

# OES BEACON

Newsletter of the Oceanic Engineering Society



SEPTEMBER 2015, Volume 4, Number 3

[www.ieeeoes.org](http://www.ieeeoes.org)

(USPS 025-095) ISSN 2164-8042



#### Editor-in-Chief:

Harumi Sugimatsu – harumis@iis.u-tokyo.ac.jp

#### Co-Editor-in-Chief:

Robert L. Wernli – wernli@ieee.org  
IEEE OES VP – Professional Activities

#### Associate Editor-in-Chief

Kevin Hardy – krhardy4438@gmail.com  
VP-PA Committee

#### Associate Editors:

Masakazu Arima  
Kenichi Asakawa  
Katsuyoshi Kawaguchi  
Toshihiro Maki  
Takumi Matsuda  
Hisashi Shiba  
Blair Thornton

#### Contributing Editors:

Australia – Mal Heron  
France – Philippe Courmontagne  
India – M. A. Atmanand  
Japan – Blair Thornton  
Korea – Son Cheol Yu  
Singapore – Venu Pallayil  
Taiwan – Jenhwa Guo

#### Publication Copy-Due schedule:

4th Qtr: December 2015: November 14

1st Qtr: March 2016: February 14

Members are encouraged to submit copy highlighting 1) Chapter Events, 2) People & Company News, 3) Student & Young Professional News, 4) Technology Updates, or 5) other material of broad interest to the OES. Please send to Beacon Editor-in-Chief, Harumi Sugimatsu <harumis@iis.u-tokyo.ac.jp>. Word format, 1-1/2 space; Photos (always encouraged): jpg, 300 dpi preferred. Material becomes property of IEEE-OES. Please send e-mail or physical address corrections or updates to the EIC.

## IEEE OCEANIC ENGINEERING SOCIETY EXECUTIVE COMMITTEE

#### President

RENÉ M. GARELLO  
r.garello@ieee.org

#### Vice President

Technical Activities  
KENNETH G. FOOTE  
Woods Hole Oceanographic Inst.  
kfoote@whoi.edu

#### Vice President

Professional Activities  
ROBERT L. WERNLI  
First Centurion Enterprises  
wernli@ieee.org

#### Vice President

Conference Development  
ALBERT (SANDY) J. WILLIAMS III  
Woods Hole Oceanographic Institute  
awilliams@whoi.edu

#### Vice President

Conference Operations  
DIANE DIMASSA  
ieeoes.vpco@gmail.com

#### Secretary

MARINNA MARTINI  
ieeoes.secretary@gmail.com

#### Treasurer

WILLIAM J. KIRKWOOD  
Monterey Bay Aquarium Research Institute  
oceanengsoc@gmail.com

#### Journal Editor-in Chief

N. ROSS CHAPMAN  
chapman@uvic.ca

#### Junior Past President

JERRY C. CARROLL  
jerrycortez@charter.net

#### Senior Past President

JAMES T. BARBERA  
j.barbera@ieee.org

## EX-OFFICIO ADMINISTRATIVE COMMITTEE

#### Co-Editors-in-Chief, OES BEACON

HARUMI SUGIMATSU  
University of Tokyo  
harumis@iis.u-tokyo.ac.jp

#### ROBERT WERNLI

First Centurion Enterprises  
wernli@ieee.org

#### Editor, OES e-newsletter

TOSHIHIRO MAKI  
University of Tokyo  
maki@iis.u-tokyo.ac.jp

#### Webmaster

STEVE HOLT  
sholt@ieee.org

#### Student Activities

BARBARA FLETCHER  
bfletcher@kuokoa.net

#### Membership Development

JIM COLLINS  
j.s.collins@ieee.org

#### Fellows

SHAHRIAR NEGAHDARIPOUR

#### Women in Engineering

BRANDY ARMSTRONG  
Brandy.Armstrong.US@ieee.org

#### Young Professional

FRÉDÉRIC MAUSSANG  
frederic.maussang@telecom-bretagne.eu

#### Technology Committee

KENNETH G. FOOTE  
kfoote@whoi.edu

#### Reconnaissance Committee

ROBERT L. WERNLI  
First Centurion Enterprises  
wernli@ieee.org

#### Joint OCEANS Advisory Board (JOAB)

ALBERT (Sandy) J. WILLIAMS III  
Woods Hole Oceanographic Inst.  
awilliams@whoi.edu

#### Awards, Nominations, and IEEE USA

R&D Policy  
JERRY CARROLL  
jerrycortez@charter.net

#### Chapter Coordinator and PACE

JIM COLLINS  
j.s.collins@ieee.org

#### Chapter Chairs

#### REGION 1-6, USA

HOUSTON Michael Romer  
HONOLULU Mark Rognstad  
PROVIDENCE Albert (Sandy) J. Williams Iii  
SAN DIEGO Kevin J. Delaney  
SEATTLE Harold (Skip) Denny  
WASH., DC James Roche

#### REGION 7, CANADA

CANADIAN Dr. Ferial El Hawary  
ATLANTIC Yifeng Zhou  
OTTAWA Yves de Villers  
QUEBEC Bruno N. Di Stefano  
TORONTO Tristan Crees  
VANCOUVER Ross Chapman  
VICTORIA  
NEWFOUNDLAND  
LABRADOR Ralf Bachmayer

#### REGION 8, EUROPE,

#### MIDDLE EAST & AFRICA

FRANCE Dr. Philippe Courmontagne  
NORWAY Bjarne I. Naess  
SPAIN Marc Carreras  
UK/Ireland Yong Xue  
ITALY Andrea Trucco  
TUNISIA Nizar Rokbani

#### REGION 9, SOUTH AMERICA

ARGENTINA Gerardo Acosta

#### REGION 10, ASIA & PACIFIC

AUSTRALIA COUNCIL Dr. Mal Heron  
CHINA Lian Lian  
INDIA Prof. Bahl Rajendar  
JAPAN Katsuyoshi Kawaguchi  
MALAYSIA Dr. Mohd Rizal Bin Arshad  
NSW, AUSTRALIA Dr. Brian Ferguson  
SINGAPORE Tawfiq Taher  
TAIWAN Dr. Forng-Chen Chiu

#### Journal Associate Editors

M.A. Atmanand  
Ralph Bachmayer  
Brad Buckham  
Mandar Chitre  
Nicholas Chotiros  
Tory Cobb  
Lee Culver  
Brendan Englot  
Ken Foote  
Eric Gill  
Joao Gomes  
Jules Jaffe  
Elizabeth Magulia  
Toshihiro Maki  
Eliza Michaloupoulou  
Andrey Morozov  
Bruce Newhall  
John Potter  
Gopu Potty  
Mike Richardson  
Roland Romeiser  
Torstein Sæbø  
Dick Simons  
Milica Stojanovic  
Ken Takagi  
Andrea Trucco  
Karl von Ellenrieder  
Kathleen Wage  
Wen Xu  
Shengli Zhou

#### Technology Committee Chairs

#### ACOUSTICS AND SIGNAL PROCESSING

Environmental Acoustics  
TIMOTHY F. DUDA  
Ocean Signal and Image Processing  
JEAN-PIERRE HERMAND

#### Underwater Acoustics

KENNETH G. FOOTE  
Underwater Communication, Navigation,  
and Positioning  
MILICA STOJANOVIC

#### GEAR, INSTRUMENTS, AND VEHICLES

Environmental Technology  
TORU SATO  
Innovative Technology  
WILLIAM KIRKWOOD  
Underwater Cables and Connectors  
M. A. ATMANAND  
Unmanned Maritime Vehicles and  
Submersibles  
HANUMANT SINGH

#### DATA AND INFORMATION

Information Processing and Data Fusion  
WILLIAM PORTO  
Numerical Modeling, Simulation and Data  
Visualization  
FREDERICK H. MALTZ  
Standards  
ALBERT J. WILLIAMS 3RD

#### OBSERVATIONS AND MEASUREMENTS

Airborne/Spaceborne Ocean Remote  
Sensing  
DAVID E. WEISSMAN  
Current, Wave, and Turbulence  
Measurements  
BRUCE MAGNELL  
Oceanographic Instrumentation, Navigation,  
and Positioning  
P. R. SASEENDRAN PILLAI  
Subsea Optics and Vision  
FRANK M. CAIMI

#### POLICY AND GLOBAL CONCERNS

Global Earth Observing System of Systems  
JAY S. PEARLMAN  
Ocean Energy  
YE LI  
Ocean Policy and Education  
DOUGLAS BURNETT

## ELECTED ADMINISTRATIVE COMMITTEE

#### 2013–2015

JAMES V. CANDY KEN TAKAGI  
JAMES S. COLLINS JOHN WATSON  
JOHN POTTER THOMAS F. WIENER

#### 2014–2016

GERARDO ACOSTA MALCOLM HERON  
ELIZABETH L. CREED LIAN LIAN  
JEAN-PIERRE HERMAND CHRISTOPHE SINTES

#### 2015–2017

ROBERT BANNON FERAL EL-HAWARY  
CHRISTIAN DE MOUSTIER BARBARA FLETCHER  
DIANE DIMASSA HARUMI SUGIMATSU

IEEE OES Beacon Newsletter (ISSN 2164-8042) is published quarterly by the Oceanic Engineering Society of the Institute of Electrical and Electronics Engineers, Inc. Headquarters: 3 Park Avenue, 17th Floor, NY 10017-2394. \$1.00 per member per year (included in Society fee) for each member of the Oceanic Engineering Society. Printed in U.S.A. Periodicals postage paid at New York, NY and at additional mailing offices. Postmaster: Send address changes to IEEE OES Beacon Newsletter, IEEE, 445 Hoes Lane, Piscataway, NJ 08854 ©2015 IEEE

Permission to copy without fee all or part of any material without a copyright notice is granted provided that the copies are not made or distributed for direct commercial advantage, and the title of the publication and its date appear on each copy. To copy material with a copyright notice requires specific permission. Please direct all inquiries or requests to IEEE Copyrights and Permissions Office.

## Table of Contents

<i>Past and future Ocean-Conference logos</i> .....	Cover
<i>From the President</i> .....	3
<i>OES VPCO activities</i> .....	4
<i>From the Editor's desk</i> .....	5
<i>OES Reaches out to WIE</i> .....	6
<i>A New Young Professional Chair</i> .....	6
<i>Digital Library</i> .....	7
<i>Colonel Norman D Miller</i> .....	8
<i>OCEANS'15 Washington DC</i> .....	12
<i>Chapter News</i> .....	14
<i>Getting the bigger picture, From Beacon Contributing Editor</i> .....	16
<i>OCEANS'16 Monterey</i> .....	19
<i>OCEANS'15 MTS/IEEE Genova Conference</i> .....	20
<i>ATC/OTC15 Report</i> .....	23
<i>Ocean Business 15 Report</i> .....	25
<i>Battle of the OCEANS Conference Pins</i> .....	26
<i>OCEANS MTS/IEEE and Co-participating Societies</i> .....	27
<i>Earthzine Expands Oceans Coverage with OES Alignment</i> .....	27
<i>Cool Tech</i> .....	30
<i>The Sea and OCEANS'15 Washington DC</i> .....	31
<i>Member's Highlights</i> .....	33
<i>Who's Who in the OES</i> .....	35
<i>OES Members in Print</i> .....	35
<i>Welcome New and Reinstated Members</i> .....	36
<i>OES Award Student Scholarship</i> .....	37
<i>Student Corner – The Way Ahead</i> .....	40
<i>Ad. on Student Scholarship</i> .....	41
<i>OES Support to NOSB</i> .....	42
<i>OES Sponsored WS/Symposium organizing outline</i> .....	44
<i>Ad. on OI'16 Europe</i> .....	47
<i>OCEANS'16 Shanghai</i> .....	Cover

## From the President

### Greetings

Summer, time for reflexion!<sup>1</sup> And another issue of the Beacon: they are coming fast now.

This one starts with one bad news, the passing of Col. Norman D. Miller, promoter of the OCEANS Student Poster Competition. There is a special section in these Newsletters dedicated to him with a tribute to which many are contributing. Norman was, in a sense, the father and the grandfather of many of us. With his (funny) Woody Allen look and his gentle manners, he has helped the Society to be one of the most successful in the IEEE in terms of Student supports, ranging from High school to higher research level.

Reflexion has another deep meaning in British English: mourning. Farewell, Norm!

But, as is said in other circumstances, “the show must go on”.

In the June editorial, I referred to the review of the Society last November. The Committee gave its report at the TAB meeting in June and here are some of its recommendations and conclusions below.



*Reflexion while in vacation*

On the positive side:

- Clear Goal – Novel programs – DL (Distinguished Lecturer) expansion – Student support – Good international presence – Financially sound – Innovative practices
- Commended for our handling of the conferences – Commended for our handling of the Journal – Request to investigate industry relationship.

Some criticism with suggestions:

- Increase on-line environment – Nuclear strategic planning – No formal operational plan
  - Develop a recommendation for marine standards – Suggestion to develop Earthzine as an OES publication
  - Membership: develop survey, enhance website
- Clearly, we know where we go, but we haven't shown a good strategy on how to go there.

In order to improve these elements, I had already created an Ad Hoc Committee last October, the “Next decade strategy committee” and we'll have a special effort put on the outreach to the members, with surveys, forum and active communication

<sup>1</sup>British English: the process of giving careful thought to something

(continued on page 18)



# The OCEANS Conference and Exhibition: A Wave of Opportunity

***Diane DiMassa, Ph. D., Vice President of Conference Operations***

One of the most significant activities of the OES is the OCEANS Conference and Exhibition – our flagship conference. As OES is truly a global society, we have a strong commitment to serving our members all over the world. OCEANS takes place twice year, each autumn in North America and each Spring in either the European or Asia/Pacific Theaters. In odd numbered years the conference is in Europe, most recently in Genova, Italy, where we conducted the largest European OCEANS and possibly the largest OCEANS conference ever. Check elsewhere in this newsletter for a recap. In 2017 we are returning to Aberdeen, Scotland, where a very successful and enjoyable conference took place in 2007. In even numbered years, the conference is held in Asia/Pacific, having had successful events in Japan, Korea, Australia, Singapore, and most recently Taiwan. Next in line for Asia is Shanghai, China, in April 2016 where we expect to have a joint exhibit with the China (Shanghai) International Technology Fair. Check elsewhere in this newsletter for more information. But before we head to China, the North American OCEANS will be held in Washington DC, October 19–22, 2015, where Rep Sam Farr, Co-Chair of the House Oceans Caucus and Dr. Rick Spinrad, Chief Scientist at NOAA, will be our Honorary Co-Chairs. Again, more info elsewhere in this newsletter.

Why participate in an OCEANS Conference and Exhibition? Lots of reasons! As a delegate, whether presenting or not, there are opportunities to network whether it is through the social receptions, lunches, gala dinner, or by conversing with whoever is sitting next to you at a technical session. Delegates can learn about the latest technology and instrumentation by perusing the exhibit hall and discussing direct with the manufacturer about the capabilities of the equipment. The plenary speakers, leaders in their field, offer insights into future directions of technology, research, and funding. Tutorials that offer Continuing Education Units (CEUs or Professional Development Hours, PDHs) are not only great for delegates just getting started in the industry, but are also good for those who want to keep current in the their field or to learn something new in a new direction. The technical sessions display current activities and expose potential partners for collaboration, cross-disciplinary activity included! The student poster session shows the future of the industry as students bring new ideas and enthusiasm. Their energy is invaluable.

Exhibitors at the OCEANS Conference and Exhibition have the opportunity to meet the true end users of the equipment, not just a buyer in the business office. When the venue allows, exhibitors can even demonstrate equipment and the methods of calibration and data processing. Engineers and scientists are pleased to talk with exhibitors about needs for the projects they are currently working on and needs for upcoming projects. For exhibitors, not



only is this an opportunity to make sales, but also a forum to garner valuable information about the needs and forthcoming directions of the industry that can then be discussed with the home office to be considered for further development. Partnerships in projects and proposals are often formed at OCEANS.

The OES always holds its administrative meetings in tandem with the OCEANS conference, so this is also an opportunity for members to meet with the Society leadership, ask questions, make suggestions, and discuss

future directions. We truly are a friendly bunch and want to hear from you! Let us know what you think! At OCEANS, eat, drink, and be merry, for we are learning something new and building partnerships with like-minded technologists.

Overseeing the planning for all OES-sponsored conferences is the responsibility of the Vice President for Conference Operations. This is a big job as it includes the development of the technical program, publications, tutorials, exhibits, local arrangements, student activities, conference web site, publicity, finance, administration, and management. That is currently the job of yours truly. We can always use more help, but fortunately there is a strong team of support lead by the Joint OCEANS Administrative Board (JOAB). As the OCEANS Conferences are a joint venture between the OES and the Marine Technology Society, the JOAB Committee was established as the main conduit by which the two Societies work together for conference oversight. JOAB provides advice to the Local Organizing Committees (LOC) of each conference, maintains the OCEANS Conference Operations Policy (OCOP) manual, and provides recommendations to the Societies for both operational changes and new ideas. Each conference also has a liaison from each Society whose job it is to interface between the LOC and JOAB. It takes a lot of hard-working people to run a conference as complex and valuable as OCEANS. Volunteer is not a dirty word. Fortunately, there are a lot of dedicated OES members who make it interesting, fun, and more than worthwhile. If you are interested in being part of this enthusiastic team, please let me know at ([ieeoes.vpco@gmail.com](mailto:ieeoes.vpco@gmail.com)).

Although this article is mainly about OCEANS, our flagship event, you should know that there are many smaller workshops and symposia conducted around the world by OES as well. These cover a wide variety of topics (acoustics, current/wave measurement, AUVs for example but there are many more) and can be tied in closely with our technology committees. The main contact for symposia and workshops is Liz Creed ([ieeoes.workshop@gmail.com](mailto:ieeoes.workshop@gmail.com)).

Get involved with OCEANS and OES. We want to see you at the next event, and we want your help in shaping the future of the Society and its conferences.

## From the Editor's desk

**N. Ross Chapman – Journal Editor-in Chief**

I think everyone knows by now that OCEANS15 in Genoa was a highly successful meeting where over 450 papers were presented covering a broad spectrum of research in oceanic engineering. What you won't know is that it was a very productive meeting for me in trawling for topics for special issues in the Journal. This is a good opportunity for me to report on special issues in general. Since taking over as EIC, we have published only one special issue, in October 2013 on underwater communications (UCOMMS). That's going to change, and I'll give some background about it here.



Special issues are difficult beasts for an editor to deal with, because we set deadlines that seem appropriate from a distance but are vulnerable to delays in getting reviews and revisions in time to publish the group as a whole. The end result is that the collection of papers comes out in a series of special issues, to the chagrin of both editors and authors. However, there is a reasonable solution that will enable us to create special issues that grow with time as new papers are accepted for publication, and the whole group can be searched on IEEE Xplore as a special unit. The way to do this is to attach special identifier labels to each paper in the group when it is accepted for publication. We do this already when we identify papers as members of a specific volume and issue of the Journal: if we search volume 40 issue 3 on Xplore, all the papers in the issue are listed and are accessible. In the same way, we can attach an additional identifier label to specific papers that form a group, and Xplore will display the entire list when the label is searched. As new papers for the special collection are accepted, the group of papers grows with time and the most up to date grouping will be available when searched on Xplore. I think this will benefit both authors and readers; authors get the benefit of early access publication of their paper, and readers get the benefit of searching an entire (or up to date) collection of papers. There are still some things to work out, for instance how to advertise the search label for each special collection, but these are details that can be overcome.

In the meantime, here is a preview of special issues that are in the works. The first one is UCOMMS2, a reprise of the very successful special issue on underwater communication. It is set for publication in the last issue this year. On the way for next year and afterwards are: TREX13, a set of papers on acoustic reverberation and scattering from the Target and Reverberation Experiment sponsored by the Office of Naval Research in 2013; a collection of papers on sensors and systems from the Sensors and Systems for a Changing Ocean conference that was held in Brest in October 2014; a special issue on waterborne noise due to shipping; and a collection of papers and review article on sea bed mining. More information about these special issues with announcements of deadlines will be posted on the Oceanic Engineering Society webpage and published in the regular issues of the Journal.

While I am thinking about early access publication, I'd like to remind readers that papers are published electronically on Xplore immediately upon acceptance of the final version by me. Unfortunately, Xplore does not advertise this fact widely at the present time so I will use this opportunity to list the papers that have been published as Early Access papers over the past three months. Readers of the Journal will note that I am also listing these papers in editorials, but it doesn't hurt to advertise in as many ways as possible. These papers will of course appear in due course in regular issues of the Journal:

Toward an Efficient and Comprehensive Assessment of Marine Sediments Through Combining Hydrographic Surveying and Geoacoustic Inversion, *Siemes, K., Hermand, J-P., Snellen, M. and Simons, D.G.*

A Self-Contained Subsea Platform for Acoustic Monitoring of the Environment Around Marine Renewable Energy Devices—Field Deployments at Wave and Tidal Energy Sites in Orkney, Scotland, *Williamson, B.J., Blondel, P., Armstrong, E., Bell, P.S., Hall, C., Waggit, J.J. and Scott, B.E.*

A Brain-Computer Interface (BCI) for the Detection of Mine-Like Objects in Sidescan Sonar Imagery, *Barngrover, C., Althoff, A., DeGuzman, P. and Kastner, R.*

Spatially Multiplexed CDMA Multiuser Underwater Acoustic Communications, *Yang, T.C.*

Coordination of Marine Robots Under Tracking Errors and Communication Constraints, *Ferreira, B.M., Matos, A.C., Cruz, N.A. and Moreira, A.P.*

Lagrangian Observations of Waves and Currents From the River Drifter, *Postacchini, M., Centurioni, L.R., Braasch, L., Brocchini, M. and Vicinanza, D.*

Inversion of the Sound Speed With Radiated Noise of an Autonomous Underwater Vehicle in Shallow Water Waveguides, *Zhang, M., Xu, W. and Xu, Y.*

A Concept for Docking a UAV With a Slowly Moving Submarine Under Waves, *Watt, G.D., Roy, A.R., Currie, J., Gillis, C.B., Giesbrecht, J., Heard, G.J., Birsan, M., Seto, M.L., Carretero, J.A., Dubay, R., Jeans, T.L.*

On the Capability of Hybrid-Polarity Features to Observe Metallic Targets at Sea, *Paes, R.L., Nunziata, F. and Migliaccio, M.*

Simulating the Wake Downstream of a Horizontal Axis Tidal Turbine Using a Modified Vorticity Transport Model, *Vybulkova, L., Vezza, M. and Brown, R.*

Fast Broadband Beamforming Using Nonuniform Fast Fourier Transform for Underwater Real-Time 3-D Acoustical Imaging, *Chi, C., Li, Z. and Li, Q.*

Corrections to "Adaptive Modulation and Coding for Underwater Acoustic OFDM" [L. Wan, H. Zhou, X. Xu, Y. Huang, S. Zhou, Z. Shi, and J.-H. Cui, IEEE J. Ocean. Eng., vol. 40, no. 2, pp. 327–336, Apr. 2015. DOI: 10.1109/JOE.2014.2323365], *Wan, L., Zhou, H., Xu, X., Huang, Y., Zhou, S., Shi, Z. and Cui, J.-H.*

Corrections to “OFDM-Modulated Dynamic Coded Cooperation in Underwater Acoustic Channels” [Y. Chen, Z.-H. Wang, L. Wan, H. Zhou, S. Zhou, and X. Xu, IEEE J. Ocean. Eng., vol. 40, no. 1, pp. 159–168, Jan. 2015. DOI: 10.1109/JOE.2014.2304254, Chen, Y., Wang, Z., Wan, L., Zhou, H., Zhou, S., Xu, X.

Underwater Acoustic Modems (S2CR Series) for Synchronization of Underwater Acoustic Network Clocks During Pay-

load Data Exchange, Kebkal, K.G., Kebkal, V.K., Kebkal, O.G. and Petroccia, R.

Improving Statistical Robustness of Matched-Field Source Localization via General-Rank Covariance Matrix Matching, Zhou, Y., Xu, W., Zhao, H. and Chapman, N.R.

That’s it for now.

---

## OES Reaches Out to WIE

**Robert Wernli and Brandy Armstrong**

OES has worked to increase our interaction with IEEE’s Women in Engineering, the largest international professional organization dedicated to promoting women engineers and scientists and inspiring girls around the world to follow their academic interests to a career in engineering. We’d like to thank Marinna Martini for her support in this activity and welcome our new WIE liaison, Brandy Armstrong, who we introduce to you below.

Brandy Armstrong is a Hydrologist at the U.S. Geological Survey (USGS) Hydrologic Instrumentation Facility (HIF). Amongst other duties at the HIF, she manages the Hydraulic Laboratory and Quality Assurance Programs, specializes in hydroacoustic technology and participates in the Hydroacoustics Working Group (HaWG). Brandy earned her Bachelors and Masters of Science



*Brandy Armstrong – OES WIE Liaison.*

from the University of South Carolina Marine Science program. She has been working in the field of oceanography since 2000 and with the USGS since 2008. From early 2008 through late 2014 she worked with the USGS Coastal Marine Geology Program in Woods Hole collecting and analyzing physical data and maintaining a daily forecast model (Coupled-Ocean-Atmosphere-Wave-Sediment Transport Modeling System, COAWST). She joined the HAWG in 2012, which received the USGS Excellence in Leadership Award in 2014, for its leadership and

skill in transforming how stream flow measurements are made using acoustic Doppler technology. Brandy transferred to the HIF, and switched to hydrology, in September of 2014, in order to be closer to family and pursue career opportunities. Brandy Armstrong lives with her husband in Kiln, Mississippi.

---

## A New Young Professional Chair

**Frédéric Maussang – OES YP Chair**

It was an honor for me to be nominated as Young Professional (YP) Chair in the beautiful and historical Italian city of Genova in May 18th.

I have graduated as an Engineer in Electrical Engineering in Grenoble INP in 2002 and as a Ph.D. in Grenoble University in 2005. I am currently an Associate Professor at Telecom Bretagne, a French high school of Engineering based in Brest. My research interest concerns, above all, are Sonar signal and image processing.

I serve as a reviewer for several IEEE Journals (Journal of Oceanic Engineering, Trans. Image Processing, Geoscience and Remote Sensing) and conferences (OCEANS, IGARSS). I was also co-organizer of IEEE conferences such as PASSIVE 2010.

As a Young Professional myself, I feel concerned with the interests and the problematics of similar OES members. Young



*Frédéric Maussang – OES YP Chair.*

professionals have indeed particular interests and needs due to the transition from a student state to a professional one. Among these interests are worldwide visibility and contact development. This can be addressed thanks to social networks such as LinkedIn, Facebook,... These tools are indeed particularly developed and used by our generation.

As YP Chair, I will try to make these tools known and largely used by the community, in order to develop YP groups by formation, university, chapter or region. We will then strive to develop collaborations between YP and “non-YP” to share their experiences, their skills, job opportunities.

OES has a crucial rule in this domain for its members. It will be a pleasure for me to receive your ideas.

See you soon.

# Accessing Your Society Member Digital Library

**Christian de Moustier**

The Society Member Digital Library (SMDL) is a benefit of membership for all members of the IEEE Oceanic Engineering Society (IEEE-OES) who have access to the internet.

The IEEE-OES SMDL holds all issues of the IEEE Journal of Oceanic Engineering (1976-present, 4 issues per year), as well as proceedings of conferences, symposia, and workshops sponsored or co-sponsored by the Society (see list below).

To access the IEEE-OES SMDL, point your browser to <http://ieeexplore.ieee.org> and sign in with your username and password ("Personal Sign In" at the upper right corner of the

webpage). If you have never signed in before, now is a good time to create an account by clicking on "Create Account" and following the instructions provided.

Once you have signed in, you will be able to review what you can access by clicking on – you guessed it: "WHAT CAN I ACCESS?"

As an OES Member you have access to the material listed in the box below. If you are also a Member of other IEEE Societies, additional information will appear on the webpage.

Happy Browsing!

- Acoustics in Underwater Geosciences Symposium (RIO Acoustics), 2013
- Autonomous Underwater Vehicles Technology (AUV) 1990–2015
- Baltic International Symposium 2008–2014
- Current, Waves and Turbulence Measurements (CWTM) 1978–2015
- Electric Ship Technology Symposium 2007–2011
- Integrated and Sustainable Transportation System (FISTS), 2011
- International Symposium on Ocean Electronics (SYMPOL) 2009–2013
- Neural Networks for Ocean Engineering, 1991
- Nonlinear Statistical Signal Processing Workshop, 2006
- New Trends for Environmental Monitoring Using Passive Systems, 2008
- OCEANS conferences 1970–2015
- Sensor Systems for a Changing Ocean (SSCO), 2014
- Transmission and Display of 3D Video (3DTV-CON), 2013
- Underwater Communications and Networking (UComms), 2014
- Underwater Technology Symposium (UT) 1998–2015
- Unmanned Untethered Submersible Technology (UUST) 1980–1989
- Waterside Security Conference (WSS) 2010

## **You are a member of the following IEEE Societies:**

- IEEE Oceanic Engineering Society

## **Your IEEE membership provides access to:**

- All AbstractPlus records
- IEEE eBook Classics
- IEEE Oceanic Engineering Society Digital Library

## **Full text of the following publications:**

- Distributed Systems Online
- Potential Magazine
- Spectrum
- American Institute of Electrical Engineers, Transactions of the
- Communications Surveys & Tutorials, IEEE
- Oceanic Engineering, IEEE Journal of
- Spectrum, IEEE

## **Full text of the following articles from the Technical Activities Community Snapshot:**

- Nigeria in the Spotlight: This African country is faced with multiple challenges to delivering quality care. Health advisor Femi Olugbile offers his perspective on the current situation.
- What Is an Intelligent Hospital?: A place where technology and design converge to enhance patient care.
- Anomalies Detection in Healthcare Services
- Biosignals for Everyone



# Colonel Norman D Miller, 1926–2015

**Coauthored by Jim Collins and Brad Boyd**

*Those of us who produce the OES Beacon strive to recognize the leaders and members of OES. Norm's smiling face has appeared many times in past issues and it is with sadness that this article has to document his passing. And, the fact that this is one of the largest articles ever produced about one of our members provides the proof of his impact on OES and especially the lives of over 700 former students. Norm was an icon in our society and he will be missed by all, but his legacy, the student poster competition, will live on under his name. Robert Wernli, Beacon Co-EIC.*



Norman D. Miller, age 89, soldier, engineer, organist, and staunch promoter of student oceanic engineering and science passed away peacefully in his Seattle home on Friday, July 3rd, 2015. He was born on Decoration Day, May 30, 1926 in Spragueville, Iowa to Lyle and Sophia (Beyer) Miller and grew up in nearby Epworth, Iowa. In 1943, he enlisted in the Army Specialized Training Reserve Program and received training as an engineer. Following his discharge after the war, he completed his bachelor's degree in electrical engineering from Iowa State College. He reenlisted in the Army Reserve, retiring as a full Colonel. One of his student oriented tasks at that time was interviewing prospective candidates for West Point US Military Academy and making recommendations to the Academy and the appropriate Congressman.



Norman moved to Seattle in 1961 and was employed by the Honeywell Corp. until 1988. One of responsibilities was as the engineer in charge of the design and implementation of the one meter accurate dynamic positioning system for the Glomar Explorer. Later with West Sound Associates he provided support systems for an offshore acoustic test facility.

He was very active in the Oceanic Engineering Society (OES) of the Institute of Electrical and Electronic Engineers (IEEE) and in 1989 he became a Vice President of the OES, a position he would retain for fourteen years. Norman organized the first student poster session at the OCEANS'89 Conference in Seattle. When he completed his term as a Vice President in 2003, his successor asked what he would like to do, Norman answered "students". This was an activity he would continue to lead for the next 12 years until the OCEANS'14 Conference in St. John's, CANADA. Approximately 700 students participated in the poster program over the period, 1989–2015. He also



*Receiving the Emeritus Award at the OCEANS14 St. Johns conference from Jerry C. Carroll (junior past president) and René Garelo (President).*

enthusiastically supported the Oceans Science Bowl high school competition and awarded the fifth to eight prize on behalf of the OES each year. Because of his long commitment to the students, the first prize at the biannual OCEANS poster competition is named in his honor. The US Office of Naval Research (ONR) has been very supportive of the student poster competition and it has been suggested that the OES supply a honorary plaque to be hung in a prominent spot at the ONR head office.

Norman was also active in the Seattle Valley of Scottish Rite, where he received the 33rd degree, and a member of the Walter F. Meier Lodge of Research #281. His love of playing the organ led to his playing for several lodges and membership in the Puget Sound Theatre Organ Society. Many well-known organists have visited his home to play his 7-rank pipe organ.

Shortly upon moving to Seattle Norman found his church home in University Temple United Methodist Church where his passion for liturgy led to his help in establishing special church services and an acolyte program. He produced a copyrighted procedure manual for the acolyte program.

Norman was a patron of the arts and loved to travel. His favorite trip was to Machu Picchu.



*Award Ceremony of the Student Poster Competition at OCEANS'04 Kobe with Tamaki Ura (General Chair), Hitoshi Narita (ONRG), Ken Takagi (Student Poster Chair) and students.*





*Award Ceremony of the Student Poster Competition at OCEANS10 Seattle where he worked with Philippe Courmontagne and Christophe Shintes as Student Poster Chair.*

He is survived by his sisters Enid Miller and Carol Rockwell, his nephews Douglas and Stuart, his niece Sally, and countless others touched by his boundless generosity.

Jim Collins and his wife, Faith, attended Norman's funeral in Seattle on behalf of the OES on July 18th. OES provided a bouquet. The ceremony was attended by about 120 people. Norman designed the event to the last detail. With the booming organ music played one could not but help but feel Norm's presence. After the service there was a reception where Jim met Brad Boyd who had been assisting Norman with his affairs for the last couple of years. He said that one of Norman's regrets was that he would not be able to be with us at OCEANS'15 in October. Jim had a chance to discuss Norman's contribution to the OES and our student program with some of his former engineering colleagues who were impressed with what he had achieved and at the same time recounted some of the details discussed above of his engineering achievements in Seattle.

### **Memorial Emailed Tributes to Norman**

Tribute from OES President René Garello is in the "From the President" (see page 3). Many tributes to Norman came in by email and follow below in surname alphabetical order. Many respondents agreed with Bill Kirkwood's suggestions given below but for brevity sake these comments are omitted and following these suggestions OES and MTS will have a special ceremony during the plenary session at Oceans 15 Washington DC.

From Gerardo Acosta, Argentina Chapter Chair for IEEE OES

I did not have the pleasure to meet Norman personally, but I know about his great task for the society. Always this kind of people are missed in any group, and surely we will do. RIP Norman Miller.



*Playing the pipe organ for IEEE OES Ad. Com. members and their families at his home after the OCEANS'10 Seattle conference.*

From Bob Bannon, AdCom Member of the IEEE OES

Sadly, we have all lost a dear friend, a true gentleman, and lifetime officer. Norm always gave a 110% to all endeavors and he will be missed by all of us.

From Jim Barbera, Senior Past President of the IEEE OES

As with most of the Adcom/Excom our memories of Norm were centered around the efforts with the students that he handled over the years especially when I was President and we attended one of the first NOSB events that has become usual for the society. We, especially Peggy at the conferences, developed a friendship that included many side trips at the conferences. In Boston we all went whale watching. It was a chilly day but the whales are hams and they performed for the tour boat. In DC Peggy squired him around as we live nearby so she knew places to go for sightseeing and he was glad to go. On our visit to Monterey the trip included the WAVE bus tour and a stop at Bubba Gumps for lunch. Virginia Beach included a group trek with Norm, Pat and Jim Candy and us to an airplane museum that had a large number of old planes that were still flyable. We will miss Norm as he had become a buddy over the years.

From Jim Candy, AdCom Member of IEEE OES

Not only was Norm a kind human being a true gentleman and a fabulous contributor to IEEE OES, MTS & ONR ... His legacy will clearly live on, but most important, he was a very strong and devout Christian and a true believer. It is appropriate to grieve and feel sadness for his passing, BUT as a Christian, it is time to rejoice because he has gone home to the Lord and is at eternal peace—so feel great comfort and celebrate that we were all fortunate enough to have had a great friend, colleague, and loving person in Norm Miller. God Bless him.



*Norm on the boat trip in St John's. Photo from Jerry Carroll.*



*Bouquet from OES*

From Jerry Carroll, Junior Past President of the IEEE OES

I sent you a picture of Norm on the boat trip in St John's which Norm enjoyed very much and so did I. I was very glad that I asked him to join me. We had a nice evening as well on our last day. Little did I know that would be the last time I would see him as he seemed in good health. He was always a friend and we enjoyed our visit to his home when we were in Seattle when he played the organ.

From Stan Chamberlain, Past President of IEEE OES

We certainly grieve and feel the loss of a great friend, both personally and to the IEEE OES, MTS & ONR community, and we also rejoice that, because of Norm's faith in Jesus Christ, he is now in a much better place. Norm has contributed greatly to our profession and it was a joy to work with him. He deserves the recognition he has and will receive. And now he has gone on to even greater recognition and reward.

From Ross Chapman, Editor of the IEEE OES Journal of Oceanic Engineering

I'm very sad to hear about Norman's death. The scope of his impact on the society and on research in the ocean was huge. I have very a very happy memory of breakfasts with him in St John's last year, the last time he attended an Oceans conference.



*The OES Emeritus Award plaque and photos were displayed on the table for his funeral ceremony on July 18th 2015 in Seattle (Photo by Jim Collins). Jim attended the ceremony as the representative of the OES.*

From Philippe Courmontagne, AdCom Member Elect of the IEEE OES

Really bad news ... as the Student Poster Committee chair, at each OCEANS conference, I can measure all that he has realized for OES and in particular for the students. I do not know exactly what to write except that it was a real pleasure to work with Norman, as he knew how to perfectly respect the work of the students. He has contributed a lot in the society by the way of the student poster program, not only because he gave an opportunity to the students to have their work enhanced, but too because he has thought about a relief team (or troops, as the colonel he was). Norman is not anymore, but what he has done will be there for several years.

From Joe Czika, Past President of IEEE OES

It would be fitting to rename the OES scholarship fund as the Norman Miller Scholarship Fund, or something like that. The name would immortalize Norm's most famous OES legacy. It would also be fitting to allow individual tax-deductible contributions to such a fund.

From Diane DiMassa, Past Treasurer of IEEE OES

A true pillar of the OES with a most honorable legacy. I am so happy that we named the student award for him while he was with us to appreciate it. He will be dearly missed.

From Ferial El Hawary, AdCom Member of the IEEE OES

So sorry to hear about the loss of our dear friend Norm, yes it's really day of sadness that wasn't expected. I worked with Norm on OES AdCom for more than three decades and the last seen him was at OCEANS' 14 in St. Johns, he sent me an Email after he returned home from the conference to express his feeling as this is last OCEANS for him to attend ..which sounded like he was saying Good by to OCEANS... He will be really missed.

Extract from Eulogy by Rev. John B. Grabner, Personal friend of Norman's for 52 years.

I will especially cherish the memories of traveling with Norman, my fellow worship nerd; they have enriched my life immeasurably – in sermon preparation, Bible study, and when watching British and French television or current developments in the Middle East: I will always be grateful for Norman's



loyal and generous friendship—and I'll miss his caustic wit:

From Mal Heron, AdCom Member of IEEE OES

Norman was indeed a special person and his contribution was unique.

From Franz Hover, Winner of first Oceans Student Poster Competition, Seattle, 1989

Norm made me feel like a professional, way back at the first competition in Seattle 1989, and I appreciated that! He kept a real interest in my career afterward, and we exchanged hello's every year or two. His dedication to the student posters – and the students – over all these years has been tremendous.

From Bill Kirkwood, Treasurer of IEEE OES

I propose that in DC... a very appropriate venue... we hold a special moment in his honor. I think we should have someone from ONR receive a memorial plaque (a really very nice one) in recognition of his efforts with starting the student poster competition and the link to ONR... the appropriate place for this plaque is at ONR I believe.

From Lian Lian, AdCom Member of IEEE OES

I am very sad to hear that.

From Marinna Martini, Secretary of IEEE OES

He leaves behind very large shoes to fill.

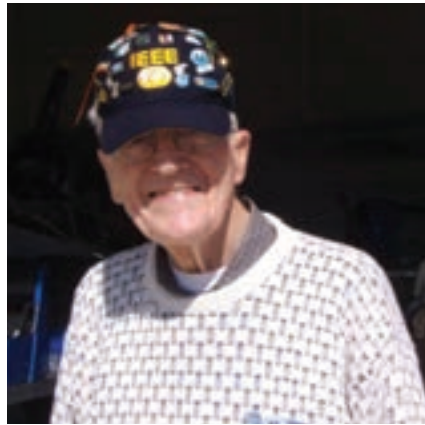
From Christophe Sintès, AdCom Member of IEEE OES

I am very sad as you to hear that. He has done a lot for students. After years he has become a friend. I will never forget his advice, and when sometimes he said "no", as the colonel he was. He always enjoyed coming to the Conferences and discussions with young people: it is a loss.

I met Norm in 1999 in Seattle for the student poster competition, he was the boss! He was strict like a retired colonel and explained clearly the rules of the game. I was impressed and a bit intimidated by him. I always liked when he made introduction of the SPC to students. It was him and students appreciated his view of the SPC: "Do your best, try to meet people, explain your work and convince!" He also each time explained the origin of the SPC with help from ONR etc, and it was success story! Norm for me was the soul of the Oceans competition. I am very happy the first prize is now named after him. During the last years he has also involved more and more people around him to help to judge, to organise, because for him, youth was future and it was matter of legacy. It could be said more about him, his military adventures, his organ etc, but I simply say: Goodbye, my friend.

From Bob Spindel, Chair OCEANS '89, '99, 2010

Norm's legacy lives on in the collective memory of those of us who have had the privilege of working with him, and especially in the lives of the hundreds of students he has championed



*Norm with Peggy's pin hat on while at the airplane museum (Photo by Jim and Peggy Barbera in 2012).*

in our (his, really!) Student Poster Sessions. I vividly remember how he pressed for the first Student Session in OCEANS 89, and how he sought and received a generous grant from ONR to fund student travel and hotel accommodations. It was a selfless, generous effort that he reprised every year thereafter until 2014. It is hard to imagine a more concrete contribution to our profession and our Society than encouraging young people in their early careers. We will miss him, but by continuing to hold Student Poster Sessions we can perpetuate a precedent he set that will be an ongoing honor to his memory.

From Harumi Sugimatsu, Editor of IEEE OES Beacon Newsletter

I am very sad to hear that. I remember our visit to his home when he played the organ for us.

From Ken Takagi, AdCom Member of IEEE OES

I am very sad to hear the death of Norman Miller. I was working with him to organize the student poster session of OCEANS 2004 as the session chair. That was a good memory.

From Ray Toll, President of MTS

We have indeed lost a special friend and colleague who impressed me most with his kind, gentle disposition and enthusiasm for our youth. I will remember him most for how he supported our OCEANS12 team as this link conveys.

<http://www.oceanicengineering.org/page.cfm/page/341/OCEANS12-Hampton-Roads>

RIP, Norm. We will commit to carrying on your legacy. You made a difference, sir.

From Joe Vadus, AdCom Member of IEEE OES

I am very saddened by the passing of Norm Miller. He was a distinguished asset of the IEEE OES, whom I admired very much for his warm, friendly personality, optimism, can do attitude, and great efforts in serving on ExCom and AdCom. He was a staunch member of MTS, and frequently interacted with ONR on the Student Program. He will be especially remembered for his guidance and the opportunities he provided for many students in organizing and managing the Student Program. Many will remember his invitation and the guidance and opportunities he provided to students from countries around the world. He was a good friend who will be greatly missed and remembered by many.

From John Watson, AdCom Member of the IEEE OES

He is a major loss to the Society. His legacy lives on in the Posters.

From Glen N Williams, Past President of IEEE OES

Truly an unsung hero of the OES. He will be missed.

Thank you, and Good-bye Norm.

We shall never forget you.



## RDML Timothy Gallaudet to Speak at Opening Plenary



OCEANS'15 MTS/IEEE Washington, DC is pleased to announce that Rear Admiral Timothy C. Gallaudet, USN will be joining Honorary Co-chair Dr. Rick Spinrad as our featured Plenary speakers. The Plenary Session is part of the opening ceremony on Tuesday morning, October 20, and is open to all registrants. Those not registered for the conference, may attend the Plenary and visit the Exhibition Hall at no charge by registering for "Exhibits Only" to get an entrance badge.

- RDML Gallaudet heads the Naval Meteorology and Oceanography Command which is responsible for providing oceanographic products and services to all elements of the Department of Defense.
- Dr. Spinrad is the Chief Scientist of the National Oceanic and Atmospheric Administration, driving policy and program direction for science and technology priorities in NOAA.

### Registration Now Open – Early-Bird Deadline on September 4

General Co-chairs Rusty Mirick and Jim Barbera have led a team of volunteers to bring you an outstanding program on behalf of the co-sponsors, the Institute of Electrical and Electronics Engineers, Oceanic Engineering Society (IEEE/OES) and the Marine Technology Society (MTS).

The **Technical Program** Committee accepted 500+ peer-reviewed abstracts focused on the 10 Core Topic areas of interest to IEEE/OES and MTS members, as well as Local Interest Topics, to form the foundation of a solid technical program. The presentations will be organized in 10–12 concurrent sessions from Tuesday through Thursday. The Proceedings DVD will be provided to full registrants at the conference and available for sale to others.



In addition to the technical sessions, a number of **Tutorials and Workshops** will be held on Monday, October 19 as additions to the full conference registration or they can be attended separately. The half-day or full-day tutorials are conducted under the auspices of the International Association of Continuing Education and Training. The Workshops provide a format for like-minded individuals to spend an extended period of time discussing a topic of mutual interest.

The **Exhibition Hall** will showcase 150-200 booths of commercial, academic, government and non-profit organizations featuring state-of-the-art developments in technologies and programs related to exploring, monitoring, protecting, and wisely using the world's ocean resources. The finalists in the **Student Poster Contest** will display their posters and explain their projects in the Exhibition Hall.

Two pre-conference affiliated events are scheduled for people with special interests. The MTS Education Committee is conducting a **K-12 Educators Workshop** on Saturday, October 17. A **Welcome Aboard Golf Tournament** will be held at Andrews Air Force Base on Sunday, October 18. Sponsored by the MTS DC Section, proceeds will support STEM education programs, such as Sea Scouts.

**Details on the program, affiliated events, social functions and a list of Exhibitors can be found on the conference website at [www.oceans15mtsieewashington.org](http://www.oceans15mtsieewashington.org). Exhibit spaces and Patron Opportunities are still available. See you at the Gaylord!**

OCEANS'15 MTS/IEEE Washington, DC will be held at the Gaylord National Resort & Convention Center. With modern facilities located directly on National Harbor, it is the perfect venue to attract a strong local attendance. For attendees from outside the metropolitan Washington, DC region, there will be easy access to explore the many historic and cultural places and activities in and around the US Capital.



We'll see you at

MTS/IEEE

**OCEANS** '15

Washington, DC

K-12 Educators  
Workshop  
October 17

Welcome Aboard  
Golf Tournament  
October 18

**October 19-22**

**REGISTER NOW**

[www.oceans15mtsieewashington.org](http://www.oceans15mtsieewashington.org)

## Why You'll Want to Be There!

### DISTINGUISHED PLENARY SPEAKERS:

Dr. Rick Spinrad, NOAA Chief Scientist

Rear Adm. Tim Gallaudet, USN, Oceanographer of the Navy

### STRONG TECHNICAL PROGRAM

Peer reviewed presentations, tutorials, workshops, special sessions and panels, U.S. IOOS Town Hall

### VIBRANT EXHIBITION

Booths with the latest products, services and programs,  
New Product Theater for in-depth presentations

### STIMULATING STUDENT ACTIVITIES

ONR supported Student Poster Competition,  
Career Panel, Opportunity to co-chair sessions

### ENJOYABLE SOCIAL AND NETWORKING EVENTS

Ice Breaker and Exhibitor receptions, OES & MTS

Awards luncheons, "Capital Casino" Gala

**MTS**  
marine technology society



IEEE Oceanic  
Engineering Society



# Chapter News

## Spanish Chapter – NGCUV'15

*Marc Carreras*

The Spanish Chapter of the Oceanic Engineering Society sponsored a plenary talk entitled “The future of Marine Robotics” given by James G. Bellingham, director of the Center for Marine Robotics at the Woods Hole Oceanographic Institution, at the Workshop on Navigation, Guidance and Control of Underwater Vehicles (NGCUV'2015). The workshop took place in Girona (Spain) on April 28–30, 2015, and was co-organized by the Universitat de Girona and the Universidade do Porto. The event counted with more than 90 attendees from 22 different countries, and an exhibitor area where 6 companies and institutions showcased their products, services and projects.

NGCUV goal was to show the latest investigations in Unmanned Underwater Vehicles as well as to promote the exchange of information and perspectives on the field's current research. The Workshop brought together a diverse set of researchers who are jointly committed to foster the research and innovation in underwater robotics. The event series was initiated in 2003 and has been held in Newport (UK), Limerick (IR) and Porto (PT) since then. NGCUV 2015 had 49 contributions, which were presented orally in two parallel sessions categorized in 8 different topics: “Underwater Manipulation”, “Mapping and SLAM”, “Navigation, Control and Planning”, “Tracking and Localization”, “Operations”, “Vehicle Modeling & Design”, “EU Projects” and “Multiple Vehicle Systems”. In addition to Bellingham's talk, 5 more invited plenary sessions were given: “An innovative vehicle concept for ocean sci-

ence: Ifremer's hybrid ROV first sea trial experience” by Jan Opderbecke (Underwater Systems Unit, IFREMER, France); “Towards Integrated Autonomous Underwater Operations” by Asgeir J. Sørensen and Martin Ludvigsen (Centre for Autonomous Marine Operations and Systems, AMOS, Norway); “Opportunities for Underwater Robotics in H2020” by Michel Brochard, (European Commission, DG Connect A2 Robotics); “The role of AUV's in the Oil & Gas Industry” by Hugh Ferguson (Subsea7, United Kingdom); and “Reflections on a decade of Autonomous Underwater Vehicles for Marine Survey” by Stefan B. Williams (Australian Centre for Field Robotics, Australia). Finally, an interesting tutorial session entitled “ROS for AUVs” was taught by Dr. Narcís Palomeras (Universitat de Girona, Spain).

For more information visit: <http://ngcuv.udg.edu>

## Providence Chapter Presentation by Jim Bellingham, July 9, 2015 at 6:00PM at Massachusetts Maritime Academy

*Albert J. Williams 3rd, OES Providence Chapter Chair*

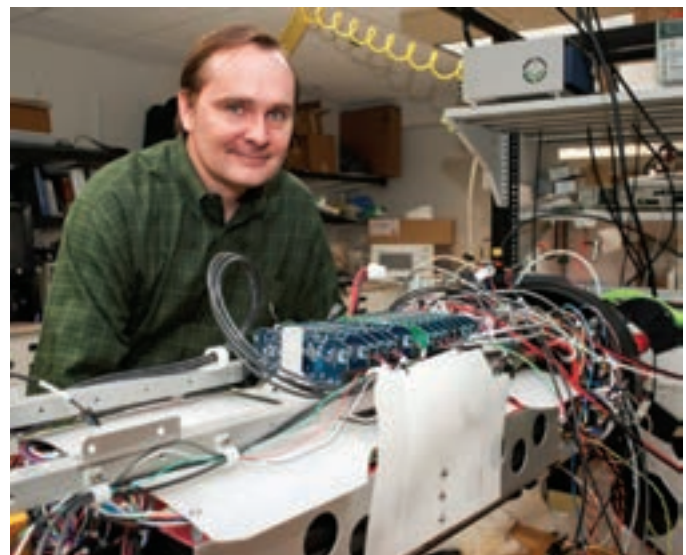
As the first talk to the newly formed OES Providence Chapter, 22 people came to hear our speaker, Jim Bellingham, talk and show slides about his and others work with underwater robotic vehicles. Jim began work as the Director of the Woods Hole Oceanographic Institution Center for Marine Robotics in early fall 2014. Bellingham came to WHOI from the Monterey Bay Aquarium Research Institute (MBARI), where he was director of engineering and most recently chief technologist. Bellingham earned his PhD from Massachusetts Institute of Technology, where he was founder and manager of the Autonomous Underwater Vehicle Laboratory. He was also co-founder of Bluefin Robotics in 1997, a Massachusetts-based company that develops, builds and operates autonomous underwater vehicles (AUVs). Bluefin was later acquired by Battelle.



*James G. Bellingham at NGCUV'15.*



*NGCUV'15 attendees in Girona (Spain).*



*Jim Bellingham, Photo courtesy of MBARI.*



## Houston Chapter Led By Award Winning Engineer

*Robert Wernli, VP of Professional Activities*

One of the reasons we receive such excellent support at the annual OTC conference held the first full week of May each year is due to the Houston Chapter of OES and its excellent leadership. The chapter mobilizes their members each year to provide 2 members for each portion of the conference to help man the OES booth and serve those interested in the society.



*Mr. Michael Romer, P.E. –  
Young Engineer of  
the Year.*

And leading the Chapter is Michael Romer, who was given the Houston Section's Young Engineer of the Year Award in 2013. We encourage more of our young engineers to step up and get involved in the society in a supporting or leadership position. The following resume on Michael highlights the talent that resides within the society.

Michael's current position is Subsurface Engineering Research Specialist for the ExxonMobil Upstream Research Company.

He works in Houston in the Drilling & Subsurface Function, Well Simulation and Surveillance team, and his focus is Artificial Lift.

Michael received a Bachelor's degree in Electrical Engineering from the University of Tennessee in 2004 and a Master's degrees in Electrical Engineering from the University of Illinois in 2006. He had 2 years of electrical engineering experience in manufacturing and power distribution prior to joining ExxonMobil in 2006.

His ExxonMobil experience includes 2 years as Subsurface Engineer for tight gas fields in Wyoming, and 2 years as an Artificial Lift Engineer for offshore oil fields in California. In this assignment he stewarded the installation of electric submersible pumps in three offshore wells and planned two more installations. Michael spent his next 2 years as an Artificial Lift Engineer in the Global Artificial Lift group, where he performed artificial lift studies for assets in Canada, Iraq, and Equatorial Guinea.

Michael moved to the Upstream Research Company in early 2012 to support artificial lift research and is currently coordinating efforts in that area. He was awarded a P.E. license in Petroleum Engineering in Winter of 2012.

Michael has authored 2 IEEE and 2 SPE (Society of Petroleum Engineers) papers. He currently serves as the Chair of the Houston Chapter of the IEEE Oceanic Engineering Society. He is also active in the steering committees of the ALRDC (Artificial Lift Research & Development Council) International Gas Lift Workshop, the Offshore Technology Conference, and the SPE North American Artificial Lift Conference.

Michael and his wife Aryn have been married for 6 years, and they have a 3-year old daughter, Amelia.

## New South Wales Section, Extracting Renewable Energy from the Oceans. What Will it Take for the Sector to Live Up to it's Potential

*Dr Gunilla Burrowes*

A large audience of over 100 gathered on 9 July 2015 for a presentation to the Joint Electrical Institutions Sydney – Engineers Australia, IEEE and IET. The audience heard from two leading Ocean Renewables companies with operations based in Sydney. Deputy Chair of the IEEE Ocean Engineering Committee NSW Section, Dr. Gunilla Burrowes, welcomed the attendees and set the theme as "Extracting Renewable Energy from the oceans? What will it take for the sector to live up to it's potential?"

Douglas Hunt, Managing Director of Elemental Energy Technologies (EET) was the first presenter. Doug gave an overview of the rapid-development process that is currently being implemented at EET for development of their MAKO turbines for generating power from ocean currents, tides and river flows. This process included advanced tools such as 3D modelling using Rhinoceros, optimisation using Grasshopper and test assembly of components using a Stratsys 3D printer. EET is currently setting to work a Kuka robot to complete the development cycle with rapid manufacture of full-size parts for test. Doug said that the rapid-development process at EET would be key to breakthroughs in technology for ocean renewables development and that the smart engineering team working on the project was testament to the ability of engineers in Australia and what could be achieved with innovative development processes.



*Mr Doug Hunt, Managing Director of Elemental Energy  
Technologies (EET).*



*Dr Tim Finnigan, CEO of BioPower Systems.*



*Mr Doug Hunt, Dr Tim Finnigan and Dr Gunilla Burrowes during question time.*

Dr. Tim Finnigan, CEO of BioPower Systems then presented on the BioWave device now being constructed for deployment at a wave energy site near Port Fairy, Victoria in late 2015. Tim described the evolution of the BioWave device, early testing and development into a full-size 250kW generator. Working with partners, BioPower has developed the technology to convert the oscillating motion of the BioWave to electric power that will be grid-connected at Port Fairy. Tim noted that many ocean renewables designs had aimed for



*The Audience at EA seminar rooms Chatswood, Sydney.*

simplicity in subsea design, but in the BioWave design the subsea components would be highly sophisticated, capable of measuring currents using an ADCP and avoiding storm events by sinking to the ocean floor.

The session was ended with a lively question and answer period and many attendees remained after the talks for further discussions with Doug and Tim. Gunilla thanked both the presenters for their preparation and for making the evening a highly successful meeting.

## Getting the bigger picture, From Beacon Contributing Editor

**Blair Thornton, OES Beacon Contributing Editor**

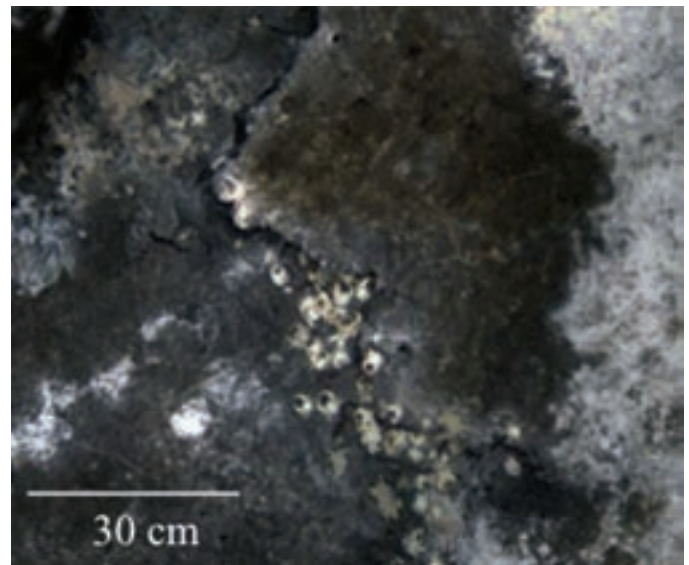
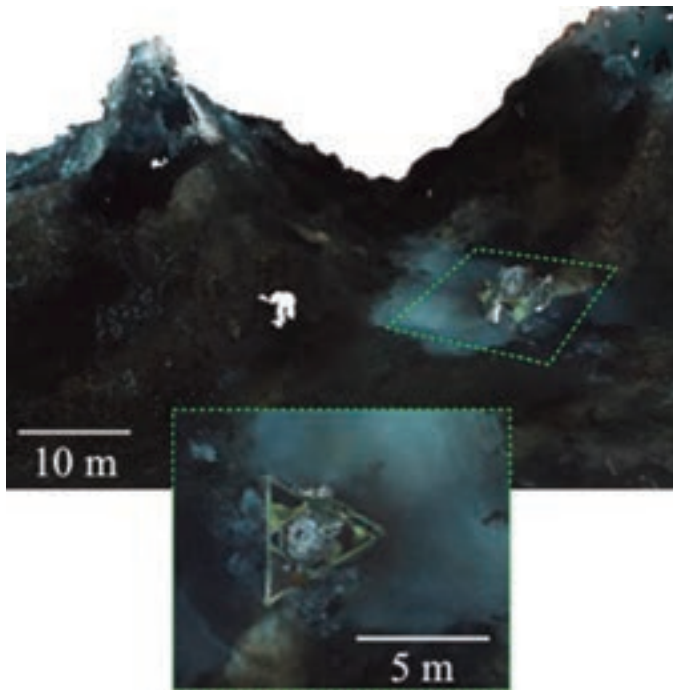
A picture is worth a thousand words. Regardless of how accurate this idiom is, there is definitely a lot that can be said from the tens of thousands of pictures that build up detailed 3D visual reconstructions of deep-sea hydrothermal vents and tsunami-debris on the seafloor around Japan. The reconstructions are the product of collaborative mapping efforts by the Ocean Perception Laboratory of the Institute of Industrial Science (IIS), the University of Tokyo, Japan, and the Marine Systems Group of the Australian Centre for Field Robotics (ACFR), the University of Sydney. The work has been supported by the Australia Japan Foundation (AJF) and the Japan Science and Technology agency's (JST) CREST program, which has allowed researchers from these groups to traverse the Pacific to participate in joint surveys, hold seminars and plan future activities together with the marine science community in Japan.

The use of underwater robots to generate 3D visual reconstruction of the seafloor is an effective way to map complex underwater scenes. While several groups around the world have demonstrated this capability, the technology is often shaped by interests in different aspects of marine science. In Australia, the ACFR runs an Autonomous Underwater Vehicle (AUV) facility to visually map coral reef systems as part of the Australian governments (Integrated Marine Observing System) IMOS



*The ROV Hyper-Dolphin returning from a day's work mapping deep-sea vents using the IIS and ACFR mapping systems.*





*Part of the Iheya data set, where the left 3D map shows two 30 m high mounds towering over an artificial vent (green outline) mapped using the IIS SeaXerochs from 10 m altitude. The more detailed map on the right, taken from 2 m altitude using the ACFR Serpent, shows a small group of Galetheids gathering around a hot-spring in true Japanese style.*

program. The application has focused developments on technology to perform repeatable high-resolution visual surveys at multiple sites to monitor temporal changes in coral reef systems. The maps generated are made accessible to the scientific community by hosting data products on web-based servers together with tools to annotate and efficiently extract information from them. On the other side of the pond, the IIS is involved in the development of technology to perform integrated chemical and visual mapping of deep-sea vent systems and monitor the effects of the Fukushima disaster off the east coast of Japan. These applications have driven the development of instruments to make in situ measurements of the chemical composition of seafloor sediments using techniques such as Laser-Induced Breakdown Spectroscopy (LIBS), Laser-Raman (LR) and Gamma-Ray (GR) scintillation spectroscopy. The 3D visual mapping technology developed at the IIS to complement these techniques has focused on mapping from higher altitudes to cover wider areas than conventional visual systems.

The first step of the collaboration was in January 2014, where researchers from the ACFR stepped on-board the R/V Kaiyo along-side colleagues from the IIS to map the artificial hydrothermal vent systems that were installed at a depth of around 1000m in the Iheya North field during the IODP 331 expedition in 2010. The ACFR's Serpent mapping system was mounted on the JAMSTEC ROV Hyper-Dolphin (see figure, previous page) alongside the IIS's SeaXerochs, and the two systems accumulated more than 60,000 pictures of the seafloor. These images have been used to generate multi-resolution 3D visual reconstructions of the region surrounding two artificial hydrothermal vents. The IIS system was used to obtain colour images from 10m altitude to cover two regions



*Blair Thornton describing the distribution of major vent animals mapped using the ACFR Serpent at the Scientific Imaging Workshop held in JAMSTEC.*

of 200 × 100 m and map large scale geological features and benthic colonies at a resolution of about a centimetre (see figure at top of page). The ACFR system was used to map several 25 × 25 m regions within the larger maps from 2 m altitude, where the millimetre resolution reconstructions give us a closer look at the diversity of vent animals that exist within the different colonies. A similar approach was adopted in July 2014, this time with both teams operating their respective mapping systems from the R/V Natsushima, operating the ROV in the Tohoku region to map an area where tsunami-related debris has accumulated on the seafloor, with the activities broadcast on Japanese national television. Once the data had been collected, Adrian Bodenmann of the IIS visited the ACFR in Sydney for a short period to work with ACFR





*Oscar Pizarro (left) and Adrian Bodenmann (right) discussing plans for future deployments with scientists at the University of the Ryukyus Sesoko station in Okinawa.*

researchers on combining the data obtained using the two mapping systems.

Based on these joint efforts, a series of seminars was organised to discuss the data obtained with members of the Japanese marine research community. The first seminar was the Scientific Imaging Workshop that took place in March 2015 at the Japan Marine Science and Technology (JAMSTEC) headquarters in Yokosuka, Japan. Stefan Williams of the ACFR gave a presentation to JAMSTEC scientists along with Blair Thornton and Adrian Bodenmann of the IIS to kick-off an afternoon of discussions about the results and directions for future survey efforts in the Iheya and Tohoku regions. A second set of seminars was held later on in July 2015, where Oscar Pizarro of the ACFR presented mapping

technology to an international audience of coral-reef and deep-sea vent ecologist at the University of the Ryukyus in Okinawa, along with members of the IIS who talked about the results of the joint expeditions. The third seminar took place just a few days later in Tokyo, where Oscar presented the latest technology and results from the ACFR to robotics engineers at the IIS.

Cheap airline tickets and broadband internet have brought offices and workshops around the world to within virtual poking distance. At the same time, more and more opportunities to support collaboration across national borders are surfacing and it is clear that international collaboration will become central to how we conduct research in our increasingly global society. The capabilities demonstrated by the ACFR and IIS have sparked much interest within the marine research community in Japan, and a series of surveys are being planned to apply these technologies to various ecological sites around Japan. We can only hope that in time, the impact of these kinds of activity will encourage more opportunities to support and sustain networks of international collaboration.

For more details about the work of the Ocean Perception Laboratory of the IIS and the Marine Systems group of the ACFR, visit the following links.

<http://ocean.iis.u-tokyo.ac.jp>

<http://marine.acfr.usyd.edu.au>



## From the President *(continued from page 3)*

(Facebook, twitter, smartphone app, etc.). We'll report on all the outcomes in one of the first Beacon issues next year.

As a continuous activity towards student support, we are sponsoring the Eurathlon event in Europe (<http://www.eurathlon.eu/>) at the end of the summer. OES will be the main patron for the underwater-related activities. In terms of conferences and workshops, we will have, of course, our second OCEANS of the year, OCEANS'15 in Washington, DC, USA (<http://www.oceans15mteewashington.org/>) in October. It will be

preceded by the 2015 IEEE Underwater Acoustic Signal Processing Workshop in Rhode Islands and followed by OTC Brazil in which we participate as a partner. We'll also support SYMPOL in Cochin, India (<http://sympol.cusat.ac.in/>) in November. Quite a busy end of the year!

OES is looking for YOU! Reach for OES.

**René Garello,**  
OES President



## *The sea's the limit!* **Oceans'16**

The North American OCEANS 2016 is being held in historic Monterey between the 19<sup>th</sup> and 23<sup>rd</sup> of September. The land of John Steinbeck is opening its arms to the ocean technology community and the world as we continue to look for solutions to today's issues.

Highlights of the conference include a superior technical program and wonderful events to educate as well as entertain participants. The week will start with local tours at several of the more than 20 marine-related facilities that form the Monterey Bay Crescent Ocean Research Consortium; world class golf; kayak tours with sea otters; and other activities where participants can experience the natural outdoor splendor of the Monterey Bay area. The Ice Breaker will feature a taste of Monterey, highlighting the local food and exquisite wines that the Monterey area is famous for.

The technical program kicks-off with workshops and tutorials then moves on to the core technical program. Join peers for breakfast, lunch, or dinner at any number of the local establishments, which are all within a few feet of the conference hotels and Monterey Convention Center.

The week will also include in-water demonstrations and exhibits of the latest in ocean technology. On the paramount evening of the conference, participants can stroll between the local flora and fauna at the Gala Dinner being held at the Monterey Bay Aquarium.



Special room rates are available for the conference and extend over the weekend prior to and after for those who would like to enjoy Monterey further. Giant sequoia redwoods, art galleries of all kinds, beautiful vistas, and endless activities are all just a short drive away from downtown Monterey.

Easy to get to, easy to stay... hard to leave...OCEANS Monterey 2016 is the place to be!  
<http://oceans16mtnsieemonterey.org/>



# New Voyages and Discoveries from an Old Harbor: The OCEANS'15 MTS/IEEE Genova Conference

**Andrea Caiti, General Chair of the Conference,  
Photos by Stan Chamberlain**

It was the time of the “Spring” OCEANS, and the MTS and IEEE OES mob gathered again: this time it was Italy, and it was the town of Genova. Once *domina* of the Mediterranean Sea, Genova is today the capital of the Liguria Region, where most of the Italian industrial, research and educational activities in the marine and maritime fields are concentrated.

The Genova Conference Center, “Magazzini del Cotone” (Cotton Warehouse), is a restored building in the middle of the Old Harbor (“Porto Antico”). The whole area was renovated in 1992, on the 500th anniversary of the landing in America of a son of Genova, Cristopher Columbus. It is now a large, pedestrian-only, marina, having at its back the medieval Old Town, and crowded with recreational and educational opportunities. The Conference Center, extending over a pier in the marina, was an inspiring location for an OCEANS meeting.

The conference had a very rich and high quality technical content: 744 extended abstracts were submitted (an absolute record since the twice-per-year OCEANS schedule started!), and 461 of them made it to the final conference program. The technical program had a total of 107 oral sessions, organized in

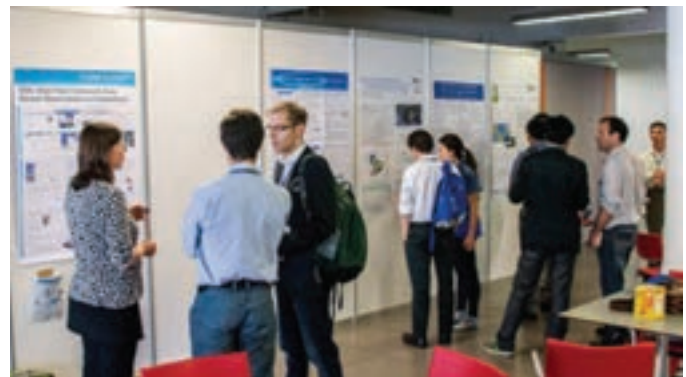
8 parallel tracks, and extending for the whole three days of the conference, plus the student poster competition and regular poster sessions. Four tutorials were offered in the pre-conference day. Special OCEANS'15 MTS/IEEE Genova topics included renewable ocean energy, maritime safety and security, persistent ocean monitoring. Submission of thematic sessions was encouraged, and resulted in many sessions based on multi-partner, multi-disciplinary research projects presentations. A special mention must be given to the session on education and student competitions in marine robotics, that gathered together current experiences and initiatives from North America, Europe and Asia, in a very fruitful and stimulating confrontation.

The plenary session opened the conference: John Delaney (University of Washington), Marco Weydert (European Commission), Henrik Schmidt (MIT) and Hank Ort (CMRE) alternated their talks on ocean science challenges, sustainable growth, marine autonomous sensing, and maritime security.

At the end of the session, the Societies Presidents, René Garello (OES) and Ray Toll (MTS), together with the plenary speakers, the honorary chairs and the OCEANS'15 Genova



*The Old Harbour (Porto Antico) marina, on the  
Genova waterfront.*



*Oral (above) and poster (below) sessions at OCEANS'15 MTS/  
IEEE Genova.*





*From left to right; J. Delaney (Univ. of Washington, Plenary Speaker); H. Schmidt (MIT, Plenary Speaker); R. Garelo (OES, President); Adm. Morellato (Italian Navy, Honorary Chair); R. Adm. Liaci (Italian Navy, Honorary Chair); A. Caili (ISME/Univ. of Pisa, General Chair); R. Toll (MTS, President); L. Grossi (DLTM, Honorary Chair); R. Adm. H. Ort (CMRE, Director, Plenary Speaker); M. Weydert (European Commission, Plenary Speaker).*

chairs, opened the exhibit. There were 65 booths in the exhibit, for a total of 75 Companies or Institutions, mostly from Europe, but with strong representation also from North America and Asia. Several booths were taken by research project consortia, either European or national, showcasing the project results as well as the activities of the participating partners: a clever way to disseminate your achievements, with more than 800 people attending the exhibit, including your fellow



*The Leonardo R/V (above) and the Aretusa R/V (below) on the pier in front of the Magazzini del Cotone Conference Centre.*



*The Ice-Breaker party on the Genova Aquarium terrace.*

scientists, the end-user community, and your funding agencies representatives!

Special events and activities were arranged exploiting the position of the Conference Centre on the harbour waterfront: the R/V Aretusa, of the Italian Navy Hydrographic Institute, and the oceanographic R/V Leonardo, jointly operated by CMRE and the Italian Navy, were on pier, free to visit for the OCEANS'15 Genova delegates. EvoLogic had two live demos at sea with their autonomous surface vehicle and acoustic positioning system: during the lunch-time breaks, attendees could follow the demo from the pier.

The opportunity of organizing side events in conjunction with the conference and exhibit was not ignored. On the pre-conference day, the IFAC Workshop on Multi-Vehicle Systems was held at the Conference venue, in parallel with the tutorials; the EMSO network (European Multidisciplinary Seafloor and Water Column Observatory) and the European Project SUNRISE (focused on the Internet of Underwater Things) had also their meetings in parallel to the conference – SUNRISE launched an open call for project tenders right at OCEANS'15 Genova; Kongsberg Maritime organized seabed mini-surveys of the harbor with their smartest shallow water bathymetric equipment. All of them exploited the presence of their target audience right there on site.

Socials were par to the level expected from an Italian event: ravishing food and wine served in locations inspiring for both their natural and historic beauty. The ice-breaking party was

held at the Genova Aquarium: after an inside tour of the Aquarium, delegates were led to the Aquarium Terrace, extending over a pier right in the middle of the Old Harbor marina, with a magnificent view of the town and of the bay, right in front of the historical Genova Lighthouse (“la Lanterna”). The mild spring sunset was an unforgettable moment, but also the cheese focaccia, prepared and cooked in the oven on the spot, will remain in the memories of many participants.



*The historical Lighthouse (la Lanterna) seen from the terrace at dusk.*



*Gala Dinner in the "Sala del Gran Consiglio", the Genovese Parliament Hall at Palazzo Ducale: ready to start (above), started! (below).*



*René Garelo and Ray Toll speaking at the Gala Dinner.*



*The OCEANS'15 MTS/IEEE Local organizing Committee and the OES and MTS Presidents– from left to right: Andrea Caiti, Pino Conte, Pino Casalino, Paola Picco, Marco Bibuli, John Potter, Enrica Zereik, Alessio Turetta, Renè Garelo, Ray Toll, Andrea Trucco.*

The Gala Dinner was a sell out, to the despair of those that wished to buy an extra ticket at the last moment. It was held in the Palazzo Ducale in the heart of the old town, in the very hall where the Parliament of the Republic of Genova had its meetings until early 19th century, before losing independence in the storm of Napoleonic wars. Now it was the turn of the Societies Presidents, René and Ray, to have their speeches echoed by the historic hall walls. Certificate and prizes to the student poster competition participants were presented in this occasion – you have already read a full

account of the OCEANS'15 Genova student competition in the last issue of Beacon!

In the final end, the Local Organizers could not help but feel proud and grateful. Proud for having brought an OCEANS conference in Italy for the first time ever; and grateful to the fellow researchers, colleagues and friends that have come to Genova from all over Planet Earth, and made OCEANS'15 Genova such a successful event. Indeed, a conference is made by you, the participants, and it rests on you. OCEANS'15 Genova was your OCEANS: be proud of it.





# OES Sponsorship Outstanding at ATC and OTC this Year

***Jerry Carroll – OES Junior Past President***

## Arctic Technology Conference (ATC)

The 2015 Arctic Technology Conference (ATC) was held in Copenhagen March 23–25, 2015 and for the first time was held outside of the U.S. and Houston. The event was a technical and operational success with many excellent papers on the latest information related to the Arctic presented. The Conference was affected by low oil prices and government sanctions with attendance down substantially from 2014. However, the goal of enhancing European registration was achieved. The IEEE/OES, one of the sponsoring societies, was in attendance with our exhibit booth and had very good active participation in the technical program. OES was represented by our President Rene Garelo, along with our OTC Board Member Claude Brancart, Jim Barbera and Jerry Carroll, who are shown in the photo of the opening ceremony. In addition, Ken Foote presented a technical paper and Co-chaired one of the sessions. Jerry Carroll served as Track Co-Chair for three of the Tracks and Co-Chaired several technical sessions with other OES members. The Governors of Canada and Newfoundland and Labrador sponsored the ice breaker reception in Copenhagen and encouraged participation in next year's ATC which will be in St. Johns, Newfoundland, October 24–26, 2016. The Comwell Conference Center near the airport was an excellent facility for the Conference.

## Offshore Technology Conference (OTC)

The Offshore Technology Conference was conducted in Houston on 4–7 May 2015. IEEE/OES is one of the sponsoring



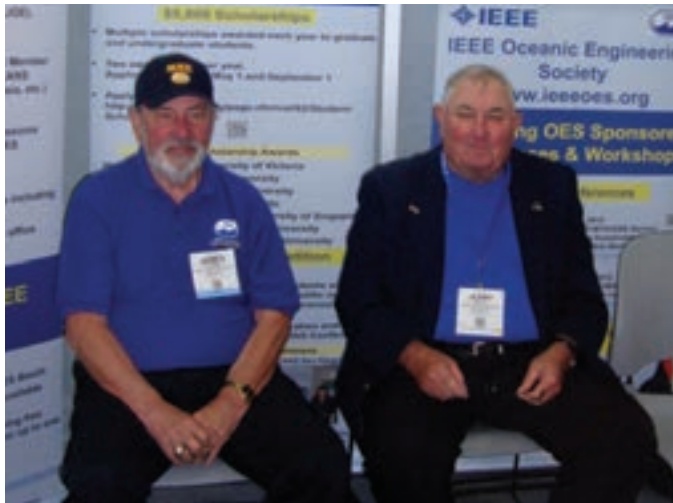
*Claude Brancart (right)*

Societies for OTC. Jerry Carroll and Jim Barbera were there manning the OES booth and participating in OTC organizational meetings. We were joined by Claude Brancart, our OTC Board member. This year's attendance was affected by the downturn in oil prices and we had about 95,000 attendees versus 108,000 last year. We had a full house of exhibits and an excellent technical program. We were assisted with our booth by our local Houston OES Chapter. Jim and I were delighted to



*Opening Ceremony (OES attendees in second row)*





*IEEE/OES Booth (Jim Barbera and Jerry Carroll)*



*OTC 2015*



*IEEE/OES Houston Chapter Dinner Meeting.*



*IEEE/OES Houston Chapter Dinner Meeting.*

join our OES Houston Chapter for their dinner meeting on May 5th and meet many of our Chapter members. They had an excellent presentation on some of the newest innovations and technology in the offshore industry. Mr. Michael Romer is the Chapter Chair and was recognized as the Young Engineer of

the Year in 2013 by the Houston Section and is doing an excellent job with the Chapter. Jerry Carroll is Chair of our OES/OTC Support Committee and we are very active in supporting all of the OTC events, including OTC Asia, and OTC Brazil which will occur in Rio de Janeiro on 27–29 October 2015.

# OES Recruits New Members at Ocean Business '15 in the UK

**Robert Wernli, VP for Professional Activities**

Since IEEE OES is an international society, we are making an effort to reach out to the international community to explain the benefits of the OES and recruit new members. Our first very successful step in this process was the attendance at Oceanology International in London last year where we recruited many new professional and student members. This effort continued earlier this year when we had a booth, shown in the related photo, at Ocean Business '15 held at the National Oceanography Center (NOC) in Southampton, UK, on 14–16 April. Ocean Business is a very successful conference that has excellent outreach to both professionals and students alike. This year attendance included 4,589 visitors with 38% coming from outside of the UK.

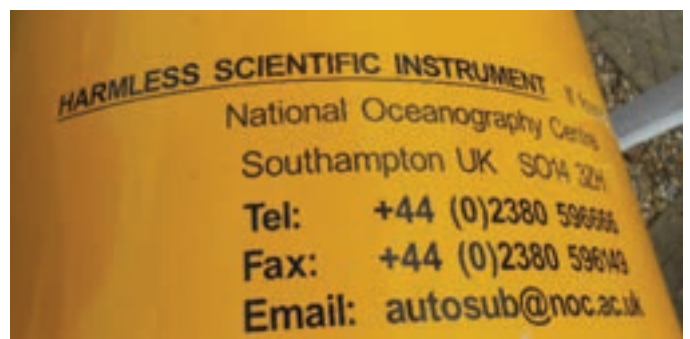
On Tuesday, the opening day of the event, I was able to participate in the Industry Presentation track where speakers discuss the wide range of job opportunities available in the marine science and ocean technology industry, and had the pleasure of following Gwyn Griffiths opening talk on Autonomous Analytics. During my presentation, I explained the benefits of joining a society such as OES for students and young professionals. My presentation ranged from the availability of our scholarships and poster competition awards to the value of networking at our conferences and workshops along with the benefits of joining the largest professional society in the world. As shown in the related photo, there was a large audience attending the presentations. This resulted in a large number of new student members and the potential of creating a student chapter at the National Oceanography Center.



*The OES booth at Ocean Business '15 manned by VPPA Bob Wernli..*



*Industry Track attendance at Ocean Business 15 during the OES presentation by Bob Wernli.*



*NOC is well known for its Autosub program. As shown in the above photos of one of the AUVs on display at the conference, should it become lost and found again, the message makes it very clear that this is harmless and NOT a torpedo.*



## Battle of the OCEANS Conference Pins

**Robert Wernli**

One of the traditions of the OCEANS conferences is for each local organizing committee to come up with the design of a pin that reflects the local flavor of the event venue. For those of us who have attended our flagship conferences for some time, our collection of pins has grown considerably. However, two of our

members have taken the collection of the OCEANS pins to a new level: Todd Morrison, former VP for Conference Operations and Peggy Barbera, wife of former OES president Jim Barbera. Their collections are shown in the following photos. We'll leave it to you to decide who the winner is.



*Todd Morrison, with his well-traveled pin jacket, flanked by Lian Lian and Zhu yi Wu at the OCEANS '15 Genova gala.*



*Peggy Barbera, with her infamous OCEANS pin hat, flanked by Pam Hurst and John Watson at OCEANS '11 Santander.*



*Peggy's Pin Hat...wear at your own risk!!*



*Todd's jacket enjoying a wee dram in the OCEANS '17 Aberdeen booth at OCEANS '15 Genova.*



---

# OCEANS MTS/IEEE and Co-Participating Societies (CPS)

**Robert Wernli, VPPA, and Kevin Hardy, VPPA Committee**

Since 2003, the IEEE-Ocean Engineering Society (IEEE-OES) and the Marine Technology Society (MTS) have been experimenting with involving more than twenty additional Professional and Scientific Societies into the OCEANS conference format, creating a dynamic and unified marine science and technology experience. Each of these Societies adds their unique blend of research, technology, commerce, and government relations. It also helps boost attendance, creating new tracks, and filling sessions and exhibit halls. With simple steps repeated consistently over time, the OCEANS conference will continue to grow and expand with new participants, while reducing the number of conflicting conferences.

An MOU is signed between the Co-Participating Society (CPS) and the two organizing Societies (IEEE-OES, MTS), which spells out the details of financial responsibility, event planning and implementation, seed funding, on-site registration, exhibit management, proceedings production, tutorial coordination, and other primary conference planning activities. All CPS members receive the same discounted rates for attendance and room rates at the host hotels as members of OES and MTS. It's a win-win for everyone involved.

The general management of the ongoing CPS program is being studied for integration into the MTS-HQ business staff tasks, since OES does not have a national headquarters (HQ) or paid staff. Our friends in MTS's HQ will be the face of the annual OCEANS conference to the many past and prospective Co-Participating Societies. This will provide a peer-to-peer link between Society HQs, while adding the vital component of continuity that is hard to sustain at the rotating Local Organizing Committee level.

A new section in the Oceans Conference Planning Manual will fully document the process.

OES members who have second memberships in other Societies relevant to ocean science and technology are encouraged to contact the VP-Professional Activities, Robert Wernli [rwernli@san.rr.com](mailto:rwernli@san.rr.com), or VPPA Committee member Kevin Hardy [krhardy4438@gmail.com](mailto:krhardy4438@gmail.com), with those Society contacts.

In the next issue of the Beacon, we'll begin a series describing the behind-the-scenes process of proposing and organizing an OCEANS conference, pointing out the many resources already in place to help Local Organizing Committees be successful.

---

## Earthzine Expands Oceans Coverage with OES Alignment

**By Jeff Kart, Managing Editor, Earthzine.org**

*IEEE has been represented at the Group on Earth Observations since 2005 as a non-governmental organization. This group created the Global Earth Observation System of Systems that links Earth observation resources worldwide across multiple Societal Benefit Areas – agriculture, biodiversity, climate, disasters, ecosystems, energy, health, water and weather – and makes those resources available for better informed decision-making. For this purpose, IEEE formed an Ad Hoc Committee, the IEEE Committee on Earth Observation (ICEO), which ended in 2013. The main activities of ICEO found a home in our society, the OES. One of the focus OES intends to have is on an “integrating oceans task of GEO,” the Blue Planet. Engineering is but the side of science which measures, calibrates and brings useful information to the world.*

*From ICEO we inherited the online magazine “Earthzine.” So far this magazine has been dedicated to all the societal benefits listed above. We are working toward having a much larger content on oceans-related activities from a “general public” point of view. For achieving this goal we need the contribution of all our members and, at large, from all our community. The article below shows the kind of review, survey and reports that Earthzine can present.*

*Don't hesitate to propose short articles. – René Garello, President of the IEEE OES.*

Earthzine.org has been covering the world of earth observation for nearly eight years, and is now sharpening its focus on the oceans.

The publication was originally launched in November 2007 as an activity of the IEEE Committee on Earth Observation (ICEO), a participating organization in the Group on Earth Observations (GEO) and its international effort to create a Global Earth Observation System of Systems (GEOSS). In 2013, Earthzine became a part of the IEEE Oceanic Engineering Society (OES) under a reorganization of the ICEO.

“The oceans are a very essential, integral part of the earth system,” said Paul Racette, editor-in-chief of Earthzine and a senior research engineer at NASA's Goddard Space Flight Center in Greenbelt, Maryland. “Our relationship with OES is a really good partnership in terms of the potential for information exchange.”

Earthzine has undertaken several additional initiatives under its new partnership with OES, including expanded coverage of ocean-related issues.

Examples include a second-quarter Ocean Acidification Theme published earlier this year. Articles from the theme



CREDIT: GLOBAL OCEAN ACIDIFICATION OBSERVING NETWORK

*A map showing an inventory of global ocean acidification observing platforms, from an Earthzine interview with Richard Feely, a senior scientist at the National Oceanic and Atmospheric Administration's Pacific Marine Environmental Laboratory in Seattle, Washington.*

included one on “Pacific Walrus and Coastal Alaska Native Subsistence Hunting” by Katya Wassillie, a staff member for the Eskimo

Walrus Commission in Nome, Alaska; and Melissa R. Poe, an environmental anthropologist at Washington Sea Grant Program and social science liaison at the National Oceanic and Atmospheric Administration's Northwest Fisheries Science Center.

A “mini-theme” on ocean sensors is planned for August 2015, Racette noted.

Jay Pearlman, chairman of the GEOSS Technical Committee for OES, said Earthzine has an international community of readers interested in a broad range of issues including satellite observation, human impacts and sustainability. OES members are encouraged to participate in the publication, to help broaden the reach of OES and help promote the important work being done by its members.

Racette said Earthzine hopes to incorporate ocean issues into future quarterly themes, and invites OES members and their colleagues to become involved in various aspects of the publication.



CREDIT: JOEL GARLICH-MILLER,  
U.S. FISH AND WILDLIFE SERVICE

*A group of walrus hauled out on an ice floe at Cape Seniavin, Alaska.*



*Earthzine content is accessible at [Earthzine.org](http://Earthzine.org). You can search for articles by topics that include Oceans.*

That involvement can include submitting articles for themes, serving as guest editors for themes, or making a general submission. To find out more, see Earthzine's Contribute page.

"Water is life's blood," Racette said. "... Understanding the oceans is vital to understanding life on earth, as well as life in the universe."

Racette noted that Earthzine is a unique publication within the IEEE, in that it's distributed strictly online and not circulated in print.

An ongoing feature of the publication has been Virtual Poster Sessions (VPSes) that showcase research projects by young professionals and students in NASA's DEVELOP National Program.

The latest VPS, launched this summer, includes 38 projects and marks the fifth year that Earthzine has hosted the sessions. Each VPS allows research to be seen online by a wider community. Each project page includes short abstracts and videos, and a section where readers can comment and ask questions of research teams. Teams compete for prizes from sponsors based on dialogue with readers, scientific merit, and creativity. Esri has been a longtime sponsor of the sessions. Previous winning projects have included "Clearing the Waters: Exploring Algae Blooms in Right Whale Nursing Grounds."

Racette said a recent increase in funding from OES for the remainder of 2015 will allow Earthzine to expand its coverage

of ocean issues with additional staffing and other initiatives including a "writing club."

Pearlman said he believes the society's relationship with Earthzine can help bridge communications between OES-member engineers and other scientists, researchers and the governance community. Addressing the oceans is an end-to-end process, he said, and Earthzine reaches across the spectrum, which can enhance communication and allow those involved to better address "grand challenges."

"What Earthzine can do is create a better understanding and appreciation of the challenges of working in the ocean environment," said Pearlman, a former member of the National Academies Ocean Studies Board. "In practice, it's a brutally hard area to work in – everything from barnacles to high pressures to extremes."

OES President René Garelo agrees.

The society includes about 2,000 members, compared to IEEE, with about 450,000 members, he noted.

"Earthzine, through its affiliation with OES and IEEE, can help promote the society and make more people aware of it," Garelo said.

And the relationship can be a two-way street, with more contributions from OES members, and Earthzine covering more topics related to OES projects, he added.

"The untold stories that are needed are about several communities working together," Garelo said.



# CoolTech: TI SensorTag- IoT made easy

**Kevin Hardy, Associate EIC**

*Topic submitted to the Beacon by Michael Kirk, Sr Development Engineer, Scripps Institution of Oceanography/UCSD*

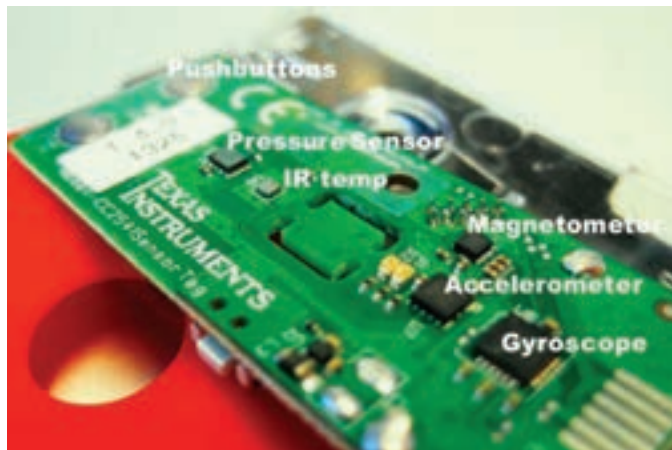
It is estimated there will be 50 billion Internet of Things (IoT) by 2020.

The Texas Instrument SensorTag allows quick and easy prototyping of IoT devices. Designers and hackers can connect their sensor solution to the cloud in three minutes. The small size hides big performance. Each Sensor Tag contains discrete sensors for IR temperature, humidity, barometric pressure, an accelerometer, a gyroscope, and a magnetometer. You still have to tie your own shoes.

The CC2541 SensorTag is the first Bluetooth Smart development kit focused on wireless sensor applications and it is the only development kit targeted for smart phone app developers. Check this out: you can control an ocean instrument on the bench or in a glass housing with your smart phone. That rocks.

A development kit for Bluetooth® Smart, 6LoWPAN and ZigBee® is around \$25. Lots more information including quick start guide, white papers, software, development tools and more at <<http://www.ti.com/tool/cc2541dk-sensor>>.

(Editors note: We're looking for cool things that are useful to a wide audience in ocean engineering. Face it, that's what brought a lot of us into this field. Let us know of anything noteworthy you see, and you may see your name in print! Send contributions to VP-PA Bob Wernli <[rwernli@san.rr.com](mailto:rwernli@san.rr.com)>, or VP-PA Committee member Kevin Hardy <[krhardy4438@gmail.com](mailto:krhardy4438@gmail.com)>.)



*The suite of board-mounted sensors is useful for a multitude of applications. The humidity sensor is on the flip side to the ones shown.*



*The TI SensorTag can even be used as a keyfob for tracking keys.*



*Trust us – Retrieving your data with a smart phone is a lot less dangerous.*

# The Sea and OCEANS'15/Washington DC

**Kevin Hardy, Associate Editor-in-Chief**

Last May the international OCEANS2015 Conference was held among the classical villas and maritime history of Genoa, Italy. (See OES Beacon, June 2015, Vol. 4, Number 2, pp. 32) This October, the North America OCEANS 2015 will be in the U.S. capitol of Washington DC.

From its inception, Washington DC has attracted the best and brightest.

Consider in 1806, President Thomas Jefferson was in his second term of office. With the Louisiana Purchase he had already doubled the size of America.



*America's third President, Thomas Jefferson, first proposed a U.S. Navy Submarine Force in 1806.*

Robert Fulton had returned to America from time in England and France. While Fulton had extraordinary success starting in 1800 with his first submarine *Nautilus* in France, Napoleon, unable to personally witness the tests, decided Fulton was a fraud. In September 1801 Fulton left for England to gauge the interest of the Royal Navy in submarines. They kept an eye on him by keeping Fulton on retainer. In 1805, Napoleon, again showing his superb mastery of nautical engagement, ordered his fleet out of port to teach that fellow Nelson a lesson. With Trafalgar behind them, the British were no longer interested in submarines as Britannia ruled the seas. Disheartened, Fulton left his design notes on submarines with the American consul in London, and left for America. The notes were forwarded to the U.S., and shortly a meeting between Fulton and Jefferson was arranged. Thirty years earlier, Jefferson had personally witnessed David Bushnell's submarine *Turtle* engage a British 64-gun third rate ship-of-the-line during the American Revolutionary War to good effect. Jefferson was wary of the English for a number of reasons, and recognized the American navy was no match for theirs. He enthusiastically encouraged Fulton to develop the *Nautilus* submarine for American coastal defense, and, said Jefferson, "I should wish to see a corps of young men trained to this service." Jefferson further says the matter "shall be the subject of a consultation with the Secretary of the Navy." Fulton's interests, however, had moved to commercializing transport by steam-powered ships. Had Jefferson been successful in convincing Fulton to establish a **submarine corps**, clearly no one else had the knowledge or aptitude, the British might

have had a more interesting time when they returned to America in 1812, and the U.S. Navy's submarine force would have recently celebrated its second centennial rather than it's first.

Another watershed moment in DC nautical history began in 1957 afterhours at the **Washington Navy Yard**, in Southeast Washington DC, the oldest shore establishment of the U.S. Navy, with a brilliant story of its own. Capt. George F. Bond, and Capt. Walter F. Mazzone, both members of the Naval Submarine Medical Research Laboratory, working in the Navy Experimental Diving Unit (NEDU), began their seminal work that led to the creation of **saturation diving**. The U.S. Navy's Man-in-the-Sea Program, including the three SEALAB under-sea habitats, was a result. There were hints and suggestions before, but saturation diving really started here. Period. Every bit of it: commercial, technical, military, Cousteau's Conshelf, Ed Link's SPID, Tektite, Hydrolab, Aquarius, all of it. Hyperbaric medicine was a secondary benefactor.



*USN Astronaut-Aquanaut Scott Carpenter inspects the lashed rigging before SEALAB II is lowered to the seafloor off La Jolla, CA, in 1965.*

*(Editor's Note: There will be a reunion of many of the original Aquanauts at a dinner gala in San Diego, October 29, 2015. Parties interested in attending should visit the Marine Technology Society-San Diego website for further details).*

Among the must-see Maritime Museums in the Washington DC area are:

**Editor's top pick: The U.S. Naval Academy Museum,** <http://www.usna.edu/Museum/index.php>.

Located 35 miles east of Washington, DC on the coast in Annapolis. The U.S. Naval Academy Museum welcomes more





*Captain John Paul Jones, the first well-known naval fighter of the United States, fought in the American Revolutionary War. Jones famously refused to surrender his ship with the words, "I have not yet begun to fight!" He went on to win the engagement.*

than 100,000 visitors annually from all over the world. The Museum offers two floors of exhibits about the history of seapower, the development of the U.S. Navy, and the expanse of projects the U.S. Navy has accomplished. Exhibits include a piece of the Civil War ironclad *Monitor*, a moon rock (52 astronauts were USNA grads including Alan Shepard, Wally Schirra, Jim Lovell, Jim Irwin, and Bill Anders), the largest model ship collection in North America, live model making demonstrations, a WWII German enigma coding machine, and a lot more. Visit the nearby Chapel and pay respects at the crypt of legendary Captain John Paul Jones of the American Revolutionary War. Admission is free. Bring the kids, they'll love it. Visitors must show a valid government-issued picture ID (driver's license, passport, CAC, etc.) at the gate. A few nice hours can be spent in the comfort of your den with a web tour of "A History of the Navy in 100 Objects" <https://www.usna.edu/100Objects/Objects/Instructions.php>.

**Historic Ships in Baltimore**, <http://www.historicships.org/historic-ships.html>.

Visitors walk among an impressive collection of vessels including the U.S. Sloop-of-War *Constellation* (1797–1853), the WWII U.S. Submarine *Torsk* (SS-423), the 1930's U.S. Coast Guard Cutter *Taney*, the Lightship *Chesapeake* (1930–1965), and the Seven Foot Knoll Lighthouse that marked the entrance to the Patapsco River and Baltimore Harbor for over



*The WWII U.S. Tench Class fleet type submarine USS Torsk (SS-423) made over 10,600 career dives.*

130 years. Knowing people are pretty much still the same, guests can sense life at sea back into the 18th century.

**Smithsonian Museum of American History**, invites you to consider **Sea-side microscopy**: "Whoever at the seaside has not had a microscope and an aquarium has yet to learn what the highest pleasures of the seaside are," according to Herbert Spencer, an eminent British intellectual, in 1860. Like reading a centuries old cookbook, you get a feel for the people of that day. Visit on-line at: <http://americanhistory.si.edu/blog/sea-side-microscopy-favorite-19th-century-summer-hobby>. Drop by to check out the vintage microscopes if you're already on the mall.

**Annapolis Maritime Museum**, <http://amaritime.org/> engages visitors in interactive experiences that highlight the oyster and its role in shaping the history and the maritime culture of Annapolis. Not far from the U.S. Naval Academy Museum.

**The National Museum of the U.S. Navy**

<http://www.history.navy.mil/museums/NationalMuseum/org8-1.htm>

Located on the grounds of the Washington Navy Yard. Visitors must have either a DOD Common Access Card; an Active Military, Retired Military, or Military Dependent ID; or an escort with one of these credentials. All visitors 18 and older must have a photo ID. Tough to get in, but awesome displays if you can, like the actual bathyscaph *Trieste*. Plan on a whole day before or after the conference.



*The USN's bathyscaph Trieste made the first manned dive to the bottom of the Mariana Trench on January 23, 1960.*

**Next up: OCEANS**

2016 International travels to Shanghai, China in April 2016. Shanghai is home to the China Maritime Museum, which is built around a full-scale recreation of

a ship captained by one of China's most famous nautical explorers, Zheng He, active in the 1400's. The architecturally inspiring museum is filled with model boats, historic relics, and interactive displays. Don't miss this article in the December 2015 Beacon.





## Member Highlights

*Contact the editors if you have items of interest for the society*

### René Garello – L' Hermione back to Brest

The exact replica of the ship that brought Gilbert du Motier, marquis de La Fayette, aka “La Fayette” to the New World in April 1780, came back to Brest. She celebrated Lafayette's second trip to America (the first was onboard “La Victoire”) and the many battles he participated to. She left Bordeaux in April this year and after a 3-month tour in the USA (<http://www.hermione2015.com/>), it took only 2 weeks and a half for l'Hermione to cross the Atlantique.

L'Hermione arrived to Brest at 2pm on Monday, August 10. More than 200 boats were present to welcome her. See all comments (in French!) on <http://www.letelegramme.fr/finistere/brest/en-images-l-arrivee-depuis-les-quais-10-08-2015-10735271.php>



Hermione, in the Greek mythology was the daughter of Menelaus and Helen and granddaughter of OCEANUS! A good omen for OES.



*Photo taken from down René's house.*



*Hermione's Views from the above URL.*



## Ferial EL-Hawary – From Western Caribbean Sea

My love story with the open oceans and seas goes back to my childhood when we had the opportunity to spend the family summer vacation on the shores of the Mediterranean Sea. We learned to swim without fear in the open water. Fast forward to the time when my husband and I came to Canada, and the birth of our three children. As each one was taken to the swimming pool to learn to swim at an early age, the same followed with our six grandchildren. All our children became competitive swimmers representing Nova Scotia (our Province) at the National level. It is a source of pride for me that our youngest is involved in the management of Canada swim teams including Olympic and World Class swimmers.

Our family made Atlantic Canada our home, and I had the good fortune to study for my Ph. D. at Memorial University of Newfoundland in the first Canadian Ph. D. Program in Oceanic Engineering. I am proud to be the first Ph. D. degree recipient in the Electrical option. I am also the first female graduate of that program.

We relocated to Halifax Nova Scotia where Mo and I joined Dalhousie University, the largest Canadian Maritime University.

We are blessed to note that all our children graduated from Dalhousie University.

My love for the Oceans and its environment goes deeper than just being a professional career pursuit and choice. We had the company of our beloved cat who named “Ocean” for more than 20 years. If you are familiar with Andrew Lloyd Webber’s “Cats” the musical play, then you may think that our cat Ocean is on his way to the Heaviside Layer.



*Touch of Giant Stingray.*



*Searshing for Star Fish at Western Caribbean Sea.*



*Swimming with Stingrays at Western Caribbean Sea.*

I also note that the famed National Geographic Explorer-in-residence **Sylvia Earle** who was the **first female** chief scientist of the U.S. National Oceanic and Atmospheric Administration has instilled in me the love for marine life. Her MTS Newsletter article accompanied by swimming side by side with the Stingrays was an inspiration with such encouragement. Whenever we are able, Mo and I enjoy a cruise and I take advantage of the day trips to swim close to stingrays, starfish, sea cucumber and other beautiful sea creatures.

I hope that future generations appreciate the riches of the Oceans, not only for its resources but for its magnificent marine life.

## Sandy Williams – Sail to New York

Sandy and Izzie sailed to New York and up the Hudson river. They could not go without removing the mast.

Bon Voyage !



## Brad Fisher – Move to Glenair

Brad has joined Glenair, Inc. (Glendale, CA) as Business Development Manager. A 20 year veteran of the Maritime Industry, and 13 years in the subsea connector industry, Brad brings a wealth of experience to Glenair’s harsh environment connector product lines. He will promote Glenair’s range of products into the maritime, Oil & Gas and other markets.





---

## Who's Who in the OES

### Steve Holt, OES Webmaster



Stephen M. Holt received his B.S. in Mathematical Physics from Wilmington College (Wilmington, Ohio), and his B.S. in Electronic Engineering from Franklin University (Columbus, Ohio). He also completed his M.S. in Engineering (with emphasis in Ocean Engineering and Underwater Acoustics).

Steve is currently employed with SGT, Inc. of Greenbelt, Maryland, USA as a Senior Systems Engineer working with National Aeronautics and Space Administration (NASA) supporting development of the future James Webb Space Telescope. He has also supported the National Oceanic and Atmospheric Administration (NOAA) for over thirty years with many meteorological and oceanic programs. He joined the IEEE Oceanic Engineering Society (OES) and was first elected to its Administrative Committee in 2000. He was later elected to the grade of Senior Member to the IEEE in 2001. He was also one of three Executive Co-Chairs for the Oceans 2005 Conference in Washington, DC in September 2005.

Steve was the elected member to the OES Executive Committee as its Secretary for ten years, from the beginning of 2001 to the end of 2010. In 2007, he was awarded the IEEE OES Distinguished Service Award (DSA).

Steve presently serves as the IEEE OES Webmaster, where he maintains the integrity of and implements new technology initiatives related to the web site. He is striving to make our web site a strong and effective tool for conducting our business

efforts, as well as conveying the importance of our Society to the global oceans community. He would also like to expand our communications and promotional activities to more effectively advertise and sell our brand and increase our membership. In addition, he would like us to more effectively use the latest tools in social media to expand our message to a more diverse, younger and international audience. This applies especially to expanding our outreach activities whereby we become even more effectively engaged with educators and students alike.

He also serves as the Co-Chair, Data Standards for the Global Earth Observing System of Systems (GEOSS) Technology Committee and presently is the Secretary for the upcoming OCEANS'15 MTS/IEEE Conference in Washington, DC. Additionally, he has been appointed as the OES Representative to the IEEE Systems Council. Steve would like to initiate an Ocean Engineering Community of Practice (CoP) capability for the OES, similar to what he developed for the IEEE Systems Council, whereby the global oceans community can engage and interact with us on a wide range of oceans related topics

Steve's technical interests include image, radar, and sonar signal processing, underwater acoustics, astronomical optics, as well as the remote sensing of the atmosphere and oceanic environments.

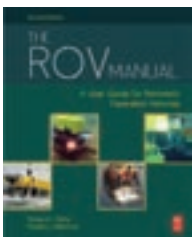
Steve's hobbies include listening to classical music, and reading extensively in history, science fiction, astronomy, and paleontology. He also recently completed two courses, one in Dinosaur Paleobiology (from the University of Alberta in Canada) and the other Volcanology (from Ludwig-Maximilians-Universität München (LMU) in Germany).

---

## OES Members in Print

### Harumi Sugimatsu

Have you had a book published recently? Let the Beacon know so that the information is available to all members of the society. Two members have recently been published: Robert Wernli and Bill Kirkwood.



**Robert Wernli**, with co-author Robert Christ, recently released their second edition of "The ROV Manual". The nearly 700 page book, available on line in digital and print versions, covers all aspects of Remotely Operated Vehicle design and operations.



**Bill Kirkwood**, with co-author David Fries, published a chapter on Non-Acoustic Instrumentation in the Springer "Handbook of Ocean Engineering". The book is available in online digital and print versions. The book is 1500 pages with 800 color illustrations and pictures providing in depth coverage over a wide spectrum of ocean technology topics. The eBook ISBN is 978-3-319-16649-0 and the print version is ISBN 978-3-319-16648-3

---

## Welcome New and Reinstated Members

### Argentina

Adrian O Madiroalas

### Australia

Paul Ashurst  
Somaiyeh Mahmoudzadeh  
Negin Fouladi Moghaddam

### Brazil

Luis Carlos Rosa

### Canada

Zhen Cao  
Jasper Dupuis  
Joshua Fritz  
Lyll John Hatton  
Ziyi Zhao

### China

Junliang Cao  
Junjun Cao  
Yao Chen  
Yongli Hu  
Zhulin Huang  
Tiejian Li  
Xin Meng  
Lingwei Meng  
Lei Yang  
Zheng Zeng  
Qunfei Zhang

### Colombia

Victor H Jimenez  
Miguel Augusto Perilla

### Cyprus

Savvas G Loizou

### France

El Houssein Chouaib Harik  
Aldo Napoli

### Germany

Mohammadreza Babaee  
Tiago Biller  
Anne-Christin Schulz

### Hong Kong

Sai Jyu Ian Wan

### India

Sayanti Bardan  
Srinivas Bolem  
Tamshuk Chowdhury  
Shyamala Varthini Dinakaran  
Prasad Dudhgaonkar  
Dharani G  
Muralikrishna Iyyanki  
Prabhakaran K  
Karunakar Kintada  
Sivakholundu Km  
Saththivel Kuppan  
Sankar M  
Ramana Murthy Mv  
Praveen Naresh  
Kishore Rajkumar Nigam  
Mohammed Osman  
Doss Prakash  
Libin T R  
Selvakumar R  
Sundar R  
Ramesh N R  
Jyoti Sanatkumar Rangole  
Muthukumavel S  
Ramesh Sethuraman  
Suseentharan V

### Indonesia

Arie Wibowo Wibowo

### Italy

Marco Bibuli  
Marina Ruggieri  
Nora Tasseti  
Enrica Zereik

### Japan

Hiroshi Igarashi

### Korea (South)

Seong-Yeol Yoo

### Mexico

Luz Abril Torres Mendez  
Alejandro Angel Maldonado  
Ramirez

### Nigeria

Cyril Ejenavbo

### Norway

Filippo Sanfilippo

### Philippines

Jeffrey Tamba Dellosa

### Russia

Vladimir Rjurickovich  
Marichev

### Singapore

Mohammad Abbas  
J Nagarajan  
Harold Yen Hai Tay

### Spain

Gabriel Ibarra-Berastegi

### Sweden

Bernt Anda  
John B Folkesson

### Tunisia

Habib M Kammoun

### Turkey

Devrim Ersanli

### United Kingdom

Idopise Afangide  
Gerry Goodfellow  
Paolo Izzo  
Jack McNeill  
Chukwulanim Patrick  
Osere  
Hanna Torrens-Spence

### USA

Pramod V Abichandani  
Kevin B Alewine  
Elizabeth Alvanas  
Matthew R. Archer  
Michael Arciero  
Brandy Armstrong  
Alexander S Brown  
Matthew J Casari  
Jae Won Choi  
Gordon W Clark  
Gilmore G Cooke

Gordon Douglas Cremer  
Randy B Crump  
Hector E Davila  
Jonathan D Dunfee  
Mike Fagnant  
Stephen A Fairfax  
Robert Forney  
R Reeve Fritchman  
Jason T Galary  
Alan H Gardiner  
Glenn Grant  
Charles Herbert Haas  
Johanna Hansen  
Karen A Harper  
Alan J Herr  
Stephen D Hickman  
Patrick A Horgan  
Ben Hurwitz  
Alexander Shahrom  
Jamshedi  
Richard Lee Jones  
Art Lee  
Elizabeth Ann Livermont  
Michael G Lovern  
Gary R. Mcallister  
Michael Patrick McGivern  
Brian P Mikeska  
Ryanlee Padilal  
John Pennewell  
Harryel Philippeaux  
Russell H Price  
Nicholas Allyn Rotker  
Christian Sauerland  
Wayne H Slade  
Andrew Spielvogel  
Gary Stables  
Joy Taylor  
Sean Thomas  
Paul A Van Tulder  
Leon Turner  
Richard A Upton  
Eugene V Vogt  
Edward Ward  
Chris Wright  
Chris Yahnker  
Joe Zhou



# OES Awards Student Scholarship

OES recently awarded a student scholarship to Augustin-Alexandru Saucan, who is finishing his PhD of University Telecom Bretagne. The following statement was written by the scholarship recipient.

## Personal Statement by Scholarship Recipient by Augustin-Alexandru Saucan



My education was geared toward electrical engineering as early as my high school years. I became interested in electronics and robotics and decided to attend the electronics and telecommunications undergraduate program at the Polytechnic University of Timisoara, Romania. My undergraduate studies allowed me to acquire basic electrical and telecommunications engineering skills. During this period

I became heavily interested in systems and signal processing, which offered me a rigorous framework to tackle engineering problems. At Telecom Bretagne I continued with my graduate studies and enriched my background in telecommunications, specifically environmental sensing (e.g. radar and sonar imagery). **During my bridge semester** I discovered the domain of oceanic engineering. It is here that I had the opportunity to participate in real data surveys using bathymetrical sonar systems (even though I didn't know how to swim). I became increasingly interested in sonar processing and bathymetry reconstruction which allowed me to combine signal/image processing, electronics and robotics. With 3-D bathymetry reconstruction methods, I found the perfect challenge involving both signal and image processing. Reconstruction is even more challenging due to the complexity and great variety of underwater scenes, especially involving manmade objects. I further explored bathymetry reconstruction in shallow waters during my final year project. This project, held in collaboration with *EdgeTech*, confronted me with the challenges of multi-path propagation and reverberation present in shallow waters. Bathymetry in shallow waters such as harbors and canals is receiving increasing attention, in particular for security applications and infrastructure inspection. However, shallow waters behave much like acoustic wave guides and involve multi-path propagation. Multi-path coupled with volume reverberation lead to several interfering echoes (i.e. clutter), that generate false depth points in bathymetry. The solution proposed was to perform adaptive processing of the echoes impinging the sonar array in order to separate the "useful" echoes from interferences. The proposed method and the results were the subject of my first Oceans conference (Oceans 2012 Hampton Roads) as a student poster [1], awarded second place.

I find processing of sonar signals highly challenging and equally rewarding, especially when involving multipath and reverberation. Such phenomena are less apparent in other domains of remote sensing, and allow me to explore not only

complex adaptive processing methods, but also physical models characterizing sonar signals. The richness of the data set and the complexity of adaptive processing techniques caused me to pursue a PhD, and motivate my continuous interest in the field. Besides the clutter-free bathymetry obtained with adaptive processing, I soon realized that adaptive processing offers not only clutter-free bathymetry but also high-resolution. That is, bathymetry with the same resolution as 2-D side-scan images (intensity images of the sea floor backscatter). This represents the main objective of my PhD, that is, to produce bathymetry at the same resolution of side-scan images, by employing adaptive signal processing methods. Usually, details visible in high-resolution 2-D side-scan images are lost in 3-D bathymetry. However, 2-D intensity images are insufficient for autonomous navigation, since they do not provide means for obstacle avoidance. Therefore, having 3-D bathymetry with the level of detail of side-scan images is highly desired for semi or fully autonomous navigation, which is itself a pre-requisite for underwater drones.

## Academic Profile

At Telecom Bretagne I took my first courses on remote sensing and in particular on oceanic remote sensing. Having chosen to specialize in environmental remote sensing during my final year, I had the opportunity to follow courses on sonar sensors, basic and non-linear acoustics, SAR (Synthetic Aperture Radar) imagery, LIDAR imaging systems. Also during my graduate degree at Telecom Bretagne, I studied sonar and image processing intensively. Relevant courses: array processing (which constitutes the core of my PhD), hyper-spectral SAR images, adaptive filtering (also a core subject of my PhD), detection with applications to sonar images, etc. These courses constitute a strong background for any student aiming for a career in remote sensing.

## General Call for Scholarship Applications

The IEEE Oceanic Engineering Society recognizes that the future of ocean engineering depends on the recruitment of talented, engaged young people. To encourage advanced education in ocean engineering, OES offers up to eight awards annually for \$5,000 each. Graduate and undergraduate students are encouraged to apply for these grants at any time. Selections are made twice each year, with deadlines of 1 March and 1 September. Information on the application process is available on the OES website: <http://www.oceanic-engineering.org/page.cfm/cat/81/OES-Student-Scholarship-Program/>

Applications for OES scholarships are reviewed. This requires the time of volunteer members. The following have served in 2014: Christophe Sintès, Chair; Kenneth G. Foote, Liesl Hotaling, Marinna Martini, and Sophie Scappini, André Lesaut.

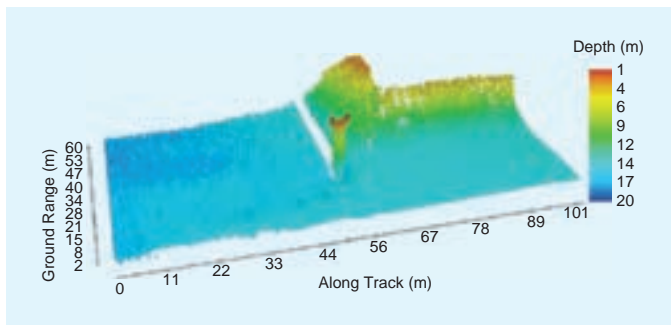


Figure 1. Bathymetry (3-D depth map) reconstruction in a shallow water canal in Fort Lauderdale, Florida (from [3]).

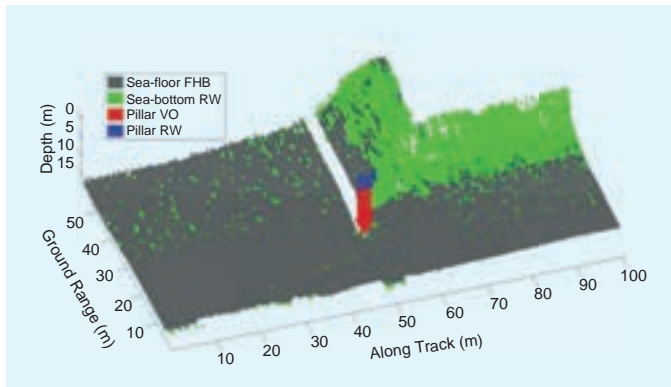


Figure 2. Model segmentation of the bathymetry surface (from [3]). Each color depicts the predominant model employed by the adaptive filter to estimate the echo DOA.

## Areas Of Oceanic Engineering of Interest To You

In general, I am interested in adaptive processing techniques that incorporate physical models as priors. This allows me to reconstruct 3-D depth maps at the same resolution as the 2-D side-scan image (amplitude only). During the 3 years of my PhD I proposed several improvements upon my early solutions. For side-scan sonars such as the EdgeTech 4600 used in our experiments, bathymetry is obtained by **triangulating the sea-bottom scatterers**. This is achieved by estimating the Direction of Arrival (DOA) of the backscattered echoes. In the pursuit of adaptive sonar array processing techniques for bathymetry recovery in densely cluttered environments, we proposed to adaptively filter the DOAs of acoustic echoes by employing an echo model. That is, we track the DOAs of the multiple echoes in order to separate “useful” echoes from clutter, for high-resolution and spurious-free bathymetry.

In [2] and [3], I proposed a system that **tracks the DOA of echoes** obtained after **pre-processing** the array signals. The pre-processor constructs an angular power distribution of the received array signal, i.e. the signal spectrogram, which is thresholded in order to obtain a rough estimate of the various echo DOAs. In such, a set of uncertain and noisy DOA estimates is obtained and fed to the post-processor: the echo DOA tracker. Tracking is conducted with a modified Kalman filter that accounts for clutter and multiple echoes. The DOA track-

ing procedure aims to filter and extract the bathymetrically “useful” echoes. Geometrical models are proposed in [3] for DOA tracking and represent the prior on echo trajectories. Goodness of fit tests are employed to validate the models employed even for real sonar data where the ground truth is not available. An example of bathymetry reconstruction, with the method of [3], is given in Figure 1. Observe a mooring pile in the middle of the figure and the canal bank. One disadvantage of this method is caused by the pre-processor, which requires several array observations to produce one DOA observation set. Hence, the tracking module offers a (spurious-free) bathymetry point for a number of array snapshots. Although this method resolves interfering echoes, it doesn’t produce 3-D bathymetry at the same resolution as a 2-D side-scan.

Furthermore, different echo models are employed by the DOA tracking module. The models employed correspond to the bathymetric surface, e.g. nearly flat and horizontal bottom (FHB), nearly vertical object (VO), or a random walk (RW). The FHB and VO are highly informative, but represent strong priors on the trajectory evolution of echoes. Conversely, RW models represent less-informative priors, with the advantage of being more flexible and capturing the deviations not accounted for by FHB and VO. These models are employed in an interacting multiple model (IMM) framework in the tracking module. In an IMM framework, several concurrent models process the same flow of data and an automatically compute weights associated to each model and fuse their individual results. Model weights represent the belief that the processed observation was generated with that specific model. As a byproduct of the IMM module, the different weight can be employed to detect model switches, and also **segment the bathymetric surface** by representing the predominant model. Observe in Figure 2 such a model segmentation results, with the FHB model (grey color) being predominant for characterizing the nearly flat floor; the VO for the vertical body of the pile; while the RW is employed for the slope of the canal bank and the pile fender (both not captured by the aforementioned models). The pile serves as a turning pile (turning dolphin) in the turning notch of the Port Everglades of Fort Lauderdale, Florida. While the fender prevents ships from bumping into the pile, for this purpose it is filled with foam and can rise with the tide. From the reconstructed 3-D bathymetry, we inferred the value of 2.23 m for the pile (body) diameter, with a 95% confidence interval of [2.14, 2.3] m. The inferred values correspond well with the typical value of 7.5 feet (2.28 m) for the diameter of such pilings.

In [4] and [5] we proposed a filter for tracking DOA of echoes directly from the array signal. By avoiding thresholding operations, this filter is able to produce bathymetry at the same resolution as side-scan images. However, this also implies highly non-linear filtering equations and a particle filter implementations is considered. A specific filter capable of **tracking two echoes** is presented in [4], with reconstruction results presented in Figure 3 a). Observe the increased resolution of the image, that is, the increase in the number of depth points. In Figure 3 b) observe the same pile reconstructed using the classical and often employed interferometry. Our reconstruction [Figure 3 a)] is more regularized due to the employed (prior) models on the bathymetric echoes. Also notice the lack of



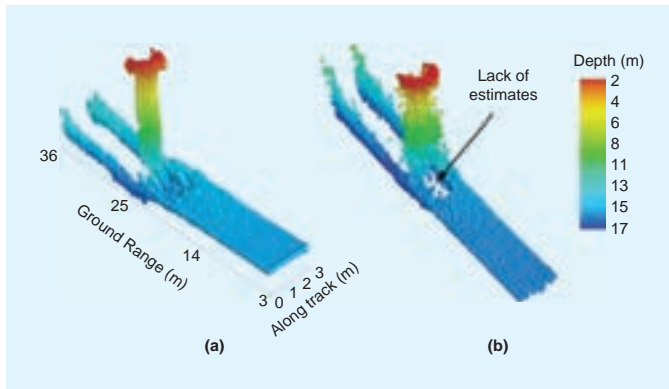


Figure 3. Bathymetry (3-D depth map) reconstruction of the mooring pile (from [4]): (a) with proposed method, (b) with interferometry.

estimates in front of the pole in Figure 3 b), this is caused by the fact that interferometry only estimates the DOA of only one echo as opposed to our double echo tracking [4]. However, this gain in resolution is contrasted by an increase in computational complexity.

In order to generalize the previous filter in order to track an arbitrary number of echoes, we proposed in [6] and [7] a novel filter aimed at tracking multiple distributed targets from phased-array observations. The echoes are generated by angularly distributed resolution cells on the sea-bottom. Hence, a distributed target model is employed, with the filter effectively tracking the centroid DOA of the extended targets. We proposed a novel marked Poisson point process model for the system, and accordingly, we derived the intensity filter that adaptively estimates the number of targets and corresponding centroid DOAs. Results on simulated data showcase improved tracking performance for the proposed filter over state-of-the-art methods.

My interest for model-based adaptive processing of sonar signals is showcased by the previous list of publications. Throughout my PhD, the main objective was to incorporate physical models into the processing stage, to enhance bathymetry (increase resolution and avoid clutter). Various physical models are formalized as a state-space system with filters effectively tracking the time-evolving parameters of interest. Whenever several models are available for the same physical process, interacting multiple model frameworks have been proposed [5]. In an IMM framework, several concurrent models process the same flow of data and automatically fuse their individual results. Furthermore, I am interested in the incorporation of priors on the backscattering process within the processing chain. That is, constructing a statistical model that describes the distribution of the sea-bottom backscattered amplitude as a function of the incident angle. Such methods are used to obtain bathymetry maps and are usually referred to as “shape-from-shading”. We believe that incorporating such

signal amplitude statistics in the phased-array processor will only increase the resolution of the reconstructed bathymetry.

## Professional Goals

I envision continuing my research on adaptive processing for bathymetric surfaces as a post-doctorate at a prestigious university/institution within a specialized laboratory or at a company specialized in oceanic imaging applications. I would enjoy the opportunity to test several leads envisioned during my PhD, such as combining *shape-from-shading* techniques with the bathymetry extraction process.

In the long term, I envision becoming a full-time researcher at a prestigious university/institution; working within a team of researchers on image reconstruction methods based on physical models. Furthermore, as my work stands to prove, signal and image processing are interconnected, and one of my personal goals is to bridge the gaps between signal and image processing with applications to oceanic engineering.

## References

- [1] H. Durrant-Whyte and T. Bailey. Simultaneous localization and mapping: Part I. *Robotics & Automation Magazine*, IEEE 13(2), pp. 99–110. 2006. A.-A. Saucan, C. Sintes, T. Chonavel, J.-M. Le Caillec. Enhanced sonar bathymetry tracking in multi-path environment. *IEEE Oceans International Conference*, Virginia Beach, U.S.A., 2012.
- [2] T. Bailey and H. Durrant-Whyte. Simultaneous localization and mapping (SLAM): Part II. *Robotics & Automation Magazine*, IEEE 13(3), pp. 108–117. 2006 A.-A. Saucan, T. Chonavel, C. Sintes, J.-M. Le Caillec. 3-D bathymetric reconstruction in multi-path and reverberant underwater environments. *IEEE International Conference on Image Processing (ICIP)*, Paris, France, 2014.
- [3] A.-A. Saucan, C. Sintes, T. Chonavel, J.-M. Le Caillec. Model-based adaptive 3-D sonar reconstruction in reverberating environments. *IEEE Transactions on Image Processing*, Submitted June 2014.
- [4] A.-A. Saucan, C. Sintes, T. Chonavel, J.-M. Le Caillec. Robust, track before detect particle filter for bathymetric sonar application. *International Conference on Information Fusion (FUSION)*, Salamanca, Spain, 2014.
- [5] A.-A. Saucan, T. Chonavel, C. Sintes, J.-M. Le Caillec. Interacting multiple model particle filters for side scan bathymetry. *European Conference on Signal Processing (EUSIPCO)*, Nice, France, 2015.
- [6] A.-A. Saucan, T. Chonavel, C. Sintes, J.-M. Le Caillec. Marked Poisson point process PHD filter for DOA tracking. *European Conference on Signal Processing (EUSIPCO)*, Nice, France, 2015.
- [7] A.-A. Saucan, T. Chonavel, C. Sintes, J.-M. Le Caillec. Track before detect DOA tracking of extended targets with marked Poisson point processes. *International Conference on Information Fusion (FUSION)*, Washington DC, U.S.A., 2015.

## Student Corner – The Way Ahead

**John J. Paserba** ([j.paserba@ieee.org](mailto:j.paserba@ieee.org))

*Special thanks to the IEEE Potentials magazine team for allowing us to reprint this article from their May/June 2014 issue. Author John Paserba was the Chair of the IEEE MGA Student Activities Committee at that time.*

This issue of IEEE Potentials has the annual theme on careers and graduate education. With the benefit of hindsight to look back on my own education and career, which has taken me from undergraduate school to graduate school, and then to two different large global manufacturing and service corporations in my career to-date, one concept resonated with my own academic and industry experiences— and that concept is “networking”.

The Webster on-line dictionary shows that networking is defined as: “the exchange of information or services among individuals, groups, or institutions; *specifically*: the cultivation of productive relationships for employment or business.”

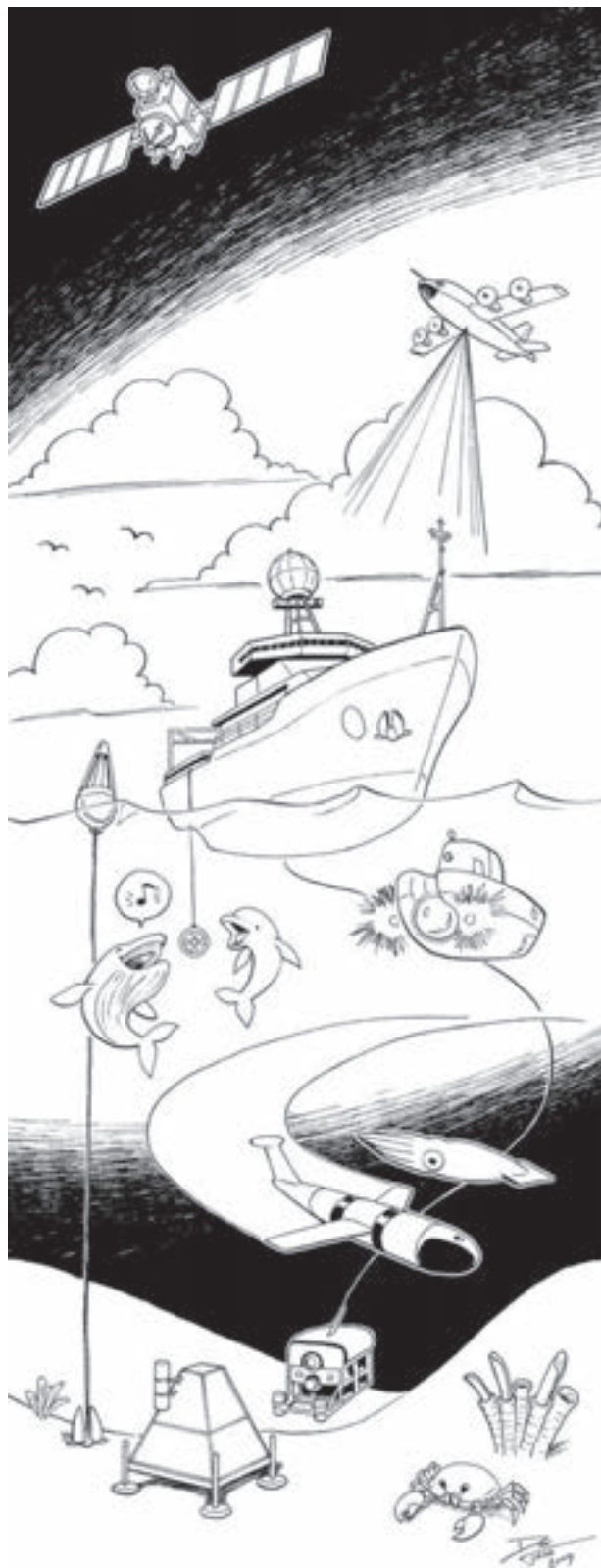
Your IEEE membership has given you access to a network of the world’s single largest group of technology professionals. IEEE is organized into technical units, geographical units, and affinity or membership groups. IEEE has 38 Societies and 7 Councils focusing on various technologies. These Societies provide an opportunity for you to network in the arena of technology via publications, conferences, educational programs, standards, and much more. IEEE is also organized geographically into 10 Regions worldwide. Each Region has Sections and within Sections are Student Branches. This provides an opportunity for you to network in your geographic area for gaining leadership opportunities or by tapping into a network to access the many benefits and services of IEEE. The technical structure and the geographic structure of IEEE come together in local Chapters of the Section or Student Branch Chapters, further providing local network opportunities for you in your technical area or areas of interest.

IEEE also has organized around member grades (Student Member, Graduate Student Member, and Life Members) and Affinity Groups (Young Professionals, formerly called Graduates of the Last Decade (GOLD) and Women in Engineering). These affinity groups have activities at the geographic unit level as well as the technical Society level. This provides a double opportunity to directly network with your peers in whatever member grade, affinity group or technical interest group you associate with.

As you read through this annual issue of IEEE Potentials focused on Careers and Graduate Education, I encourage you to engage in the benefits and opportunities in IEEE to create your own unique networking experience. I would ask are you engaging your IEEE network? And, just as importantly, are you giving to IEEE as an active participant of this massive network? If not yet, please consider beginning your life-long networking journey – starting today!!!

I like to close out each of my columns in the same manner – with a request to you to please feel free to drop me a note at [j.paserba@ieee.org](mailto:j.paserba@ieee.org) anytime to share your thoughts on the value of your IEEE Student membership and to share a story or example of what your IEEE membership engagement means to you or an example of your own personal IEEE networking experience.

### OES world



**All this, and more!**



# ATTENTION OES STUDENTS



## SCHOLARSHIPS

## STUDENT POSTER COMPETITION

## FREE TRAVEL TO CONFERENCES

## PRIZE MONEY

[WWW.IEEEOES.ORG](http://WWW.IEEEOES.ORG)

IF YOU'RE AN OES STUDENT MEMBER, DON'T MISS OUT ON  
YOUR CHANCES TO OBTAIN ONE OF EIGHT **\$5,000** SCHOLARSHIPS  
AWARDED EACH YEAR

HAVE YOU COMPLETED SOME EXCELLENT RESEARCH? BE SURE TO ENTER THE OES STUDENT POSTER COMPETITION. UP TO 25 INTERNATIONAL STUDENTS ARE CHOSEN TWICE A YEAR TO TRAVEL, ALL EXPENSES PAID, TO THE NEXT OCEANS CONFERENCE TO PRESENT THEIR RESEARCH IN THE POSTER SESSION. THE THREE TOP POSTERS RECEIVE **\$3,000, \$2,000 AND \$1,000** FOR 1<sup>ST</sup>, 2<sup>ND</sup> AND 3<sup>RD</sup> PLACE.



## OES Provides Financial Support to the National Ocean Sciences Bowl Competition (NOSB)

The NOSB is a nationally recognized and highly acclaimed high school academic competition, managed by The Consortium for Ocean Leadership (COL). It provides a forum for talented students to test their knowledge of the marine sciences including biology, chemistry, physics, and geology. The NOSB was created in 1998 in honor of the International Year of the Ocean.

Up until two years ago the National Science Foundation (NSF) provided the majority of the funding for this program. However, due to the federal cutbacks in Washington the funding situation changed dramatically in 2014 and NSF was unable to provide support. Determined to keep the NOSB alive, Dr. Robert Gagosian, COL President (now retired) and his team began an intensive search for funding sources and were able to raise enough support to continue the competition. It was during this effort that the OES, a longtime supporter of the NOSB increased its level of support tenfold to \$50k. In return, the awareness of the OES and its activities has been increased through the publicity it received from the NOSB (website, NOSB Finals Program book, newsletter The Ocean Gyre).

Over the last year COL President Sherri Goodman and the NOSB leadership team have successfully worked to increase the funding base for NOSB and create a more stable financial footing for the program. Seeing the dedication and the determination of the NOSB leadership team, the increased visibility of OES programs provided by the NOSB and the positive feedback from participants on how the NOSB has influenced their lives and career choices (see <http://nosb.org/impact/success-stories/>), the OES AdCom voted to continue supporting the NOSB, providing \$75k in 2015. A similar motion will be voted on by the AdCom this fall for 2016 funding of the NOSB.

This year the Regional NOSB Competitions were held in February and March, with more than 360 teams competing. In April the winner of each regional event traveled to the NOSB Finals at the University of Southern Mississippi's Gulf Coast Research Laboratory in Ocean Springs, MS to test their knowledge of marine sciences against that of the other regional winners.

In addition to the competition, the students participated in a day of interactive field trips around the Gulf Port, MS area. The field trips the students could select from were: West Ship Island Tour, Pascagoula River Tour, Stennis Space Center and Infinity Science Center Tour, R/V Point Sur Tour and Cruise, Horn Island Tour via the Biloxi Schooner and Dauphin Island Sea Lab Tour. One evening the students took part in a Career Expo at USM's Gulf Coast Research Lab.

The OES funds were used to support the 1st through 13th place prizes awarded at the finals, as well as other operational expenses. The top three teams had their choice of prizes, including GoPro video cameras and all-expense paid trips to Juneau and Sitka, Alaska, and Corpus Christi and Port Aransas, Texas, to conduct hands-on ocean science activities and visit Marine Science education facilities. First place winner, Boise



*Pictures 1 and 2 are of the Boise High School Team as they explore Juneau and Sitka, Alaska (Credit: NOSB Staff)*



*Pictures 3 and 4 are of the Dexter High School Team during their visit to Corpus Christi and Port Aransas, TX. (Credit: NOSB Staff)*



High School, Boise, Idaho selected the Alaska trip as their prize. Dexter High School, Dexter, Michigan the second place winner, selected the Texas Gulf Coast trip. Marshfield High School, Marshfield, Wisconsin team members each received a GoPro video camera as their third place award. The fourth through 13th place teams received an array of prizes from marine science textbooks to gift certificates.

Some of the feedback from this year's participants follows:

*"I didn't really have awareness of any impacts to the ocean before I was involved in [NOSB], and then I was exposed to lots of different information about oil spills, about ocean acidification, about climate change, about sea level rise... It's helped me to realize that even though I'm from an inland state, everyone on the planet plays a role in conserving the oceans. It's helped me to be aware of how the choices that I make might affect the ocean."* – Nate Marshall, student, Boise High School (Idaho), Salmon Bowl

*"For the past 18 years I have had the privilege to coach 18 teams at regionals, and proceed with 8 teams to the Nationals. It has been a great adventure. The Ocean literacy program has been*

*inspiring. I created an Oceanography class for our high school about 10 years ago and have kids dissecting, creating ecology projects, working on labs in ocean chemistry, learning about our ocean technology, history and marine policies. Our school library has enhanced its ocean materials, we have art classes painting ocean murals, and the numbers of graduates selecting ocean related career pathways has increased."* – Cheryl Wells, coach, Dexter High School (Michigan), Great Lakes Bowl

In addition to monetary support, the NOSB is also in need of continual development of test questions for the competitions. Each match is made up of two six minute rounds of multiple choice (Toss Up) questions separated by two multi-part written questions that take 3-5 minutes a piece to answer.

An example of each type of question is below. The NOSB also has a guide to question writing on their website (<http://nosb.org/community/volunteers/question-writers/>).

If you are interested in contributing questions (and corresponding answers) to the NOSB pool of questions please send your submissions to Kristen Yarincik ([kyarincik@oceanleadership.org](mailto:kyarincik@oceanleadership.org)).

## 2015 Buzzer Question

Question Type: Toss-Up

Question Format: Multiple Choice

Category: Technology - Research Vessels

### Question Text:

Calculating the dimensionless Froude number is useful in which of the following situations?

### Answer W:

Increasing vessel efficiency

### Answer X:

Determining plankton feeding modes

### Answer Y:

Modeling capillary waves

### Answer Z:

Measuring dissolved gas concentrations

### Correct Answer:

W

Question #: 0000030698

Competition: Finals

Round: Round 15

Pair: 2

---

# Everything You Wanted to Know About Conducting an OES Sponsored Workshop or Symposium

## ***OES Workshop/Symposium Coordinator***

The IEEE Oceanic Engineering Society sponsors a number of workshops and symposia each year and is looking for new workshop/symposium topics and individuals to organize them. For those interested in organizing an OES sponsored workshop/symposium an outline of the requirements is presented below.

### **Requirements to organize and conduct an OES Sponsored Workshop or Symposium**

- 1) The Workshop/Symposium Chair must be an IEEE OES member in good standing
- 2) Any prior workshops/symposia conducted by the Workshop/Symposia Chair must be closed in the eyes of the IEEE and the OES prior to the request for OES sponsorship of a new workshop/symposia
- 3) The Workshop/Symposium Chair must submit a request to the OES for approval to conduct an OES sponsored workshop or symposium
  - a) The request must be submitted to the OES Workshop and Symposium Coordinator (ieeeoes.workshop@gmail.com)
  - b) The OES Workshop/Symposium coordinator will present a motion to conduct the requested workshop/symposium to the AdCom
  - c) The request must be received 6 weeks prior to the AdCom meeting held at least one year before the planned workshop/symposium
  - d) The request must include:
    - i) Name of the workshop/symposium
    - ii) Date the workshop/symposium will be held
    - iii) Location of the workshop/symposium
    - iv) List of workshop/symposium committee members, their workshop job and contact information
    - v) Number of attendees expected
    - vi) Number of presentations expected
    - vii) Type of sponsorship requested of the OES
      1. Technical
        - a. Note: Beginning in January 2016, IEEE technically co-sponsored events, or their IEEE Organizational Unit (OU), will be charged a fee of \$1000 plus \$15 per paper sent to IEEE Xplore®. The OES AdCom will determine, on a case by case basis, how these costs will be shared by the workshop/symposium and the OES.
      2. Financial
  - viii) Type and amount of funding requested from the OES if financial sponsorship is desired
    1. Seed money (money is returned to the OES at the conclusion of the event)
    2. Grant (money is not returned to the OES at the conclusion of the event)
    3. Student attendance
    4. Other (please specify)
  - ix) Budget with best case, nominal and worst case forecasts
  - x) Method used to select presentations
    1. Review of submitted abstracts
    2. Other (please specify)
  - xi) Will papers be generated by this workshop
    1. If yes, will they be loaded into IEEE Xplore®
    2. If yes, will any of the papers be expanded to full length articles suitable for publication in JOE
  - xii) What tools will be used for abstract and paper submission, registration and secure payment of fees
  - xiii) Benefits to the OES for sponsoring this workshop/symposium
- 4) The OES Workshop/Symposium Coordinator will notify the Chair of the proposed workshop/symposium of the AdCom's decision
- 5) If the AdCom approves the proposed workshop/symposium, the chair of the workshop/symposium or their designee must
  - a) Within one month of the AdCom approval, complete and submit an IEEE Conference Application to the IEEE.
    - i) This form is often referred to as the ICX.
    - ii) This form is completed on-line
    - iii) An example of the ICX can be viewed at: [http://www.ieee.org/conferences\\_events/conferences/organizers/icx\\_conferences\\_app\\_screenshots.pdf](http://www.ieee.org/conferences_events/conferences/organizers/icx_conferences_app_screenshots.pdf)



- iv) The link to the actual ICX application is located at: [http://www.ieee.org/conferences\\_events/conferences/organizers/conf\\_app.html](http://www.ieee.org/conferences_events/conferences/organizers/conf_app.html)
  - v) Save a copy of this form for your records
  - vi) Contact the OES Workshop/Symposium Coordinator if you have any questions regarding the completion of this form (ieeeoes.workshop@gmail.com).
- b) The approval of a workshop/symposium by the IEEE, and its generation of a registration number for the event, triggers activation of additional forms that need to be completed ASAP. All of the forms in this section (b.) should be completed and submitted to the IEEE at least 8–9 months prior to the start of the workshop/symposium.
- i) Send a copy of the ICX and approval to the OES Workshop/Symposium Coordinator (ieeeoes.workshop@gmail.com).
  - ii) Complete and submit the IEEE Conference Publication Form. The link is located at: [http://www.ieee.org/conferences\\_events/conferences/organizers/conf\\_app.html?appName=Publication](http://www.ieee.org/conferences_events/conferences/organizers/conf_app.html?appName=Publication)
    - 1. Keep a copy of the form and send a copy to the OES Workshop/Symposium Coordinator (ieeeoes.workshop@gmail.com).
  - iii) The Workshop/Symposium Chair and the Treasurer must each complete a Conflict of Interest Disclosure Statement. The link to this form is : <http://www.ieee.org/about/corporate/compliance/coiandpob.html>
    - 1. Keep a copy of the form and send a copy to the OES Workshop/Symposium Coordinator (ieeeoes.workshop@gmail.com).
  - iv) When there are two or more sponsors of a workshop/symposium a Memorandum of Understanding (MOU) containing the basic, technical and financial information about the workshop/symposium is automatically generated and sent to the workshop sponsors. The Workshop/Symposium Chair should follow up with each sponsor to ensure that the forms have been completed.
    - 1. A Fiscal MOU (formerly Banking MOU) is required when conference related funds are held in an account where IEEE does not have access. Fiscal MOU's are **NOT** created automatically through the ICX. The document is located at: [http://www.ieee.org/conferences\\_events/conferences/organizers/fiscal\\_MOU.html](http://www.ieee.org/conferences_events/conferences/organizers/fiscal_MOU.html). Completed forms should be sent to Teresa Sacks, [t.sacks@ieee.org](mailto:t.sacks@ieee.org) and to the OES Workshop/Symposium Coordinator (ieeeoes.workshop@gmail.com)
  - v) Complete the IEEE Conference Financial Reporting form. Send a copy to the OES Treasurer for review prior to submitting to the IEEE. This online form allows submission of the workshop/symposium budget, forecast and actual finance and compliance information to IEEE. The link to the form is located at: [http://www.ieee.org/conferences\\_events/conferences/organizers/conf\\_app.html?pageType=finance](http://www.ieee.org/conferences_events/conferences/organizers/conf_app.html?pageType=finance)
    - 1. Keep a copy of the form and send a copy to the OES Workshop/Symposium Coordinator (ieeeoes.workshop@gmail.com)
- c) For each year that the workshop/symposium is active (i.e. approved in 2015 but held in 2016) the Workshop/Symposium Treasurer or Chair must complete the 1099 and 1042 Schedule of Payments Worksheet and submit it to the IEEE. The spreadsheet is located at: [http://www.ieee.org/conferences\\_events/conferences/organizers/conference\\_organizer\\_quick\\_links.html](http://www.ieee.org/conferences_events/conferences/organizers/conference_organizer_quick_links.html)
- i) Keep a copy of the form and send a copy to Teresa Sacks, [t.sacks@ieee.org](mailto:t.sacks@ieee.org) and to the OES Workshop/Symposium Coordinator (ieeeoes.workshop@gmail.com)
- d) At the conclusion of the workshop/symposium the Conference Chair and Treasurer must complete the Certificate of Accuracy to close the workshop/symposium. The link to this form is located at: [http://www.ieee.org/conferences\\_events/conferences/organizers/conference\\_organizer\\_quick\\_links.html](http://www.ieee.org/conferences_events/conferences/organizers/conference_organizer_quick_links.html).
- i) Closure of the workshop/symposium should occur within 6 months of the conclusion of the event.
  - ii) Keep a copy of the form and send a copy to the OES Workshop/Symposium Coordinator (ieeeoes.workshop@gmail.com)

## Advertising

- 1) The workshop/symposium chair or their designee is responsible for advertising the event.
  - a) Obtain the latest IEEE/OES logo from the OES Workshop/Symposia Coordinator and use it on all advertising.
  - b) Obtain a URL and set up a website. The site can be hosted by the OES if desired. Contact the OES Workshop/Symposium Coordinator for assistance (ieeeoes.workshop@gmail.com).
  - c) Design flyers for the different stages of the workshop/symposium (i.e. Call for Papers, Early Registration, General Registration ...) and give to VP Professional Activities for distribution at member recruitment events
- d) Publicize in:
  - i) OES Beacon (published 4 times/year)
  - ii) OES calendar
  - iii) OES eNews
  - iv) Trade magazines (Sea Technology, Ocean News and Technology, Hydro International, Marine Technology Reporter, International Ocean News, etc.)
  - v) OES email list (done through Veraprise)

## Abstracts/Papers/Registration

- 1) Submission of abstracts and papers should be done on-line.
- 2) When a paper is submitted, the author must sign an IEEE Copyright Form. This can be done electronically. Go to: [http://www.ieee.org/conferences\\_events/conferences/organizers/conf\\_app.html?pageType=finance](http://www.ieee.org/conferences_events/conferences/organizers/conf_app.html?pageType=finance) to view the form and learn how to set up electronic submission.
- 3) The payment of registration fees must be done using a secure payment site.
- 4) The OES has developed a suite of tools for abstract and paper submission, author notification, and registration. These modules can be used by OES sponsored workshops/symposium for a fee. Contact the OES Workshop/Symposium Coordinator ([ieeoes.workshop@gmail.com](mailto:ieeoes.workshop@gmail.com)) for details.

**OES Workshop/Symposium Coordinator Contact Info: [ieeoes.workshop@gmail.com](mailto:ieeoes.workshop@gmail.com)**



**OTC BRASIL 2015**  
AN EVENT ORGANIZED BY IBP AND OTC

OTC BRASIL attracts the world's foremost experts and companies to share knowledge and explore the latest offshore energy technologies!

**27-29 October 2015**

**THE ATLANTIC: FROM EAST TO WEST—AN OCEAN OF INNOVATION**

**Riocentro Exhibition and Convention Center | Rio de Janeiro, Brazil**

**REGISTRATION NOW OPEN! | [go.otcbrasil.org/regOTCBrazil](http://go.otcbrasil.org/regOTCBrazil)**

OTC EVENTS WORLDWIDE

OTC OFFSHORE TECHNOLOGY CONFERENCE  
OTC ARCTIC TECHNOLOGY CONFERENCE  
OTC OFFSHORE TECHNOLOGY CONFERENCE  
OTC OFFSHORE TECHNOLOGY CONFERENCE ASIA

Join Us      

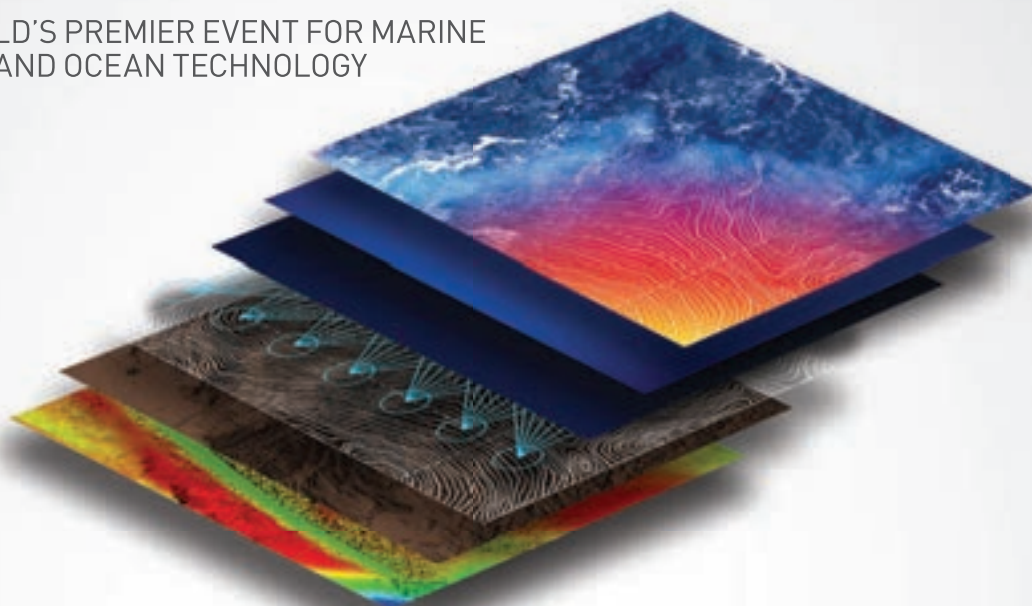


# Oi oceanology international®

## 2016

15-17 MARCH 2016, LONDON, EXCEL

THE WORLD'S PREMIER EVENT FOR MARINE  
SCIENCE AND OCEAN TECHNOLOGY



### ONLY BY EXHIBITING AT OCEANOLOGY INTERNATIONAL 2016 WILL YOU BE ABLE TO:

- **Reach 8,400 attendees from the global marine science and ocean technology community** all under one roof
- **Gain exposure to an international audience** of representatives present from 82 different countries in the oceanography, oil and gas, aquaculture and renewables sectors
- **Meet the market face-to-face:** three days of business bring 528 exhibitors from the industry direct to you
- **Connect with your target audience:** the world class conferences and panel discussions attract high level buyers
- **Develop new business relationships:** new VIP networking events help connect you directly with key buyers

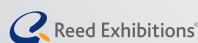
### OCEANOLOGY INTERNATIONAL 2016 SHOWCASES SOLUTIONS FOR:



**Secure your preferred location at Oceanology International by contacting the sales team today**

☎ 44(0)20 8910 7139 ✉ alex.duval@reedexpo.co.uk 🌐 oceanologyinternational.com

Organised by:



Learned Society Patron:



Endorsing associations:



# OCEANS'16

## MTS/IEEE Shanghai

"Our Future is with OCEANS"



OCEANS'16 MTS/IEEE Shanghai

April 10-13, 2016

### THE EVENT & THE VENUE: Shanghai International Convention Center

Every spring, the Marine Technology Society and the IEEE Oceanic Engineering Society sponsor OCEANS Asia/Europe, a prestigious conference/exhibition that draws hundreds of international attendees.

The Venue Shanghai International Convention Center has high reputation both at home and abroad for holding large-scale international conferences and expansive meeting and exhibition space with riverside view; and is convenient to major airports and local attractions and modern.

### CALL FOR ABSTRACTS:

Submissions related to OCEANS '16 Local and MTS/IEEE Core Topics will be considered. A list of topics is available at [www.oceans16mtsieeshanghai.org](http://www.oceans16mtsieeshanghai.org). The submitted attendees can take advantage of:

- Professionally reviewed technical papers, including sessions focused on local themes
- Plenary sessions with leaders from industry, academia and government
- A student poster session featuring outstanding projects from around the world
- Tutorials, workshops, demonstrations, government listening sessions, social/networking opportunities, professional field trips...and much, much more

*Abstracts may be submitted in one of the following categories:*

Regular Technical Program: Abstract submitted for review, technical paper presented in technical or poster session at the conference, and published in IEEE Xplore.

Student Poster Contest: Abstract, paper, poster presentation, and publication in IEEE Xplore. Open to any full-time student in an accredited program. Selected applicants, based on abstract reviews, will have travel and registration expenses subsidized.

Special Sessions (Workshops and Panels): Abstract and presentation, no publication. Participation is at the discretion of the Technical Program Committee.

### IMPORTANT DATES:

- Abstract submission opens: September 01, 2015
- Deadline for abstract submission: November 15, 2015
- Call for tutorials: October 15, 2015
- Tutorials close: December 15, 2015
- Notification for authors: January 15, 2016
- Final paper submission: February 28, 2016

For future information please contact the OCEANS' 16 Shanghai Technical Program Committee at [info@oceans16mtsieeshanghai.org](mailto:info@oceans16mtsieeshanghai.org).