

# OES BEACON

Newsletter of the Oceanic Engineering Society



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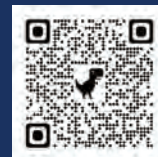
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Welcome to **OCEANS 2024 Halifax**

September 23-26, 2024  
Halifax Convention Centre



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Front cover photos during OCEANS'09 Gulf Coast were taken by Stan Chamberlain, our previous OES photographer

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## Member Benefits—Did You Know?

### Subscribe to the IEEE Learning Network Newsletter

Learn about the latest trends and practical applications on the hottest topics in tech via online courses offered on the IEEE Learning Network. Get monthly updates on our newest continuing education resources and products. Google IEEE Learning Network Newsletter or go to <https://engage.ieee.org/ILN-Course-Mailer-Sign-up.html>





## From the OES BEACON Editors

*Harumi Sugimatsu and Robert Wernli*

Our September issue of the Beacon follows a summer where, hopefully, everyone enjoyed some time off. This is reflected on the smaller number of reports we received from our chapters (Japan and Australia) and members. However, our Executive Committee remained busy working to make OES a significant society as shown in their reports.

The reports by the President and Executive Vice President highlight the activities of the society and how they are meeting our technological goals. The VP for Workshops and Symposia describes the many events that are being planned that are keeping the society active around the world. This issue includes reports on the 2024 IEEE/OES China Ocean Acoustics Conference and Norway's TAU Autonomy Challenge by students using their robotic vehicles.

Our primary events are the OCEANS conferences, which will be impacted in a couple of years when the MTS is withdrawing as a conference sponsor. The direction that the society will take in the future regarding the OCEANS conferences is discussed in the VP for OCEANS report.

The VP for Technical Activities reports on the status and future of the OES Technical Committees. The article also includes this year's call for Distinguished Lecturer nomina-



*May not make it to Halifax, but last year's cruise to Alaska got us up north from San Diego.*

tions. The benefits of being a DL is reported in an article by a recent distinguished lecturer.

Our VP for Professional Activities provides the latest on our student branch chapters (SBC), which have increased to 22. The latest SBCs are in Brazil and India. Also included in this issue is a report from IIT Chennai SBC.

The Singapore OCEANS conference, which was reported on in the last Beacon, included additional activities. In support of the Young Professionals (YPs), a YP luncheon, including a panel presentation, was held. Also reported are the benefits of the OES Women in Engineering (WIE) PROPEL Laureate program as reported by two Laureates regarding attendance at the conference in addition to the OES WIE representative. Also reported in this issue was a panel session at OCEANS Singapore that supported the UN Decade of Ocean Science regarding Ocean Observing Platforms and Technologies.

Upcoming workshops and symposia are listed in the Conference Calendar and the Journal EIC again provides a list of recently released papers that are available to our members.

On a positive note, our Distinguished Technical Achievement Award and Distinguished Service Award winners are reported in this issue. On a sadder note, we recently lost one of our key leaders, Jim Barbera. His society friends provided input for the article on him and he is also recognized in this issue's Blast from the Past.

Have you done something exciting lately? Received an award or professional recognition? Be sure to contact your editors about submitting an article. And don't miss the Who's Who in OES article on one of our outstanding members in each issue.

There is a wealth of other information and articles in this issue that we hope you enjoy. And, as always, we'll close by inviting you to participate in your society. Submit articles and material for the Beacon. Or... volunteer for other society activities as a participant or an elected officer. It's your society and it is here to help you reach your professional goals. Enjoy.



*Harumi in the AUV lab preparing for the next Cruise in October.*



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## Moving Forward Together

**Brandy Armstrong, President, [president@ieeeoes.org](mailto:president@ieeeoes.org)**

### Uniting for a Common Purpose

As I sit down to write this message, I am deeply aware of the challenges OES leadership has faced recently. Our organization, which has always been a professional home for ocean scientists, engineers and technologists, is experiencing transitions both internally and externally that will change how we are able to serve our community globally. Each challenge is an opportunity. It is in times like these that our commitment to our shared mission must be reaffirmed and strengthened.

First and foremost, I want to acknowledge the diverse perspectives and passions that exist within our organization. It is these very differences that have enriched our dialogue and driven us to innovate and excel. It is crucial to make every OES meeting one where diverse viewpoints are wanted, and everyone feels welcome to participate and contribute. It is essential that we address these issues head-on and work towards a unified path forward.

Our mission transcends individual viewpoints. We are united by a common goal: to make a meaningful impact in the communities we serve and uphold the values that define our organization. As we move forward, let us remember that our strength lies in our ability to work together, listen to one another, and find common ground amidst our differences.

To this end, I propose a renewed focus on collaboration and dialogue. The Administrative Committee will meet in person following OCEANS Conference in Halifax, Nova Scotia. This gathering will provide an opportunity for leadership to share our perspectives openly, to address concerns, and to forge solutions that reflect our collective wisdom.

OES continues to organize many programs and events which focus on engaging women, students and young professionals. We are seeing member growth in regions 8, 9 and 10. Many of these new members are student members. To effectively engage and retain young members in a professional organization, it is crucial to create an environment that values diversity, fosters meaningful connections, and addresses the unique needs and aspirations of younger generations. OES leadership has begun discussing how to establish a working group dedicated to fostering equity within our organization. This task force will be comprised of members from diverse backgrounds and viewpoints, including our Women in Engineering PROPEL and Young Professional BOOST representatives, ensuring that all perspectives are represented. If you are



*OES President Brandy Armstrong present at the OCEANS Singapore, 2024 gala.*

interested in being a part of this working group, please contact your president at [president@ieeeoes.org](mailto:president@ieeeoes.org).

During challenging times, it is easy to lose sight of our shared goals. Let us recommit ourselves to our mission and to each other. We are more than the sum of our differences; we are a community bound by a common purpose. Together, we have the power to overcome any obstacles and strengthen our organization to make a positive difference in the world.

Thank you for your dedication and your willingness to engage in this critical process of building collaboration and unity. If you want to join one of our many committees and get more involved, please contact me and I will work with you to find something that connects your interests to action.

*With heartfelt gratitude and optimism,  
Your President,  
Brandy Armstrong*

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## Executive VP Report

**Malcolm Heron, a New Executive VP**



“Advancing Technology for Humanity” is on the logo of IEEE. During the revision of the Oceanic Engineering Society Strategic Plan and Bylaws the question arises about how does OES live under this motto? When we look closely at the wide range of activities that the Society supports each year, we can find many points where the wider community is served – provided their interest is in the ocean and other

bodies of water. The flagship OCEANS Conference is a good example where statistics over the years show that about 70% of delegates come from the region surrounding the conference city. This ratio is pretty well constant from North America to Europe and Asia/Pacific. It is clear that the OCEANS Conference serves members and non-members in the regions of the world as it moves between the Americas, Europe and Asia/Pacific. The average ratio of OES members to non-members is about 3:2, so here is one place where the Society serves the wider community.

This participation ratio translates approximately to other OES activities, from technical publications to Student Branch Chapters, where non-members are always invited to participate.

Many of our members are engaged in applying ocean technology to maritime operations, environmental protection, sustainability and education, and topics like these are an intrinsic part of most OES activities. These applications are bringing technology to the community in a way consistent with the IEEE motto. One valuable contribution to the community is that OES members bring scientific and technical knowledge to advocacy and policy where the scientific method of empirical testing of ideas is often lacking. This is where integrity and ethics of a professional society like OES stands out strongly – policy and applications need to be based on validated science.

By serving our members with a range of activities, with open invitations to all who have interests in the theory and practice of electrotechnology, allied branches of engineering, and related arts and sciences, applied to all bodies of water (OES Constitution1-2: <https://ieeooes.org/about-us/constitution-of-the-oceanic-engineering-society/>) we are bringing our development of advanced technology to the support of humanity.

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## VPTA Column

**Shyam Madhusudhana, VP for Technical Activities**



It’s been a good year so far with relatively smooth progress in our technical activities. The Technology Committees (TCs) and various Chapters have been active and largely running on auto-pilot, needing minimal intervention from me.

The Technology Committees are essential to our Society, shaping various aspects within the Oceanic Engineering Society (OES). These committees were originally estab-

lished to address the needs of our members in key and emerging

thematic areas. As mentioned in previous editions of the newsletter, we’re continuing our efforts to ‘revamp’ the current set of 10 TCs, aiming to expand their scopes and enhance their relevance in light of the evolving landscape of oceanic engineering. A final round of consulting and discussions with the current TC executives is scheduled in early September, and we are positive about wrapping up this undertaking in the next couple of months and have the new slate of TCs ready to be active starting 2025.

The call for nominations to the 2025–27 class of Distinguished Lecturers (DLs) ended on July 31. I am quite pleased by the responses to the call – we have received six nominations. The committee will oversee the selection of the next DLs and I hope to be able to announce the DL picks soon. Stay tuned!

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## From the VP For Professional Activities

### Elizabeth Creed, Vice President for Professional Activities

It is hard to believe that we are rapidly approaching the final quarter of 2024. The first eight months have gone quickly, filled with many OES activities (i.e., OCEANS Singapore, the Singapore AUV Competition, ODI Student Ambassador led local projects, OES WIE and YP programs at OCEANS, lectures presented by our Distinguished Lecturers (DLs), Winter School, Summer School, students participating in the Berth of Opportunity program, to name a few). The remainder of 2024 will be just as busy.

This time of year also signals the start of the IEEE membership renewal cycle for the next year. The 2025 renewal cycle began on August 16th and the member's renewal portal opened in early September. If you have not already received a renewal communication from IEEE, you will shortly. Additionally, if you have colleagues who are interested in joining IEEE and OES, now is a great time to do so. Why? If an individual joins now, they will receive member benefits from the time they join through December 31, 2025 at the price of the standard

12-month membership. This deal on new memberships applies to students and professionals.

The OES family of Student Branch Chapters (SBCs) has grown to 22, up from 16 at the end of 2023. We now have one SBC each in Region 5 (Southwestern US) and Region 6 (Western US), seven in Region 8 (Africa, Europe, Middle East), five in Region 9 (Latin America) and eight in Region 10 (Asia and Pacific).

Finally, The OES Women in Engineering (WIE) Propel and Young Professionals (YP) Boost programs are accepting applications for their respective 2025–2026 Laureate positions. The deadline to apply for either Laureate program is October 31, 2024 at 11:59 pm UTC. Information on the two programs can be found on the OES website: <https://ieeeco.org/member-communities/women-in-engineering/> (WIE Propel) and <https://ieeeco.org/young-professionals/> (YP Boost). These laureate positions are a great opportunity for OES members to get involved in OES activities, expand their network, and build their leadership skills.

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## From the Vice President for Workshops & Symposia

### Gerardo “Gerry” Acosta, VP for W&S

Since our last meeting on these lines, our OES kept on having a great deal of workshops and symposia activities. Our Society aims to be the home for people willing to share experiences, knowledge, and networking around the oceans, from a technological and scientific stand-point. This is why IEEE OES offers their members a great deal of opportunities. Work-shops and symposia are just a little sample of this. We will see part of this activity carried out reported in this issue of our Beacon.

During May 29th to 31st, we celebrated the *2024 OES China Ocean Acoustics Conference* in Harbin, China. There were about 300 attendees from over 100 acoustic research institutes around the world, 6 key-note talks, 20 invited lectures, and about 200 technical talks and poster presentations. An article with more detail about this is within this Beacon. Congratulations to Prof. Suleman Mazhar and the organizing team!

During June, the French OES Chapter was going to organize the *French Top Experts Festival at Toulon*, a meeting among professionals, academics, students and experts on topics of great interest to those passionate about the sea. They have decided to postpone it to next fall for a better organization. Something similar happened with the first holding of the *Sym-*



*posium on Maritime Informatics and Robotics*, organized by the University of the Aegean, in Syros, Greece, with OES patronage. It was rescheduled for next year, the first week of July.

September awaits us with four events. The *Ucomms Conference 2024* will be held the first week of the month in Sestri Levante, Italy, co-organized with the RSMC. Also in Italy, but this time in Bolzano, OES will be collaborating with the *Automatica 2024* congress. In Port Louis, Mauritius, OES is sponsoring the *Western Indian Ocean (WIO) Futures 2024*. And in Boston, MA,

USA, the prestigious *2024 OES AUV Symposium* will take place, from 18 to 20 September.

October has an even greater offer. The first event will be the traditional *2024 Breaking the Surface*, in Biograd na Moru, Croatia, supported by our OES, among other sponsors, and carried out by the Faculty of Electrical Engineering and Computing of the University of Zagreb. The *2024 OES MIW—Marine Imaging Workshop* will be held in Monterey, CA, USA, with the support of the local MBARI. Subsequently, the *USYS—IEEE 10th International Conference on Underwater System Technology: Theory and Applications* will be held in Xi'an, China, with the support of the local Northwestern Polytechnical University. Finally, in Portoroz, Slovenia, *Metro Sea*



2024—IEEE International Workshop on Metrology for the Sea will take place.

In the *Metro Sea 2024*, Filippo Campagnaro, one of OES YP BOOST laureates will organize a panel on Observing platforms for studying climate change and biodiversity in coastal areas and lagoons—a focus on the Venice Lagoon use-case.

Our Society will also be present at the 2024 IEEE International Workshop on Technologies for Defense and Security, to be held in Naples, Italy, in November. As well as in the 25th Biennial Conference on Biology of Marine Mammals in Perth, Australia, also in next November. Another exciting meeting that we are supporting is the International Workshop on Optimizing Engineering Design with AI: A Focus on Ocean Energy Systems (OEDAI-2024), with a theme of Sustainability and Marine Structures, from 17 to 20 November, 2024, to be hosted at IIT Madras, India. In addition, during the last week of November, we also secured our presence as OES at the IEEE

International Humanitarian Technology Conference (IEEE IHTC), thanks to the energy that our local Italian chapter puts into all activities linked to the ocean.

If you wish to get involved in these workshops or propose new ones, please contact me at [vp-workshops-symposia@ieeeyes.org](mailto:vp-workshops-symposia@ieeeyes.org). In addition, keep in mind that our OES offers the possibility of both technical and financial sponsorship, as well as patronage with grants for students and young professionals. In order to consider the latter in the budget, it is necessary to submit requests for support during the first half of the calendar year. Specifically, until the last days of May for the W&S that want to be held during the following year. On our website, there is a detailed guide for these presentations (<https://ieeeyes.org/conferences/workshops-and-symposia/>) and if you have any questions, do not hesitate to contact me.

Have a safe and pleasant navigation and always tell me how I can help you!

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## VP OCEANS Report

### Venugopalan Pallayil, Vice President for OCEANS (VPO)

Dear Colleagues,

As many of you probably would have heard by now, the OCEANS Conference is taking a new direction in its organization after 2025. Marine Technology Society (MTS), our long-term partner in the organization of OCEANS, has decided to pull out of the existing joint agreement. They will be a partner to the conferences until OCEANS 2025 Great Lakes. MTS feels that the current business model of OCEANS is not working out well for them and hence the need to look for other avenues where their interests would be better served. Even so, MTS is open to collaborations in the areas of mutual interest on a case-by-case basis. During the past couple of years the OCEANS Steering Committee (OSC) had been trying to re-imagine and restructure the conference operations, but without much success. A Conference Manager was hired, and a Joint Conference Committee was formed. However, there were operational challenges in meeting our objectives and the Conference Manager post had to be terminated. Subsequent efforts to hire a Conference Manager, and also the call for a single Professional Conference Organiser for OCEANS conference operations, did not materialize. The Joint Conference Committee, or JCC (which never had an opportunity to convene), has also been disbanded. OSC has also decided to cancel the OCEANS 2026 Washington DC conference at the request of MTS.

OCEANS has been a highly rewarding conference for the oceanic engineering community technically and offered one of the best networking platforms for our scientific and industrial



community. Hence, it will continue in its full rigor under a new leadership from OES. So, you can continue to enjoy and contribute to this flagship conference as in the past.

A straw poll was conducted among the AdCom and ExCom members to decide whether OES should continue organizing OCEANS beyond 2025 and if so whether it is recommended to hold one conference per year or continue with the current model of two conferences per year. In all, 21 responses were received and there was unanimity in the decision of continued organization of

OCEANS by OES beyond 2025. However, the opinions were divided on the frequency of holding OCEANS per year with no clear majority. A detailed discussion on future OCEANS is proposed to be carried out during the AdCom meeting in Halifax on 27th and 28th of September.

A Standing Committee to oversee operation of future OCEANS conferences is proposed to be setup. The role of this Central Coordination Committee will be to support the local organizing committee and the Professional Conference Organiser, as well as to provide directions for a successful organization of the conference. The full scope of this committee will be detailed in a policy and procedure (PnP) document, which is under preparation. The President, Past President, VP OCEANS and Treasurer will be permanent members of the committee, while there will be four nominated members. Each of these members would serve the committee for a period of two years and their terms can be extended by another two years, if they so wish.

OCEANS 2026 Sanya will take place as decided during April 2026 and OES will be the sole sponsor for this conference. We are exploring Aberdeen as a possible venue for our 2027 conference. Future North American conferences will soon be finalized.

Preparations for Halifax conference is progressing well. Out of 619 abstracts received, 405 have been accepted (acceptance rate of ~66%) and 399 final papers are expected to be presented. 21 of these papers are under the Student Poster Competition Category. About 100 exhibitors are expected (70 booths already sold out). OES Ocean Decade Initiative is organizing a couple of panels. There will be regular events like Student Mixer, Member's Reception, Young Professional (YP)/Early Career Oceans Professionals (ECOP)/Women In Engineering (WIE) luncheon. Please check the Halifax conference website for schedule details (<https://halifax24.oceansconference.org/schedule-at-a-glance/>) and sign up.

I attended the IEEE Convene meeting, that was held in Hawaii, at the invitation of IEEE CEE (previously MCE). This is an invitation only event where thought leaders and decision makers come together to address conference leadership practices, discuss challenges in the conference landscape, envision the future and launch new conference initiatives. The attendees consist of VPs for conferences, VP for workshops and symposia, Vice-President MGAs, Region Directors, Section Chairs, leaders from Technical Activities Boards, etc. There was also strong presence from IEEE Conference Events and Experiences (CEE) as well as from Tourism Industry and Hotel Venue Managers. The first day of the event discussed conference organization related challenges including growing the conferences, industry engagement and maintaining publication quality.

vene.org/ to know more about IEEE Convene. Personally, this was a good opportunity to meet up with some of the top-level IEEE volunteers and IEEE Staff, whom I have known only through email correspondence. Evenings were filled with excellent social events on the beaches of Waikoloa village.



*Attendees during a break.*

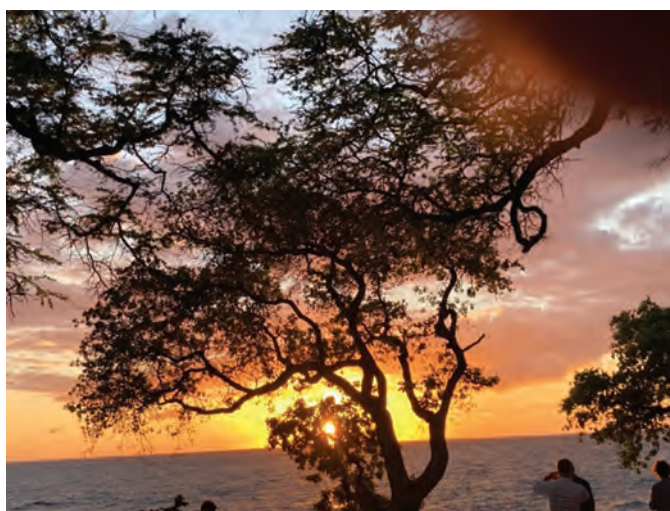


*Dinner with delegates.*



*A panel session in progress.*

Day 2 was filled with panel discussions and a presentation by the IEEE VP for Conferences as well as Chair for IEEE Conference Committee. Day 3 was primarily an event design workshop where the participants experienced different stages of conference organization from various stakeholder's viewpoints through an event organization exercise. This was a fun exercise and rewarding experience for some of the young and upcoming conference organisers. Please visit the website: <https://ieeekon->



*A beautiful evening at the beach.*

Please feel free to send your feedback and comments to me at [vp-oceans@ieeeco.org](mailto:vp-oceans@ieeeco.org).



## From the Journal Editor's Desk

**Karl von Ellenrieder, Journal Editor-in-Chief**

Firstly, I would like to welcome Margaret Hayden to the Journal of Oceanic Engineering (JOE) as our new Editorial Assistant. She is an affiliate with the Department of Ocean Engineering in the College of Engineering at the University of Rhode Island (URI). Before joining URI, she managed fundraising and supported professional development programs for journalists and scientists at a small science communication institute at URI. Earlier in her career, she produced television programs about engineering for PBS, National Geographic, and the Discovery Channel.



Secondly, I am looking forward to attending the OCEANS meeting in Halifax, September 23-26. As always, I would also like to remind the authors of OCEANS conference papers they are welcome to develop their short conference papers into significantly longer manuscripts and to submit them for consideration for publication in the JOE. For information about how to do this, I encourage interested OCEANS Conference authors to refer to the editorial by EiC Emeritus N. Ross Chapman, which can be found online at the following link – <http://dx.doi.org/10.1109/JOE.2014.2313375>.

Additionally, I would also like to remind the authors of JOE papers accepted between 23 July 2023 and 22 July 2024 that they can present their JOE paper at OCEANS 2024 Halifax. As the work has already been peer reviewed and published, there is no need for an abstract review, or to write a new paper. The work would be submitted as a “presentation-only” abstract, without further review. Accepted submissions would give oral presentations at the conference and be listed in the on-site final program but would not appear in the IEEE Xplore Conference Proceedings. I encourage interested JOE authors to refer to the detailed instructions for how to do this in the online editorial found here – <https://doi.org/http://dx.doi.org/10.1109/JOE.2024.3356094>.

Finally, congratulations to the authors of our most recently approved papers. The following papers were published as Early Access papers on IEEE Xplore and will appear in a regular quarterly issue of the Journal soon. You'll find these papers online now:

- Murad Tukan, Eli Biton, and Roe Diamant. An Efficient Drifters Deployment Strategy to Evaluate Water Current Velocity Fields  
<http://dx.doi.org/10.1109/JOE.2024.3369148>
- Kang-Hoon Choi, Jee Woong Choi, Sunhyo Kim, Peter H. Dahl, David R. Dall'Osto, and Hee Chun Song. Experimental Study on Performance Improvement of Underwater Acoustic Communication Using a Single Vector Sensor  
<http://dx.doi.org/10.1109/JOE.2024.3374424>
- Ole J. Lorentzen, Torstein O. Sæbø, Alan J. Hunter, and Roy E. Hansen. Synthetic Aperture Sonar Interferogram Filtering by Intensity Image Segmentation  
<http://dx.doi.org/10.1109/JOE.2024.3374424>

- Tianjiao Li, Bo Wang, Zhihong Deng, and Mengyin Fu. Genetic Algorithm-Based Weighted Comprehensive Image Matching Algorithm for Underwater Gravity Gradient-Aided Navigation  
<http://dx.doi.org/10.1109/JOE.2024.3379484>
- Jesus Guerrero, Ahmed Chemori, Vincent Creuze, and Jorge Torres. Improved Adaptive High-Order Sliding Mode-Based Control for Trajectory Tracking of Autonomous Underwater Vehicles  
<http://dx.doi.org/10.1109/JOE.2024.3381391>
- Mohamed Barbary and Mohamed H. Abd El Azeem. Robust and Flexible Maritime ISAR Tracking Algorithm for Multiple Maneuvering Extended Vessels in Heavy-Tailed Clutter Using Skewed Multiple Model MB-Sub-RMM-TBD Filter  
<http://dx.doi.org/10.1109/JOE.2024.3386227>
- Worakrit Thida, Roberto Li Voti, and Sorasak Danworaphong. Phase Speed Inversion for Shallow Water Bathymetry Mapping  
<http://dx.doi.org/10.1109/JOE.2024.3412227>
- Brian Emery and Anthony Kirincich. Estimating Scattering Patch Area for a Direction Finding HF Radar  
<http://dx.doi.org/10.1109/JOE.2024.3388101>
- Mehedi Hassan, Matthew Bryant, Andre Mazzoleni, Praveen Ramaprabhu, and Kenneth Granlund. Marine Hydrokinetic Farm Optimization for Coaxial Dual-Rotor Turbines  
<http://dx.doi.org/10.1109/JOE.2024.3393538>
- Songzuo Liu, Honglu Yan, Lu Ma, Yanan Liu, and Xue Han. UACC-GAN: A Stochastic Channel Simulator for Underwater Acoustic Communication  
<http://dx.doi.org/10.1109/JOE.2024.3401779>
- Ciaran J. Sanford, Benjamin W. Thomas, and Alan J. Hunter. Fourier-Domain Wavefield Rendering for Rapid Simulation of Synthetic Aperture Sonar Data  
<http://dx.doi.org/10.1109/JOE.2024.3401968>
- Dalong Zhang, Shuai Chang, Guoji Zou, Chengcheng Wan, and Hui Li. A Robust Graph-Based Bathymetric Simultaneous Localization and Mapping Approach for AUVs  
<http://dx.doi.org/10.1109/JOE.2024.3401969>
- Geunhwan Kim and Youngmin Choo. Enhancing Generalization of Active Sonar Classification Using Semisupervised Anomaly Detection With Multisphere for Normal Data  
<http://dx.doi.org/10.1109/JOE.2024.3374424>
- Easton Potokar, Kalliyann Lay, Kalin Norman, Derek Benham, Spencer Ashford, Randy Peirce, Tracianne B. Neilsen, Michael Kaess, and Joshua G. Mangelson. HoloOcean: A Full-Featured Marine Robotics Simulator for Perception and Autonomy  
<http://dx.doi.org/10.1109/JOE.2024.3410290>



- A. Trucco. Predicting Underwater Noise Spectra Dominated by Wind Turbine Contributions  
<http://dx.doi.org/10.1109/JOE.2024.3415753>
- Karl D. von Ellenrieder and Marco Camurri. Relaxed Control Barrier Function Based Control for Closest Approach by Underactuated USVs  
<http://dx.doi.org/10.1109/JOE.2024.3423869>
- Yukang Xue, Xiangzhao Qin, and Y. Rosa Zheng. Cross Evaluation of Waveform Modulation Schemes Using Postexperimental Field Data  
<http://dx.doi.org/10.1109/JOE.2024.3412202>
- Qiang Tu, Kefei Wu, En Cheng, and Fei Yuan. Dual-Feature-Based Bubble Sound Detection Method and Its Application in Passive Acoustical Detection of Underwater Gas Leakage  
<http://dx.doi.org/10.1109/JOE.2024.3412218>
- Yanwu Zhang, Brian Kieft, Brett W. Hobson, Quinn Shemet, Christine M. Preston, Christopher Wahl, Kathleen J. Pitz, Kelly J. Benoit-Bird, James M. Birch, Francisco P. Chavez, and Christopher A. Scholin. Coordinated and Collaborative Sampling by Two Long-Range Autonomous Underwater Vehicles  
<http://dx.doi.org/10.1109/JOE.2024.3408889>
- Hongyue Chen, Zhongrui Zhu, and Desen Yang. Conventional Beamforming Algorithm Based on Polarization Filtering for an Acoustic Vector-Sensor Linear Array Mounted Near a Baffle  
<http://dx.doi.org/10.1109/JOE.2024.3408888>
- Xiang Yu, Hong-De Qin, and Zhong-Ben Zhu. Observability Analysis of a Single-Beacon Underwater Navigation Method with Unknown Effective Sound Velocity  
<http://dx.doi.org/10.1109/JOE.2024.3408891>

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## Introduction of a New Beacon Associate Editor

### ***Takahiro Sano, A New Beacon Associate Editor from July 16, 2024***

*We are pleased to introduce you to a new Beacon Associate Editor, Takahiro Sano. He took over the positions of the Associate Editor and OES Japan Chapter Treasurer from July 16, 2024.*

*Welcome to the editorial board.*

Takahiro Sano received B.E., M.S., and Ph.D. degrees in engineering from Tokyo Institute of Technology in 2008, 2009, and 2012, respectively. During his doctoral studies, he was awarded a prestigious Special Fellow DC1 scholarship by the Japan Society for the Promotion of Science. Upon completing his Ph.D., he joined Fujifilm Corp. in Kanagawa, Japan, in 2012, where he focused on the development of sputtered Nb-doped PZT thin film and its new applications in MEMS sensors and actuators. In 2018, he transitioned to Fujifilm Dimatix Inc. in Santa Clara, California, where he specialized in developing piezoelectric micromachined ultrasound transducers for medical applications. During his time in California, he also became a die-hard fan of the 49ers football team. After five productive years in the United States, he returned to Japan in 2023 to join NEC. In his current role, he is involved in the advancement of underwater technologies, particularly in the development of piezoelectric materials and transducers.



*Takahiro Sano at Antelope Canyon.*

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# Obituary for Jim Barbera

*Edited by Robert Wernli and Harumi Sugimatsu*



It is with sadness that I have to report the passing of one of our greatest members, Jim Barbera, on 5 June 2024, at the age of 87. He was preceded in death by Peggy, his beloved wife of 62 years. He is survived by his four children, as well as multiple grandchildren and great-grandchildren. Jim was a devout Catholic and long-time parishioner at the Shrine of St. Jude Catholic Church in Rockville, MD. Jim was a little league

sports coach, a founder of the Olney boys club, a high school football referee, a crossword puzzle solver, a sports fan and a world traveler. He was dearly loved and will be greatly missed.

The following provides comments from many OES members regarding their memories of Jim.

## Robert Wernli

Jim was highly involved in the organization and running of OES. He spent 12 years on AdCom between 1992 and 2005 followed by being OES president from 2005-2008 and as past president for the next 8 years.

In addition, Jim and I, along with several others, spent decades traveling the world to promote OES and to take our OCEANS conferences and other symposia to different countries. This effort proved to be very successful. Jim also enjoyed working in the OES exhibit booths at OCEANS and OTC conferences, where I also had the pleasure of spending many conference weeks working with him promoting the society.

Another fixture at the OES conferences was Peggy Barbera, Jim's wife, who was always there supporting Jim and the conferences. Unfortunately, Peggy passed in January of 2023. I'm sure they're again together, high above, keeping an eye on the society and their conference friends.

## Harumi Sugimatsu

I first met Jim at the OCEANS around 2000. Whenever I attended OCEANS, Jim and Peggy were always there to welcome us all warmly. It was because of the strong support of Jim and his team that we were able to hold the OCEANS and other international conferences like UT in Japan and Asian countries.

Thanks for everything, Jim and Peggy!

## Jerry Carroll

We all miss Peggy and Jim very much. Two of my very best friends and advisors.

## M. A. Atmanand

That is a sad news. Jim was the main person in all OCEANS conferences as a lead in the booth. He used to motivate young



*Toast at UT07 Tokyo Banquet by President Jim (L to R: Tamaki Ura, Robert Wernli, Jim Barbera).*

students to become IEEE members. I still remember how he motivated my son and his friends during OCEANS at Taipei.

## Stan Chamberlain

Jim was one of the many colleagues in OES who became a good friend. I fully enjoyed his company and his counsel in the many involvements we had together.

## Diane DiMassa

So so sorry to hear this news.

He was such an integral part of OES for so many years and personally helped me navigate AdCom and ExCom when I was getting started. Farewell my friend. I will raise a glass of Barbera wine in your memory and honor. RIP Jim.

## René Garello

Sad news indeed. I have been working very closely with Jim after he was elected President, and for years we traveled to many of the next OCEANS sites, especially in Europe, for meeting the chairs and the local authorities. I have a very fond memory of his sense of humor, and I recall his endless stories of when he was in the Navy. Farewell, Jim.

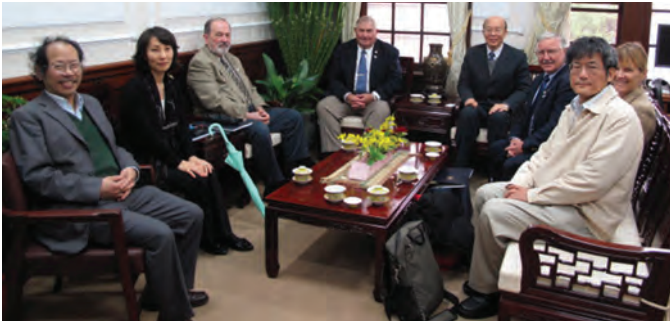
## Louise and Tom Wiener

The OES has lost a treasure both in Jim and in Peggy. Louise and I are deeply saddened. As others have said, Jim was a wise counselor and an effective, energetic participant and leader in our Society. When there was something to be done, Jim was there to do it. I recall many times his sensitive and knowledgeable advice kept me away from blunders and on the straight and narrow path to success. And Peggy was always a bright presence on our social gatherings. We wish them peace in the arms of the Lord. Sadly.

## Jenhwa Guo

I attached a picture taken on the 2010 9th of March at 9:30 in the morning. We visited the chairman's office of the National





Site visit for OCEANS 2014 Taipei at National Taiwan University.

Taiwan University. He was here for the preparation and site visit for the OCEANS 2014.

### Archie Todd Morrison III

Jim was a wonderful colleague and trusted friend. As an OES officer, you could count on him to address any situation, no matter how seemingly dire, calmly and with minimal fuss. In discussion he always saw right to the heart of the matter and usually offered a comment that was simultaneously pithy, entertaining, and enlightening. I'll always remember the night in Aberdeen when Jim, John Watson, Craig McLean, and I held an impromptu single malt tasting in John's hotel room, calmly discussing and solving most of the problems in the world until about 3am. At that point Peggy located us and told Jim, forcefully, but calmly, that it was bedtime. Peggy was Jim's wife and she also passed recently. She was a fixture and helpmate at OCEANS, where she and I had a friendly competition displaying our collections of conference pins. Jim and Peggy were OCEANS colleagues, but more importantly, Jim and Peggy were great friends, to me and to many others, and I will miss them dearly.

### Steve Holt

Jim was an old friend of mine who lived close to where I do in the Washington, DC area. I enjoyed seeing him sometimes for lunch and I can't tell you how informative he was in teaching me about OES procedures. I enjoyed being Secretary to him years ago and my wife (Dorothy) and I really enjoyed attending his 50th wedding anniversary with Peggy nearby. He will be very sadly missed and I thank him for all of his service to the IEEE OES and also the US Navy.

### Yasuyoshi Ishii, the First Treasurer of OES Japan Chapter

I think I first met Mr. Jim Barbera at OCEANS'02 Biloxi. He was a very dependable person with impressive eyes and goatee. At that time, I was a treasurer of OES Japan Chapter, and Mr. Barbera, who was a treasurer of OES, helped me a lot from the submission of Preliminary Budget to the submission of Final Report for OCEANS'04 Kobe TECHNO-OCEAN 2004 (OTO'04), which was to be held in Japan for the first time. He was a great help to us for OTO'04. He is one of the people who contributed to make OTO'04 possible in Japan. The photo is from our visit to Scripps Institution of Oceanography during



From the visit to Scripps Institution of Oceanography during OCEANS'03 San Diego (L to R: Jerry Carroll, Joseph R. Vadus, Rajendar Bahl, Tamaki Ura, Jim & Peggy Barbera).

OCEANS'03 San Diego. I would like to express our sincere condolences to Mr. Jim Barbera.

### Venugopalan Pallayil

Sorry to hear the sad news. I still remember my first time meeting in Singapore during the preparations for OCEANS 2006 along with Stan.



Jim and Stan with the MTS/IEEE OCEANS 2006 Singapore LOC members.

### Malcolm Heron

Vale Jim. A true gentleman and a pillar of OES.

### Christoph Waldmann

I have found Jim to be an absolutely reliable and supportive person. It saddens me to hear of his death.

### John Watson

That's really sad news. A real stalwart of OES.

### Bill Kirkwood

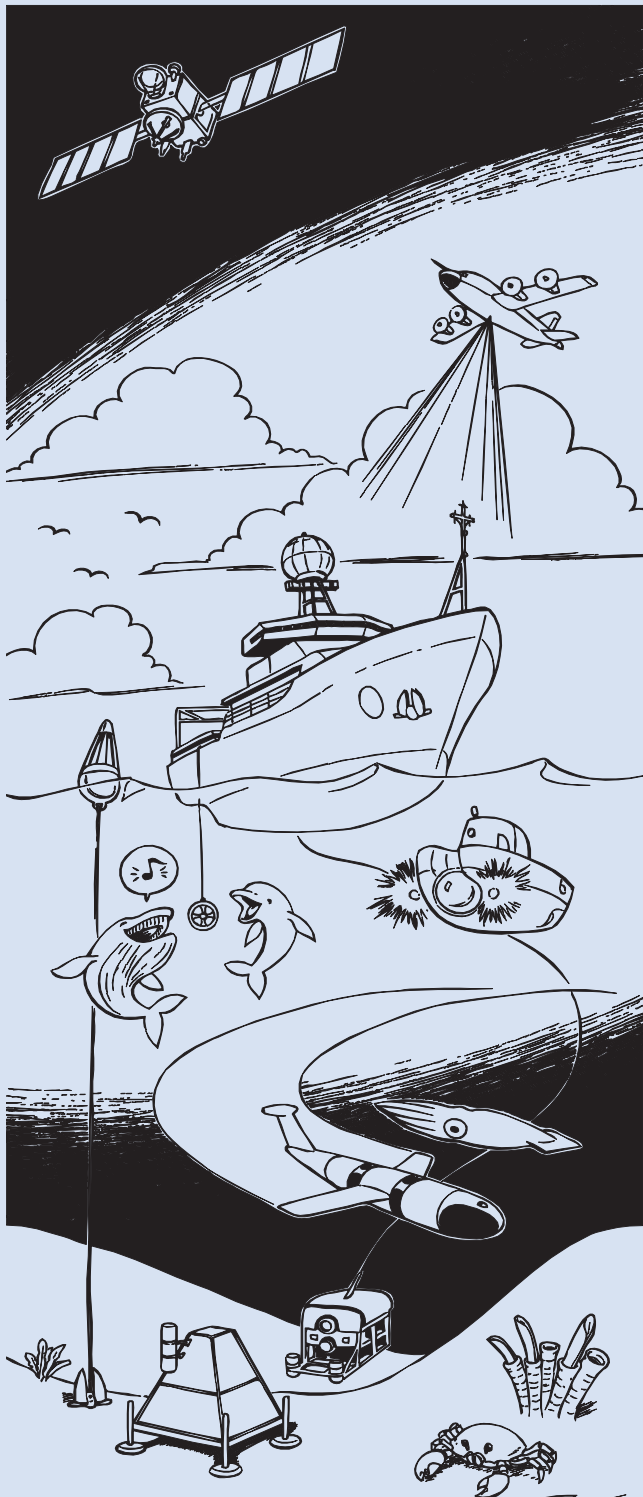
Sorry to hear about this... he was a good guy who did a lot for OES.

### Marinna Martini

This is sad news indeed.



# OES World



All this, and more!

## Tamaki Ura

My sincere condolences to spirit of Jim. In November 2002, Jim traveled to Kobe as Treasurer of OES with President Tom Wiener and MTS leaders, attending the Techno-Ocean Conference and the signing ceremony (see below photos) for the joint conference in 2004 with OCEANS and Techno-Ocean. Thank you, Jim, for your careful instruction to the Japanese Secretariat on how to do the accounting, which made the 2004 conference a success and laid the foundation for the three OCEANS conferences in Kobe in 2008, 2018, and also OCEANS conferences in Asia.



*MTS Executive Director Judith Krauthamer, Jim and Stan Chamberlain at the signing ceremony at Techno-Ocean 2002.*



*Those attending the meeting of the Techno-Ocean 2002 signing for the combined OCEANS'04 and Techno-Ocean 2004 conference ...*



*... followed by a celebration at dinner.*



## **Congratulations to Dana R. Yoerger, 2024 Recipient of the OES Distinguished Technical Achievement Award**



**Dana Yoerger**  
IEEE Fellow

### **Citation:**

**For over 4 decades of development and operation at sea of innovative remotely operated and autonomous systems for deep-sea research.**

### **Brief Bio:**

**Dr. Dana Yoerger is a Senior Scientist at the Woods Hole Oceanographic Institution and a researcher in robotics and autonomous vehicles. Dr. Yoerger has been a key contributor to the remotely-operated vehicle Jason; to the Autonomous Benthic Explorer known as ABE; most recently, to the autonomous underwater vehicle, Sentry; the hybrid remotely operated vehicle, Nereus which reached the bottom of the Mariana Trench in 2009, and most recently Mesobot, a hybrid robot for midwater exploration. Dr. Yoerger has gone to sea on over 90 oceanographic expeditions including the Titanic discovery cruise in 1985, many expeditions researching the Mid-Ocean Ridge, mapping underwater seamounts and volcanoes, surveying ancient and modern shipwrecks, studying the environmental effects of the Deepwater Horizon oil spill. His current research focuses on robots for exploring the midwater regions of the world's ocean. He has a PhD in mechanical engineering from the Massachusetts Institute of Technology and was elected as a Fellow of the IEEE in 2021.**

**Outside of work, he enjoys hiking, skiing, fishing, and kayaking. He has 4 children and 6 grandchildren.**





## Congratulations to Hani Elshahawi, 2024 Recipient of the OES Distinguished Service Award



Hani Elshahawi  
IEEE SM

### Citation:

For continued contributions to the Offshore Technology Conference (OTC) as member (2005-present), Vice-Chair (2009-2012), Chair (2013-2020) of the OES Technical Program Subcommittee, and Vice-Chair (2021), Chair (2022), Past Chair (2023) of the OTC Technical Committee.

### Brief Bio:

Hani Elshahawi has over three decades of experience in the service, consulting, and operating sectors of the energy industry with roles spanning technology, engineering, marketing, business, technology, and management. He is currently managing director of NoviDigiTech which partners with innovators, academics, startups, entrepreneurs, investors, and customers to create impact and drive growth through technology, innovation, and digital transformation. He is an advisor to several startups both on formal and volunteer basis and an active angel investor. Hani holds several patents, has authored over 150 technical publications, and has received multiple awards from the SPE (Society of Petroleum Engineers), SPWLA (Society of Petrophysicists and Well Log Analysts), the IEEE (Institute of Electrical and Electronics Engineers), and the OTC (Offshore Technology Conference). He holds a bachelor's degree in mechanical engineering from the American University in Cairo and a Master's degree in petroleum engineering from the University of Texas at Austin.



# OES/MTS Young Professional Luncheon Event at OCEANS 2024 Singapore

**Roberto Petroccia, Gaultier Real, Karen Renninger**

During the last OCEANS Conference in Singapore (14–18 April 2024), the IEEE Oceanic Engineering Society (OES) and the Marine Technology Society (MTS) joined forces once again to promote professional development of Young Professionals (YPs) and Early Career Ocean Professionals (ECOPs). This is a recurrent activity for both OES and MTS that capitalizes on the large participation to the flagship OCEANS Conference and provides YPs and ECOPs a unique opportunity for career development, professional networking, exposure to facets of oceanic engineering inside and outside of their area of expertise, and more. The main objective for these events has always been to engage with young professionals, inform them about OES and MTS, and share with them important messages, experiences and recommendations on how to build/promote a career in ocean science, engineering and technology. Basically, the main things that everyone would love to hear when deciding or making the first steps in the maritime fields, e.g., key aspects when deciding to pursue a PhD or select the area of research, how to write a CV or get a job in Industry, link individuals with opportunities and companies, etc. Key aspects, such as sustainability of the oceans, diversity, equity and inclusion are also discussed.

The topic selected for the event in Singapore was “Proposal writing and career development: Navigating funding Opportunities.” It was organized as a luncheon event with the objective to provide a safe space for YPs and ECOPs to network with other participants, gain valuable perspectives on navigating funding opportunities and shaping their career paths.

Three panelists from the different areas of ocean science, engineering and technology and with different backgrounds were invited to share their views and key messages with participants.

The panelists were (alphabetical order):

- Francesco Maurelli (Professor at Constructor University, Bremen, Germany), who leads the Marine Systems and Robotics group at Constructor University and has worked for more than a decade in the field of autonomous marine robots.
- John R. Potter (Professor at NTNU, Trondheim, Norway), who has been a sort of “globe trotter” working around the world on several key topics, including, marine mammal and underwater acoustics, underwater communications networking, and distributed acoustic sensing over fiber optic cables.
- Jill Zande, who is the President/Executive Director of MATE Inspiration for Innovation and the Associate Director of the MATE Center. She established the global ROV (remotely operated vehicle) student competition, cultivating and maintaining partnerships with industry, professional societies, academic institutions, and STEM professionals.

The event was moderated by Roberto Petroccia, Research Scientist at the NATO’s Science and Technology Organization (STO) Centre for Maritime Research and Experimentation (CMRE) in La Spezia, Italy. He is also the liaison for the IEEE OES YP Program.

The event started with a presentation about the IEEE OES YP Program, by Filippo Campagnaro (YP BOOST laureate), and the MTS ECOP Program, by Justin Manley (MTS President).

Each panelist then had the opportunity to delve into the world of funding opportunities and proposal writing, sharing his/her insights, practical advice, and personal experiences. A large part of the event was dedicated for questions and answers, giving all the participants the opportunity to engage with panelists and creating an open platform for learning and discussion.

Overall, it was an interesting and well received event that provided a great opportunity for participants to network and build connections to be used in the future steps of their professional life.

The IEEE OES and MTS team will continue to organize these events at future OCEANS Conferences and welcome your suggestions for topics you would like to have covered as well as feedback on past events. We would like to maximize the attendee experience. If you have any suggestion or feedback, please contact Roberto Petroccia ([roberto.petroccia@ieee.org](mailto:roberto.petroccia@ieee.org)) and Joshua Baghdady ([jbaghdady@gmail.com](mailto:jbaghdady@gmail.com)).

## Next Event at OCEANS 2024 Halifax Conference

We are excited to announce an upcoming event at OCEANS 2024 Halifax tailored specifically for YPs and ECOPs. The session, titled “Understanding the Role of Professional Societies in the Context of International Collaboration,” will take place on September 24, 2024, from 12:00 to 13:30 in Room 103 of the

EARLY CAREER | YOUNG PROFESSIONAL LUNCHEON

MTS  
IEEE Oceanic Engineering Society

OCEANS 2024

**PROPOSAL WRITING & CAREER DEVELOPMENT**  
NAVIGATING FUNDING OPPORTUNITIES

Panelists will share their experiences, offer practical advice, and answer your burning questions about proposal writing and career development.

**WHEN:** APR 17 | Time 12:30-2:00 PM  
**WHERE:** OCEANS Singapore | Marina Bay Sands Level 4, Roselle 4711

SAVE YOUR SPOT  
SCAN ME

\*Image generated using AI.

Halifax Convention Centre. This event will bring together a diverse group of early career professionals and leaders from MTS and IEEE OES, the Halifax Local Organizing Committee, and the national node of the UN Decade ECOP Programme for Canada. The discussion will focus on the significant role that professional societies play in fostering and supporting international and interdisciplinary research and development

collaborations, aligning with the goals of the UN Decade of Ocean Science for Sustainable Development.

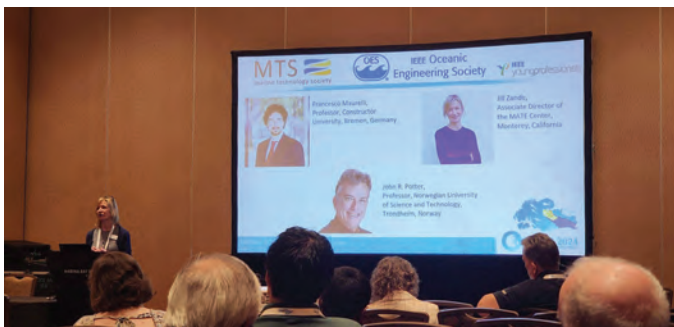
Participants are encouraged to register on the OCEANS Halifax website (<https://halifax24.oceansconference.org>) or by filling out the form at <https://forms.gle/VNJPt7Ex6eLE5U1R7> to help us plan appropriately for the lunch that will be provided during the meeting.



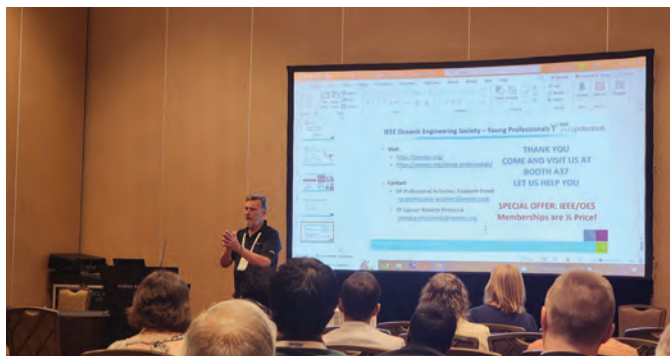
*Filippo Campagnaro, YP BOOST Laureate, presenting the OES YP program at the IEEE/MTS OCEANS Conference in Singapore, April 2024. The session brought together a diverse group of attendees eager to explore and discuss the advancements in marine technology and ocean engineering.*



*Francesco Maurelli presenting at the IEEE/MTS OCEANS Conference in Singapore, April 2024. His talk on "Marie Skłodowska-Curie Actions: Building Your Career in Europe (but not only)" was an inspiring session for young professionals exploring international career opportunities in ocean engineering and marine technology.*



*Jill Zande speaking at the IEEE/MTS OCEANS Conference in Singapore, April 2024. As the Associate Director of the MATE Center, Jill shared her insights on the critical role of professional societies in fostering international collaboration and supporting the next generation of ocean engineers and marine technologists.*



*John R. Potter presenting at the IEEE/MTS OCEANS Conference in Singapore, April 2024. Having worked in different continents, John was very engaging in sharing his experience on how to write successful proposals and how to boost career development.*

## OES WIE PROPEL Laureate in OCEANS Singapore 2024

**Nicole Macas, WIE Propel (2023–2024) and Grace Mena, WIE Propel (2024–2025)**

### An Empowering Experience

*Reported by Nicole Macas*

The OCEANS Singapore conference was a wonderful experience. At last being able to coincide with Brandy and Farheen,

and the other OES WIE PROPEL Laureate, noting their effort and dedication in OES activities.

During the days of the event, I learned about new technology, research, opportunities and trends in the ocean industry. However, the best of all was being able to share and meet other

women in engineering and science, learn about their work and the challenges they have faced.

I was able to connect with women who are passionate about their careers, such as Esther Tan, who advises always taking every opportunity you can, and Amy Gibson, who recommends events like this as a way to find your path and a community; both work for Subnero, managing to find a pleasant place in this company that allows their professional and personal growth. As well as with Tabitha Tinsman and Beverly Williams from zen4blue, a couple of professionals committed to being able to finance studies and training for women in science.

During the WIE Breakfast, interventions were made by Meghan Cronin, NOAA oceanographer; Julie Angus, CEO of Open Ocean Robotics; and Karenne Tun, National Director of Nparks. We accompany the presenters on an exciting journey. From little Meghan who dreamed of being a scientist, to seeing her dreams come true thanks to the support of her daughter and husband. Or the adventurer Julie, becoming the first woman to row across the Atlantic from continent to continent and Karenne, who began part of her career from volunteering, especially inspiring for me.

In this panel, those of us who are not mothers were able to empathize with the journey of women who are and have faced different and inspiring challenges, often with an emotional cost for them and their families, however, they have endured with great strength and they have mastered both responsibilities, being a mother and a scientist.

While we were interviewing Ruth Patterson from Elysium EPL, she was able to tell us about the need for you to have the strength to move to a place that values your skills more and the importance of knowing about finances, even if you work in science, since there are disadvantages that you are not aware they exist until you look back or face new challenges. Regarding these difficulties in her career, she emphasized that the path has not been easy, however, being born and raised in a country like Australia has made certain things easier for her, with a more equitable culture in gender roles she has found herself struggling in her leadership position. She can't imagine what it's like for some women in Latin America.

All my experience at OCEANS, along with what I was able to learn from this international event, helped me feel more confident in my abilities as a leader and climate activist and improve the organization of the event, OCEAN WEEKEND, with a university in a coastal community in Ecuador, which was endorsed by the Oceans Decade.

The mentoring, support and company of other women in these professional careers is crucial, so I am very grateful for having been able to participate, learn and share in Singapore.

## My Experience at OCEANS Singapore 2024

Reported by Grace Mena

Participating in OCEANS 2024 Singapore as the new Women in Engineering (WIE) representative was an incredibly enriching experience. As an Ecuadorian currently living in Chile, navigating my way in the engineering field has been both challenging and rewarding. Being selected as the WIE 2024–2025

and attending this conference was a significant milestone in my career.

From the first day, I had the opportunity to interact with some of the brightest and most distinguished professionals in oceanic engineering. Meeting colleagues doing extraordinary work and being part of such a wonderful and supportive community was both inspiring and motivating. This experience not only broadened my horizons but also helped solidify my ideas and objectives in my career.

At the symposium, we collaborated with CNET to introduce students to companies, facilitating access to available internships and job opportunities. This effort was incredibly rewarding, seeing how excited the students were to connect with potential employers and mentors. Additionally, we attended the WIE panel, where we had the honor of meeting amazing women who shared their journeys, the obstacles they have overcome, and how they have faced challenges to get to where they are now. One particularly memorable moment was during the open discussion when a young mom talked about having to leave her child behind while she continued her education abroad. The room got a little hot as emotions ran high. Quoting Meghan Cronin, one of the panelists: “We need MORE On-Site Day Care! It's a win-win-win for everyone involved—Families, Kids, Institutions, Communities. 20+ years later, my daughter is still close to these friends from the infant room, and I know much more about the science and work done by their parents.” I'm sure that this topic deserves a bigger discussion in the next panel.

The stories and advice shared by these women were captured in interviews that we are publishing on OES social media. These conversations not only provided us with valuable lessons but also inspired us to continue working hard and contribute to the advancement of our discipline.

The conference allowed me to better understand the importance of organizations like the Oceanic Engineering Society and their crucial role in the growth of research and development. Active participation in this event has increased my motivation and desire to contribute more significantly to OES activities in the future.

## Photo Gallery



Opening of the conference in the company of Brandy Armstrong, Farheen Fauziya, Nicole Macas, Laureate Grace Mena and the YP Karen Renninger (L to R).





*Visit to the National Marine Laboratory of St John's Island.*



*Photo from the heights of Singapore.*



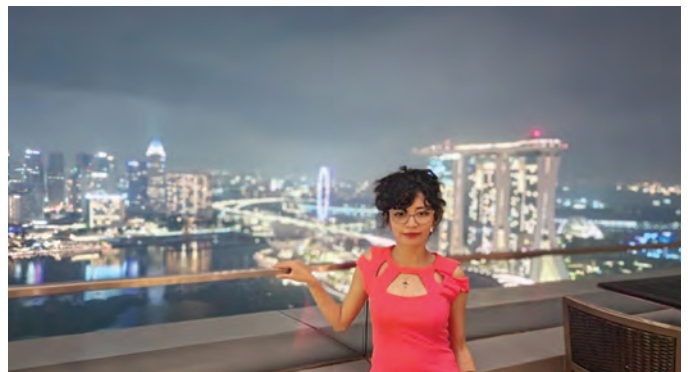
*Nicole at Conference Gala Dinner Night.*



*Visit to the National Marine Laboratory of St John's Island.*



*In the company of Venugopalan Pallayil, General Chair from the National University of Singapore.*



*Nicole with the view of the Marina Bay Sands.*



*In the company of Tabitha and Beverly from zen4blue.*



*Nicole interviewing Ruth Patterson.*



# IEEE Oceanic Engineering Society

## OES Young Professionals Boost Program

Are you an IEEE OES Young Professional who wants to help develop and promote Young Professional activities for the OES? If so, you should apply for one of the two available 2025-2026 OES Young Professionals Laureate positions.



2023 - 2024



2024 - 2025



2025 - 2026



**ARE YOU THE NEXT OES  
YOUNG PROFESSIONALS  
LAUREATE?**

For information on the IEEE OES YP Program and details on how to apply for an OES 2025-2026 YP Laureate position go to:  
<https://ieeoes.org/young-professionals/>

Application deadline: October 31, 2024, 11:59 pm UTC





IEEE Oceanic  
Engineering Society



# OES-WIE PROPEL

## CALL FOR APPLICATION

ARE YOU PASSIONATE ABOUT ADVOCATING FOR WOMEN IN  
ENGINEERING, AND EAGER TO CREATE A POSITIVE IMPACT?

**Don't miss the opportunity to join**

### WHO CAN JOIN

- If you are an OES member and supporter of women with a passion for women in engineering, this program is for you.
- Men who support diversity and inclusivity in engineering are also encouraged to apply.



LAST DATE TO APPLY  
OCTOBER 31 2024



### Fill the form or Scan the code

<https://docs.google.com/forms/d/e/1FAIpQLSdX8Zg9cYdR0fhHjZMoGOYsFfycjrJ6t8-OjN6T3HbckEEwRQ/viewform>

**Contact** 

[wie-liaison@ieeoes.org](mailto:wie-liaison@ieeoes.org)  
<https://ieeoes.org/contact-us/>

**Visit our website**

<https://ieeoes.org/member-communities/women-in-engineering/>



# Chapter News

Submit Chapter news to Beacon Co-Editors and OES Chapter Coordinator

## Japan Chapter

### OES Japan Annual Meeting

Reported by Harumi Sugimatsu

The annual meeting of OES-Japan was held on 16 July 2024. At this meeting, it was decided that the treasurer would be replaced. Dr. Hisashi Shiba of NEC resigned his position as treasurer and was replaced by Dr. Takahiro Sano of the company. Hisashi had been the OES-Japan treasurer for many years, and had been responsible for many international conferences organized by OES-Japan, such as UT13 to UT23, AUV2016, and OTO 2018. Hisashi has also held the position of BEACON Associate Editor since 2015. Takahiro will also take over this position (his introduction article is in this issue).

Hisashi, thank you for your longstanding contribution to OES. Takahiro, welcome!

## Australia Chapter

### Working to Boost Uptake in Gender Diversity and Engineering Careers

Reported by Melanie Olsen, Chapter Chair

IEEE WIE Day celebrations commenced on the 23rd of June and IEEE OES members and the IEEE Northern Australia Section supported the STEM Changemakers initiative to encourage more high school girls to take up engineering careers. The last reporting period has had a focus on improving gender diversity for our future engineering workforce.

IEEE WIE Day celebrations included a marine technology focus talk on reef monitoring technologies at an IEEE Women in Engineering affinity group networking breakfast held in

Townsville at James Cook University's new Engineering and Innovation Place facility.

Over a six-week period, STEM Changemakers conducted a pilot program that involved small groups of high-school girls working together on STEM projects. This program focused on encouraging high-school girls in regional North Queensland to take up engineering careers, by assisting them to design solutions to real problems provided by sponsoring industries. At the end of the six weeks, the groups presented their completed projects at a celebratory event aligning with International Women in Engineering Day. It was outstanding to see so many young ladies presenting their innovative solutions to Australia's Chief Scientist and over 200 people from industry, academia, and of course IEEE OES.



IEEE OES Australian Chapter representatives Melanie Olsen (Left) and Mal Heron (Right) with Australia's Chief Scientist Cathy Foley AO PSM.



IEEE Women in Engineering Day Networking Event (OES Australian Council Chapter members both organizing and participating in this event).



- STEM Changemakers
- Friends
- Family Supporters
- Teachers
- Industry
- Community
- Special Guests
- Volunteers

## Celebration Event 200 Attendees



STEM Changemakers Celebration Event.

## UKRI Chapter

OES UKRI Chapter holds the successful Joint Subsea Innovation Technologies Workshop on 7 June, with young professionals chapter in Aberdeen, UK. Full report will be in the December issue.

## Distinguished Lecturer Experiences

### **Peng Ren, OES Distinguished Lecturer from 2024–2026, China University of Petroleum (East China)**

I was honored to be appointed as a Distinguished Lecturer for the 2024–2026 term. Upon receiving this appointment, I felt a profound sense of responsibility and promptly began planning how to fulfill this role effectively.

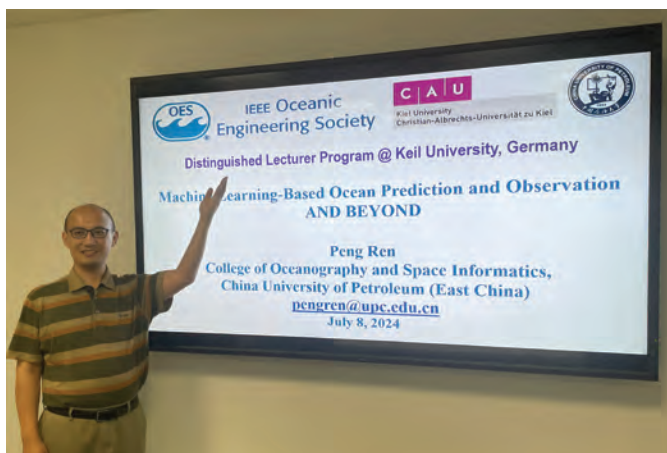
After a discussion with the VP of Technical Activities at the OCEANS 2024 conference in Singapore, I developed a strategy to deliver a series of lectures across various regions. This plan materialized into a series of three lectures in three different countries, focusing on machine learning methods for ocean observation and prediction. I showcased some of our latest research, including mutual guide, hashing for localization, and meta captioning. These topics not only illustrate general machine learning techniques but also their potential applications in oceanic engineering.

The lecture series began at Kiel University in Germany on July 8, 2024. The following day, I spoke at the University of Antwerp in Belgium. The audiences at both institutions, primarily computer science and physics professionals, had varying research interests that are potentially related to oceanic engineering. These lectures helped strengthen connections between the computer science, physics, and oceanic engineering communities. On July 12, 2024, I delivered a talk to the OES Shanghai Chapter at Shanghai Jiao Tong University. This lecture, as part of OES activities, greatly enhanced communication among OES members.

To date, these three lectures have addressed a range of topics, including ocean prediction, underwater observation, and machine learning. They have attracted audiences in China, Germany, and Belgium through in-person talks, engaging various research communities, including OES members and broader scientific and engineering audiences.

Encouraged by the positive feedback from previous lectures, I have been collaborating with OES colleagues to plan future lectures in various formats to reach a broader audience. After careful discussion, we have scheduled a webinar for the OES UK and Ireland Chapter, which will be remotely hosted by Robert Gordon University on August 22, 2024. Additionally, future lectures in various formats—webinars, in-person talks, or hybrid sessions—at the OES Newfoundland and Labrador Chapter, hosted by Memorial University in Canada, and the newly established OES Shandong Chapter in China are anticipated.

I believe the Distinguished Lecturer Program has provided a valuable platform for extensive and meaningful academic exchanges.



*Lecture in Kiel University, Germany.*



*Lecture in University of Antwerp, Belgium.*



*Lecture at the OES Shanghai Chapter, hosted by Shanghai Jiao Tong University, China.*



# Panel Session on “Ocean Observing Platforms and Technologies for Ocean Decade: Prospects and Perspectives” at OCEANS 2024 Singapore

**Filippo Campagnaro (OES Young Professional 2023–2024) and Hari Vishnu (Acoustic Research Laboratory, National University of Singapore)**

On Wednesday, 17 April, 2023, during the OCEANS Conference in Singapore, a panel session related to Ocean Decade observatories took place, titled “Ocean Observing Platforms and Technologies for Ocean Decade: Prospects and Perspectives.” As many of our readers already know, the vision of the Ocean Decade is “the science we need for the ocean we want” and it seeks to stimulate ocean science and knowledge generation to reverse the decline of the state of the ocean system. The 3Ms: Measure, Monitor and Model the ocean data are fundamental to understand the science of our oceans and ocean management. However, the vastness, harsh environment, and accessibility issues to remote areas makes it challenging for observing the oceans widely. Alternatively, the availability of limited platforms and technologies restricts our ability to collect large enough data through sustained and long-term monitoring. Low-cost autonomous platforms and persistent measurement technologies are now shaping the future of the ocean observing systems.

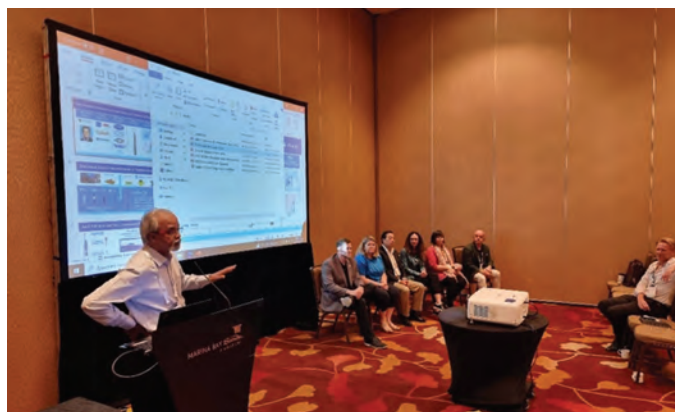
- 5) Allan Adams, Physicist and PI of the Future Ocean Lab, MIT,
- 6) Kendra McDonald, Chief Executive Officer Canada’s Ocean Supercluster, and
- 7) Dr. Jani Tanzil, Director of the St. Johns Island National Marine laboratory.

The panelists addressed how these emerging ocean observing approaches can contribute on the surface, in water and on the seabed measurements and how it can serve different industry sectors.

Justin mentioned that, when speaking of the “Blue Economy” and “Blue Energy,” everyone thinks about turbines. But the application is not that straightforward as most people think, as you need 2000-3000 windmill turbines to produce enough energy for a city, hence the footprint of such deployment may be very high and so the deployment cost for making energy.

Changing topic, he highlighted another aspect - that smart buoys and mooring systems are collecting precious data, but such deployments are not scalable as they cost millions of US Dollars (USD) and are hard to be deployed. Simpler systems, like Argos, cost a few tens of thousands of USD and are well known for their scalability. Other smaller buoys exist now in the market (with a price of 5k USD) and their deployment may scale even better, indicating these types of systems as promising solutions to help studying the oceans.

Julie Angus addressed another promising technology that can push the study of ocean waters forward, i.e., the use of relatively low-cost Autonomous Surface Vessels (ASVs), with a price of about 100 thousand USD each, equipped with sensors for collecting maritime data. The modular structure of such



*Venugopalan Pallayil, the moderator, introducing the panelists.*

This panel addressed and showcased some of the technologies and platforms that have either been tested and deployed or being developed to increase sustained ocean observing capacity globally. More than 30 people attended the panel that was organised and moderated by Venugopalan Pallayil. Venugopalan, after a quick but inspiring introductory speech, introduced the speakers of the panel. Their names and affiliations are listed below:

- 1) Justin Manley, President of the Marine Technology Society,
- 2) Yi Chao, Founder & CEO of Seatrec,
- 3) Julie Angus, CEO & Co-Founder of Open Ocean robotics,
- 4) Carlos Barrera Rodriguez, VIMAS Head, Oceanic Platform of the Canary Islands – PLOCAN,



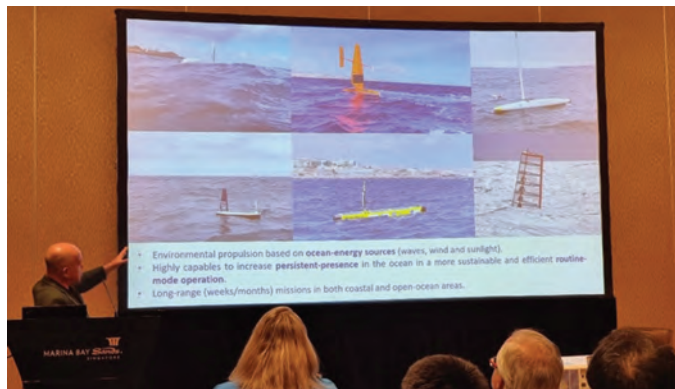
*Justin Manley giving his talk at the panel.*



vessels allows customization sensor payloads and configure the ASVs for any user needs. The data, including the vessel's mission, can be retrieved in real-time. These solar powered ASVs are a drive towards sustainable operation.

Yi Chao presented how research activities performed by academia can have a significant innovation impact and result in the creation of startups and commercial products. He presented Seatrec's InfiniTE® float as a case study. The float measures several water properties including conductivity, temperature and depth along the water column for long periods. The energy harvesting feature of this float provides sustainable operation in the Subsea. He opined that it could be an alternative to Argo floats, but with less impact on the ocean floor as the new system, unlike Argo floats, does not leave anything on the seabed. He also mentioned that these floats can be equipped with additional sensors such as an echosounder for bathymetry mapping and hydrophones for passive acoustic monitoring.

Kendra then presented the Canada's National Ocean Cluster, a big action and accelerator to fund made-in-Canada solutions for Ocean Energy, sustainable seafood, future transport and ocean climate solutions. She highlighted that national and international funding actions are essential to push the study on the ocean a step forward, by supporting the development of new technology that covers several aspects of ocean science, hence using a holistic approach. This includes, among the others, genomics, fish tracking, satellite data, autonomous vessels, data analysis with AI for various accurate predictions and data retrieval through underwater acoustic communications.



*Carlos Barrera spoke on persistent and long-range monitoring in the Ocean including using Ocean-energy driven platforms.*

Speaking on the subject of data accessibility, Carlos presented how European level data retrieved by floats, ferries, mooring, gliders, and research vessels is well-organized in several frameworks to provide high quality measurements in standardized databases. This is missing for Unmanned Surface Vessels (USVs), although many USVs already transit from academia to market. They are very capable energy wise due to solar panels and ability to retrieve energy from waves. Many sensors can be installed, and technology is mature, but there is a lack at the network level (technology, mission and operation, etc.). Therefore, at the European level, there is the ongoing European Ocean Observing System (EOOS) project where this problem is in the process of being addressed and more

actions are in process with U.S. and Global Ocean Observing System (GOOS).

Finally, Jani presented the Singapore St. Johns Island National Marine laboratory and its facilities, including a research vessel and various resources and infrastructure for experimentation. As part of her ongoing Marine environmental sensing network (MESN) projects, an R&D buoy was developed in a modular way, where one can add and remove sensor modules depending on the observation needs of researchers. She mentioned that for a busy port like Singapore autonomous sensing platforms, such as USVs and ASVs, may not be the best due to limited space and very shallow waters. A research community-based database is made available online to everyone, to help research activities and make the students aware of the environment. There are big challenges on fronts such as "unwanted biodiversity," or biofouling, that is still an unresolved issue. Jani said she is looking for help on this front if anyone has the solution.

After these inspiring speeches, a Q&A session started, where audiences could interact with the panelists.

In reaction to a question related to whether the world is reacting well enough to address the climate change problem, Justin and Julie agreed that the Blue Economy is going to have to scale a lot in response to this, and we need this for the decarbonization of shipping activities. According to Kendra, Julie and Jani, it is essential to make the general public (and not just scientists or technologists) aware of the impact of climate change, and to show them the easy-to-understand and unequivocal data. The lack of awareness outside of our community of scientists, engineers, educators and technologists, slows down the process, as the whole population, including those outside this community, are the ones driving actions, and convincing politicians with their vote. Following the same theme, Carlos added in another aspect that the technology sooner or later will arrive, but the main problem is regulation to enable it to be applied.

The second question pointed out that oceanography research and monitoring faces problems with vandalisms that cause mooring systems to go missing or out of service sooner than expected. Moreover, all activities related to data retrieval for ocean studies are very expensive and many countries cannot afford them. Carlos answered that in case of vandalism, there is not a lot that can be done, and that the perfect ocean monitoring system does not exist, but it comes from the creation of a system-of-systems where equipment already in place is integrated with new devices, creating a holistic platform. Julie agreed that vandalism is always a risk, but technology can help as, in the case of a USV, you can send another USV if the first gets vandalized without the need of going in with a ship. Moreover, using lower cost assets have less impact if vandalized, and it is more important that the data is retrieved even if the unit is lost, which can now be done thanks to wireless connectivity. Yi stated that it is difficult to make a mooring system vandalism-proof, and redundancy is an option. The defense community is coming out with methodology to reduce the footprint and we will see in the near future if this is applicable. Kendra also agreed that redundancy to have data in real-time

through wireless communications is essential so that the data is not lost if the assets get vandalized. It is also important to provide a way to locate the sensor and get it back if it is lost. Justin pointed out that for vandalism, making the sensors “invisible” can help—for example, have them below the water surface like Argo floats.

A comment from the audience highlighted that adding sensors to monitor the ocean is also increasing the ocean pollution. While Justin on the one hand agrees that if sensors are lost they may become a source of pollution, the small pollution they are creating is a small price to pay compared to the importance of the data they are acquiring to help decarbonize the oceans. In fact, this pollution is definitely negligible compared to other human actions.

The next question was related to the use of the data acquired from these observatories, and what steps are needed to facilitate actions starting from data products.

In response, Justin opined that ocean data itself is becoming a business, and without this happening it will be hard to have a strong action. Hence, he advocates for ocean data to be commercialized. Kendra highlighted that there are many actions under the umbrella of the Ocean Decade, and a lot is going on with Artificial Intelligence to make predictions from data. She went on to mention that it is time now to investigate how this information is valuable for aquaculture, defense or other activities. Yi agreed that industry started making sensors and databases without knowing what the customers were doing with the data, and fortunately the new trend is understanding the final use of this data, hence making customization to the final user.

Julie spoke on the fact that lots of intelligence onboard the sensors can allow to classify vessels, do passive acoustics and many other operations. Then, on shore data fusion can be performed with satellite data to better understand what is happening in a certain area. Jani thought that the main problem in terms of sustainability of the platform, is to have the money for using and maintain such systems in the long term, and to figure out how the data can be useful for policy makers. Carlos highlighted that it is important to understand the role of the people and the institutions in the chain of data management and exportation, as the data itself is only the starting point and the roles on the added value chain must be clarified.

To conclude the panel, the final question addressed to the panelists was on increasing people awareness on ocean topics, and how to prevent possible problems with misinformation and people misunderstanding on these topics. Carlos highlighted the importance of a multidisciplinary approach with new technology and the importance to cooperate with other fields involved in the same project to have a very efficient approach. Jani states that it is essential that the scientific community never sows climate change skepticism. The problem is how do we convey this information to general people, student sharing our knowledge to have a strong impact? This is an important point that needs to be discussed. Julie also agreed that communication to people is very important, and so is working with people and making them feel that new technologies, such as robots, are not about stealing their jobs.

Yi said that, in fact, when mapping the ocean, people ask why the public money is spent to perform this task when there are many other problems directly related to people life. Communication with people is important to make them understand the importance of this activity. Kendra stated that it is a big challenge having the world understanding research as the way the academia communicate is different than how the public communicate. So, we need to put in an effort to simplify our communication and make it more accessible to general public. Finally, Justin mentioned that the problem is that communities make decisions based on emotions and not on data provided by scientists, and for this reason we need to make this information more accessible to avoid this to happen.

Overall, the panel provided many diverse and excellent insights into this important topic of ocean observation in a sustainable and low-cost manner, which is a crucial aspect of the ongoing UN Ocean Decade.



*The Q&A session at the panel was highly engaging.*



# The 2024 Tau Autonomy Centre Challenge

**Prof. John R. Potter, NTNU, Fellow IEEE**

Chances are, you've not heard of the Tau Autonomy Centre Challenge (TAC Challenge), or even of Tau, a small region in the southwest of Norway, just NE of the heart of the Norwegian offshore oil and gas operations centre of Stavanger, where there is an impressive ecosystem of marine technology developers and operators.



*For those of us yet unfamiliar with the geography of Norway in the context of Europe, showing also Stavanger and Tau.*

Norwegians are a strong, independent people who, over centuries (some might say millennia) have learnt how to operate efficiently and effectively in the harsh environments of the North and Norwegian Seas, and who have developed a broad and in-depth offshore operations capability in the exploration and development of their offshore hydrocarbon industry over the last 50 years. There is much to be learnt from them and perhaps there is also something to be gained in them engaging more with the international ocean engineering scene via OES. Thus, I felt both excited and privileged to be invited as an observer and guest judge for



*A vehicle being deployed into the frigid fjord waters at the Tau Autonomy Centre.*

the TAC Challenge, a Norwegian ROV/AUV competition for students, this last June.

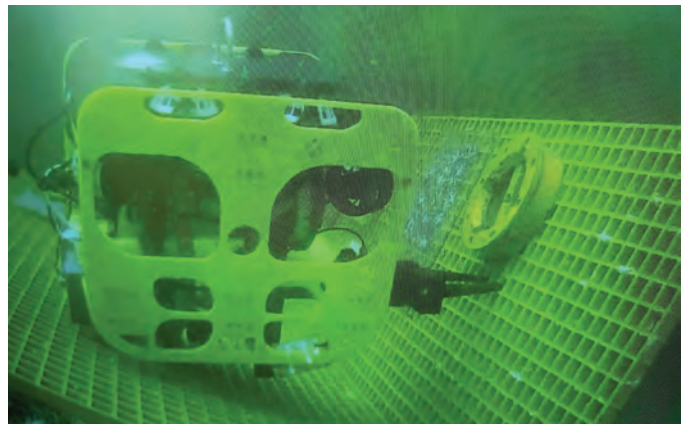
The competition is open to student teams from all over the world to bring their vehicles to compete in three practical tasks, two of which are in the natural open waters of the Tau Autonomy Centre facilities, and one in a freshwater pool. They also have to submit a written report of their technical approach and present their work to judges, both of which elements count towards their final score.



*Inside the team preparation tent, showing the overall technical winners, VORTEX and Casmarine teams at work.*

The practical challenges are representative of real-life tasks. The pool task requires the vehicle to move towards, and land on, a platform on the pool bottom. Points are awarded for accuracy and the ability to connect wirelessly with an inductive puck, with bonus points for autonomous capabilities rather than piloted.

The at-sea tasks are particularly interesting, as they offer a realistic environment with turbidity, currents, waves and the hazards of stirring up sediment, etc. One task requires the



*A vehicle working on the undersea platform task, attempting to turn a valve.*

vehicle to locate a pipeline and to follow it, reading printed codes posted along its length, and identifying which end is the starting point, by recognising an acoustic pinger.

The other at-sea task mimics operating a seabed control station, with valves to turn and code plaques to be located and read from many different angles and surfaces on the platform, some obscured by gratings or other obstructions. Again, bonus points are awarded for all capabilities that can be demonstrated to be autonomous. An interesting feature is that the launch and recovery of the vehicle, by chain hoist over the quay side, and the time spent orienting the vehicle and having it find the underwater task area is included in the teams' operational trial window of 30 minutes.



*A social event to bond across cultures and create that extra 'WoW!' factor; In Norway this just has to be a hike, in this case to the Preikestolen rock.*

This year 12 teams, consisting of 150 students, participated from India, Norway, Poland and Turkey. This compares with 5 teams and 60 students the previous year. The teams came from both University and High Schools. They must design, develop and deploy their own vehicle. As might be expected, there is a wide range of technical competence, experience, sponsorship funding and complexity across the different teams. One thing all the teams had in common, though, was a fantastic enthusiasm and positive spirit, helping each other out when they could, innovating and problem-solving on the fly with remarkable agility. It helps the sense of communal team spirit that all the teams are housed in a local hostel nearby, where they share meals and recreational spaces.

This kind of competition cannot survive without its sponsors, of course. In this, the TAC organisers are blessed with a consortium of offshore technology manufacturers and operators, many of whom contribute to maintaining the Tau Autono-

my Centre where the competition is held and who provide access to these wonderful facilities for the competition. It is the realistic nature of the testing environment which, in my mind, sets the TAC apart from similar competitions elsewhere.

But organising such an event takes more than sponsorship. It needs a 'torch-bearer' to invest their time and enthusiasm into the project. In the case of TAC, the key person is Truls Munch-Ellingsen, an NTNU graduate and now CTO at Stinger Technology AS, who was a core sponsor of TAC. Stinger were joined by Equinor, Total Energies, Saab Technology, Subsea USB, NOSEFO, Tekna, BlueRobotics as co-sponsors of the event. Not too shabby a list in the ocean engineering world! Local support was provided by Strand and Stavanger Kommune.

Many of the Norwegian marine technology companies belong to a distinctly Norwegian association, the Forening for Fjernstyrt Undervannsteknologi (FFU) that gives them a national platform. The FFU is a major player and supporter of TAC, but perhaps there is value in exploring whether OES could join and contribute, providing a more international network and at the same time opening up opportunities to grow OES membership.

The 2024 competition lasted for 5 days in total, with the first two days devoted to teams' build up and integration of the inductive pucks into their systems. This was followed by 2 days' of competition on the three practical tasks and technical presentation. The final day was organised around social activities, including a fantastic hike to Preikestolen rock, overlooking Lysefjord several hundred metres below.



*Gathering of the teams for the awards ceremony.*

In addition to the competition, a conference was held with leading AUV developers (Oceanering, Eelume, Saab, Stinger) and end-user (Equinor, Total Energies) in a synergistic exercise that brought more industry folk to the scene to interact and experience the events. The strong Indian contingent of teams attracted the Indian ambassador to Norway to attend, together with several other political figures.

At the final prize awards ceremony, there were of course technical winners (Vortex from NTNU came 1st, Dreadnought Robotics 2nd and Sub-Horizon 3rd) but there were also special awards to recognise young professionalism (CAL ROV), tenacity (SRM AUV) and innovation (Sub-Horizon). In the final analysis, there were no 'losers,' everyone learnt and grew through the experience and the group photograph shows, to me, one large communal team of winners.



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# OES Conference Calendar

Contact **BEACON Editors, OES VPWS and VPTA**

## OCEANS

### OCEANS 2024 Halifax

September 23–26, 2024

Halifax, Canada

<https://halifax24.oceansconference.org>

### OCEANS 2025 Brest

June 16–19, 2025

Brest, France

<https://brest25.oceansconference.org>

### IEEE-OES Summer School 2025

June 20–21, 2025

Brest, France

\* More info will soon be updated.

## OTC

### OTC 2025

May 5–8, 2025

Houston, USA

<https://2025.otcnet.org>

## OES Sponsored (financial or technical)

### UComms

September 3–6, 2024

Sestri Levante, Italy

<https://ucomms.net/index.php>

### AUV2024

September 18–20, 2024

Boston, USA

<https://auv2024.sites.northeastern.edu>

### MIW 2024

October 7–10, 2024

Monterey, USA

<https://miw2024.org>

### Metro Sea 2024

October 14–16, 2024

Portorose, Slovenia

<https://metrosea.org>

### 2024 USYS

October 18–20, 2024

Xi'an, China

<https://usys2024.com>

### OEDAI-2024

November 17–20, 2024

Chennai, India

<https://ge.iitm.ac.in/oedai-2024>

### OES Patronaged

#### Automatica.it 2024

September 11–13, 2024

Bolzano, BZ Italy

<https://automatica2024.unibz.it>

### Western Indian Ocean (WIO) Futures 2024

September 16–17, 2024

Port Louis, Mauritius

### BTS 2024

September 29–October 6, 2024

<https://bts.fer.hr>

### TechDefense 2024

November 11–13, 2024

Naples, Italy

<https://www.techdefense.org>

### IHTC 2024

November 27–30, 2024

Bari, Italy

<https://2024.ieee-ihtc.org>

### Workshop: Advancing Marine Mammal Research through Machine Learning

#### @ SMM2024

November 10, 2024

Perth, Australia

<https://www.smmconference.org>

## Non-OES but OES Members are Involved in

Please contact us if you have any information about non-OES events that OES members are involved in.

# China Ocean Acoustics (COA) 2024 H2O Competition 2024

*Suleman Mazhar, TPC Co-Chair, COA 2024 and Qi Bin, Harbin Engineering University*



Figure 1. Opening Ceremony COA 2024, Qihang Activity Centre Main Hall, Harbin Engineering University, China.



The third IEEE/OES China Ocean Acoustics Conference 2024 was held from 29-31 May, 2024, and was the first in-person meeting after three years of COA 2021 (which was organized as a hybrid event due to post-COVID situation). The conference was organized and hosted by the college of Underwater Acoustics Engineering, Harbin Engineering University, China, technically co-sponsored by IEEE Ocean Engineering Society and technically and financially co-sponsored by IEEE Harbin Section. Conference program featured 6 key-note talks, over 20 invited lectures, industry stalls, and around 200 technical talks and poster presentations. More than 300 Chinese and foreign scholars from over 100 acoustic research institutes in the USA, UK, Russia, South Korea, Singapore, Taiwan, Pakistan, Japan and India joined the meeting to discuss cutting edge international research related to different fields of ocean acoustics.

On 30 May, professor Qiao Gang (Dean, College of Underwater Acoustics, HEU) opened the conference with a welcoming note to all the participants of the COA 2024. Academician Yang Desen (conference co-chair COA), Professor Yu Zhiwen Jingwei (VP Harbin Engineering University), and Professor Suleman Mazhar (technical program co-chair COA) delivered the welcoming speeches in the opening ceremony. Professor Yang Desen welcomed the arrival of new and old friends and expressed his sincere wishes for all the participants. He pointed out that underwater acoustics is a classical but youthful discipline as evident by the participation of experts from all over the world. He expressed his hope that participants would find new

inspiration and innovative ideas for their research through this academic exchange and will make new friends and collaborations through this meeting. The author welcomed the participants on behalf of IEEE-OES and expressed his optimism in the collective wisdom of scientific community, for the good of humanity and for finding innovative solutions for world problems in the context of emerging AI technologies.

## Keynotes and Invited Talks

There were six keynote presentations and over 20 special invited talks by distinguished speakers from mainland, India, Japan, Pakistan, Russia, Singapore, Taiwan, UK and USA. Two of these invited talks were delivered by Professor Chi-Fang Chen (National Taiwan University, Taiwan) and Professor Milica Stojanovic (North Eastern University, USA). Professor Chi-Fang talked about passive acoustic monitoring of North



Figure 2. Professor Qiao Gang, Dean, College of Underwater Acoustic Engineering (L) and Conference chair, Academician Professor Yang Desen (R) welcoming the audience.





Figure 3. VP HEU Professor Yu Zhiwen (L) and Technical Co-Chair Professor Mazhar (R) briefing the participants about the conference venue and the technical program and activities.

Atlantic Right Whales (NARWs) in the Gulf of St. Lawrence and the soundscape studies in that area. Professor Milica's talk focused on feedback-based transmit beamforming, explaining its fundamental principles and outlining solutions suitable for acoustic channels with delayed feedback. She discussed multi-carrier signal processing algorithms for both uplink and downlink transmission, with coherent and differentially coherent signal detection based on an in-air acoustic communications test-bed. Dr. Venugopalan Pallayil (Principal Research Scientist, ARL National University of Singapore) talked about Distributed Acoustic Sensing (DAS) and explained how undersea fiber optic cables hold the future for marine sensing and gave some examples of recent projects, exploiting governmental and commercial synergies, in the region. In another invited talk, Professor Philippe Blondel (University of Bath, UK) presented some interesting insights from his research work about range of underwater acoustic applications in marine exploration, soundscape mapping, renewable energy devices and passive acoustic monitoring of Arctic environments. His talk provided an interesting futuristic view of Big Marine Data, automated near-real-time data collection and processing and cloud-based virtual observatories. Professor Kazuo Ishii (Kyutech, Japan) and Professor Rizal Arshad (UTM, Malaysia) delivered invited talks on themes related to underwater robotics.

## Posters & Awards Ceremony

This year marked the second episode of H2O Technology Innovation competition sponsored by Harbin Engineering University. Eleven projects were shortlisted for site-demos and poster presentation. First prize was awarded to “An integrated system for underwater acoustic communication and localization based on vector arrays” from Harbin Engineering University. Second position was shared by two students from Pakistan, namely, Mansoor Jan for poster titled “Deep learning based joint underwater acoustic OFDM channel estimation and peak to average power ratio reduction” and Shahabuddin Shaikh for his field work on “Acoustic Properties of the Novel Marine Sediment Samples from the Arabian Sea.” Third prize was jointly shared by Bashar Oderah (Syria) and team led by Hao Li (China) for their posters titled “Air-Water Cross-Medium Communication

Method Based on Acoustically-Induced Small-Scale Wave Detection on the Water Surface” and “Marine Noise Suppression of PPTC Propeller using PressurePores Technology” respectively.

On 31 May, all participants joined the conference dinner and the award ceremony at the university hotel. During the award ceremony, cash prizes and certificates were distributed for the best session papers, the H2O Technology Innovation Competition, session chairs and conference volunteers.

## Industry Exhibition, IEEE-OES Booth & Poster Session

Industry booths were arranged in the exhibition hall where latest underwater acoustic equipment, underwater vehicles and sonar systems were displayed. A poster session was also arranged in the same hall along with a special IEEE-OES booth disseminating the information about IEEE-OES membership and technical activities for students, young professionals and the experienced researchers.

Organizing COA 2024 was a challenging yet a rewarding task as it required a lot of effort to coordinate with guests and speakers coming from different countries. It was a successful event as depicted by the active participation of the audience. We developed new linkages and collaborations and made new friends! It was all made possible, thanks to our active young and experienced participants, volunteers and supporters. Looking forward to seeing you all again at OCEANS 2026 Sanya!



Figure 4. Highlights of some of the talks during COA 2024: Professor Philippe Blondel, University of Bath (Top, Left), Professor Naoaki Yamanaka, Keio University (Top, Right), Dr. Venugopalan Pallayil, National Univ of Singapore (Mid, Left), Professor Paeng Dong-Guk, Jeju University (Mid, Right), Professor Kazuo Ishii, Kyutech (Bottom, Left) and Professor Chi-Fang Chen, Nat. Taiwan University (Bottom, Right).

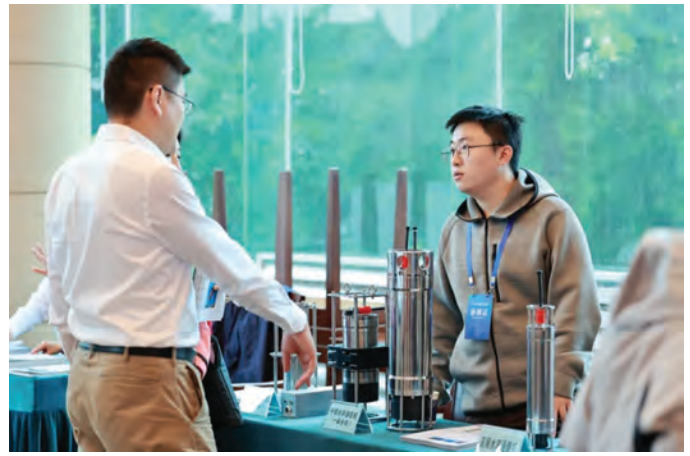
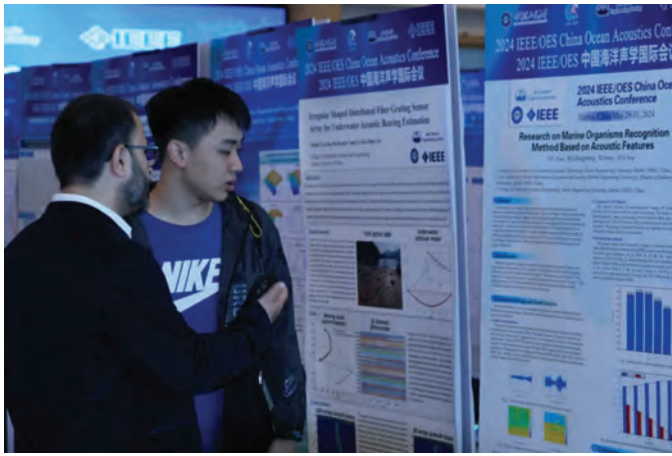


Figure 5. Student Poster Competition and Industry Stalls.



Figure 6. Academicians and Experts with the invited guests and speakers.



Figure 7. Participants and students listening to the talks.





Figure 8. Audience attending the keynote sessions and the guest lectures.



Figure 9. Participants and speakers actively engaging in different social and academic activities during the conference Poster session (L, Top), Industry booth (R, Top), Speakers engaged in a discussion (L, Bottom), Session Break (R, Bottom).



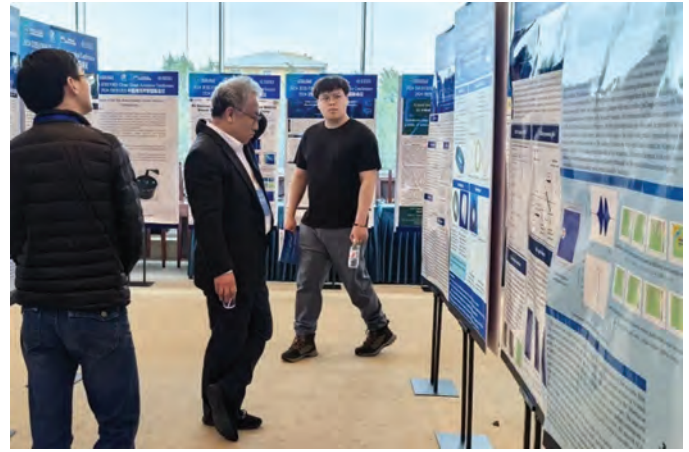


Figure 10. Selected highlights from the poster session during COA 2024.



Figure 11. Volunteers group photo at COA 2024.

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## China Oceans Acoustic Conference—My Reflections

**Venugopalan Pallayil, Vice President for OCEANS (VPO)**

I attended the China Oceans Acoustic (COA) Conference at the invitation of the organizing committee and delivered a keynote talk. Thanks to Prof. Chifang Chen from the Department of Engineering Science and Ocean Engineering, National Taiwan University, for extending an invitation on behalf of the Technical Programme Committee. This was my first ever trip to the COA and to Harbin Engineering University. It was cold (to my

standard) and rainy on the two days I spent there. But it never dampened the excitement and enthusiasm among the delegates and organizers. This was also an opportunity for me to meet up with some of the colleagues from the region and exchange greetings. The conference was well attended by researchers from the region. One of the things that stood out for me was the number of student posters displayed at the conference. There



were over 100 posters, and this is something we could emulate at the OCEANS and other OES sponsored conferences. A full report on the COA conference itself has been covered elsewhere in this edition of the Beacon by Prof. Suleman who was the Technical Programme Chair for COA 2024.



*Keynote talk.*

My keynote talk was on “Distributed Acoustic Sensing (DAS) for Underwater Applications.” Though the technology has been used by seismologists for some time, it is only recently that DAS has found increased attention from the researchers in the field of ocean engineering and underwater acousticians. The focus of my presentation was the works that have already been done or underway at other research institutions in detecting ships and marine mammals using underwater fiber optic telecommunication cables and its future possibilities. DAS has been employed in the detection and tracking of anchoring of vessels and fishing activities, which by itself could be damaging to the telecommunication cables. The technology is also widely being applied in the studies of detection of micro-seismic activities, seabed classification, pipeline integrity monitoring, traffic and structural monitoring as well as in the oil and gas industry for reservoir monitoring. We at the Acoustic Research Laboratory, National University of Singapore, are embarking on a local DAS pilot experiment in collaboration with Norwegian University of Science and Technology, Norway (NTNU) and Institute for Infocomm Research (i<sup>2</sup>R) under A\*STAR, Singapore.

The conference was well organized, and participants were largely from local universities. Some participants wished that the conference was moved around to other locations in China for a better service to the participants. I would help staff and

encourage students from other universities to experience the organization of the conference and contribute. I understand HEU has multiple campuses in China and rotating the conference among those venues is worth exploring.

My special thanks to Dr. Suleman, who made all the arrangements to ensure that my journey was a smooth and enjoyable one. The hospitality I received from the conference organisers was inexplicable. My thanks are also due to students Lu Simin and Adil Mohammed for meeting me at the airport and taking care of me while at the conference. Post doctoral student Shao Zhen was my guide and interpreter during the campus tour including the HEU history museum. Overall, I had a very exciting and interactive visit to HEU and the COA conference.



*Shao Zheng taking me on a tour.*



*With some student volunteers (Lu Sumin is just next to me and on my left).*



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20



25

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(#MIW24)

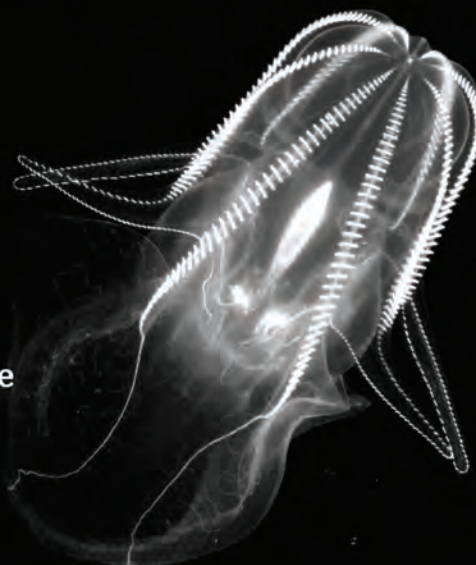
30 + Talks

75 + Posters with 3 minute lightning talks

3 Workshops

Lots of interactive time

Local Events



IEEE Oceanic Engineering Society 



Image Credit:  
MBARI's Biounspiration Lab

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### IMPORTANT DATES

**MARCH 31, 2024**

SPECIAL SESSION PROPOSAL  
SUBMISSION DEADLINE

**JUNE 15, 2024**

EXTENDED ABSTRACT SUBMISSION  
DEADLINE

**JULY 15, 2024**

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- Electronic instrumentation for the sea
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- Measures for Coastal and Marine Geology

In addition to regular papers, many initiatives and opportunities such as special sessions, exhibits, tutorials, demos, student contests, journal papers, and others are planned to enhance your experience with the conference, and will make IEEE MetroSea 2024 a vibrant event to meet with people in instrumentation and measurement for sea applications. Papers that are accepted and presented will be submitted for inclusion in the IEEE Xplore Digital Library.

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## 2025 IEEE International Symposium on Underwater Technology

Date | March 2<sup>nd</sup>-5<sup>th</sup>, 2025  
Venue | The Grand Hotel Taipei

### Call for Abstracts and Student Posters

We are delighted to invite you to submit abstracts and student posters for the **2025 IEEE International Symposium on Underwater Technology (UT 2025)**, held from **2-5 March 2025** at the Grand Hotel Taipei, Taiwan. This is an excellent opportunity to present your research and innovations to a global audience. Don't miss the great chance to be involved in UT 2025!

#### Abstract Topics

1. Acoustics and Communications	9. Marine Sensors
2. Autonomous Ocean Sensing Systems	10. Mobile Sensor and Actuator Networks
3. Environmental Monitoring	11. Observatory and Disaster Mitigation
4. Fishery Engineering	12. Renewable Energy
5. Human-autonomy Interaction	13. Underwater Archaeology
6. Marine Construction	14. Underwater Bio-related Technology
7. Marine Mineral Resources	15. Underwater Soundscape
8. Marine Robotics	16. Others

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**Abstract Submission Deadline: 10 September 2024**

### Important Dates

- Registration Open: **15 October 2024**
- Notification for Paper Submission: **15 December 2024**
- Deadline for Early-Bird Registration: **15 January 2025**



IEEE / OES  
Taipei Chapter

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IEEE Oceanic  
Engineering Society



# A Blast from the Past! . . . Remembering Jim Barbera

**Bob Wernli—Beacon Co-Editor-in-Chief and Photographer Stan Chamberlain**

*Unfortunately, this issue includes the obituary of one of our leading members, Jim Barbera, a little more than a year after losing his wife, Peggy. The two of them were fixtures at so many of our OES events. So, this version of the Blast will provide a few more photos in remembrance of Jim...and Peggy.*



*OCEANS '05 Brest—President Jim Barbera congratulates Sandy Williams on receipt of his IEEE Fellow award.*



*OCEANS '06 Boston—Jim presenting Rene Garello his IEEE Fellow award.*



*OCEANS '11 Santander—Pat and Jim Candy, Peggy and Jim Barbera.*



*OCEANS '13 Bergen—Jim and Peggy with Kevin Hardy at the Leadership Dinner.*



*OCEANS '13 San Diego—JOAB meeting.*



*OCEANS '16 Shanghai Leadership Dinner—Peggy, Jim and Jerry.*



*OCEANS '15 Genova after receiving award.*





IEEE / OES Taipei Chapter    IEEE / OES Japan Chapter    OES IEEE Oceanic Engineering Society

Underwater Technology 2025  
UT 25  
from 1998

2025 IEEE International Symposium  
on Underwater Technology

Date | March 2<sup>nd</sup>-5<sup>th</sup>, 2025  
Venue | The Grand Hotel Taipei



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**When:** Sept.  
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For questions, contact: [adcom-g.demasi@ieeooes.org](mailto:adcom-g.demasi@ieeooes.org)    Full registration link: <https://forms.gle/KFScWSEN11855dJG6>

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IEEE Oceanic  
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2021  
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United Nations Decade  
of Ocean Science  
for Sustainable Development

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## Who's Who in the IEEE OES

**Son-Cheol YU, IEEE OES Korea Chapter Chair, Professor of Pohang University of Science and Technology (POSTECH)**

I started my academic career at Prof. Ura's laboratory at the University of Tokyo and received a Ph.D. in 2003 with an AUV major. In 2008, I joined the Department of Mechanical Engineering at the Pusan National University as an assistant professor. Since 2010, I have been a professor at the Pohang University of Science and Technology (POSTECH). Pohang City is famous for the local landmark 'Big Hand' as shown in Fig. 1.

In 2017, I spent a sabbatical year at Prof. Hanumant Singh's Laboratory at WHOI. He introduced me to an artic AUV at that time, and it was a strong motivation to develop various field robots. I learned many things from Dr. Kenneth G. Foote in image sonars. I also had a good time with Dr. Dana Yoerger and Dr. Yogesh Girdhar in Cape Cod.

In 1998, I attended the first IEEE OES International Symposium on Underwater Technology (UT) conference in Tokyo. It was my first international conference, and it was a strong motivation to host UT in my country. Hosting UT 2017 in Busan was a memorable and challenging experience. The OES Korea Chapter, established in 2014, had never hosted an OES conference. Despite the hurdles, with the strong support of the OES Korea Chapter, Prof. Tamaki Ura, and the OES Japan Chapter, we successfully hosted the event, as shown in Figures 2 and 3, creating many good memories along the way.

In 2024, I attended the Open House, a public event held annually by the Institute of Industrial Science (IIS) at the University of Tokyo. I was a presenter during my graduate studies in the Open House. But I attended as a visitor this time, which was a very touching moment, and I enjoyed the event. One of the impressive events at the IIS Open House was the Hoshizora Touronkai (Starry Sky Discussion), which was centered around the OES Japan Chapter, where I was delighted to meet Prof.

Maki Toshihiro, Ms. Sugimatsu Harumi, and old friends as shown in Fig. 4. Hoshizora Touronkai is a networking event of the OES Japan chapter and related attendees. Most of all, I love the name of the event.

OES technology often significantly contributes to solving issues in public society. Since 2011, I have been charged as the director of the POSTECH Gyeonbuk Sea Grant Center, which is almost the same as the US Sea Grant Program. The motto of this Center is "Not Solution, But Tools!". The Center mainly aims to develop tools to solve a local marine community's issues. For example, one of the large local fishery areas is a deep-sea crab, and the fishermen need to improve the fishing trap and change the fishing spot to preserve the environment. As shown in Fig. 5, the Center had developed a 2000m depth rating stand-alone all-in-one type time-lapse video camera with lights. It had been recorded for several months with 1 minute wake up every hour. The Center just sent the camera system, and the local fishermen solved the problems and found various applications utilizing the camera. The camera system is based on an AUV's camera system. The Center has successfully delivered many tools, such as a safety watch and gear, to



Figure 1. Local landmark 'Big Hand' at Pohang.



Figure 2. Group photo of UT2017 Busan.



Figure 3. Ice breaking event at UT2017 Busan.





Figure 4. Hoshizora discussion at IIS, June 2024.

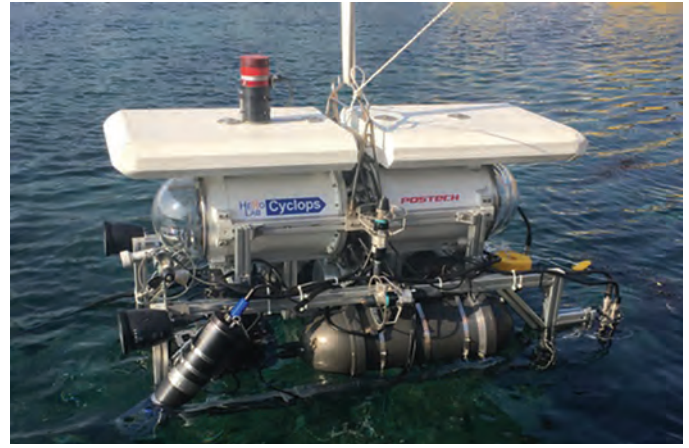


Figure 6. Hovering Type AUV "Cyclops"



Figure 5. Deep-sea camera system for red crabs.

support traditional Korean fishery ladies' underwater safety during their dives and smart aquaculture systems. Most of them are based on underwater robots and sensing technology. Public service for the community hardly contributes to academic credit or research funding, but it is worthwhile for all.

In 2012, my laboratory's first AUV Cyclops was developed, as shown in Fig. 6, from scratch. Building a new AUV is hard work. However, building essential infrastructures for AUVs, such as an indoor water tank or a machine shop on campus, is a harder and more challenging task. At that time, I understood the difficulties of the founder of a laboratory. Underwater technology has contributed greatly to ocean engineering and marine science, resulting in many applications. Based on this potential, I have been working to broaden the spectrum of my research. Ocean-focused underwater robots and sensing technology have been extended to extreme environmental robots and sensing-related technology. With the support of ONR Global, the wave glider mechanism-based robotic buoy system capable of wave

energy harvesting has been developed. Various sensors and robots, such as an underwater biomimetic robot, as shown in Fig. 7, and the underwater real-time microscope, have been developed. My lab was also named the Hazardous Extreme Environmental Robotics (HERO) Lab. Thanks to these efforts, a new research center was established in June 2024: the POSTECH-Korea Hydro and Nuclear Power (KHNP) Robot Research Center. This Center focuses on developing robots for power plants, especially underwater applications. We plan to develop underwater robots for the safety inspection and maintenance of nuclear reactor cooling tanks and power plant water supply pipes. These research efforts are based on marine robotics and sensing technology. I believe that technology based on OES will continue to produce many promising applications in the future.

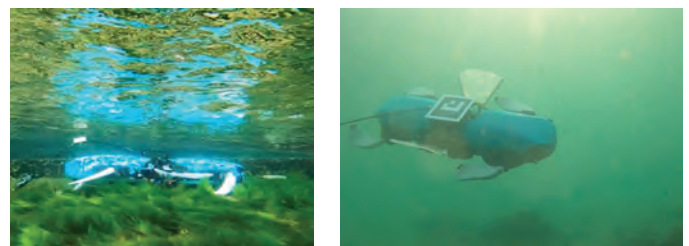


Figure 7. Underwater amphibious biomimetic robot, HERO-BLUE.

Finally, I appreciate my lovely family. My wife has been a companion on the journey of my work and life. My two daughters have been a source of joy and good memories.

---

## AdCom Election Results

The election results are in for the 2025–2027 Administrative Committee members. This year we had a great list of 14 candidates from around the world and the results were very close. Congratulation to the following six candidates who were elected:

FRANCESCO MAURELLI  
LAURA MEYER  
MAURIZIO MIGLIACCIO

JACQUELINE NICHOLS  
ANANYA SEN GUPTA  
HARUMI SUGIMATSU

Welcome aboard. Now...let's get to work!

---

## Welcome New and Reinstated Members

From 7 May through 8 August 2024

Total: 85 (incl 40 student)

### Australia

Michael J Robinson

### Botswana

Kabo Modiredi Pilane

### Brazil

Mauro Goncalves Bueno  
Pedro Soares Damas  
Barbara Stanzig

### Canada

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Clarence Blaine Carr  
Jason Jianjun Gu  
Dugald Thomson  
Travis Wilson

### China

Yan Li  
Yingwei Tian  
Yuzhi Zhang  
Chen Zhao

### Colombia

David Alejandro Bermudez  
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Sara Cansing

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Yves Chocheyras

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Christian Pfaab

### Hong Kong

Lorenz Angelo Aguila Gonda

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Dr. Annalakshmi G  
Nivetha G  
Mohammad Haadi Akhter  
Subashini J  
Ajith Kumar K  
Rajinder Kaul  
Saleem Anwar Khan  
Sudarshan M  
Zaidh Ahamed M S  
Somya Mishra  
Varshnee N  
Niveditha S Nair  
Kayalvizhi R  
Tanya Rajput  
Dhanalakshmi S  
Chinnu Mol S N  
Arham Sajid  
Pragati Saravanan  
Gummalla Gummalla  
Ritik Upadhyay  
Harshitha V  
Akash Vijayakumar

### Italy

Lorenzo Cecchi  
Luigi Di Michele  
Samiullah Yousaf

### Jamaica

Racquel Wright

### Korea, Republic of

Daehyuk Kim

### Norway

Melania Borit

### Peru

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Marcos

### Portugal

Bruno Mateus Ferreira

### Singapore

Xiaoling Liang

### Spain

Juan J Forteza  
Xavier Soler

### Sri Lanka

Shamika Imantha U.K.

### Turkiye

Burak Alptekin

### United Arab Emirates

Ashraf Medhat Zeid

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Funmilayo Humurat Olasupo

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Zheng Chen  
Rahul Dattangire  
Ethan DeMoura  
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## IEEE OES IIT Chennai Student Branch Chapter Report

**Sridhar K, Chair of IEEE OES IIT Chennai Student Branch Chapter**

### Guest Lecture by Dr. Hari Vishnu, Senior Research Fellow, NUS and IEEE OES Secretary

Our inaugural guest lecture, presented by **Dr. Hari Vishnu, Senior Research Fellow, NUS and IEEE OES Secretary** as part of IEEE OES IIT Chennai Student Branch Chapter and IEEE IIT Chennai Student Chapter, was a resounding success. This event marks the beginning of many more enlightening sessions to come.

Date/Time: June 24, 2024, 11:00 AM

Venue: Seminar Hall, Ocean Engineering Department

Speaker: Dr. Hari Vishnu

Lecture Title: Passive Acoustic Monitoring for Marine Biodiversity and Arctic Climate Change Studies.

The event kicked off with a warm welcome from Prof. V. Sriram, Chair of IEEE OES Madras Chapter, followed by an introduction to our esteemed speaker by Mr. Sridhar Krishnamoorthy, Chair of IEEE OES IIT Madras Student Branch Chapter.

### About the Speaker

Dr. Hari Vishnu, a distinguished Senior Research Fellow at the Acoustic Research Laboratory, National University of Singapore, specializes in underwater acoustic signal detection and localization. He earned his Ph.D. from Nanyang Technological University and has since made significant contributions to the fields of machine learning for underwater applications, bio-acoustics, and signal processing in impulsive noise. His work

spans various underwater scenarios, from biodiversity studies and defense applications in tropical waters to mineral exploration and Arctic ice sheet research. Dr. Vishnu has also served as a Visiting Scholar at the Scripps Institution of Oceanography and is the current Chief Editor of the IEEE Oceanic Engineering Society's magazine, Earthzine, as well as the society's Secretary.

Dr. Vishnu's captivating lecture delved into the fascinating world of passive acoustic monitoring (PAM), highlighting its crucial applications:

### Marine Mammal Monitoring

Dr. Vishnu discussed the monitoring of marine mammals, such as dolphins, in Singapore waters through their vocalizations, which are vital for foraging, navigation, and communication. He explained the development of a machine-learning-based PAM system designed to handle the unique challenges of Singapore's noise environment, including biological and shipping noise. This system helps detect and quantify marine mammals amidst complex acoustic backgrounds.



Figure 1. Speaker explaining about PAM.

### Climate Change and Glacial Studies

The second part of the lecture focused on utilizing PAM to study climate-induced ice-loss mechanisms at marine-terminating glaciers in the Arctic and Antarctic. Dr. Vishnu highlighted the importance of remote sensing in these hazardous and inaccessible regions to understand glacier melt activity and the challenges faced in this endeavor.

The lecture was truly enriching, highlighting innovative applications of passive acoustics in marine biodiversity and climate change research. Students and research scholars



Figure 2. Participants listening to the voice of Dolphins played by the speaker.

engaged in a stimulating interaction with the speaker, fostering insightful discussions. We eagerly anticipate organizing more thought-provoking events like this in the future.



Figure 3. Speaker talking about the climate change impacts in Arctic and Antarctic regions.



Figure 4. Head of the department of Ocean Engineering felicitated the speaker.



Figure 5. Interaction session of speaker with the participants.

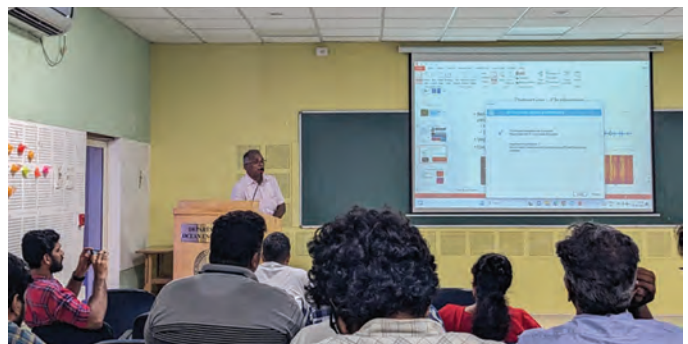


Figure 6. Prof. Nallayarasu providing feedback during the session.





Figure 7. Group photo of the participants with the speaker.

The session was followed by a detailed Q&A session in which both faculties and students participated.

Prof. S. Nallayarasu, Head of the Department, presented our esteemed speaker with a commemorative memento, acknowledging the lecture's profound impact on ocean engineering. He expressed his strong support for such student-led initiatives within our institute.

### Exciting Networking Event with the Oceaneering Team at IIT Madras

The IEEE Oceanic Engineering Society IIT Madras Student Branch Chapter, IEEE IIT Madras Student Chapter, Marine

Technology Society (MTS) IIT Madras Student Chapter, and SCORE (Scholars' Communion of Ocean Research and Engineering) from the Department of Ocean Engineering IIT Madras jointly hosted an excellent networking event on July 5, 2024, with the Oceaneering team.

#### About Oceaneering

Oceaneering International, Inc. is a global leader in providing engineered services and products primarily to the offshore energy industry. Established in 1964, the company specializes in deep-water applications, offering a broad range of solutions including remotely operated vehicles (ROVs), subsea hardware, and project management services. Beyond oil and gas, Oceaneering extends its expertise to industries such as aerospace, defense, entertainment, and renewable energy. Renowned for its innovation and technical prowess, Oceaneering is committed to enhancing safety, efficiency, and reliability in challenging environments worldwide.

#### Glimpse of the Event

We were honoured to welcome a distinguished delegation from Oceaneering, including:

Holly Kriendler, SVP & Chief HR Officer, Oceaneering Houston

Kamaljeet Kaur HR Manager, India.

Sivakumar N, PMI-ACP, Manager-A & G, Market & Patent Research

Dileep Kumar, Senior Director- Engineering & Technology, Site Leader- India.

The event kicked off with an engaging faculty interaction session, followed by a lab visit where our guests explored the Ocean Engineering department's experimental facilities, such as the towing tank, wave basin, etc., and the MAV LAB (Marine Autonomous Vessels (MAV) Laboratory). These visits sparked insightful discussions and a deeper understanding of our research capabilities.

Following the lab visits, a student interaction session was organized with the Oceaneering Team. Mr. Sridhar Krishnamoorthy,



Figure 1. Towing tank visit by the delegates.



Chair of the IEEE OES IIT Madras Student Branch Chapter, initiated the session with introductory remarks. The Oceanering Team provided feedback on their visit and shared exciting opportunities available in their industry for students in the Ocean Engineering field.

During the session, several Oceanering team members were felicitated: Mrs. Holly Kriendler by Prof. Srinivasan Chandrasekaran, HOD In-charge of the Department of Ocean Engineering; Mrs. Kamaljeet Kaur by Prof. V. Sriram, Chair of the IEEE OES Madras Chapter; Mr. Sivakumar N by Prof. Abdus Samad, Professor in the Department of Ocean Engineering; and Mr. Dileep Kumar by Dr. Narendran K, Faculty Advisor of SCORE.

During the student interaction session, our research scholars showcased their work and the activities of their research groups, fostering meaningful exchanges and potential collaborations. Mr. Krishnavelu from the MAV lab shared their team's activities and research developments. Team ARI-TRA and Team AMOGH, led by undergraduates from the Ocean Engineering department at IIT Madras, presented their achievements in AUV-related competitions over the past years and their future plans. Mr. Prashant from the research group of Prof. Abdus Samad discussed their recent achievement of the pilot project of a wave energy converter. Mr. Hariiram, representing the research group under Prof. V. Sriram, discussed their activities in computational modeling and analysis using in-built tools. Mr. Vengadesan from Prof. S. A. Sannasiraj's research group highlighted their team's experience in research projects and provided insights into the DST and ABCD center. Finally, Prof. V. Sriram introduced the facilities available at the Discovery campus of IIT Madras to the Oceanering Team, emphasizing the importance of developing our own facilities.

The interaction session concluded with a vote of thanks delivered by Prof. Abdus Samad, Professor in the Department of Ocean Engineering. We express our sincere gratitude to the



Figure 2. a. MAV lab visit by the delegates, b. to d. Ocean Engineering department's experimental facilities visit by the delegates.



Figure 3. a. Introductory talk by Mr. Sridhar Krishnamoorthy, b. Interaction with students by Mrs. Holly Kriendler.



Figure 4. Felicitation of Oceanering team by the faculties of the Department of Ocean Engineering.





Figure 5. Research scholar presenting their research group activities.



Figure 6. Prof.V.Sriram provided the insights of state of art facilities at the discovery campus of IIT Madras.



Figure 7. Group picture with delegates and participants of the event.

Oceanering delegation, which included Holly Kriendler (SVP & Chief HR Officer, Oceanering Houston), Kamaljeet Kaur (HR Manager, India), Sivakumar N (PMI-ACP, Manager-A &

marine technology. We look forward to building on the connections made today and exploring new avenues for collaboration and innovation.

G, Market & Patent Research), and Dileep Kumar (Senior Director- Engineering & Technology, Site Leader- India). Their participation and contributions were invaluable, providing us with a profound understanding of the industry’s current challenges and opportunities.

We extend our heartfelt thanks to Prof. Abdus Samad for organizing this exceptional event. We also express our deep appreciation to our faculty advisors, Prof. Sannasiraj S A, Prof. Sriram, Prof. Atmanand M A, Dr. R Venkatesan, and Dr. K. Narendran, for their unwavering support and guidance.

A special acknowledgment goes to the organizing team: Sridhar Krishnamoorthy, Vijayalakshmi Thiagarajan, Sree Nandhini Elayaperumal, Rushikesh Kamble, Sangeetha S, Vallabh Deogaonkar, Krishnavelu Ramachandran, Hari Ram N, and Vengadesan Palanimanickam. Their dedication and meticulous planning were instrumental in the success of this event.

In conclusion, it underscored the importance of collaboration between academia and industry in advancing

## A New Core for the Phyto-Finders

**Todd Morrison, OES member**

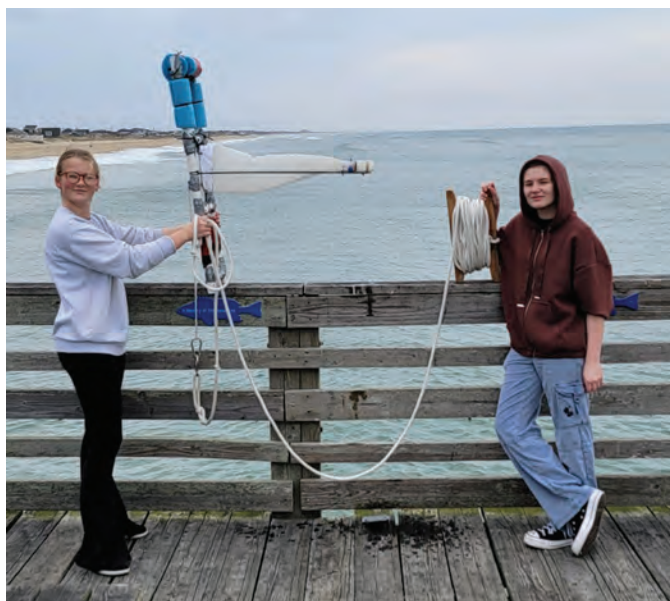
Intrepid OES mentors, Drs. Todd and Hilary Morrison, once again traveled to the Outer Banks of North Carolina to meet with the Phyto-Finders of First Flight High School. OES has been supporting this student club since 2010. We arrived in the middle of April, knowing that the last experienced member of the club, one of the attendees at OCEANS 2022 Hampton Roads, would be graduating in June, leaving the future of various proposed research and development projects uncertain.

To our delight, Hilary and I were introduced to a new core of sophomore and freshman women, all extraordinarily enthusiastic about the Phyto-Finders and ready to forge ahead.

Working with these new students in the science lab, Hilary was able to begin trialing a new eDNA processing technique. The club's main target species, *Pseudo nitzschia*, produces domoic acid, a potent and potentially fatal neurotoxin. The new approach promises to enable same day detection, with very high sensitivity, of *Pseudo nitzschia* in tow samples. Notably, this would be by the students and in their classroom lab. There would no longer be a need to ship extracted eDNA to Woods Hole for sequencing, an approach the Phyto-Finders previously used. This change greatly reduces the response time should a potentially toxic bloom be imminent.

On another front, one long-standing problem has been getting the sample bottle at the end of the plankton tow net to reliably flood as it enters the water. This issue, which has been discussed in previous Beacon articles, had been orphaned during COVID. Working with Todd, these new students were able to resolve the problem with a rigid extension to the tow frame that was successfully tested during our trip.

Students are also restarting their use of two sensors, measuring temperature, depth, and dissolved oxygen. The sensors



*Talulah Morris (L), who has graduated, passes the torch, and the new and improved tow frame, to rising junior Sophie Vaught (R) on one of the Outer Banks piers used by the Phyto-Finders for sample collection.*

were very kindly donated by RBR, a regular exhibitor at OCEANS. Correlating changes in the makeup of the phytoplankton community with these water characteristics is a future goal of the Phyto-Finders.

A return to the Outer Banks is tentatively planned for this fall, once school is in session. The future once again looks bright.





# 💡 IEEE OES Ocean Challenge 2024 💡



## Call to Action:

Are you a student or young professional passionate about ocean conservation and innovation? Join us in shaping the future of our planet by participating in the IEEE OES Ocean Challenge. Let's work together to develop groundbreaking solutions to address the UN Decade of Ocean Science goals.

Visit [oceanchallenge.xyz](https://oceanchallenge.xyz) to learn more and submit your ideas!

This is a challenge dedicated to teams of students and young professionals to take on new innovative ideas and technical solutions to address at least one of the ten OD challenges ([oceandecade.org](https://oceandecade.org)).

The "Ocean Challenge" will be modelled as a two-stage global competition.

In the first phase, teams will present their ideas in a *written report and a video*. A panel of experts from Academia and Industry, including the OES Technical Committees, will evaluate the proposals and select 5 teams for the second phase.

The seed funding will be used to implement the proposed solution.

Representatives of the winning team will then be invited to present their solution to the IEEE OES Oceans Brest conference!

Submit your proposal by 30/11/2024

Contact email: [info@oceanchallenge.xyz](mailto:info@oceanchallenge.xyz)



#IEEEOES #OceanChallenge #UNOceanDecade



2021 United Nations Decade of Ocean Science for Sustainable Development 2030

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# OCEANS

CONFERENCE & EXPOSITION

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OCEANS:  
infinity  
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limit

## City of Brest

**Brest in Finistère, Pen Ar Bed**, the beginning of the world: steep cliffs, long sandy beaches, sharp reefs and the blue of Armor (“land of the Sea”), the hills and green of Argoat (“land of the Woods”).

Brest in Brittany, a rich heritage of Breton culture: language, music, dance and a “spirit” – open to the world, curious about others and willing to share its wealth and diversity.

Brest’s geographical location, combined with the know-how of local companies, research institutes and a strong oceanographic tradition have all made Brest a focal point of excellence regarding the ocean. This location reinforces, both nationally and internationally, the strong position held by Brest and its region in:

### OCEANS 2025 BREST Emphasis

- > Environmental Engineering,
- > Energy from the Oceans,
- > Digital Ocean,
- > Industrial activities related to the ocean

Contact: [r.garello@ieee.org](mailto:r.garello@ieee.org)

<https://brest25.oceansconference.org>

## OCEANS Conference

The **OCEANS Conference** is a major forum for scientists, engineers and end-users throughout the world for presenting the latest research results, ideas, developments and applications in all areas of Oceanic Engineering systems.

OCEANS 2025 Brest program will be built around the theme “**Oceans: Infinity is the Limit**”, with an emphasis on the impact of climate change in the oceans and from the oceans. The technical sessions will provide a review of recent advances in oceanic engineering, science and technology.

**OCEANS 2025 Brest** will comprise both a SCIENTIFIC CONFERENCE (oral and poster presentations) and a large State of the Art EXHIBITION in the field of **Engineering and Marine Technology**. Both will take place in the Brest downtown cozy conference center “Le Quartz”.

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