



Celebrating 125 Years
of Engineering the Future



Oceanic Engineering Society Newsletter

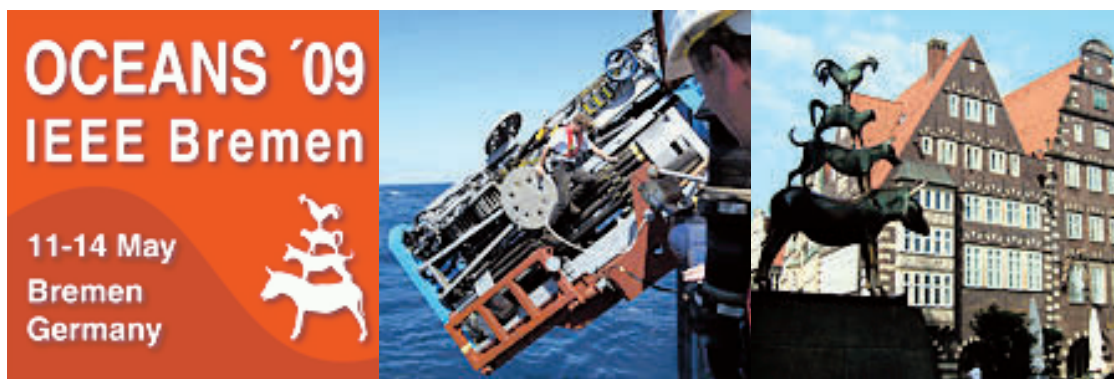
VOLUME XXXXIV

NUMBER 2

EDITOR: JAMES GANT

April 2009

(USPS 025-095) ISSN 0746-7834



OCEANS '09 IEEE Bremen

Balancing Technology With Future Needs

11-14 May 2009

Bremen, Germany



Panorama of the old market place, town hall, cathedral and Parliament

IEEE OCEANIC ENGINEERING SOCIETY EXECUTIVE COMMITTEE

President

JERRY C. CARROLL
jerrycortez@charter.net

Vice President

Technical Activities
ALBERT (SANDY) J. WILLIAMS III
Woods Hole Oceanographic Inst.
awilliams@whoi.edu

Vice President

Professional Activities
JAMES S. COLLINS
Univ. of Victoria
j.s.collins@ieee.org

Vice President

Conference Development
JOSEPH R. VADUS
Global Ocean Incorporated
j.vadus@ieee.org

Vice President

Conference Operations
RENE M. GARELLO
IT - Telecom Bretagne
rgarello@ieee.org

Secretary

STEPHEN M. HOLT
Noblis
sholt@ieee.org

Treasurer

DIANE E. DIMASSA
Mass. Maritime Academy
ddimassa@ieee.org

Editor

J. of Oceanic Engineering
CHRISTIAN DE MOUSTIER
Univ. of New Hampshire
cpm@ieee.org

Junior Past President

JAMES T. BARBERA
j.barbera@ieee.org

Senior Past President

THOMAS F. WIENER
t.wiener@ieee.org

EX-OFFICIO ADMINISTRATIVE COMMITTEE

Newsletter Editor

JAMES GANT
Battelle Memorial Institute
gantj@battelle.org

Webmaster

BARBARA FLETCHER
SPAWAR
barbara.fletcher@navy.mil

eNewsletter Editor

MARINNA MARTINNI
USGS
m_martini@comcast.net

Student Activities

NORMAN D. MILLER
colmiller@comcast.net

Chapter Coordinator and PACE

JAMES S. COLLINS
Univ. of Victoria
j.s.collins@ieee.org

Membership Development

ELIZABETH L. CREED
elcreed@ieee.org

Fellow Nominations

DAVID WEISSMAN
Hofstra University
eggdew@hofstra.edu

Women in Engineering

PAMELA J. HURST
Battelle
pjhurst@ieee.org

Technical Committee

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

Conference Development

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

Awards, Nominations and IEEE USA

R&D Policy
JAMES T. BARBERA
j.barbera@ieee.org

Chapter Chairpersons

JAMES S. COLLINS (Coordinator)

REGION 1-6, USA

BOSTON	John W. Irza
CHICAGO	J. Sherman
HOUSTON	Gamal A. Hassan
HONOLULU	Mark Rognstad
SAN DIEGO	Robert Wernli (Acting)
SEATTLE...	(open)
WASH., DC	Michael J. Goldberg

REGION 7 CANADA

HALIFAX	Ferial El Hawary
OTTAWA	Balakumar Balasingam
QUEBEC	Y. de Villers
TORONTO	Sridhar Krishnan
VICTORIA	James S. Collins

REGION 8 EUROPE, MIDDLE EAST &

AFRICA	
FRANCE	Rene M. Garello
SPAIN	Gabriel Oliver Codina
UK & RI	(open)

REGION 10 ASIA & PACIFIC

INDIA	M. A. Atmanand
JAPAN	Kenichi Asakawa
NEW SOUTH WALES	Brian G. Ferguson
SINGAPORE	Pallayil Venugopalan
TAIPEI	Forng-Chen Chiu

Journal Associate Editors

Christian de Moustier (Editor in Chief)
Douglas A. Abraham

John R. Buck
Brian Calder
William M. Carey
Ross Chapman
Stefano Coraluppi
Malcolm L. Heron
Franz Hover
Jules S. Jaffe
David P. Knobles
Edward R. Levine
James F. Lynch
Hisakki Maeda
Urbashi Mitra
Antônio M. Pascoal
John Potter
James Preisig
Michael D. Richardson
Roland Romeiser
Hee-Chun Song
Robert C. Spindel
Daniel J. Stilwell
Milica Stojanovic
Andrea Trucco
Kathleen E. Wage
Louis L. Whitcomb
Lucy R. Wyatt

Technology Committee Chairpersons

KENNETH FOOTE (Coordinator)
Air/Space Remote Ocean Sensing

DR. DAVID WEISSMAN

Current, Wave, and Turbulence
Measurements

STEVEN P. ANDERSON

Environmental Acoustics
TIMOTHY F. DUDA

Environmental Technology

DANIEL HANES

Global Earth Observing System of Systems

JAY S. PEARLMAN

Information Processing and Data Fusion

WILLIAM (BILL) PORTO

Maritime Security and Critical Infrastructure
Protection

PAMELA J. HURST

Modeling, Simulation, and Visualization

WARREN L. J. FOX

Ocean Energy

CLAUDE P. BRANCART

Ocean Policy and Education

JOSEPH CZIKA, JR.

Oceanographic Instrumentation, Communi-
cation, Navigation, and Positioning

MICHAEL HARRIS

Sonar Signal and Image Processing

JAMES V. CANDY

Submarine Cable Technology, Commercial
and Scientific

ROBERT T. BANNON

Subsea Optics and Vision

DR. FRANK M. CAIMI

Underwater Acoustics

KENNETH G. FOOTE

Underwater Communication, Navigation,
and Positioning

DR. MILICA STOJANOVIC

Unmanned Maritime Vehicles and

Submersibles

CLAUDE P. BRANCART

ELECTED ADMINISTRATIVE COMMITTEE

2007-2009

ELIZABETH L. CREED
BARBARA FLETCHER
VICTOR KLEMAS
MARINNA MARTINI
JOHN R. POTTER
ALBERT J. WILLIAMS III

2008-2010

ROBERT T. BANNON
JERRY C. CARROLL
PAMELA J. HURST
ARCHIE T. MORRISON III
JOSEPH R. VADUS
CHRISTOPH WALDMANN

2009-2011

DIANE E. DIMASSA
MALCOM L. HERON
FREDERICK H. MALTZ
MILICA STOJANOVICH
TAMAKI URA
JOHN WATSON

IEEE Oceanic Engineering Society Newsletter (ISSN 0746-7834) 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 OCEANIC ENGINEERING SOCIETY NEWSLETTER, IEEE, 445 Hoes Lane, Piscataway, NJ 08854

©2009 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>Oceans '09</i>	<i>Cover</i>
<i>President's Corner, Jerry Carroll</i>	3
<i>From the Editor's</i>	4
<i>OES Newsletter Editorial</i>	4
<i>An Autonomous Marine Robot (AMR) Sports Movement—a great opportunity for the IEEE Oceanic Engineering Society (OES)</i>	5
<i>OES Conference Development</i>	7
<i>IEEE/OES Chile-US Workshop 2008: Summary Report</i>	9
<i>Oceans Conferences</i>	15
<i>OES RECON Committee Report</i>	16
<i>Jim Candy Award</i>	19
<i>Activity Report for 2008 IEEE OES India Chapter</i>	20
<i>IEEE GEOSS Workshop</i>	22
<i>2009 IEEE Underwater ASP Workshop</i>	<i>Cover 4</i>

President's Corner

This year the IEEE celebrates its 125th Anniversary. As you know, most of your dues are for your IEEE membership and only \$19 for your Oceanic Engineering Society membership. The \$19 is a great bargain and includes access to the IEEE/OES EXPLORER, the cost of which the Society absorbs. The IEEE is a very large organization of over 350,000 members and provides its members many networking opportunities. Through its programs and significant financial contributions, the IEEE provides support to the international community. One project that was presented at the 2008 IEEE Energy 2030 Conference was the Smart Grid that will enable customers to save money by controlling their energy. Significant savings will result from the use of communications and computing technology to improve electricity transmission and distribution. It will also facilitate the integration of energy from remote and distributed sources. As part of the IEEE anniversary celebration, some of the ongoing activities include engineering the future by focusing on emergency technologies and the benefit to humanity and “Change the World”, in which students create solutions to real world problems, competing for a top prize of US \$10,000. I would suggest to all of you that you read the “IEEE Member Benefits Bulletin” which is an e-newsletter provided monthly and discusses member benefits and happenings at the IEEE to get an appreciation of the scope of all the things the IEEE does. Through your membership in IEEE, you have access to a wealth of information in your technical areas.



If you go to the IEEE/OES website, you will note that we have a Scholarship Program that is funded at a level of \$15,000 to provide graduate and undergraduate scholarships. These awards are at least \$1,000 each and may be more, depending on the number of applicants to apply. Should we have a large number of applicants the funding for the program can be increased. We just returned from Underwater Intervention in New Orleans where we had an OES booth and much interest from the students in our scholarship program and in OES.

Our Student Poster competition associated with our OCEANS Conferences is very popular, with competitions scheduled for Bremen and Biloxi (which should be one of our largest competitions). The Conference in Biloxi will have a Career Fair on Monday and a High School Outreach program. The student program appears to be very impressive and should attract much interest at the Conference.

In spite of the economic downturn, 2009 will be a very active year for our members and volunteers. We have the 6th International Underwater Technology Symposium in Wuxi, China, April 21-24, and the final program has approximately 70 excellent papers. The registration numbers are also very good. The Offshore Technology Conference will be in Houston, Texas, again this year from 4-8 May and OES is one of the sponsoring

(continued on page 4)

Former Editor's Note



In the last issue there was a typo – Sandy Williams is our new Vice President for Technical Activities. Jim Collins remains Vice President for Professional Activities, and has an article on Autonomous Marine Robots on pages 5 and 6 of this issue. Also, Joseph Vadus, Vice President for Conference Development has a report on page 7.

There are three other reports in this issue, one from Joseph Vadus on the recent Chile – US Workshop on Ocean Observations another from his RECON Committee headed by Robert Wernli who

describes some recent “evaluations pertaining to future conference venues, primarily for the OCEANS conferences” and a Report from our India Chapter .

Below, Jim Gant introduces himself to you as your new Editor for the OES Newsletter.

Jim has taken an active part in bringing you this issue and will be fully in charge of future issues. Once again, thanks for your participation and please stay involved and support your new editor.

April 2009
Frederick H. Maltz

OES Newsletter Editorial



It is my great privilege to introduce myself to you as the new editor for the OES newsletter. I'm looking forward to helping to facilitate communication that will keep things moving in the society. I'd like to make this a valuable forum and something you look forward to receiving each quarter. I hope to meet many of you at the Oceans conference in Bremen in May and at other events in the coming months.

OES offers a lot of opportunities to network and to learn new aspects of the ocean engineering profession from one another. This newsletter serves to keep everyone informed of the current and coming events in OES but it can also serve

as a forum for us to share experiences and express opinions. I look forward to hearing from a great many of you – please feel free to sound off about any related topic. The newsletter can be a venue for a vigorous discussion. I feel strongly that to have a balanced view of our profession, we need to hear from a wide variety of people from different backgrounds and experiences. I'd love to hear from you, just drop me a line at j.gant@ieee.org.

In this issue, you will find the items assembled and pointed out by Fred Maltz in the above.

April 2009
Jim Gant

President's Corner *(continued from page 3)*

organizations. Booth space is sold out. OCEANS' 09 IEEE BREMEN will be May 11-14 and we expect a large crowd from the European area to attend. We have an excellent technical program and a number of exhibitors, many of which do not normally exhibit in the US. Our fall OCEANS Conference will be in Biloxi 26-29 October 2009. Through the special efforts of Fred Maltz and James Gant we now have the Newsletter back on a regular schedule. Liz Creed now has our OES booth in

modular form for easy shipment and assembly which allows us to exhibit at a number of conferences. We will be a technical co-sponsor at the International Symposium on Oceans Electronics (SYMPOL 2009) 18-20 November 2009, at Cochin University of Science and Technology in India.

April 2009
Jerry Carroll

An Autonomous Marine Robot (AMR) Sports Movement—a great opportunity for the IEEE Oceanic Engineering Society (OES)



Imagine you are in the viewing gallery of a large swimming pool building attending the International Autonomous Marine Robot (AMR) Games. Here's the announcer, "... here they come around to the last corner, AUV Japan is in the lead, AUV France is coming on strong, will Japan hold it? The finish is just ahead...here they come...Japan

is holding on...here's the line...Japan wins it! Japan has won the 200m AUV pool race gold medal by half an end cap...wow, what a race!"

That scenario is still a long stretch of the imagination but it gives a glimmer of the potential of future autonomous robot races run in a style and spirit modeled on competitions like the Olympic Games. What is not a stretch is that the IEEE has developed member, geographic, technical, and standards organizations that lend themselves to easily organizing an autonomous robot sport movement modeled on the Olympic Movement. According to the Olympic Charter found at www.olympic.org, "The three main constituents of the Olympic Movement are the International Olympic Committee ("IOC"), the International Sports Federations ("IFs") and the National Olympic committees ("NOCs")." The IOC can be easily modeled using existing membership resources and the IFs and NOCs are currently paralleled respectively by the Technical Activities and Membership and Geographic Activities organizations in the IEEE.

The IFs are non-governmental organizations each of which set the rules for a group of closely related sports and administer them worldwide. This activity is paralleled in the IEEE by the Technical Activities groups and Standards Association. In the IEEE Technical Activities area there are several Societies and Councils associated with robotics, the Oceanic Engineering Society, the Robotics and Automation Society, the Aerospace Electronic Society, the Computational Intelligence Society, the Computer Society, the Control Systems Society and so on.

As stated in the Olympic Charter, "The mission of the NOC's is to develop, promote and protect the Olympic Movement in their respective countries, in accordance with the Olympic Charter." This activity is paralleled in the IEEE by the Member and Geographical Activities group. Sections and Chapters provide a base for development of competitive autonomous robot sports among local universities. In many cases the Sections and Chapters are nationally based. In the case of India and Japan the national equivalent is an IEEE Council and in the case of Canada the national equivalent is IEEE Region 7. In Region 1 to 6 the situation is different and the national equivalence might be best established with IEEEUSA.

With respect to the IOC the Olympic Charter states, "The mission of the IOC is to promote Olympism throughout the world and to lead the Olympic Movement." The IOC is the only constituent of the Olympic Movement that presently does not seem to have an obvious parallel in the IEEE relative

to staging autonomous robot competitions. This is a minor problem since an IEEE robot sports committee can be easily assembled from current appropriate IEEE members around the world. In this matrix management approach this committee oversees the Technical Activities group and the Membership and Geographic Activities group which in turn govern these independent but overlapping aspects of each group under them.

Before setting up an Autonomous Robotic Sports Movement, a reasonable first step entails setting up a pilot project based on an area of autonomous robot sports activity within IEEE. Areas that immediately come to mind are the Robotics and Automation Society (RAS) and the Oceanic Engineering Society. I am more familiar with the OES than the RAS and since AMRs operate in an environment where application development has not been constrained by the possibility of interfering with humans, I will outline the first formative steps in starting an OES led AMR sports movement.

The technology of AMRs is increasingly awesome. Autonomous underwater vehicles (AUVs) survey ocean bottoms at great depth, chemical and wave activated gliders are defining new methods in ocean profiling, autonomous sail, solar and chemically powered surface AMRs are providing unprecedented survey and surveillance capability. Multi element robots like amphibians are not yet available in the open market.

How would one organize an Autonomous Robot Sport Movement starting with AMRs?

1. Issue a Call for AMR Interest from IEEE OES members worldwide. In this first step members submit their name, contact information and the AMR group in which they are interested, AUV, chemically energized glider, etc. Also it is important to know a respondent's level of interest, i.e. monitoring or participating. My contact information is given at the end of this editorial for those interested.
2. Respondents are sorted into groups defined by AMR type and level of interest. (Non-IEEE members are welcome to join but not able to vote on issues directly influencing IEEE finances. As other groups choose to get financially involved with the IEEE OES effort this limitation will be reduced.)
3. A Chair is selected for each group from that group.
4. These Chairs and others designated by IEEE and OES form the International AMR Sport Federation.
5. The International AMR Sport Federation sets guidelines that each of the groups must meet in writing rules. Meeting by Internet or teleconference, each group defines a number of competition events and sets the rules for those events.
6. Since there is only one Federation at this point, this Federation can be synonymous with the overseeing International Autonomous Robot Sport Committee (IARSC) which is to be eventually modeled after the IOC.
7. Sport events will be run on a periodic schedule. The IARSC will determine the schedule and location of the ultimate

competition when the international champion is determined for each event.

8. Geographic representatives on the IARSC coordinate with other groups for joint conduct of events when possible and sequencing of local, regional and national events which culminate in the ultimate international event.

With this initiative to oversee autonomous marine robot (AMR) sports, the IEEE OES has an opportunity to reconfirm its current contribution as the technical society most supportive of AMR development. At the same time this is an opportunity for the worldwide network of IEEE OES members interested in AMRs to popularize that technology as well as promote serious student interest in oceanic engineering. The organization I have in mind for autonomous robots would eventually model where appropriate the Olympic Movement and its mission, goals and implementation. I reiterate that this concept also applies to autonomous robots that operate in the land and air elements and to the IEEE Societies that research and develop them. A joint effort is most reasonable and inevitable.

Small scale AMRs have been built for competition by students and dedicated hobbyists. The locations of competition have been limited and not amenable to large scale public viewing and monitoring of robotic contestants performance. Existing competitions tend to pit robots individually against technical challenge courses rather than simultaneously against each other.

If you have ever watched any of the growing number of robotic competitions you are impressed by the dedication and enthusiasm of the competitors who are usually university students. They normally are studying in traditional programs associated with robotics...electrical, mechanical, computer and software engineering. Except for their loving parents and the eager technical recruiters present, the contestants usually outnumber the spectators. There has been little use of facilities

such as public swimming pools where AMR sports should be held so they can be easily viewed. AUVs should race around a standardize course defined set of submerged pylons set out so that race result can be compared between locations distantly separated around the world.

Some of us have engineering teaching occupations where we are trying continually to stimulate student enthusiasm for the subject matter. We do this not only by illustrating its long term benefits to society but also by involving students in short term design projects that provide a forum for their creativity and competitive spirits. AMR sports provide such a forum.

Human sport competitions are characterized by visible, often simultaneous, and sometimes electrifying comparisons based on skills such as speed, strength, accuracy, tactical superiority, endurance, and teamwork. The same properties can be subject to test with autonomous robots by properly designed sport events.

I propose the Autonomous Robot Sport Movement as an international forum for the presentation of high performance robot races and skill competitions Superior performance is to be rewarded by celebration of excellence and highly visible international recognition. Implementation is to be expedited by through the resources of appropriate IEEE geographical entities and technical Societies. A pilot AMR Sport Movement will position the OES at the leading edge of the more general and inevitable autonomous robot sport effort.

If you are interested please let me know the extent of your interest and your contact information. Contact me at j.s.collins@ieee.org or telephone +1 250 595 6928. Then we will move on to Step 2, forming the AMR groups. Don't be left out!

Jim Collins

IEEE OES Vice President for Professional Activities.

Visit the OES online, link to the IEEE homepage:
<http://www.oceanicengineering.org>

OES Conference Development

Joseph R. Vadus, LF IEEE
Vice President, Oceanic Engineering Society

US/EU-Baltic International Symposium 2008

May 27-29, 2008, Tallinn, Estonia—Hotel Sokos Viru- Swedish Chain

Sponsors: ONR Global; NOAA; IEEE/OES; Tallinn University of Technology

Supporters/Patrons: Level 1: Estonia Environmental Investment Center; Estonia Ministry of Environment; Level 2: Estonia Academy of Sciences; Estonian Ministry of Education & Research **Program Size:** 140 papers from 22 countries; about 200 attendees; 140 Registrants

ONR & NSF Grant Status

ONR Grant: Final Summary Report delivered; Financial Report delivered

NOAA Grant: Final Summary Report was delivered January 2, 2009 (7 months after the symposium because of their on line procedures). 4 interim progress reports were required. The financial report was delivered and required payback of \$10,500 out of \$24,000 because of their requirement to use all sources of funding before NOAA funds were used. These conditions were imposed by NOAA because IEEE wanted to invoke their conditions. This was not experienced in 7 of the 8 grants received to date. However, care must be taken to avoid these problems in future grants.

US/EU-Baltic International Symposium 2010-4th in the series

At the final plenary session of the 2008 Symposium in Tallinn Estonia, the attendees recommended the venue for 2010 should be Riga, Latvia. We have contacts in Latvia at the University of Latvia and the Latvian Institute of Aquatic Ecology who have attended our Baltic Symposia. This was acceptable by the Economic Counselor of the Latvian Embassy in Washington DC. This was the same procedure used for Lithuania and Estonia. They are in the process of organizing their committee, and need to firm up plans in accordance with our conference guide. A Recon visit is planned for May

Chile-US Workshop 2008 – on Ocean Observation Systems, November 4-5-6, 2008 in Vina Del Mar, Chile, near Valparaiso, Chile's main port.

This workshop was sponsored/supported by: The US National Science Foundation's (NSF)- Office of International Science and Engineering(OISE); The US Office of Naval Research Global (ONRG); The Institute of Electrical and Electronic Engineers (IEEE), Oceanic Engineering Society; and The Catholic University of Valparaiso (PUCV); The Chilean Fund for Applied



L to R: J.Vadus; Guest Speaker Ignatio Casas, LACCIR, Santiago; J.Diaz, PUCV



9th Julio Avenida – world's widest avenue



Famous tourist intersection: Cordoba & Florida Aves at Argentine Navy Building

Research (FONDEF-CONICYT); The Chilean Geological Survey (SERNAGEOMIN); The Chilean Association of Natural Gas Distributors (AGN); GEODATOS Geophysical Exploration Company; and The Hydrographic and Oceanographic Service of the Chilean Navy (SHOA).

US Sponsorship was provided by Grants from NSF and ONR Global

NSF Grant: Final Summary Report was delivered on line via NSF Fast Lane, and it has been accepted by NSF. The financial report is in preparation awaiting some delayed bill payments. The full grant of \$39,000 is expected to be expended.

ONR Grant: Final Summary Report was delivered to ONR Global in London. The Financial Report is in preparation. The full grant of \$10, 600 will be expended.

The Final Summary Report is included herein. Attendees considered the workshop to be very successful and promoted international collaboration.

IEEE 2009 Argentina-US Workshop on Ocean Observation Systems. (ARGUS Workshop) was proposed for November 3-4-5, 2009 in Buenos Aires. However, it was decided to combine these plans with a South American Symposium/Workshop in March 2010.

IEEE 2010 Latin American Symposium/Workshop

The Argentina IEEE Section proposed this symposium for 2010—Celebrating 50th Anniversary for Argentina and 50th Anniversary of Chile; and 50th Anniversary of IOC. The Chair of IOC (Javier Valladares of Buenos Aires) participated in the Chile Workshop. He proposed the Symposium during our meeting with the IEEE Section one year ago. Following the Chile-US Workshop in Vina Del Mar, an exploratory planning meeting was held in Buenos Aires with members of the Argentina IEEE Section November 9-11, 2008 to begin the planning process. There are three OES members in this IEEE Section with plans to develop an OES Chapter.



Christmas tree in summer in Galaria Pacifico, Florida Ave



Tango on Florida Ave, famous "people's mall"



IEEE Section Meeting L to R: J.Barbera; Ricardo Valek, OES Buenos Aires (BA); J.Carroll; J.Vadus; Gurardo Acosta, OES BA; Javier Valladares, BA, IOC Chair



J.Vadus & J.Carroll at sidewalk cafe

IEEE/OES CHILE–US WORKSHOP 2008: SUMMARY REPORT

**Joseph R. Vadus, Workshop Co-Chairman
Vice President, Oceanic Engineering Society
Institute of Electrical and Electronic Engineers**

This first IEEE/OES CHILE–US Workshop was successfully conducted in Vina del Mar, November 4–6, 2008 in the Club Vina del Mar. The plan is to continue with symposia and workshops as a series in South America every 2 years. This workshop was sponsored/supported by: The US National Science Foundation's (NSF) – Office of International Science and Engineering(OISE); The US Office of Naval Research Global (ONRG); The Institute of Electrical and Electronic Engineers (IEEE), Oceanic Engineering Society; and The Catholic University of Valparaiso (PUCV); The Chilean Fund for Applied Research (FONDEF–CONICYT); The Chilean Geological Survey (SERNAGEOMIN); The Chilean Association of Natural Gas Distributors (AGN); GEODATOS Geophysical Exploration Company; and The Hydrographic and Oceanographic Service of the Chilean Navy (SHOA). It was supported in part by NSF and ONRG grants. Participating US sponsors were the NSF's Office of International Science and Engineering (OISE) – Jessica Robin, Program Manager, Americas Program; and William Melton, Associate Director for Science and Technology of the ONRG–Americas in Santiago. The grants from our sponsors and support from these organizations greatly insured having a meaningful program.

The writer summarizes below, some highlights of the workshop's 23 papers plus special presentations by: Capitan Javier Valladares (ret), Chairman, Intergovernmental Oceanographic Commission (IOC) of UNESCO; Dr. Ignacio Casas, Executive Director of the Latin American and Caribbean Collaborative Information and Communication Technology Research Federation (LACCIR); and Jessica Robin of NSF–OISE. Ms. Robin was not able to attend the workshop and her presentation was given by Joseph Vadus.

This summary edits, paraphrases and abbreviates information provided by and credited to the authors, session chairs and working group participants led by the session chairs. However, the writer does not necessarily endorse all highlights as reported, and encourages readers to refer to the proceedings for the full text of the papers and special presentations.

INTRODUCTION

The "IEEE/OES Chile–US Workshop on Ocean Observation Systems" included 4 working groups: Group 1 – Ocean Observation Systems, Including Acoustic Observations; Group 2 – Remote Sensing of the Coastal Environment; Group 3 – Observation Assessment of Gas Hydrates in the Coastal Ocean; and Group 4 – Seismic and Tsunami Observation and Real Time Measurement Techniques for Protection of the Coastal Community. The primary focus of Group 1 was on in situ ocean observation and acoustic observation related to: fish feeding

grounds; safety with respect to medium and high power sonar; and ambient noise in naval applications. The primary focus of Group 2 was on remote observation with respect to: oil spills and other pollution concerns; wind field and salinity measurement; and ship traffic. The primary focus of Group 3 was on: hazards; environmental impact of man–made disturbances; and untapped potential of Methane Gas as a renewable energy source. The primary focus of Group 4 was on: early tsunami warning; sediment transport; risks to fishing; naval operations; and protection of the coastal community.

The 23 papers were presented by authors from Chile, Argentina and the US and provided an excellent forum for exchange of research information and promotion of international cooperation. The papers were interspersed on a single track and the 4 working groups met to discuss and record their daily comments. Simple forms called "Daily Blogs" were used to record daily highlights and findings to facilitate summarizing and reporting. Working group summaries were prepared and presented on the last day of the workshop for discussion and are included below.

WORKING GROUP SUMMARIES

Group 1 – Ocean Observation Systems Including Acoustic Observations

Albert Williams III (US) – Chair, Frederick Maltz (US), Sergio Salinas (Chile),

Javier Valladares (Argentina), Georges Dossot (US)/ Gareth Lawson (US),

Juan Fiero (Chile), Mario Jordan (Argentina), Edwin Niklitschek (Chile),

Oscar Vergara (Chile), Gresel Arancibia (Chile) and Claudia Rozas (Chile)

A. Web based data serving needs to become more standard with two or more flavors: the first is the high quality, well calibrated data from which long term evolution of sea level, ocean temperature, and alkalinity of the sea might be determined. The second is the rapid serving of data with a caveat that the quality is not assured and the data have not been calibrated against standards but can be used for patterns and trends over the duration of the acquisition period. There may be other quality presentations as well with intermediate quality assurance and intermediate delay to presentation. The issue is that scientists are generally reluctant to release data until they have analyzed it and possibly published one or more papers based upon it. This makes the data unavailable for a long time, maybe a year or more, during which a rough presentation might have been valuable for other purposes if it were presented in a timely way. Examples might be location of upwelling based upon temperature

maps useful for fisheries and ecological studies that do not require the absolute calibration of temperature. It remains to devise both a way to distinguish these qualities and a culture of two or more tiers of data presentation on the web for the benefit of all mankind.

The production of some of this information by VOS (Volunteer Observing Ships) is useful; but the measurements should be put on the World Wide Web as rapidly as possible. Incorporation of standards and quality assurance in these systems will be most valuable. Standards can be introduced into the sensors periodically. Protective fluids can be pumped into the sensors between measurements to retard degradation. Calibrations at the ends of passages can correct the data for the previous leg by interpolated corrections (within the certainty of the drift or error accumulation).

Users are both scientists wanting great quantities of data and non-scientific users needing simple information in readable form. Scientific users may be directed to an FTP site. Web sites are out of date quickly and this must be addressed. Try to use the Wikipedia evaluation process for this.

B. How much effort or how many resources should be directed towards technology development in Chile where the number of technologists in oceanographic sensors is small and the resources are limited relative to say the United States? A position that can be defended is that a small number, carefully chosen, should be pursued and can be expected to be effective not only in Chile but in the world oceanographic instrumentation community. Ability to include a student and a technician or engineer on such a development project is not unlike such an effort in the US. The Internet, in particular Facebook or equivalent means for international communication, should lower the threshold for sharing ideas and forming collaborations and vastly reduce the time for such sharing over awaiting publication of papers and reading them to learn what else is being done. Finally, intellectual challenges and stimulation need not be denied simply because the number of ocean instrumentation technologists is small; other academic colleagues are equally valuable as sounding boards or critics or at least intelligent listeners to ideas presented by the technologist. Informal meetings such as coffee time gatherings on a regular basis can provide this community across discipline lines. Occasional visits of six to ten weeks to a lab in another country can cement collaborations at a distance and lead to long term exchanges of students and joint research programs. Workshops provide a very cost-effective way for science and technology development.

C. Automation of sampling by AUV, VOS (Volunteer Observing Ships), and gliders will reduce the cost of dedicated ships and people and supplement remote sensing by satellite and be effective for Chile and all countries. Some of the issues that this raises are the presentation of the data for all to work with as discussed in point A, but also technical concerns like obstacle avoidance for AUV and glider and sensor integrations for measurements that are required. Some of the most valuable measurements along the Chilean coast are very near shore where the bathymetry is both poorly known and rough. Satellite measurements very near shore are generally contaminated for

several pixels from the shore by the strong contrasts of the transition from land to sea. So the issues of near shore autonomous sampling are critical. Obstacle avoidance is important for both an AUV and glider. The capacity of most AUVs and gliders to carry, sidescan sonar, CTD, ADCP, optical and chemical sensors makes them attractive for many programs. Gaps in Chilean bathymetry could be filled by such a near shore survey. These vehicles can even make certain biological collections with Video Plankton Recorder (VPR), and modified LH plankton recorder. Multi-frequency acoustic systems might be incorporated for surveys of krill and other zooplankton and fishes. There is a newly available acoustic-video camera that can identify fish that could be incorporated on an AUV. Possibly, chlorophyll sensors could be included. Most of these items on the wish list apply to any country but the obstacle avoidance is particularly appropriate for Chile. What should be sought with these surveys? Evidence of submarine slides that may have produced tsunamis, productive regions responding to La Nina winds, oxygen minima or even anoxia at certain depths, and evidence of methane hydrates would be plausible targets for discovery. While it may not be possible for AUVs to obtain sediment cores for determination of soil types as might impact tsunami inundation, visible evidence of soil type from the surface (shell, sand, gravel, rock, mud) can offer some information for generating inundation hazard maps. Existing AUVs and gliders should fill this need but the application and modification of these commercial products would pay dividends in information without costing excessively in ship time.

D. Real-time data return from such instruments as Argo floats and gliders forces recognition that states don't totally control access to territorial waters for observation. There are two objectives of these data: scientific research and operational monitoring. Generally scientific research should follow Law of the Sea and not violate sovereignty. Operational measurements, particularly those without human control like Argo drifters, may not be so constrained but it should be recognized that the concept of operational monitoring varies from country to country. What is harmless for one state may be misunderstood by another.

E. Observations of currents in tough environments can be an issue, particularly where the current may reach 7 m/s. But, this is a region where there is a possibility of energy production by tidal turbines so an accurate measurement of current may be necessary and standard moorings are not practical. Electric field measurements across the fjord offer a possibility or a trawler proof mounted ADCP on the bottom for a profile at one point.

F. Sea Wiffs gets color from multi spectral observations but the calibration for chlorophyll is not available for the Pacific phytoplankton populations. This is a valuable calibration for both Chile and for others in the international community. Although it seems that this might be possible from the salmon aquaculture projects, the Sea Wiffs observations will be too close to the shore so the calibrations should be done from annual or biannual cruises offshore where collections of phytoplankton can be taken.

G. The interdisciplinary nature of this workshop was very valuable with surprise realizations that biology was connected to hydrates by their microbiological genesis and krill surveys might be performed with the same technology that did pipeline surveys. Nearly every presentation was of interest and provided surprising new information to us.

Group 2 – Remote Sensing

Victor Klemas (US) = Chair, Maria Angela Barbieri (Chile), Samuel Walker (US),

Gerardo Acosta (Argentina), Brian Dzwonkowski (US), Dante Figueroa (Chile),

Adriana Hidalgo R. (Chile), Felipe Grossi G. (Chile), Gresel Arancibia A. (Chile),

Carolina Morales H. (Chile), Ursula Cifuentes O. (Chile), Elfred Muñoz (Chile),

Dayana Vélez (Chile), Paola Rogel G. (Chile), Nayadet Soraya Pulgar (Chile),

Roxana Rodríguez D. (Chile), Laura Henriquez C. (Chile) and Cesar Nuñez C. (Chile)

A. Key issues, challenges, and opportunities for collaboration identified by the larger RS working group are identified below. The Remote Sensing Working Group contained approximately 15 participants over the course of the workshop. The working group included professionals and students from Chile, Argentina, and the United States, and identified current research advances and needs:

1. Modeling and forecasting of wave propagation and tidal current behavior is needed, especially in fjords where surges endanger boat traffic (e.g., fishermen) and there is pollution from terrestrial sources (e.g., agriculture). Chileans could benefit from application of the U.S. Sea Lake Overland Surge from Hurricanes (SLOSH) models and HF radar imaging of surface waves.
2. Studies of beach dynamics (e.g., erosion) using optical remote sensing, and measurement of beach profiles using a combination of LIDAR, sonar, and in situ observations.
3. Acoustic detection of pipelines and surrounding environments (e.g., sand, silt, clay, obstructions, etc.) from AUV platforms.
4. Acoustic pattern recognition from an AUV (as noted in the US–Baltic Symposium sponsored by NOAA and ONRG in 2008). Adapt from multispectral and radar pattern recognition and enhancement procedures such as edge detection.
5. Calibration and validation of measurements (e.g., wave heights, current flows) through integration of GPS on buoys and other in situ observations to enhance the use of remote sensing in ocean observing models and sensor design.
6. Strategic and logistical concerns including funding, social challenges, complex collaborations, competing advocacies, etc. for incorporating remote sensing in coastal observing systems.
7. Improved chlorophyll mapping algorithms for near shore waters.

Action Items: Distribute email addresses to all working group participants (Walker),

U.S. participants to provide contact information on underwater remote sensing applications in the Baltic Sea to

colleagues from Chile and Argentina (Klemas/Walker), and U.S. participants to provide information on SLOSH model applications to colleagues from Chile and Argentina (Klemas/Walker).

B. Summary (as presented orally by Victor Klemas) follows.

The Remote Sensing Session presentations covered a broad spectrum of applications and technologies from traditional optical instruments in coastal, estuarine, and marine environments to radar, LIDAR, and acoustic instruments in marine (surface and sub-surface) environments. The session highlights comprised the following key elements and themes.

1. Land–Sea Interface
2. Data and Sensor Integration for User–Defined Applications
3. Use of Remote Sensing Data in Modeling and Forecasting
4. Use of AUVs and ROVs for Underwater Applications
5. Calibration and Validation of Measurements
6. Challenges to Adoption and Implementation of RS in Coastal/Ocean Observing Systems

Group 3 – Observation and Assessment of Gas Hydrates in the Coastal Ocean

Thomas McGee (US) – Chair, Juan Diaz–Naveas (Chile), Stephen M. Masutani (US),

Borys Didyk (Chile), Leonardo Macelloni (US) and Monica Paez (Chile)

A. Most discussion within this working group was on comparing microbial influences on the formation/dissociation of thermogenic gas hydrates (Gulf of Mexico) and biogenic gas hydrates (Chilean coast) and the fate of methane vented into the water column. In particular, it was considered important make measurements of how much methane vented from bottom sediment survives microbiologic consumption in the water and arrives at the surface to become an atmospheric gas.

B. Borys Didyk expressed the viewpoint that biogenic methane is a waste product which microbes in the sediment must dispose of for their own well being. From this viewpoint, biogenic methane may be considered to be a renewable energy source that would be quite valuable to Chile if it could be harvested. Toward that end, he is in favor of obtaining sea-floor samples under *in-situ* conditions for further analysis. He suggested the new Chilean research vessel would be available for sea-floor mapping and sampling. According to Juan Diaz–Naveas, Member of the Oceanographic Technical Panel of the New Chilean Research Vessel (called Medusa Project) it should be ready by the end of 2010 and fully operative by March 2011, after the trial period.

C. It was agreed that collaboration be established between The Catholic University of Valparaiso (PUCV) plus the Center of Innovation of the Chilean Oil Company (CICE–ENAP) and the University of Mississippi to facilitate field and laboratory studies that would obtain such measurements. It was suggested that the studies include an ocean modeler and a microbiologist from the University of Hawaii (ONR), Rick Coffin of NRL and Laura Lapham of Florida State University (DOE).

D. At the close of the workshop, Juan Diaz–Naveas undertook the task of proposing the collaboration to the Catholic University of Valparaiso. As of this reporting, the office of the Chancellor at the University of Mississippi awaits receipt of a letter from the Catholic University of Valparaiso.

Group 4 – Seismic and Tsunami Observation and Real Time Measurement Techniques for Protection of the Coastal Community

Andrew Clark (US = Chair, Oliver–Denzil Taylor (US), Jennifer L. Miselis (US)

Juan Diaz–Naveas (Chile), Klaus Bataille (Chile) and Dante Gutierrez (Chile)

A. Many areas of common interest were discussed between US and Chilean participants in the fields of tsunami and seismic research and technologies. Chile is already involved in several international collaborative initiatives among them with Germany and Japan.

Discussions were focused upon those topics that might most readily lead to potential collaborative efforts between US and Chilean researchers.

Klaus Bataille provided a very informative summary of recent and ongoing seismic initiatives in Chile, along with some of their future goals. This, coupled with Dante Gutierrez presentation describing Chilean national tidal wave system (NTWS) served as a solid foundation for the work group’s focus. The make–up of the US participants in the working group, in terms of their backgrounds, expertise and interests proved to be extremely fortuitous, as noted in the summary provided below.

What became clear right away is the immediate need in Chile for sensors that report their data from offshore in real time for both seismic and tsunami applications. This is precisely the area of expertise provided by Andrew Clark of Harris Corporation in our working group, which led to some good discussions. Klaus Bataille identified one particular location of the Chilean coastal cities of Iquique approximately 60 km offshore in 2,000m water depth (to be verified); where a system like this could both serve to provide invaluable scientific data and a life–saving tsunami early warning node for the nearby populated coast. A. Clark described a US National Science Foundation initiative, called the Ocean Observatory Initiative (OOI) that is funded and that had previously been considering a potential location off Chile. A. Clark will contact NSF program manager to find out if this could represent a potential collaboration.

Oliver Taylor of the University of Rhode Island, provided an excellent presentation on the correlations between pore water pressures, seismic and landslide events, and discussed the additional benefits of adding geotechnical sensors to such ocean observatories. K. Bataille agreed and this led to a discussion of the number and type of sensors (ocean bottom seismometers, bottom pressure recorders, pore pressure gauges, etc.) that could be supported by such a system and how the data should be best telemetered to shore. All agreed that the wireless (either satellite or RF line of sight [if close enough] to shore) would be preferred over a cable especially if this Iquique location is selected.

Whether or not the Iquique location becomes an area of joint US–Chile collaboration Jennifer Miselis of the US Naval Research Laboratory, discussed the need for high resolution bathymetric surveys and charts of the nearshore region, particularly where the potential for tsunami wave run–up might occur.

J. Miselis described some techniques that have been successfully employed in the US using sonar and RTKS GPS methods to detect seafloor deformation prior to and after a seismic event. The methods she described were very similar and familiar to those that K. Bataille has been using to monitor similar seismically caused deformations on land in Chile. Ironically, this same RTKS GPS techniques are also very similar to those that A. Clark discussed in his presentation as a means to detect tsunami wave in the open ocean without the need of seafloor sensors. This very obvious confluence of interest between the Chilean and US working group participants led to some very informative discussions.

Include seismic reflection coverage with bathymetry to provide information about the geologic framework. The new Chilean research vessel will be an excellent platform for such an effort. Geophysical data collection should be followed by various sediment coring efforts. This should include deep geotechnical borings, ideally in conjunction with the installation of a seismograph. In addition, surficial sediment grabs in shallow cores (up to 10 m penetration) could be collected to provide sedimentological plus surficial geotechnical information for shelf plus coastal tsunami sediment transport and other studies. Both the geophysical and sedimentological efforts should consider the data requirements of numerical modelers before that data collection takes place. This will insure good data inputs for processing modeling.

B. This working group summary is as follows:

1. Beyond this workshop–summary the working group will continue these ideas with each other via email (and possibly some sort of blog or wiki)
2. A. Clark will contact the NSF OOI program director to investigate the possibility of a collaboration.
3. K. Bataille will discuss and investigate whether there is interest or the possibility of including such an off–shore node within the current Chile national seismic network that is now being decided and deployed. Juan Diaz–Naveas will suggest that Chile’s new research vessel be made available for deploying, operating and maintaining any such off–shore node.
4. During the installation of a real–time data observation system near Iquique, it would be of extreme benefit to obtain a deep geotechnical boring to obtain a complete sediment profile. These profiles are invaluable to the understanding of seismic hazards and risks.
5. Collaboration between not only international entities (US–Chile) would be achieved through the installation of a real–time data observation system. By combining geotechnical and seismological instrumentation, a true multi–disciplinary ocean observation system unlike any current system worldwide could be realized. Further, the data collected from this system could and should be shared beyond the seismic and

geotechnical communities (e.g. physical oceanography, sedimentology and geology, ocean engineering, emergency planning, education, etc.)

SPECIAL PRESENTATIONS

A. Capitan Javier Valladares (ret) gave an excellent overview of the relationship of IOC to: The Group on Earth Observations (GEO); The Global Earth Observation System of Systems (GEOSS) and; The Committee for Earth Observation Satellites (CEOS). He also indicated the partnering of IOC with The Global Ocean Observing System (GOOS) and relationship of IOC to the various other entities including: The UN Environmental Program (UNEP); The World Meteorological Organization (WMO); and The International Council for Science and Technology (ICST).

J. Valladares also delineated some other entities that were members of IOC and some that cooperate with IOC such as The Joint WMO–IOC Technical Commission for Oceanography and Marine Meteorology (JCOMM) and The IOC of UNESCO International Data and Information Exchange (IODE).

J. Valladares concluded his talk by outlining some accomplishments in the open and coastal oceans plus multi user operational hazard prevention systems. He described the ARGO array float system and indicated the history of GOOS Regional Forums in 2002 (Athens, Greece), 2004 (Nadi, Fiji) and more recently in 2006 (Capetown, S.Africa) and 2008 (Guayaquil, Ecuador).

B. The NSF–OISE presentation material provided by Jessica Robin (as presented by Joseph Vadus) described how NSF acts as an agent to foster internationally, collaborative scientific research, education and engineering. The “Americas” is one of the 5 regional clusters worldwide. Specific activities are outlined in the body of Jessica Robin’s presentation included in the proceedings.

C. The final presentation was on Information and Communication Technology (ICT) by Ignacio Casas, Executive Director, Latin American and Caribbean Collaborative ICT Research Federation (LACCIR) in which he described the structure and function of LACCIR. The Federation Members include the hub universities (PUC of Chile in Santiago and The University of Chile) plus spoke universities in Mexico, Uruguay, Brazil, and Argentina. I. Casas outlined the activities of LACCIR and pointed to the Web Portal www.laccir.org for further information. His presentation is included in the proceedings of this workshop.

ACKNOWLEDGEMENTS

The writer acknowledges the valuable roles provided by: US Workshop Co–Chair and Financial Co–Chair Jerry C. Carroll and Chile Co–Chair Juan Diaz–Naveas (PUCV);

Fred Maltz (IEEE/OES) and Marisel Medina (PUCV) served as coordinators and editors of this report; the four Group/Session Chairs providing technical leadership; and the technical contributions of all the workshop participants identified herein.



L to R: J.Vadus & J.Diaz, Workshop Co-Chairs; Dr. Sergio Marshall, Vice-Chancellor for Research and Postgraduate Studies of the PUCV; Dr. Eleuterio Yañez, Dean of the Faculty of Natural Resources of the PUCV; William Melton, ONRG, Santiago



Gaston Le Franc, IEEE Section; Juan Diaz, PUCV, Chile Co-Chair; J.Vadus, UC Co-Chair; Sergio Salinas, PUCV



Workshop site: Club Vina Del Mar



Group photo at workshop site, Club Vina Del Mar



Plenary Session L to R: Jim Barbera; Andy Clark; Sandy Williams; Javier Valladares, Chair IOC; Gaston LeFranc; Fred Maltz, Editor



Sandy Williams, Group Chair, leading discussion on Ocean Observation Measurements



US Members on tour: Gareth Lawson; Oliver-Denzil Taylor; Sam Walker, S. Carolina; Georges Dossot; Tom McGee, Ole Miss



L to R: Steve Masutani, Hawaii and OESers J.Vadus, J.Barbera, J.Carroll, US Co-Chair



Sandy Williams' Group - second half



Garden Reception L to R: J.Vadus; Andy and Mrs. Clark; Gerardo Acosta, OES Buenos Aires; Victor Villagran, Chile; Sergio Salinas, PUCV



Marisel Medina, PUCV, Workshop Coordinator feted at dinner



Group Chairs L to R: J. Diaz, PUCV; Oliver-Denzil Taylor, Rhode Island (for Andy Clark); Tom McGee, Ole Miss; S. Williams, OES; Victor Klemas, U.Del



Victor Klemas (OES) leading Remote Sensing Group in discussion

OCEANS CONFERENCES



PAST CONFERENCE LOCATIONS

UNITED STATES

San Francisco, CA
 Los Angeles, CA
 San Diego, CA
 Seattle, WA
 Honolulu, HI
 Biloxi, MS
 Boston, MA
 Newport, RI
 Washington, DC
 Providence, RI
 Fort Lauderdale, FL



CANADA

Halifax, NS
 Victoria, BC
 Vancouver, BC
 Quebec City, QC

EUROPE

Brest, France
 Nice, France
 Aberdeen, Scotland

ASIA-PACIFIC

Singapore
 Kobe, Japan

JOIN US AT THESE INTERNATIONAL CONFERENCES

NORTH AMERICA*



**BILOXI
 MISSISSIPPI**
 26 – 29 October 2009



**SEATTLE
 WASHINGTON**
 19 – 24 September 2010



**WAIKOLOA
 HAWAII**
 19 – 23 September 2011



**HAMPTON ROADS
 VIRGINIA**
 15-19 October 2012

*Co-Sponsored with the Marine Technology Society

EUROPE



BREMEN, GERMANY
 11 – 15 May 2009



SANTANDER, SPAIN
 6 – 10 June 2011



ASIA – PACIFIC
SYDNEY, AUSTRALIA
 24 – 28 May 2010



YEOSU, KOREA
 21 – 25 May 2012

SITES UNDER CONSIDERATION



WANT TO ATTEND, EXHIBIT OR HOST AN OCEANS CONFERENCE?
 VISIT US AT OUR “CONFERENCES AND WORKSHOPS” LINK ON
WWW.IEEEORG.OES.ORG

OES RECON COMMITTEE REPORT

Robert Wernli
Chair, OES RECON Committee

So what is the OES RECON Committee? If you're one of the OES Administrative Committee (AdCom) or OES Executive Committee (ExCom) members you're well versed on the activities of the RECON committee. However, if you haven't participated at that level within the society, then you may be unfamiliar with what RECON is and what it is doing for you as a member.

RECON is the Reconnaissance Committee, which reports to the OES VP of Conference Development (Joe Vadus), and our primary job is to seek out and evaluate future conference venues, primarily for the OCEANS conferences. And we want to do this in a timely manner so that the process is smooth and capable of approving the future conference locations at least four years in advance. This is necessary to ensure facilities are under contract in time to support the conference and also to give the Local Organizing Committees (LOC) for the conferences sufficient time to prepare for the event. We're all volunteers, so the better we plan our time, the easier it will be to run a successful conference.

For RECON, the timeline starts much earlier. We begin the process of evaluating future venues about seven years in advance. This may seem like an early start, but we're also volunteers and the process of choosing potential sites, conducting site visits, and inviting the LOC to make an official presentation to the RECON committee at an OCEANS conference takes time. With RECON approval, the LOC is then invited to present their proposal to the AdCom to obtain final conference approval. That's about a three-year process.

So what has RECON been up to this past year? After going through my planner, even I was surprised at the amount we have accomplished in the past twelve months. Here's a summary.

February – R. Wernli presented the RECON activity at the OES ExCom meeting.

April – OCEANS 2008 Kobe – RECON Committee activities in Kobe included:

- OCEANS 2012 KOREA – Dr. Geong-Gil Kang, Dr. Chang-Gu Kang, and Dr. Pan-Mook Lee, Korean Ocean Research & Development Institute (KORDI), presented their updated proposal for hosting the OCEANS 2012 conference in Korea. RECON gave them approval to present to the AdCom at OCEANS in Quebec pending a successful site visit.
- Presentation to the AdCom regarding future potential sites that included St. Johns, Newfoundland; San Diego, CA; Bergen, Norway; and Italy. San Diego was given the green light for a presentation in Quebec for OCEANS 2013.

July – OCEANS 2012 site visit. A RECON Committee site visit to the Virginia Beach/Norfolk area was conducted by Robert Wernli, Jim Barbera, Bob Bannon, Jerry Boatman (MTS–VP elect), and Rich Lawson (MTS Executive Director). The Local Organizing Committee included Ray Toll (SAIC), Larry Atkinson (Old Dominion University), Tom Bosse (JFCOM), Mark Bushnell (NOAA), and Sally McNeilan (Fugro). Potential hotels and social event sites were evaluated along with the new “green” Virginia Beach Convention Center. The LOC was given the green light to proceed.

July – Anchorage, AK site visit – R. Wernli made a site visit to Anchorage as the guest of the Convention and Visitor's bureau. Anchorage was shown to be an excellent site to host a conference, especially after viewing their newly constructed convention center. Anchorage submitted a proposal to host a future OCEANS conference.

August – R. Wernli presented the RECON activity at the OES ExCom meeting.

August – R. Wernli, Jerry Carroll and Tamaki Ura traveled to Korea to meet with the OCEANS 2012 LOC and conduct a site visit. Dr. Geong-Gil Kang (MOERI) and Dr. Chang-Gu Kang, Director General of KAOST (Korean Assoc. of Ocean Science and Technology), hosted the visit. Meetings were held in Seoul with KAOST and the LOC. This was followed by a trip to the





city of Yeosu where the contingent was greeted by the mayor, followed by tours of the hotel and convention facilities. The city is undergoing a large redevelopment to support the upcoming EXPO 2012 (the World's Fair), which will have an Ocean theme. Following recommendations by the RECON committee, approval was given to proceed with an AdCom presentation at OCEANS 2008 in Quebec.

September – OCEANS 2008 Quebec – RECON Committee activities in Quebec included:

- RECON gave an overview of recent activities to the AdCom.
- Presentations were made for OCEANS 2013 San Diego and OCEANS 2012 Yeosu, Korea. Both sites were approved by the AdCom.
- The RECON meeting included:
- Ray Toll and Larry Atkinson presented a proposal to hold the OCEANS 2012 conference in Hampton Roads, VA.
- Terje Gjengedal (Chair, IEEE Norway Section) and Britt Angell-Hansen (Bergen Convention Bureau) gave a presentation to host the OCEANS 2013 conference in Bergen, Norway
- Prof. Andrea Caiti, University of Pisa, presented a proposal to hold the OCEANS 2013 conference in Genova, Italy.
- The RECON Committee agreed to pursue Bergen, Norway for 2013 and Italy possibly in 2015. Request for approval of OCEANS 2012 Hampton Roads will be sought by MTS at OTC and by the OES AdCom at OCEANS 2009 Bremen.

October – R. Wernli and Jim Barbera traveled to St. John's, Newfoundland to participate in a site visit regarding St. John's bid for the OCEANS 2014 conference. The hosts included Darrell O'Neill (Gov't of Newfoundland and Labrador), Vicki Button (City of St. John's), Stacy Noonan (Destination St. John's) and Dwight Howse (Marine Institute of Memorial University of Newfoundland). The trip showcased the facilities available to host a conference and also the many oceans related academic and business organizations in St. John's. Discussions will be held with MTS regarding the possibility of taking the OCEANS conference to St. John's.

December – R. Wernli and John Watson visited the LOC for OCEANS 2011 to be held in Santander, Spain. The successful trip allowed the team to meet with the reorganized LOC after a recent change in leadership, review upcoming action items prior to the Bremen conference, answer any questions the LOC had and to get formal agreements in place regarding finance and leadership. The meeting was both timely and successful. RECON is working with the LOC to ensure promotional material is developed and their participation at OCEANS 2009 Bremen is on track.

January – Although not the optimum time of the year weather-wise for a site visit to Norway, R. Wernli, Jerry Carroll and John Watson made the trip, ensuring the conference planning schedule remained on track. The RECON team was hosted by Terje Gjengedal, Statkraft – General Chair; Fritz Bekkadal, Marintek – Vice Chair; and Britt Angell-Hansen, Bergen Convention Bureau.



Hotel and conference facilities were visited including the newly expanded Grieghallen International Congress and Exhibition Center, which is also the city's symphony hall. RECON approval was given to the LOC to present the OCEANS 2013 bid at the AdCom meeting at OCEANS 2009 in Bremen, Germany.

Other than that, it has been a rather uneventful year. What is on the schedule for the remainder of 2009? Plans include:

- Conduct a membership survey regarding future OCEANS conference venues including data on past and future participation.

- Obtaining approvals for the OCEANS 2012 Hampton Roads, VA and the OCEANS 2013 Bergen, Norway conferences.
- Meet with the OCEANS 2012 Yeosu, Korea LOC during travel to Wuxi, China for the Underwater Technology '09 symposium.
- Hold RECON meetings at OCEANS 2009 Bremen and OCEANS 2009 Biloxi.
- Evaluate North American sites for OCEANS 2014 and beyond that include: St. John's, Newfoundland; Baltimore/Washington DC; Anchorage, AK; Monterey, CA; and others as necessary.
- Evaluate non-North American sites for OCEANS 2014 and beyond that include: Genova, Italy; Aberdeen, Scotland; Singapore, France, Japan, India and China.

As you can see, IEEE OES is an international society and the OES, in particular, is treating our membership accordingly. Don't see your city or country on our planning calendar (or on our one page planning overview elsewhere in this newsletter) and feel your city should be considered? Then visit the OES website at www.ieeeoes.org and review the Conferences and Workshops page where you can find everything from conference planning to information on how to bid on or run an OCEANS conference.

Request for Nominations for the IEEE Oceanic Engineering Society Distinguished Technical Achievement Award for 2009

The IEEE Oceanic Engineering Society is seeking nominations from the Oceanic Engineering Society membership for the Oceanic Engineering Society Distinguished Technical Achievement Award for 2009.

The Distinguished Technical Achievement Award is presented to a member of the profession whose technical achievements in oceanic engineering are recognized by their peers. This award is the Oceanic Engineering Society's way of affording acknowledgement to the technical accomplishments of individuals who have produced and furthered the reputation for technical excellence currently enjoyed by the society. The last five Distinguished Technical Achievement Award recipients are:

- 2004 John P. Craven**
- 2005 Douglas C. Webb**
- 2006 Fred Noel Spiess**
- 2007 Donald E. Barrick**
- 2008 Thomas B. Sanford**

The Nominations Packet(s) for the Distinguished Technical Achievement Award should include a Letter of Nomination accompanied by a one page vita of the candidate and two letters of recommendation.

Nominations will be accepted through 30 April 2009.

Please submit nominations to the undersigned.

James Barbera
Chair, IEEE/OES Awards Committee
Address 13513 Crispin Way
Rockville, MD 20853 USA
Phone 1.301.460.4347
email j.barbera@ieee.org



ACOUSTICAL · SOCIETY · OF · AMERICA



For more information,
Please contact
Elaine Moran,
Acoustical Society of America,
516-576-2360, elaine@aip.org

**Chief Scientist for Engineering at Lawrence Livermore National Laboratory
Awarded Medal from the Acoustical Society of America**

Melville, NY (24 June 2008) -- The Acoustical Society of America (ASA) has named James V. Candy recipient of its Helmholtz-Rayleigh Interdisciplinary Silver Medal for his contributions to signal processing and underwater acoustics. The Silver Medal is awarded to ASA members whose work overlaps more than one technical area. The award will be presented on 2 July 2008 in Paris, France at Acoustics'08 Paris, an international meeting jointly sponsored by the ASA, the European Acoustics Association, and the French Acoustical Society.

"Receiving the interdisciplinary Silver Medal award from the Acoustical Society of America is an overwhelming honor," says Candy. "I praise the Lord for his gifts, my wife for her endless support, my colleagues for encouragement and my institutions for the opportunity."

Candy is the Chief Scientist for Engineering at Lawrence Livermore National Laboratory and an Adjunct Professor in the Department of Electrical & Computer Engineering at the University of California, Santa Barbara. A veteran of the U.S. Air Force, Candy has held a number of positions at Lawrence Livermore for more than 30 years and is the former Director of the Laboratory's Center for Advanced Signal & Image Sciences.

His research focuses on the development of model-based signal and image processing techniques. Using embedded physical models, these techniques can extract critical information from noisy measurement data for a wide variety of applications. The applications range from vibrational failure detection for prosthetic heart valves, target localization in ocean acoustics, communications in room acoustics, detecting and imaging flaws in materials for nondestructive evaluation, biomedical imaging for ultrasonic cancer detection, time reversal processing for signal enhancement as well as detection of radioactive contraband in containers, and synthetic aperture for underwater and airborne targets.

James Candy is a graduate of the University of Cincinnati (BSEE, '66) and the University of Florida, Gainesville (MSE, '72; Ph.D., '76). He is a resident of Danville, California.

The Acoustical Society of America is the premier international scientific society in acoustics devoted to the science and technology of sound. Its 7,500 members worldwide represent a broad spectrum of the study of acoustics. ASA publications include *The Journal of the Acoustical Society of America*—the world's leading journal on acoustics, *Acoustics Today* magazine, books and standards on acoustics. The Society also holds two major scientific meetings each year. For more information about the Society, visit our Web site, <http://asa.aip.org>.

Activity Report for 2008

IEEE OES India Chapter

Meeting No: 1

Report on the Inauguration of IEEE OES India Chapter at NIOT, Chennai, India on 25th September 2008

India Chapter of IEEE Oceanic Engineering Society was inaugurated on 25th September 2008 at National Institute of Ocean Technology (NIOT), Ministry of Earth Sciences, Govt of India, Chennai. Dr P.S.Goel, Former Secretary, Ministry of Earth sciences and Dr. James McFarlane, President, International Submarine Engineering (ISE), Canada has inaugurated the Chapter by lighting a traditional lamp along with the other dignitaries. Dr. S. Kathirola, Director, NIOT welcomed the gathering including members and other invitees.

Dr. P. S. Goel delivered the inaugural address. He dwelled on the importance of interaction among the ocean engineering community of India. He felt that such initiative has to be encouraged by the Institutes involved in Research and Development activities in the field of ocean Engineering. Dr M. A. Atmanand, Chairman, IEEE OES, India Chapter, presented the need for membership in IEEE by professionals and the vision of IEEE, OES, India Chapter and introduced the office bearers of the India Chapter.

The inaugural technical lecture was delivered by Dr. James Mc Farlane. He gave a lecture on “Underwater Vehicles: Past, Present and Future” In his lecture he explained about the developments in subsea technology and various improvements in the design of Underwater Vehicles “:

Mr. B. K. Miller from South West Research Institute (SWRI), USA, presented their activities in developing various submersibles in association with ISE. Dr. G. A. Ramadass, Secretary, IEEE OES, India Chapter introduced the speaker.

The inaugural session was attended by representative from research institutes like NIOT, Indian Institute of Technology (IIT Madras) and Ocean Engineering Industry, 28 IEEE members and 57 others attended the function. The meeting ended with vote of thanks by the Vice President of IEEE OES India Chapter, Prof. P.R.S. Pillai, Cochin University of Science and Technology, Kochi, India



Dr. Kathirola speaking, On the dias – Dr. Atmanand, Dr. James Mc Farlane, Dr. Goel, Dr. Pillai

Meeting No: 2

Report on Technical Lecture at Hotel Palm grove, Chennai, India on 13th December 2008

A Lecture on the topic “Advances in Underwater Vehicles” by Dr. Sergey Sukonkin, Head of Dept. Underwater Vehicles, Experimental Design Bureau of Oceanological Engineering, Russian Academy of Sciences (EDBOE) was organized jointly by IEEE OES India Chapter, IEEE Madras Section, and IEEE Women in Engineering Affinity group on 13th Dec 2008.

Mrs.M.Ramalatha Chairperson IEEE- Madras WIE welcomed the gathering. Dr.S.Kathirola Director, NIOT Chennai, India gave an introduction on underwater technologies and inspired the young engineers to join the research organization. Dr. M. A. Atmanand, Chair, IEEE-OES India chapter introduced the speaker.

Dr. Sergey Sukonkin in his presentation stated the importance of the underwater vehicles to improve the knowledge of ocean where human manipulation is not directly possible. He explained various studies on ocean floor in the world oceans like Atlantic, Marina Trench, Pacific Ocean etc. He also explained about bathymetry survey, underwater hydrothermal vents and black smokers visualization with underwater vehicles designed by Experimental Design Bureau of Engineering Russian Academy of Sciences.

Dr. Sergey Sukonkin’s expertise in developments of the underwater equipment since 1970s, and contribution to technology development of other underwater components also was explained.

The talk was inspired by presentation of video clippings of various expeditions of AUV’s and ROV’s in Pacific and Atlantic oceans. His presence in a mission on Manned Underwater Vehicle motivated the researchers and scientists who attended the meeting.

Tsunami warning system and the Earthquake tracking system added up to latest developments.

The session was attended by representatives of NIOT Chennai, IEEE Madras, IEEE WIE, 61 IEEE members and 21 other members attended the function. The meeting ended with vote of thanks by Dr.T.Thyagarajan, Secretary, IEEE Madras chapter.



Atmanand, Thyagarajan, Sergey Sukonkin, Salivahanan, Ramalatha

Meeting No: 3

Report on Technical Talk at Hotel Sangeetha, Chennai, India on 20th December 2008

The topic the third technical meeting of IEEE OES India Chapter was "Developments at the University of Tokyo in the field of Underwater Vehicles" by Mr. P. V. Unnikrishnan, URA laboratory, Underwater Technology Research Center, Institute of Industrial Science. The meeting was organized jointly with the IEEE Engineering Management Council Madras Chapter and IEEE Power Energy Society Madras Chapter on 20th Dec 2008.

Mr. K. V. Rupchand Chairman IEEE TMS & PES Madras chapter welcomed the gathering. Dr P. Suresh Chander Pal, Senior Member IEEE Madras Chapter encouraged students present to take active part in IEEE activities. Dr M. A. Atmanand, Chairman IEEE OES India Chapter introduced the speaker.

Mr. P. V. Unnikrishnan in his lecture presented the Developments at the University of Tokyo in the field of Underwater Vehicles and Autonomous Underwater Vehicles. He explained various types of AUVs, from large size to miniature ones used for pipe line inspection.

The session was attended by representatives of NIOT Chennai, Anna University, IEEE Madras, 10 IEEE members and 18 other members. The meeting ended with vote of thanks by Mr. K. V. Rupchand Chairman IEEE- TMS & PES Madras Chapter



Rupchand, Unnikrishnan, Suresh Chandra Pal, Atmanand

My profession.
My organization.
My IEEE.

Discover the benefits
of IEEE membership.

Access the latest technical information and research, gain global networking and career opportunities, and take advantage of exclusive discounts on education and insurance products when you become an IEEE member.

Join today
www.ieee.org/join



IEEE GEOSS Workshop XXVII – Understanding the Oceans Integrated Observation Systems Including Sub-surface Sensors

Congress Center Bremen, Bremen, Germany
Sunday May 10th, 2009 from 09:00 to 18:15

Co-organizers:

Udo Gaertner, Al Gasiewski, Françoise Pearlman, George Percivall, Jana Stone, and
Christoph Waldman

Background

The Global Earth Observation System of Systems (GEOSS) is envisioned to cover all aspects of Earth observations and by this will introduce a new capability for monitoring environmental processes. GEOSS is a complex “system of systems,” including sensors, communication systems, spatio-temporal data infrastructures and other components essential for observing the Earth and disseminating this information to users for a host of important societal benefits. In addition, GEOSS includes models and data fusion processes to create information from the observational data that is essential for decision making. The 2003 Earth Observations Summit established the objective “*to monitor continuously the state of the Earth, to increase understanding of dynamic Earth processes, to enhance prediction of the Earth system, and to further implement our international environmental treaty obligations*”. GEOSS goals are to achieve comprehensive, coordinated and sustained observations of the Earth system, in order to improve monitoring of the state of the Earth, increase understanding of Earth processes, and enhance prediction of the behavior of the Earth system.

The GEOSS 10-year Implementation Plan states that GEOSS will provide the overall conceptual and organizational framework for integrated global Earth observations to meet user needs. GEOSS will be a system of systems consisting of existing and future Earth observation systems, supplementing but not supplanting their own mandates and governance arrangements. It will provide the institutional mechanisms for ensuring the necessary level of coordination, for strengthening and supplementing existing Earth observation systems, and for reinforcing and supporting component systems in carrying out their mandates.

The emphasis of GEOSS is on societal benefits, initially in nine key areas. Sound management of the Earth system, in both its natural and human aspects, requires information that is timely, of known quality, long-term, and global. Interpretation and use of Earth observations requires information on drivers and consequences of change, including geo-referenced socio-economic data and indicators. The nine areas addressed in the GEOSS Implementation Plan are:

- Disasters: Reducing loss of life and property from natural and human-induced disasters
- Health: Understanding environmental factors affecting human health and well-being
- Energy: Improving management of energy resources
- Climate: Understanding, assessing, predicting, mitigating, and adapting to climate variability and change

- Water: Improving water resource management through better understanding of the water cycle
- Weather: Improving weather information, forecasting and warning
- Ecosystems: Improving the management and protection of terrestrial, coastal and marine resources
- Agriculture: Supporting sustainable agriculture and combating desertification
- Biodiversity: Understanding, monitoring and conserving biodiversity

Although all of the above societal benefit areas (SBAs) of the Implementation Plan are important for GEOSS, this workshop will focus specifically on Ocean Observing Systems, which relates primarily to Climate, Ecosystems, Weather, Water, and (via transportation) to Energy.

The GEO Work Plan

The GEO 2009-2011 work plan takes the GEOSS 10-year Implementation Plan through its midway point, and has an increasing focus on putting the components of GEOSS into place. This phase of the plan will enable connections to be realized between diverse observing, processing, data-assimilation, modeling and information-dissemination systems. The new work plan will also enhance the role of users and Communities of Practice within GEO. The work plan includes a subtask associated with the Global Ocean Observation System (GOOS, ref GEO subtask AR-09-03c).

Workshop Theme

The Workshop will explore the status of existing ocean observation systems and data portals for the Global Earth Observation System of Systems. The discussion will focus on the ability to build on existing systems to develop a global coordinated information and data system for ocean monitoring to better understand the dynamics of the deep-ocean processes throughout the ocean water column (ref GEO subtask AR-09-03c).

Workshop Objectives

The workshop will first address the integration of an Ocean Observing System within the broader context of GEOSS. After bringing the audience up to date on the GEOSS architecture and standards and providing a GEOSS portal demonstration, the discussion will focus on answering a series of questions associated with Ocean data collection, evaluation and decision support systems, including: 1) What Ocean Observing Systems are available today and what tools and methods are best suited for integrating these systems, 2) What ocean observation methods and infrastructure are immediately needed and what gaps are there in observations, and 3) What key scientific reference data sets are available and what sets still need to be developed.

By answering these questions the workshop will serve to enhance and improve the coordination of coastal/open-ocean observations and modelling initiatives in support of a global ocean observation system.

ANNOUNCING the
**2009 IEEE UNDERWATER ACOUSTIC SIGNAL PROCESSING
WORKSHOP**
<http://www.uasp.org>

October 14–16, 2009
Alton Jones Campus, University of Rhode Island
West Greenwich, RI, USA

Sponsored by the IEEE Providence Section
with promotional partners the IEEE Oceanic Engineering Society, Raytheon and the Office of Naval Research

Chairman

John R. Buck
University of Massachusetts
Dartmouth
chair@uasp.org

Technical Program

Douglas A. Abraham
CausaSci LLC
abraham@ieee.org

Geoffrey S. Edelson
BAE SYSTEMS
geoffrey.s.edelson@baesystems.com

Donald W. Tufts
University of Rhode Island
tufts@ele.uri.edu

Special Session Chair

Phil Schniter
The Ohio State University
schniter@ece.osu.edu

Local Arrangements

Richard J. Vaccaro
University of Rhode Island
vaccaro@ele.uri.edu

Publications

Igal Bilik
University of Massachusetts
Dartmouth
ibilik@umassd.edu

The objective of this workshop is to provide an informal atmosphere for discussions of original research on signal processing techniques with underwater acoustic applications. The intent is to review theoretical and experimental research at an early stage of development. Particular areas of interest are:

- Adaptive processing in non-stationary interference
- Detection, localization or tracking, and classification
- Underwater acoustic communications
- Marine mammal related acoustic signal processing
- Multistatic sonar signal processing
- Performance analysis for active and passive sonar
- Physics-based signal processing algorithm design and analysis
- Signal processing for AUVs or deployed autonomous systems
- Synthetic aperture sonar

Research on other topics in Underwater Acoustic Signal Processing will also be considered. **There will be a special session on Results from Underwater Acoustics Communications Field Experiments.**

Facilities limit attendance to 50 persons. Preference will be given to those presenting research results. Abstract submission and registration directions may be found at <http://www.uasp.org>

Important dates:

July 13, 2009 - Deadline for abstract submission

July 31, 2009 - Deadline for those wishing to attend but not present

Aug. 24, 2009 - Notification of accepted abstracts and attendees

Sept. 11, 2009 - Room block at Whispering Pines released

Oct. 14–16, 2009 - Workshop

