



SEVENTH INTERNATIONAL WORKSHOP ON MARINE TECHNOLOGY

Barcelona, Spain

Unidad de Tecnología Marina (CSIC), Universitat Politècnica de Catalunya (UPC)
BarcelonaTech.

October 26th, 27th and 28th, 2016

<http://martech-workshop.org/>

info@martech-workshop.org

WELCOME

Welcome to the 7th International Workshop on Marine Technology – Martech Workshop 2016. The main objective of this workshop is to present the state of the art in Marine Technologies development and to encourage knowledge sharing between engineers and scientists in an environmentally friendly use in marine research. **MARTECH** workshop congregates a broad research community dedicated to developing innovative equipment in the field of marine sciences and technology. The MARTECH lecture series began in 2005, and this year 2016 we are moving to Barcelona. This edition is co-organized by the **Consejo Superior de Investigaciones Científicas** (CSIC) and the **Universitat Politècnica de Catalunya** (UPC), and will be held between 26th and 28th October 2016 in **the Instituto de Ciencias del Mar** (CSIC). **MARTECH 2016** workshop will gather more than 50 contributions, which will be presented in two parallel sessions covering different topics: Operational Oceanography; Seabed Observatories and sensor networking; Marine Robotics perspectives; Image and underwater communication; Instrumentation, Marine aquaculture Technology; Marine Geophysical technology solutions; Science application citizens and interfaces; Polar Research Infrastructure challenges, Metrology, Signal Processing; Remote sensing; Characterization of seabed and water column; Coastal, and regional research vessels and offshore platforms. Two stimulating plenary sessions will cover two extreme marine environments which require high complex technology, as deep sea floor and polar research.

The tutorial sessions on the 26th October will be stimulated by well-known marine technology companies showing their cutting-edge instrumentation, hoping that the participation of these companies will help the transfer of knowledge in both directions: science and industry. In addition to the technical sessions, there will be an exhibitor area where companies will show their products, services and projects to the assistants.

I thank all the authors and companies for their contributions and the attending participants at **MARTECH Workshop 2016** for their interest and collaboration. I am most grateful to the many contributors to the organising committee, especially those from the **Unidad de Tecnología Marina** and **Instituto de Ciencias del Mar** (CSIC), the **SARTI Research group** (UPC) and the **Museu Marítim de Barcelona** for their support and effort in the preparation and organization of this hopefully successful event. I hope you enjoy and find fruitful the meeting, and I wish all of you an enjoyable time in Barcelona. Finally, I want to give Special acknowledgment to my friend **Dr. Antoni Mànuel** who was the initiator of these successful meetings.

Yours sincerely

Juan Jose Dañobeitia,
Barcelona October 2016
Martech Workshop 2016 Chair

TECHNICAL PROGRAM

Wednesday 26/10/2016	Thursday 27/10/2016		Friday 28/10/2016		
	Registration opens at 8:00		Registration opens at 8:30		
	9:00 - 9:45 h (Room 1)		9:00 - 10:30 h (Room 1)	9:00 - 10:30 h (Room 2)	9:00 - 13:00 h
	Inaugural Session by Prof. A. Palanques & Prof. J.J. Dañobeitia Invited Conference 1: Prof. Paolo Favali European Multidisciplinary and Water-Column Observatory -(EMSO ERIC):Challenges and opportunities for Strategic European Marine Sciences		E1: Marine geophysics technology and solutions and underwater imaging and communication Chair Rafael Bartolome	E2: Instrumentation, Metrology, Signal processing Chair José Martin Davila	
	10:00 - 11:30 h (Room 1)	10:00 - 11:30 h (Room 2)	10:30 - 18:00 h		
	A1: Seafloor Observatories and sensor networks Chair Joaquin del Rio	A2: Operational Oceanography and Technology for Marie Biology and Aquaculture Chair Jacopo Aguzzi			
	11:30 - 12:00 h Coffee Break				
	12:00 - 13:30 h (Room 1)	12:00 - 13:30 h (Room 2)			
	B1: European Multidisciplinary Seafloor & Water Column Developments (EMSODEV H2020 EU Project) Chair Jaume Piera	B2: Marine Robotics perspectives: ROVs, AUVs, ASVs, Gliders, Crawlers Chair Marc Carreras	Companies Exposition		
	11:00 - 11:30 h (Room 1)				
	F1: Polar Research and Citizen Science applications interfaces Chair: Veronica Willmont	F2: Instrumentation, Metrology, Signal processing and seafloor and water column characterization, costal regional and offshroe research vessels and platforms Chair Daniel Rey			
	11:45 - 13:15 h (Room 3)				
	13:30 - 14:30 h Lunch		F3: Meeting Thematic Network. MarInTech Member's		
Registration opens at 14:00			13:15 - 13:30 h (Room 1)		
15:00 - 15:45 h	14:30 - 16:00 h (Room 1)	14:30 - 16:00 h (Room 2)	Closing Session and Martech 2018 announcement		
Kongsberg Subsea Technology update. By Morten Bersten	C1: Seafloor observatories and sensor networks Chair Ivan Rodero	C2: Marine Robotics perspectives: Chair Daniel Toma	13:30 h Lunch		
15:45 - 16:30 h					
Multibeam data. Beyond depth and backscatter information. By Matías Morales	16:00 - 16:30 h Coffee Break				
16:30 - 17:00 h					
Coffee Break					
17:00 - 17:45 h	16:30 - 18:00 h (Room 1)	16:30 - 18:00 h (Room 2)			
"AUV - Latest Technology - Payload Sensors and Results".By Atle Gran	D1 : Remote sensing, Seafloor observatories and sensor networks Chair Nuno Gracias	D2: Marine Robotics perspectives: Chair Pedro Gonçalves			
17:45 - 18:30 h					
Phased array antennas MBR. Maritime Broadband Radio. New revolution in maritime communications. By Miguel A. Leches					
	21:00 h Gala dinner				
			* Room 1: Salón de Actos * Room 2: P31		

PARALLEL SESSIONS

SESSION A – 27th THURSDAY. 10:00 – 11:30

A1: Seafloor observatories and sensor networks
(**ROOM 1**) Chair: Joaquin del Rio

- **ID 9: SmartBay: The development and implementation of an advanced subsea marine technology platform on the west coast of Ireland**
Alan Berry, Paul Gaughan, Caitriona Nic Aonghusa
- **ID 26: Video monitoring of Sparidae temporal rhythms: Three-year study by OBSEA cabled observatory**
S. Coco, V. Sbragaglia, E. Fanelli, E. Azzurro, S. Marini, S. Enguidanos, J. del Río, M. Nogueras, D. Toma, M. Ponti, J. Aguzzi
- **ID 32: Near real time seismic data from the coastal ocean**
Daniel M. Toma, Xavier Roset, Xavi Alonso, Carla Artero, Joaquín del Río
- **ID 38: Data comparison between three Acoustic Doppler Current Profilers deployed in OBSEA platform in north-western Mediterranean**
Matias Carandell, Marc Nogueras, Rogerio Chumbinho, Cristobal Molina

A2: Operational Oceanography and Technology for Marine Biology and Aquaculture (**ROOM 2**)

Chair: Jacopo Aguzzi

- **ID 7: Seven years of marine environmental changes monitoring at coastal OOCs stations (Catalan Sea, NW Mediterranean)**
N. Bahamon, M.A. Ahumada-Sempoal, R. Bernardello, J. Aguzzi, A. Gordo, G. Carreras, J. B. Company, Z. Velasquez, A. Cruzado
- **ID13: Multibeam Systems for the Detection of Gas Flares in the Water Column**
Christian Zwanzig, Francisco Mier
- **ID 20: Using ORB, BoW and SVM to identify and track tagged Norway lobster Nephrops Norvegicus (L.)**
Jose A. Garcia, David Masip, Valerio Sbragaglia, Jacopo Aguzzi
- **ID 21: Integrating data from Vessel Monitoring System and fish landings in Mediterranean small fleets, using a PostgreSQL database with PostGIS extension**
Jose A. Garcia, Joan B. Company, Jacopo Aguzzi, Giulia Gorelli

SESSION B – 27th THURSDAY. 12:00 – 13:30

B1: European Multidisciplinary Seafloor & Water Column Developments (EMSODEV H2020 EU Project) (**ROOM 1**) Chair: Jaume Piera

- **ID10: EMSO-Azores: six years of continuous monitoring of a deep sea hydrothermal vents – Technical results**
J. Legrand, J. Blandin, P. M. Sarradin, M. Cannat, J. Y. Coail, P. Pichavant, G. Guyader, N. Lanteri, T. Carval and the MoMARSAT team
- **ID36: Data Acquisition System Development for EGIM on EMSODEV EU Project**
O. García, J. J. Dañobeitia, J. Sorribas, R. Casas, J. Piera, R. Bartolome, R. Bardaji, J. del Rio, J. Cadena, D. M. Toma, I. Bghiel, E. Martínez, M. Nogueras
- **ID48: The EGIM, modular though generic addresses the requirements of the EMSO platforms**
N. Lantéri, J. Legrand, A. Gates, P. Pagonis, J. Del Rio, J.R. Lagadec, Henry A Ruhl, J. F. Rolin
- **ID43: A Big Data architecture designed for Ocean Observation data management**
P. Andriani, M. Nigrelli, D. Pellegrino, L. Lombardo, L. Badiali

B2: Marine Robotics perspectives: ROVs, AUVs, ASVs, Gliders, And Crawlers (**ROOM 2**)

Chair: Marc Carreras

- **ID 4: Smart and Networking UnderWater Robots in Cooperation Meshes - The SWARMs ECSEL-H2020 Project**
Daniel A. Real-Arce, Tania Morales, C. Barrera, J. Hernández, O. Llinás
- **ID 6: Improving Ocean-Glider's Payload with a new generation of spectrophotometric Ph sensor**
C. Almisas, C. Barrera, C. Waldmann, H. Precheur, S. Meckel
- **ID 8: Development of a roV titanium manipulator for light work class roV vehicles**
Gaizka X. Garay, Dario Sosa
- **ID 11: A 3D Mapping, Obstacle Avoidance and Acoustic Communication Payload for the AUV SPARUS II**
Miquel Massot-Campos, Francisco Bonin-Font, Pep Lluís Negre-Carrasco, Eric Guerrero, Antoni Martorell, Gabriel Oliver-Codina

SESSION C - 27th THURSDAY, 14:30 – 16:00

C1: Seafloor observatories and sensor networks
(**ROOM 1**) Chair: Ivan Rodero

- **ID 39: High Frequency pCO₂ Monitoring in the Mediterranean Coastal waters**
Maite Báez-Hernández, Melchor González-Dávila, J. Magdalena Santana-Casiano, Marc Nogueras, Joaquín Del Río
- **ID 41: SWE Bridge: Software Interface for Plug & Work Instrument Integration into Marine Observation Platforms**
Enoc Martínez, Daniel M. Toma, Joaquín del Río, Óscar García, Ikram Bghiel
- **ID 45: Galway Bay Shallow-Water Observatory: Installation, Commissioning and Research Opportunities**
Diarmuid Gearóid Ó Conchubhair, Dr Eleanor O Rourke
- **ID 46: Architecting the Cyberinfrastructure for the National Science Foundation Ocean Observatories Initiative (OOI)**
Ivan Rodero, Manish Parashar

C2: Marine Robotics perspectives: ROVs, AUVs, ASVs, Gliders, and Crawlers (**ROOM 2**) Chair: Daniel Toma

- **ID22: First AUV and ROV investigation of seismogenic faults in the Alboran Sea (Western Mediterranean)**
Eulàlia Gràcia, Hector Perea, Rafael Bartolome, Claudio Lo Iacono, Sergio Costa, Susana Diez, Xavier Placaud, Chris Smith, Pablo Rodríguez, Héctor Sánchez, Olivier Quedec, Juanjo Dañobeitia, Shake cruise team
- **ID 24: AUV/ASC cooperative survey**
Narcís Palomeras, Natalia Hurtós, Marc Carreras
- **ID 25: 5 Year-long Monitoring of Barkley Canyon Cold-seeps with the Internet Operated Deep-sea Crawler “Wally”**
Damianos Chatzievangelou, Laurenz Thomsen, Autun Purser, Carolina Doya, Jacopo Aguzzi, Jakob Schwendner, Alexander Duda, Mairi M.R. Best, Fabio De Leo, S. Kim Juniper
- **ID 31: Review of lessons learned after five years of shallow water AUV operations**
Pablo Rodríguez Fornes, Núria Pujol Vilanova, Simó Cusí, Juan José Dañobeitia

SESSION D - 27th THURSDAY, 16:30 – 18:00

D1: Remote sensing and Seafloor observatories and sensor networks (**ROOM 1**)
Chair: Nuno Gracias

- **ID2: Recent Technical Innovations around HF radar Technology and steps towards Integrated National HF radar Networks**
Ismael Lopez, Andrés Alonso-Martirena, Jorge Sánchez, Pedro Agostinho, Maria Fernandes, Zouhair Benmoussa, Abderrahim Oulhassan
- **ID 33: Omnidirectional Underwater Surveying and Telepresence**
Nuno Gracias, Rafael Garcia, Ricard Campos, Ricard Prados, Josep Bosch, Armagan Elibol, Tudor Nicosevici, Laszlo Neumann, Josep Quintana
- **ID 49: Electronic System for drift clock calculation and synchronization for seafloor observatory**
Umberto Apponi, Davide Embriaco, Giuditta Marinaro, Vincenzo Romano
- **New Teledyne Technology on multibeam systems**
Alava ingenieros

D2: Marine Robotics perspectives: ROVs, AUVs, ASVs, Gliders, and Crawlers (**ROOM 2**) Chair: Pedro Gonçalves

- **ID 28: Seabed monitoring with Girona 500 AUV working as HROV**
Marc Carreras, Andrea Gori, Angelos Mallios, Narcís Palomeras, Cristina Linares, Josep-Maria Gili, David Ribas, Natàlia Hurtós, Lluís Magí, Pere Ridao
- **ID 37: Range-only benthic Rover localization off the central California coast**
I. Masmitja, S. Gomariz, J. Del Rio, B. Kieft, T. O’Reilly
- **ID 44: The LSTS open-source communication and autonomy software: enabling networked vehicle systems to find, track, and sample dynamic features of the ocean**
J. Borges de Sousa, J. Pereira, A. Sérgio Ferreira, M. Ribeiro, J. Pinto, P. Dias, M. Costa, K. Rajan
- **ID 47: Obstacle detection algorithm of low computational cost for Guanay II AUV**
C. Galarza, J. Prat, S. Gomàriz
- **Liquid Robotics WAVE GLIDER SV3 : Evolución, nuevas aplicaciones y futuro**
EMS Sistemas de Monitorización Medio Ambiental SL

SESSION E - 28th FRIDAY. 9:00 – 10:30

E1: Marine Geophysics technology solutions and underwater imaging and communication

(**ROOM 1**) Chair: Rafael Bartolomé

- **ID 17: Real-time lossless compression of multibeam echosounder water column data**
David Amblas, Jordi Portell, Xavier Rayo, Alberto G. Villafranca, Enrique García-Berro, Miquel Canals
- **ID 27: Technological and infrastructure collaborative seismic research in western Mexico**
R. Bartolome, J. Dañobeitia, A. L. Cameselle, D. Cordoba, F. Núñez, C. Day, W. L. Bandy, M. Prada, H. Perea, C. A. Mortera, D. Nuñez, A. Castellón, J. L. Alonso, Tsujal Working Group
- **ID 23: Automatic fish counting from underwater video images: performance estimation and evaluation**
S. Marini, E. Azzurro, S. Coco, J. Del Rio, S. Enguñados, E. Fanelli, M. Nogueras, V. Sbragaglia, D. Toma, J. Aguzzi
- **ID 29: Development of a prototype for submarine communications in shallow waters**
L. A. Mariscal, L. Gómez, E. Rychkov, M. Figueroa, A. Corzo, J. Bohórquez, S. Papaspyrou

E2: Instrumentation, Metrology, and Signal processing

(**ROOM 2**) Chair: José Martín Dávila

- **ID 3: Development and calibration of a cost-effective temperature sensor**
Pablo Álvarez, Ana Alméjija, Ignacio González, Silvia Torres
- **ID 15: iObserver: Species Recognition via Computer Vision**
Fernando Martín, Mónica Barral, Angel Besteiro, José Antonio Vilán
- **ID 42: Firsts Underwater Potentiostat Sea-Tests in the OBSEA**
I. Masmitja, J. J de Damborenea, A. Conde, P. Daponte, S. Rapuano, J. del Rio
- **ID 30: Precise OBS location at the sea bottom in active seismic profiles using the air gun shot records**
A. Pazos, J.L. Granja Bruña, J.M. Dávila, A. Carbó-Gorosabel, R. Cabièces, A. Rodríguez-Zurrunero, J. Santos Loaisa, J. M. Gorosabel Araus, J. Quijano, M. Ambros

SESSION F – 28th FRIDAY. 11:45 – 13:15

F1: Polar Research and Citizen Science applications and interfaces (**ROOM 1**)

Chair: Veronica Willmott

- **ID 35: EUROPEAN POLAR RESEARCH: STATUS AND CHALLENGES OF EUROPEAN POLAR FLEET FOR ENHANCING STRATEGIC COLLABORATION**
J.J. Dañobeitia, Nicole Biebow, Per Nieuwejaar, Miguel A. Ojeda, Veronica Willmott, Bjorn Dahlback, Yves Frenot, Valerie Mazauric, Michelle Rogan-Finnemore, Helge A. Thomsen, Gonçalo Vieira
- **ID 40: Noise and Biological Sounds: Arctic Soundscapes during the 2013 and 2014 seasons**
Mike van der Schaar, Anja Johansen Haugerud, Jürgen Weissenberger, Steffen De Vreese, Michel Andre
- **ID 16: Measurement errors with low-cost citizen science radiometers**
R. Bardaji & J. Piera
- **New Teledyne BlueView Image and motion scan application**
Alava Ingenieros

F2: Instrumentation, Metrology, Signal processing and seafloor and Water Column characterization, Coastal

research vessels and platforms (**ROOM 2**) Chair: Daniel Rey

- **ID 19: Bares 2.0 wave buoy and sustainable buoy network**
Pablo González, Xulio Fernández
- **ID 12: Optical fibers to measure temperature vertical profile at sea**
Albert García, Joaquín del Rio Fernández, Marc Nogueras, C. García, D. del Campo, S. Hernández
- **ID 14: Acoustic system for physical oceanography research in the deep ocean**
Berta Biescas, Valentí Sallarès, Jhon Mojica, Sandro Carniel
- **ID 18: Inndaga: An environmental data acquisition innovation platform**
Daniel Rey, Belén Rubio, Ana Bernabeu, Federico Vilas, Kais Mohamed, Miguel Oter

INVITED SPEAKERS

CONFERENCE 1 – 27th THURSDAY. 09:15 – 09:45 (ROOM 1)

"European Multidisciplinary and Water-Column Observatory - European Research Infrastructure Consortium (EMSO ERIC): Challenges and opportunities for Strategic European Marine Sciences" by Prof. Paolo Favali , INGV, Rome, Italy.



Professor Paolo Favali Research Director at INGV since 2000, he has about 40 years of experience especially in the fields of Natural Hazards (mainly Seismic), Seismotectonics, Geodynamics, Geophysics and Environmental Sciences. He published over 150 papers, including 3 books. He was in the Board of Directors member of the Istituto Nazionale di Geofisica from 1987 to 2000. Since 2000 acts an Expert Evaluator of EC projects. Head from 2001 to 2014 of the Marine Unit of INGV. He also was and is involved in many national and international projects. He has been teaching "Physics of Solid Earth" and "Earth Physics" in Italian Universities from 1994 to 2009. He worked in many research and technological projects with Italian/International Universities, Scientific Institutions and Industries, acting as coordinator in some of them. In these projects, complex underwater systems and sensor prototypes have been developed and validated not only for scientific uses with a complete interdisciplinary approach from shallow to deep waters. He has been coordinator of numerous European projects for the development and scientific use of multidisciplinary seafloor observatories and networks, and related infrastructures. Currently he is working as coordinator of the ESFRI Research Infrastructure EMSO (European Multidisciplinary Seafloor and Water-Column Observatory, <http://emso-eu.org>), included in the 1st ESFRI Roadmap (2006), and now "Landmarks" in the last ESFRI Roadmap (2016).

CONFERENCE 2 – 28th FRIDAY. 11:00 – 11:30 (ROOM 1)

"Towards a better use of Arctic marine infrastructure: EU- PolarNet, EUROFLEETS2 and ARICE" by Dr. Nicole Biebow, Alfred Wegener Institute, Germany



Dr. Nicole Biebow is the executive manager of the EU coordination and support action EU-PolarNet – Connecting Science with society and Head of International Cooperation Unit, Alfred-Wegener-Institut, Helmholtz-Zentrum für Polar- und Meeresforschung, Bremerhaven, Germany. She has long-standing experience in the management of international projects and coordination of international consortia. She received her PhD in Marine Geology at GEOMAR in Kiel in 1996. Since then she has worked as scientific coordinator or executive manager of international projects. From 1996 till 2004 she coordinated the large German - Russian Joint Project KOMEX (Kurile Okhotsk Sea Experiment) funded by the BMBF. In 2004 she moved to the Alfred-Wegener-Institute (AWI) and took over a position as the scientific assistant of the director and the scientific coordinator of the joint Russian – German Master Program for applied Polar and Marine Sciences, POMOR in St. Petersburg. Since 2010, she is heading the International Cooperation Unit. From 2009 – 2013 she additionally took care of the EU funding at the AWI.

GENERAL INFORMATION

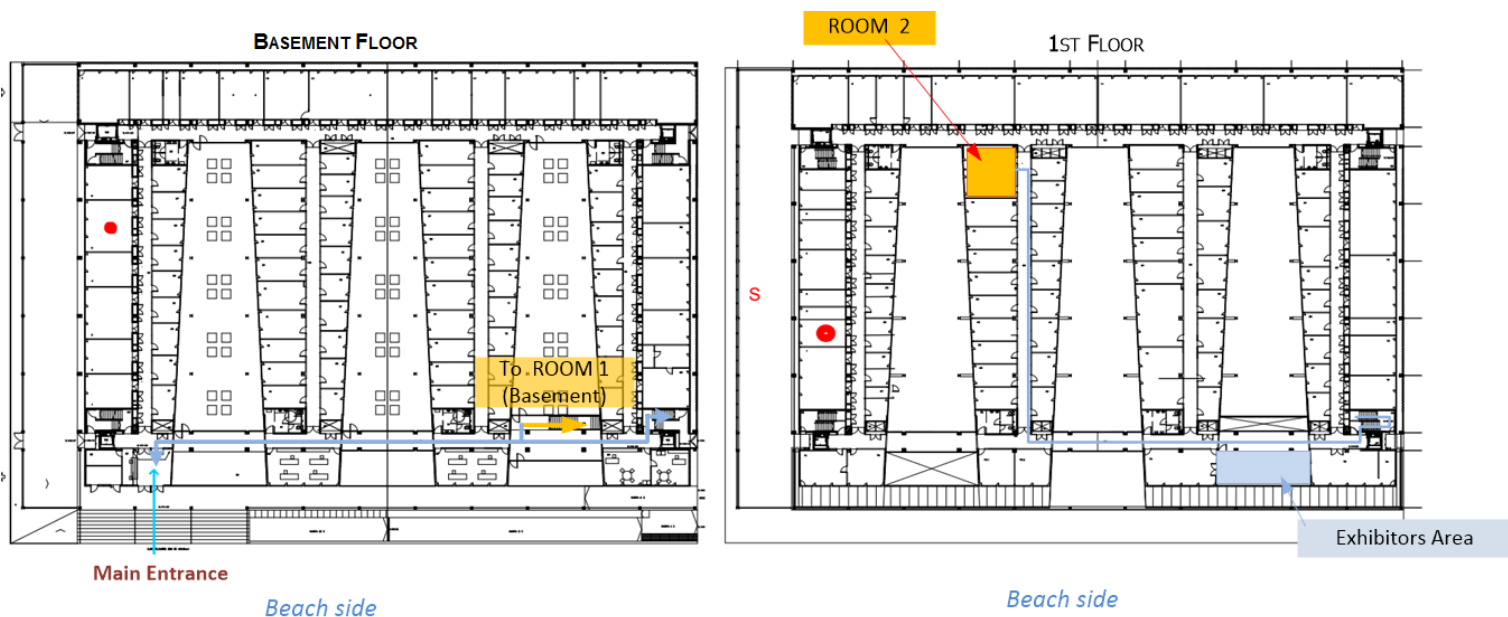
WHERE WILL THE CONFERENCE TAKE PLACE?

MARTECH 2016 will take place at the the Instituto de Ciencias del Mar - ICM- CMIMA (CSIC). The venue is located in Barcelona’s Villa Olímpica District between Hospital del Mar and the Olympic Towers.

Location: [Passeig Marítim, 08003 Barcelona](#)



The conferences will take place in two different rooms: “Salón de actos” and “P31” theaters, located on the Basement and First floor.



COMMERCIAL EXHIBITOR

EXHIBITOR AREA

The exhibition area will be in the First Floor of the Instituto de Ciencias Del Mar, near the Cafetería.

EXHIBITOR LIST

 **Álava Ingenieros** GRUPO ALAVA – **ÁLAVA INGENIEROS** – www.alavaingeniers.com

Oceanografía, Tecnología en el fondo marino.

Álava Ingenieros potencia su línea de productos de Oceanografía e Hidrografía, incrementando sus acuerdos con socios tecnológicos líderes en el sector.

Los clientes tienen acceso a equipos que ofrecen diversas prestaciones, como ecosondas monohaz y multihaz, sistemas de posicionamiento, sondas multiparamétricas, perfiladores de la velocidad del sonido, software con sencilla interfaz,.... Desde Álava Ingenieros nos mantenemos en la vanguardia de todas estas tecnologías para ofrecer al cliente una solución flexible y completa, que incluye servicios de integración, instalación, puesta en marcha, soporte y mantenimiento del equipamiento suministrado.

Con oficinas en Madrid, Barcelona, Zaragoza y Lisboa, Quito, Lima y TEXAS el Grupo Álava comercializa sus soluciones con la experiencia de sus 40 años en el mercado de la instrumentación.

 – **Advanced Crew and Ship Management** – www.acsmships.com

ACSM (Advanced Crew and Ship Management) provides global maritime services such as nautical management of vessels as well as complete services of submersible ROV vehicles for offshore projects with clients from all over the world. Established in 2001, ACSM key personnel have more than 15 years' experience in marine and subsea services for offshore operations.

ACSM has a wide experience in ship management with cable ships, special purpose offshore vessels, oceanographic/research vessels, and other types of vessels with Dynamic Positioning (DP) and/or Diesel- Electrical propulsion. The Marine Management service includes Human resources (MLC 2006 Certification), and full Technical Management in compliance with relevant IMO conventions and other applicable international and flag state regulations.

 – **EMS Sistemas de Monitorización Medio Ambiental SL** - www.ems-sistemas.com

EMS offers a solid background in sensors, systems and vehicles, serving the oceanographic community and users of marine and underwater technology for more than 15 years with offices in Barcelona and Paris.

EMS represents leading manufacturers in the industry and offers advanced technical capabilities focused on

system integration and data providing, as well as an own product line and associated technical services.

EMS sensors : Sea-Bird Electronics, WETLabs, Turner Designs, Teledyne RD Instruments, Biospherical Instrument, Sequoia Scientific, Paroscientific, Campbell Scientific, Ocean Waves, et al. EMS systems : Teledyne Blueview, ATLAS Hydrographic, MacArtney, Chelsea Technologies, Flotation Technologies, Deep Sea Power & Light, Technicap, Link-Quest, Falmat Cables, et al. EMS vehicles : Liquid Robotics, ATLAS SeaCat, Bluefin Robotics, International Submarine Engineering, Deep Ocean Engineering, VideoRay, et al.



– **GRAFINTA S.A.** – www.grafinta.com

Established on 1964, we offer and deliver the most advanced and reliable equipment and solutions in different engineering areas such as:

- Surveying and Mapping
- Photogrammetry.
- Dimensional Control
- Geodesy
- Hydrography
- Oceanography
- Machine Control
- Defense
- Timing

We maintain representation agreements with some of the most important companies around the world providing services, support and maintenance.

PENTAX - ASAHI Surveying instrumentation, / UAV's

JAVAD GNSS Systems

IXBLUE Navigations Systems; Inertial INS for Aerial, Marine and Land applications; acoustic systems.

Wärtsilä ELAC Sistemas sonar y ecosondas multihaz

Roustescene Lidar system for UAV's integration.

Z+F Laser scanner 3D

ASV Unmanned Marine Surface Vehicles.

Alseamar Gliders, submarine profilers for oceanographic Data Acquisition.

Offshore Sensing Unmanned Surface Vehicle for ocean surface Data Acquisition

McLane Oceanographic Instrumentation

ASL Oceanographic Data profilers

Edgetech Side Scan Sonar; Multibeam Systems

BluePrint Surface and Underwater Navigation Aids.

Hypack. Aplicación lógica hidrográfica, Hidrografía

LinkQuest. Inc. Perfilador de corrientes Doppler

Dartcom Estaciones meteorológicas remotas, HRPT, CHRPT, SEAWIFS, AHRPT y DMSP, EUMET SAT, GMS, GOES, MTSAT.

Idronaut CTD, sensores.

General Oceanics Instrumentos oceanográficos. Analizadores de CO².

General Acoustics Instrumentos oceanográficos, Mareografos. Log_aLevel.

At the present time our company employs seven persons full time and two additional technicians on partial time. Half of them with technical or engineering degree. All the personnel have ample experience in sales, training, after sales service and support.

We also maintain a workshop certified by the Spanish Institute of Metrology which provides technical assistance, maintenance and repair jobs as required.



- FURGO - www.fugro.com

The Fugro group of companies is an international consulting company that provides the people, equipment, expertise and technology that support the exploration, development, production and transportation of the world's natural resources. Fugro also provides its clients with the technical data and information required to design, construct and maintain structures and infrastructure in a safe, reliable and efficient manner.

Focusing on providing solutions to its client's requirements, the group was created by the merger of Fugro and McClelland groups of companies. Fugro operates on a world-wide scale. The group employs over 12,000 people in over 275 offices world-wide and is headquartered in the Netherlands.

Fugro provides a unique range of services and activities worldwide. These are organised in two divisions: Geotechnical and Survey.



KONGSBERG - KONGSBERG MARITIME - www.km.kongsberg.com

Kongsberg Maritime is a wholly owned subsidiary of the Kongsberg Group. As a leading Norwegian technology company established on 20th March 1814, the Kongsberg Group can celebrate more than 200 years in business. The company can boast the longest industrial history in Norway, with continuous operations since its foundation.

Kongsberg Maritime provide innovative and reliable solutions for on- and offshore, merchant marine, subsea, navy, coastal marine, aquaculture, port & harbor surveillance, training services and more.



- QUALITAS REMOS - www.qualitasremos.com

QUALITAS Remos is a leading company in science and solutions for the operational oceanography, marine safety, offshore and marine renewables sector with international activity and business units in

Spain, Portugal, UK, Colombia and Morocco.

The company vision is to provide innovative knowledge intensive solutions associated with technology and data to the marine community in cooperation with our clients and partners. The company has wide experience in the delivery of:

- Turnkey deployment, operation and maintenance of ocean observing systems with special focus on HF Radar.
- Innovative, powerful, reliable IT solutions and added value decision support software tools for marine information and marine risk management.
- Expert marine consultancy and testimony, spill trajectory and fate modelling, impact analysis as part of a marine pollution preparedness and response service.



- CASCO ANTIGUO OCEANOGRAFÍA- www.cascoantiguooceanografia.com

In Casco Antiquo we are devoted to the manufacture, sale, distribution and commercialization of professional diving equipment, both technical and recreate, completing this extensive offer with a department of Search and Rescue, and another one of Oceanography.

Nowadays, Casco Antiquo is a leader in these areas in the Iberian Peninsula and Latin America, and in its product catalog you can find the most prestigious brands in each sector.

Casco Antiquo Oceanography is part of the Casco Antiquo Commercial Company, as a department specialized in products and equipment for the Oceanography, Hydrography and Underwater Technologies areas.



CLS - CLS COLLECTE LOCALISATION SATELLITES- www.cls.fr

CLS is a subsidiary of CNES, IFREMER and the investment company ARDIAN. It has been operating satellite systems and providing high value-added products and services since 1986.

CLS provides operational services for environmental monitoring, sustainable management of marine resources, and maritime security.

The company also provides services for telematics.

Through its range of products and services, CLS provides direct operational assistance to stakeholders in both the public and private sectors.

CLS operates over 80 instruments carried by 40 satellites and provides its expertise to a broad range of customers: governments, scientific organizations, non-governmental organizations, institutions, large industrial groups (maritime freight, oil and gas companies, commercial shipping, fisheries, etc.).

INNOVA
oceanografía litoral - INNOVA - www.oceanografialitoral.com

INNONA is a company devoted to analysis, studies and projects for improving coastal and marine management strategies and finding solutions related to the coastal zone and surrounding waters, getting closer to a more rational, responsible and sustainable exploitation of the limited coastal and marine resources.

Our company offers its services to companies, institutions and governmental offices looking for advice and actions related to coastal dynamics and physical oceanography, littoral environment, moorings and management of measuring instruments.

Our staff have a long experience in how to address studies at the coastal and marine physical environment obtained along a range of geographical sites. We have more than 20 years of experience in a range of marine science techniques both in the field and in laboratory, equipment development, marine modelling, etc.

We represent several companies (Nortek A/S, Datawell bv, Radac bv, Teledyne Benthos, Teledyne Webb Research, Teledyne Gavia, Aquatec group, SAIV A/S, and some others) in several and different countries (Spain, Portugal, Italy and Slovenia). For a better knowledge and information about our activities, tools and know-how please, visit our web site at <http://www.oceanografialitoral.com>

The logo for NAUTILUS OCEANICA, featuring a blue nautilus shell icon on the left and the words "NAUTILUS OCEANICA" in blue capital letters on a green rectangular background to the right.
- NAUTILUS OCEANICA - www.nautilusoceanica.com

Nautilus Oceanica distributes oceanographic instrumentation and survey equipment from some of the most renowned manufacturers in the industry.

Our company is specialized in all kind of sonar equipment (singlebeam, multibeam, side scan sonar & sub-bottom profiling), ancillary sensors (GNSS, heading & sound velocity), hydrographic software, environmental monitoring systems (multi-parameter probes, tides, currents & waves) and marine life monitoring equipment (bio-acoustic monitoring & acoustic tags).

We actively assist our customers with the installation and set to work of any system and also provide the needed training. Visit our website for a better insight and contact us by phone or e-mail. We will be pleased to provide you a tailored service according to your particular needs.