, *Regional Agency for Environmental Protection of Liguria, Italy*

Tania Del Giudice, *Regional Agency for Environmental Protection of Liguria, Italy*



**15:30 – 16:30**

**Special Session - High-Tech Flexible Networks of Augmented Observatories for the Monitoring of Marine Ecosystems - PART II**

**Room:** *Aula Spinola, University of Genoa*

**Chairs:** Emanuela Fanelli, *Università Politecnica delle Marche, Italy*  
Fabio Conversano, *Stazione Zoologica Anton Dohrn, Italy*

**15:30 Obsea: a test site to develop marine ecosystems monitoring techniques by acoustic devices**

Ivan Masmitja, *Universitat Politècnica de Catalunya, Spain*  
Spartacus Gomariz, *Universitat Politècnica de Catalunya, Spain*  
Joaquin del-Rio, *Universitat Politècnica de Catalunya, Spain*  
Jacopo Aguzzi, *Marine Science Institute, Consejo Superior de Investigaciones Científicas, Spain*

**15:50 Quality control and pre-analysis treatment of 5-year long environmental datasets collected by an Internet Operated Deep-sea Crawler**

Damianos Chatzievangelou, *Jacobs University, Germany*  
Jacopo Aguzzi, *Instituto de Ciencias del Mar (ICM-CSIC), Spain*  
Laurenz Thomsen, *Jacobs University, Germany*

**16:10 Marine Genomics Observatories and the Triple Helix; EMBRC ERIC & ASSEMBPE Plus contribution**

Georgios Kotoulas, *IMBBC-HCMR, Greece*  
Paraskevi N. Polymenakou, *IMBBC-HCMR, Greece*  
Melanthia Stavroulaki, *IMBBC-HCMR, Greece*  
Evangelos Pafilis, *IMBBC-HCMR, Greece*  
Dimitra Mavraki, *IMBBC-HCMR, Greece*  
Panos Bravakos, *IMBBC-HCMR, Greece*  
Thanos Dailianis, *IMBBC-HCMR, Greece*  
Manolis Mandalakis, *IMBBC-HCMR, Greece*  
Vasilis Gerovasileiou, *IMBBC-HCMR, Greece*  
Christina Pavloudi, *IMBBC-HCMR, Greece*  
Christos Arvanitidis, *IMBBC-HCMR, Greece*  
Antonios Magoulas, *IMBBC-HCMR, Greece*  
Nikolas Pade, *EMBRC-ERIC*

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**15:30 – 16:45**

**Special Session - Metrology in Marine Geology: applications in shallow and deep waters - PART II**

**Room:** *Vessel Magnaghi, Port of Genoa*

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**15:30    Potentialities of integrated 3D surveys applied to maritime infrastructures and to the study of morphological/sedimentary dynamics of the seabed**

Antonio Lucarelli, *Drafinsub Survey*

Pierluigi Brandolini, *University of Genoa, Italy*

Nicola Corradi, *University of Genoa, GNRAC, Italy*

Lelio De Laurentiis, *Drafinsub Survey*

Bianca Federici, *University of Genoa, Italy*

Ilaria Ferrando, *University of Genoa, Italy*

Alessio Lanzone, *Drafinsub Survey*

Domenico Sguerso, *University of Genoa, Italy*

**15: 55    MAREGOT project experience: Integrated approach to understanding coastal dynamics behaviour**

Luca Carpi, *University of Genova, Geoscape soc. coop., Italy*

Luigi Mucerino, *University of Genova, Geoscape soc. coop., Italy*

Giovanni Besio, *University of Genova, Italy*

Nicola Corradi, *University of Genova, Italy*

Marco Ferrari, *University of Genova, Italy*

**16:20    Numerical modelling of Orbetello lagoon circulation in the XVIII century**

Lorenzo Cappietti, *University of Florence, Italy*

Irene Simonetti, *University of Florence, Italy*

Ilaria Crema, *University of Florence, Italy*



MARINA MILITARE

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**16:30 – 17:15**

**TECHNICAL VISIT** - *The tide gauge at Ponte Morosini*

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**17:15 – 18:00**

**TECHNICAL VISIT** - *Vessel Magnaghi*

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**18:00 – 18:30**

**AWARD CEREMONY** – *MetroSea Student Challenge*

**Room:** *Vessel Magnaghi*

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**18:30**

**MetroSea 2019 GROUP PHOTO**

**Room:** *Vessel Magnaghi*

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**Gala Dinner**

**20:00 – 23:00**

*"I Tre Merli" Restaurant*

*Calata Cattaneo, 17 - Genova*

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## TECHNICAL SESSIONS - Saturday, October 5, 2019

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**08:30 – 15:00**

**REGISTRATION**

**Room:** *Foyer, University of Genoa*

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**09:30 – 10:20**

**INVITED TALK**

**Room:** *Aula Guglielmo Embriaco, University of Genoa*

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**Roberta Ivaldi, Italian Hydrographic Institute, Italy**  
**Measuring the Ocean in the High North**

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**10:20 – 10:40**

**COFFEE BREAK**

**Room:** *Foyer, University of Genoa*

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**10:40 – 12:40**

**Special Session - Marine Metrology and Oceanographic Measurements:  
procedures for ocean observing systems**

**Room:** *Aula Fieschi, University of Genoa*

**Chairs:** Paola Picco, *Italian Hydrographic Institute, Italy*  
Francesca Rolle, *Istituto Nazionale di Ricerca Metrologica (INRiM), Italy*  
Michela Segà, *Istituto Nazionale di Ricerca Metrologica (INRiM), Italy*

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**10:40 Slocum underwater glider acoustic capabilities improvement by wings  
re-design**

Paolo Gemelli, *University of Genoa, Italy*  
Pierre-Marie Poulain, *NATO STO CMRE, Italy*  
Mario Ivan Zignego, *University of Genoa, Italy*  
Daniele Cecchi, *NATO STO CMRE, Italy*



**10:57    Toward a buoys reference network for SST measurements**

Marc Le Menn, *Shom, France*

Marc Lucas, *CLS, France*

Paul Poli, *CMM, France*

Arnaud David, *NKE, France*

Anne O'Carroll, *EUMETSAT, Germany*

Mathieu Belbeoch, *JCOMMops, France*

Kai Herklotz, *BSH, Germany*

**11:14    Long period oscillations of sea level data in Genoa**

Lorenzo Papa, *Istituto Idrografico della Marina, Italy*

**11:31    ARGO floats vs. ship-based CTDs: an overall metrological comparison in the whole Mediterranean Sea**

Andrea Bordone, *ENEA - Marine Environment Research, Italy*

Francesca Pennecchi, *INRiM - Istituto Nazionale di Ricerca Metrologica, Italy*

Giancarlo Raiteri, *ENEA - Marine Environment Research, Italy*

Franco Reseghetti, *ENEA - Marine Environment Research, Italy*

**11:48    Estimate of the robustness of XBT temperature measurements from SOOP in the Mediterranean by comparison with ARGO profiles**

Franco Reseghetti, *ENEA - Marine Environment Research, Italy*

Francesca Pennecchi, *INRiM - Istituto Nazionale di Ricerca Metrologica, Italy*

Giancarlo Raiteri, *ENEA - Marine Environment Research, Italy*

Luca Repetti, *IIM - Istituto Idrografico della Marina Militare, Italy*

**12:05    Designing a comparison coupler for low-frequency calibration of hydrophones in air**

Salvador Barrera-Figueroa, *Danish Fundamental Metrology A/S, Denmark*

Alper Biber, *TÜBITAK Marmara Research Center, Turkey*

Ata Can Çorakçı, *TÜBITAK Marmara Research Center, Turkey*

Alexander Golick, *TÜBITAK Marmara Research Center, Turkey*

Stephen Robinson, *National Physical Laboratory, UK*

Gary Hayman, *National Physical Laboratory, UK*

Justin Ablitt, *National Physical Laboratory, UK*

Silvano Buogo, *CNR, Marine Technology Research Institute, Italy*

Salvatore Mauro, *CNR, Marine Technology Research Institute, Italy*

Fabrizio Borsani, *CNR, Marine Technology Research Institute, Italy*

Salvatore Curcuruto, *CNR, Marine Technology Research Institute, Italy*

Markus Linné, *Totalförsvarets forskningsinstitut, Sweden*

Peter Sigray, *Totalförsvarets forskningsinstitut, Sweden*

Per Davidsson, *Totalförsvarets forskningsinstitut, Sweden*

## **12:22 Open-water free-field calibration of an autonomous underwater noise recorder for frequencies below 1 kHz**

Salvatore Mauro, *CNR-INM, Italy*

Silvano Buogo, *CNR-INM, Italy*

Junio Fabrizio Borsani, *ISPRA, Italy*

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### **10:40 – 12:40**

#### **Special Session - Experimental laboratories for shipbuilding**

**Room:** *Aula Spinola, University of Genoa*

**Chair:** *Lise Folso, Cetena spa, Italy*

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## **10:40 Cavitation tunnel in Naval Architecture: from cavitation prediction to radiated noise**

Giorgio Tani, *Università degli studi di Genova, Italy*

Michele Viviani, *Università degli studi di Genova, Italy*

Marco Ferrando, *Università degli studi di Genova, Italy*

## **11:00 Visual Inspection of Vessels Cargo Holds: Use of a Micro-Aerial Vehicle as a Smart Assistant**

Alberto Ortiz, *Universitat de les Illes Balears (UIB), Spain*

Francisco Bonnin-Pascual, *Universitat de les Illes Balears (UIB), Spain*

Emilio Garcia-Fidalgo, *Universitat de les Illes Balears (UIB), Spain*

Joan Pep Company-Corcoles, *Universitat de les Illes Balears (UIB), Spain*

Kai Yao, *Universitat de les Illes Balears (UIB), Spain*

## **11:20 Robotic inspection of ship structures: how to fill the gap between available technologies and current survey practices?**

Laura Poggi, *University of Genova, Italy*

Tomaso Gaggero, *University of Genova, Italy*

Marco Gaiotti, *University of Genova, Italy*



MARINA MILITARE

Enrico Ravina, *University of Genova, Italy*  
Cesare Mario Rizzo, *University of Genova, Italy*

**11:40 Experimental validation of a FEM-aided structural design of an eco-sustainable high performance made skiff**

M. Fontana, *Politecnico di Torino, Italy*  
M. Glorioso, *Politecnico di Torino, Italy*  
C. Moscoloni, *Politecnico di Torino, Italy*  
G. Mattiazzo, *Politecnico di Torino, Italy*

**12:00 The Ship Model Basin of Naples' University Federico II: Facilities, Experimental Tests, Measurement Systems**

A. Bove, *Università degli Studi di Napoli Federico II, Italy*  
F. De Luca, *Università degli Studi di Napoli Federico II, Italy*  
P. Marsilia, *Università degli Studi di Napoli Federico II, Italy*

**12:20 CETENA Testing Laboratory: the importance of being traceable**

Federico Gaggero, *CETENA SpA, Italy*

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**12:40 – 13:10**

**POSTER SESSION**

**Room:** *Foyer, University of Genoa*

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**PS-1 Medusa II: A Quasi-Lagrangian Autonomous Underwater Vehicle**

Enrico Petritoli, *Università degli Studi "Roma Tre", Italy*  
Fabio Leccese, *Università degli Studi "Roma Tre", Italy*

**PS-2 Case study-based ZigBee network implementation for maritime on-board safety improvement**

Romuald Masnicki, *Gdynia Maritime University, Poland*  
Janusz Mindykowski, *Gdynia Maritime University, Poland*

**PS-3 Underwater Gliders: Mission Profiles and Utilisation Strategies in the Mediterranean Sea**

Enrico Petritoli, *Università degli Studi "Roma Tre", Italy*  
Fabio Leccese, *Università degli Studi "Roma Tre", Italy*  
Marco Cagnetti, *Università degli Studi "Roma Tre", Italy*



**PS-4 Harmonics detection in frequency sparse signal**

Beata Palczynska, *Gdansk University of Technology, Poland*

Romuald Masnicki, *Gdynia Maritime University, Poland*

Janusz Mindykowski, *Gdynia Maritime University, Poland*

**PS-5 Shoreline measurement obtained with direct and remote techniques on a sandy beach in Gulf of Pozzuoli (Campania)**

Giovanni Pugliano, *University of Naples "Parthenope", Italy*

Umberto Robustelli, *University of Naples "Parthenope", Italy*

Guido Benassai, *University of Naples "Parthenope", Italy*

Diana Di Luccio, *University of Naples "Parthenope", Italy*

Luigi Mucerino, *University of Genova, Italy*

**PS-6 Field measurements in a flow around a hydrofoil: some preliminary results**

Domenico Maraglino, *Polytechnic University of Bari, Italy*

Mouldi Ben Meftah, *Polytechnic University of Bari, CoNISMa, Italy*

Francesca De Serio, *Polytechnic University of Bari, CoNISMa, Italy*

Michele Mossa, *Polytechnic University of Bari, CoNISMa, Italy*

**PS-7 Multiple year characterization of the wave field in the Gulf of Naples by multi-platform measurements**

Simona Saviano, *"Parthenope" University of Naples, CoNISMa, Italy*

Daniela Cianelli, *"Parthenope" University of Naples, CoNISMa, Italy*

Enrico Zambianchi, *"Parthenope" University of Naples, CoNISMa, Italy*

Fabio Conversano, *Stazione Zoologica Anthon Dohrn, Italy*

Marco Uttieri, *CoNISMa, Stazione Zoologica Anthon Dohrn, Italy*

**PS-8 The MetroSea Student Contest: An Amazing Educational Experience at 2019 IMEKO TC-19 International Workshop on Metrology for the Sea**

Eulalia Balestrieri, *University of Sannio*

Francesco Bonavolontà, *University of Naples Federico II, Italy*

Pasquale Daponte, *University of Sannio, Italy*

Emanuele Della Volpe, *GreenTech Solution, Italy*

Annarita Tedesco, *University of Naples Federico II, Italy*



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**12:40 – 13:10**

**TECHNICAL VISIT** - *The tide gauge at Ponte Morosini*

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**13:10 – 14:20**

**LUNCH**

**Room:** *Foyer, University of Genoa*

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**14:20 – 15:40**

**Special Session - Underwater Measurement for 3D Characterization of Subsea Objects**

**Room:** *Aula Fieschi, University of Genoa*

**Chair:** Enrico Primo Tomasini, *Università Politecnica delle Marche, Italy*

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**14:20 Underwater Image Pre-Processing for Photogrammetric Application**

Rachele Napolitano, *DIISM, Università Politecnica delle Marche, Italy*

Paolo Chiariotti, *DIISM, Università Politecnica delle Marche, Italy*

Enrico Primo Tomasini, *DIISM, Università Politecnica delle Marche, Italy*

**14:40 Evaluation of underwater photogrammetry for coral reef 3d changes assessment**

Alessandro Capra, *Università degli Studi di Modena e Reggio Emilia, Italy*

Paolo Rossi, *Università degli Studi di Modena e Reggio Emilia, Italy*

Cristina Castagnetti, *Università degli Studi di Modena e Reggio Emilia, Italy*

Francesco Mancini, *Università degli Studi di Modena e Reggio Emilia, Italy*

Erica Nocerino, *Theoretical Physics, Switzerland*

Andrew Brooks, *Coastal Research Center, University of California, USA*

Armin Gruen, *Theoretical Physics, Switzerland*

**15:00 3D photogrammetric surveys on coral reefs in the Maldives**

Domenico Sguerso, *University of Genoa, Italy*

Annalisa Azzola, *University of Genoa, Italy*

Carlo Nike Bianchi, *University of Genoa, Italy*

Bianca Federici, *University of Genoa, Italy*

Sara Gagliolo, *University of Genoa, Italy*

Carla Morri, *University of Genoa, Italy*

Monica Montefalcone, *University of Genoa, Italy*

**15:20 Integrating acoustic depth measurements and photogrammetry-based 3D point clouds for the generation of a continuous digital terrain model in coral reef environments**

Fabio Marchese, *University of Milano-Bicocca, Italy*

Alessandra Savini, *University of Milano-Bicocca, Italy, MaRHE center, Republic of Maldives*

Luca Fallati, *University of Milano-Bicocca, Italy, MaRHE center, Republic of Maldives*

Cesare Corselli, *University of Milano-Bicocca, Italy*

Paolo Galli, *University of Milano-Bicocca, Italy, MaRHE center, Republic of Maldives*

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**14:20 – 15:40**

**General Session - PART II**

**Room:** *Aula Spinola, University of Genoa*

**Chair:** *Nicola Corradi, University of Genova, Italy*

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**14:20 Experiments on Coupled Wave-Flow-Vegetation Interaction**

Mouldi Ben Meftah, *Polytechnic University of Bari, Italy*

Elvira Armenio, *Polytechnic University of Bari, Italy*

Diana De Padova, *Polytechnic University of Bari, Italy*

Francesca De Serio, *Polytechnic University of Bari, Italy*

Michele Mossa, *Polytechnic University of Bari, Italy*

Davide Tognin, *University of Padova, Italy*

**14:40 SEALab current research trends: Maritime Unmanned Systems for dual-use applications**

Daniele S. Terracciano, *Naval Support and Experimentation Centre of Italian Navy, University of Pisa, Italy*

Vincenzo Manzari, *Naval Support and Experimentation Centre of Italian Navy, Italy*

Mirko Stifani, *Naval Support and Experimentation Centre of Italian Navy, Italy*

Benedetto Allotta, *Interuniversity Center of Integrated Systems for the Marine Environment, University of Florence, Italy*

Andrea Caiti, *Interuniversity Center of Integrated Systems for the Marine Environment, University of Pisa, Italy*

Giuseppe Casalino, *Naval Support and Experimentation Centre of Italian Navy, University of Genoa, Italy*



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**15:00 Turbulence changes due to a tidal stream turbine operation in the Pentland Firth (Scotland, UK)**

Simone Zazzini, *University of Rome "La Sapienza", Italy*

Michela De Dominicis, *Marine System Modelling group, National Oceanography Centre, UK*

Agnese Pini, *University of Rome "La Sapienza", Italy*

Giovanni Leuzzi, *University of Rome "La Sapienza", Italy*

Paolo Monti, *University of Rome "La Sapienza", Italy*

Rory O'Hara Murray, *Oceanography Group, Marine Scotland Science, UK*

Xiaorong Li, *Geography and Planning Department, UK*

**15:20 What do marine zoologists need from an underwater vehicle?**

Giovanni Chimienti, *University of Bari Aldo Moro, CoNISMa, Italy*

Francesco Mastrototaro, *University of Bari Aldo Moro, CoNISMa, Italy*

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**16:00 – 16:15**

**CLOSING AND AWARD CEREMONY**

**Room:** *Aula Fieschi, University of Genoa*

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