We all had a great time in Bremen. Join us in Biloxi for the next OCEANS '09 Conference

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President's Corner

This has been a very busy year with many activities for our Society. The 6th International Symposium on Underwater Technology in Wuxi, China held April 21–24 was very successful. The Symposium general Co-Chairs were Tamaki Ura, Robert Wernli, and Wei-Cheng Cui from the China Ship Scientific Research Center. This was our first major event in China and we were very pleased with the technical papers, the attendance, and the organization of the Symposium. The Offshore Technology Conference was held May 4–7 in Houston, Texas with OES as one of the sponsors. This year's event coincided with the flu scare but 67,000 people attended with a sell-out of exhibit space. The Panel sessions as well as the technical papers were of particular interest. The OCEANS '09 Bremen Conference was the following week and the local organizing committee presented an extremely well organized Conference. There were 1,172 participants in the Conference with 104 exhibitors. The Conference met our expectations and was extremely successful. One of the highlights was the ROV Competition for local high school students conducted in an aquarium just behind the exhibits. Throughout the day the aquarium and stage were used to demonstrate equipment and to brief new technology and new developments in oceanography. The ROV competition was broadcast live on local radio where the disc jockey referred to the OES members as the people that make the oceans "rock". To the delight of the audience the winning team consisted of two 14-year old young ladies.

We have a number of lady OES members on our ADCOM and EXCOM who contribute significantly to our efforts. Pam Hurst is our representative to the IEEE Women in Engineering (WIE), serves on our ADCOM, and has been very active in organizing conferences, symposia, and workshops. Diane DiMassa is our Treasurer and a professor at Massachusetts Maritime Academy which will be hosting the MAST Competition in late June. Marinna Martini is on our ADCOM and responsible for our electronic newsletter and will be helping Diane with the MAST Competition. Liz Creed is also a member of our ADCOM and responsible for organizing and manning our OES booth at various events. She now has the booth in modular form so that we can exhibit at multiple conferences at the same time. She was very successful in recruiting new members and at the Bremen conference recruiting over 60 new members. Barbara Fletcher, another member of our ADCOM, has taken over the job of Web Master from Todd Morison and is also helping organize the OCEANS Conference in San Diego in 2013. Milica Stojanovic is a member of the ADCOM, an Associate Editor of the Journal of Oceanic Engineering, and maintains the Society's calendar. We also have one of our former ADCOM Members, Ferial El-Hawary, who was the Co-Chair for the OCEANS Conference in Quebec City and is the IEEE Regional Director for Canada. We are very pleased with the participation of so many women engineers and scientists in OES.

OES Newsletter Editorial

In this issue you will find coverage of the Oceans '09 conference that was held in Bremen, Germany in May 2009. The conference was a great success at many levels. You will also find news items about people and committees in the OES that are actively engaged in the work of promoting the art and science of ocean engineering around the globe. You will also see a lot of emphasis on student activities because they represent the future of the OES and we place a great deal of emphasis on encouraging their participation.

During my travel to the Oceans'09 conference in Bremen I was impressed by the number of windmills I saw generating power, especially in the coastal areas of Germany and Denmark. This observation started me thinking about the potential of renewable energy sources such as wind energy. I did a little research on the subject when I got home and discovered that the United States has an abundant potential for generating wind energy, both onshore and offshore. I found a great deal of information at http://ocsenergy.anl.gov/guide/wind/index.cfm. One study by the US Department of Energy found that it would be feasible to have 20% of the country's electrical capacity powered by wind energy by 2030. Most of the progress in this arena has been concentrated in onshore installations and as a result the cost per kWh of wind generated electricity dropped from about $.40 to $.04 over the last 20 years. Offshore wind energy is still more expensive because there are additional engineering challenges. The point here is that over the next several years wind energy as a technology and an industry will experience significant growth because the cost is reaching levels where it can start to compete with other energy sources. This growth will spawn multiple industries associated with the design, construction, operation, and maintenance of the wind generating systems and support equipment as well as the requisite power transmission infrastructure. This growth potential represents an opportunity for scientific research and engineering development that OES members can participate in. The opportunities are defined, to a great extent, by the engineering challenges that currently exist in transitioning the technology from onshore installations to offshore installations. One challenge is the greater complexity in foundations and structures that are required because most of the best locations for offshore wind generators are in water depths greater than 30 meters and must be capable of withstanding greater forces from both wind and waves. The structures now envisioned are more akin to deep water oil platforms than shore based structures. Improvements to anchoring techniques and structures should find a ready market. Another challenge is to efficiently convert, condition, control, and transmit the power from where it is generated to where it is consumed on shore. Various approaches to transmission are being considered including the more traditional methods using transformers and underwater cables as well as alternative methods like using the electricity produced by the wind generator to liberate hydrogen gas from seawater via electrolysis and then transporting the hydrogen gas to shore. Because the wind is intermittent, features must be built into the system to properly regulate the power and handle periods of both low and high generating capacity and balance that variable supply with the variable load of the grid. Many of these features already exist in traditional transmission systems but they can be optimized to the unique environment of offshore wind generation. Another challenge is how to best address the various environmental concerns associated with wind generators. These include:

- Sedimentation, noise, and vibration during construction
- Collisions between birds and rotors
- Disorientation of migrating birds caused by maneuvering around the rotors and navigation lights mounted on the structures
- Interference with navigation for endangered and threatened species caused by electromagnetic fields generated and transmitted by the equipment
- Conflict with other sea space use
- Visual impacts of units close to shore

What opportunities do you see around you for advances in ocean related science and industry? Send me your comments, opinions, and experiences so I can share them with the rest of our community. E-mail me at j.gant@ieee.org.

Jim Gant
OES Newsletter Editor

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

OCEANS '09 will be in Biloxi at the end of October and will be focused on education and student participation with several related activities. On the Saturday before the Conference there will be an "Educator's Professional Development Program" for 6–12th grade teachers at Stennis Space Center. It is expected that IEEE will provide material for the program. There will also be a High School Outreach Class Program in which 8 classes will be brought to the conference for special training and other activities and OES will be sponsoring two of the classes. The Office of Naval Research is also sponsoring our student poster competition once again this year.

The IEEE TAB Strategic Planning Committee has developed an initial Strategic Plan which I will propose that OES adopt and follow. The objectives in the plan are those things that we are trying to achieve.

Jerry Carroll,
OES President

OCEANS 2009 IEEE Bremen Conference and Exhibition

Dr. Christoph Waldmann,
Conference Chair

This year's OCEANS conference in Europe was hosted from May 11th to May 14th in the Hanseatic City of Bremen in Germany. Held at the modern Bremen Convention and Fair Centre the conference was organized in facilities that provided ideal conditions and a number of amenities for this particular event. In retrospect, the organizers are extremely happy with the attendance and the positive atmosphere in which the OCEANS 09 IEEE Bremen took place. Starting from the icebreaker party until the end of the last sessions lively discussions between participants from over 40 nations and representatives from more than 100 companies involved in the field of ocean technologies provided the base of bringing everyone up to date about future directions in this field. In the words of the chairman Prof. Gerold Wefer the OCEANS 09 was a complete success demonstrating the global interest in ocean engineering and its growing importance. For over 30 years now the OCEANS conferences have developed into the central event in this field providing an excellent platform for all branches of marine technology to give a comprehensive overview of ongoing activities.

Awards

At the IEEE luncheon on Tuesday, May 12th, Jerry Carroll, president of OES, presented the Award for an IEEE Fellow of the Oceanic Engineering Society to Jean- Pierre Hermand from Brussels University in Belgium. His work excelled in the field of ocean acoustics where he significantly contributed to the progress in the field of passive acoustic tomography.

Attendees

With more than 1000 attendees from Europe, North America, Asia, Australia and Africa all expectations of the organizers were exceeded. The IEEE and the Bremen team were particularly pleased about the huge number of students and young engineers who attended the sessions. For the chairman of the conference Gerold Wefer this demonstrates the strong interest in the field and how attractive this field is for young academics. The Upper Town Hall with its interior design that goes back to the Hanseatic seafarer tradition provided an ideal setting for the student award ceremony. This ceremony also demonstrates the importance of the transfer of knowledge to future generations for the progress in this field.

Keynote Speeches

With about 400 participants the plenary session was very well attended. OES President Jerry Carroll opened the session. Next, Minister Ralf Nagel brought greetings and a warm welcome from the City and State of Bremen. The auditorium was given an overview about the history, state of the art and future of ocean sciences and technology. The director of the NATO Underwater Research Center in La Spezia, François-Régis Martin- Lauzer, covered these three branches for the field of ocean acoustics in his presentation. His talk about "The impact of underwater acoustic on ocean research and surveillance" clarified how the close interaction between pure research and applications lead to the central role that ocean acoustics plays for the progress in ocean science and technology. Prof Wefer, Director of the research centre MARUM, gave an excellent overview about the role of ocean technology in marine research presenting latest developments in deep sea technology like the new drilling device MeBo of the research centre MARUM. The Global Earth Observation System of Systems GEOSS that is currently planned and implemented will embrace all earth related science disciplines. Udo Gaertner, a consultant for the German government, emphasized the importance of GEOSS and pledged for a strong involvement of ocean sciences in this initiative.
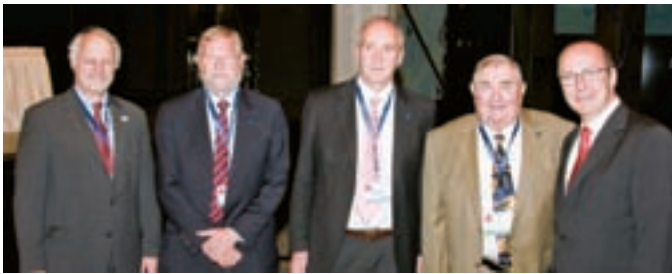
Udo Gaertner, Gerold Wefer, Christoph Waldmann, Jerry Carroll, Ralf Nagel

Exhibition and Social Events

A highlight of the exhibition was the 60,000 liter aquarium. It provided the opportunity for students and school kids to test self-designed underwater vehicles. A ROV student competition set a stimulus to attract young people into this vital field of sciences. Exhibitors also welcomed the additional attractions. As all coffee breaks and meals were served in the exhibition hall the exhibitors were pleased with the number of attendees. People are looking forward to the next OCEANS conference in Bremen.

The aquarium was used for student ROV competitions as well as equipment demonstrations

Student ROV Competitions

Ten year old robotics competitors being interviewed

14–15 year old robotics competitors

Competition robot in the tank

Exhibit Booths
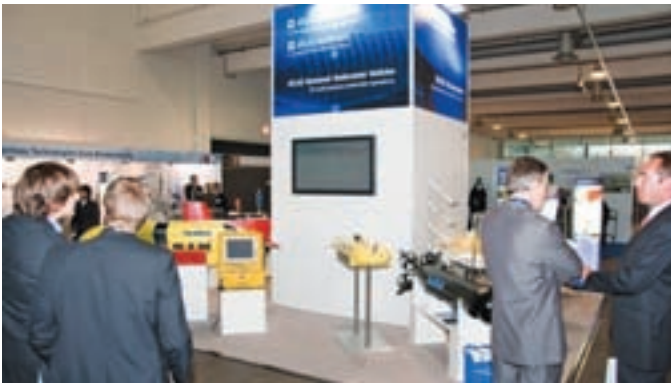
Atlas-Maridan

Briese Schiffahrts GmbH & Co. KG

Fugro
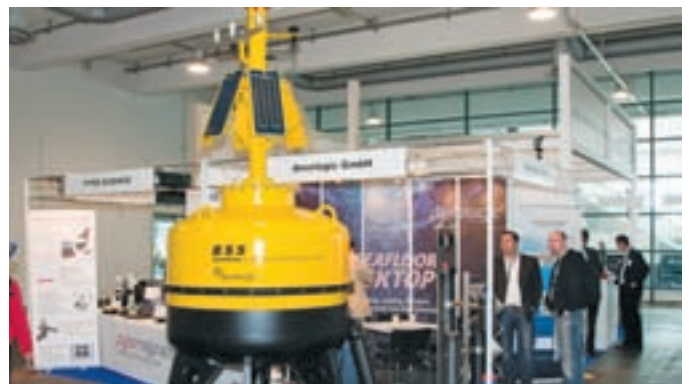
Develogic GmbH

Contros Systems & Solutions

Maritime Technologies from Bremerhaven

MARUM Centre for Maritime Environmental Sciences

J. Bornhoft Industriegeräte GmbH

IFremer

Fielax

MacArtney Group

Internet Operated Vehicle

Technical Sessions

On Tuesday through Thursday, papers on a variety of topics were presented as outlined below. The volume of data presented as well as the rich diversity of topics are vibrant indicators of the technical value offered by the OCEANS conferences.

- Autonomous Underwater Vehicles
- Ocean Observing Systems and Strategies
- Vehicle Design
- Oceanographic Instrumentation, Buoys and Cables
- Acoustic Telemetry and Communication
- Ecology versus Economy
- Sonar Signal Processing
- Renewable Energy
- Vehicle Navigation
- Advanced Technology for Resource Exploration
- Sonar Imaging
- Coastal Radars
- Marine Life, Ecosystems, and Pollution Monitoring

- Estuary Systems and Wadden Seas
- Current Measurement Technology
- Marine Optics Technology and Communication
- Data Access, Handling, and Visualization
- Atlas Grex Project
- Array Signal Processing and Array Design
- Numerical Modeling
- Marine Law and Policy
- Automatic Control
- Spaceborne Ocean Observing
- Vehicle Performance
- Imaging and Vision
- Signal Processing Techniques
- Information Management
- Maritime Security and Surveillance
- Acoustical Oceanography
- Marine Safety and Security
- Marine Material Sciences and Marine Structures
- Ocean Noise and Seismo-Acoustics

Hwee-San Lim presents his paper on Chlorophyll Measurement from Landsat TM Imagery

Stephan Holsten delivering his paper on Global Maritime Surveillance with Satellite-based AIS

Eric Gill chairs the session on Coastal Radars

John Watson chairing the session on Imaging and Vision

Ed Sullivan presents his paper on Adaptive Model-Based Mine Detection/Localization using Noisy Laser Doppler Vibration Measurements

Bremen City Sights

Founded in 787 AD, Bremen is one of Germany's oldest cities. Bremen was once an independent city that played an important role in Germany's political and economic development. The city was known as a free market trade region and eventually became the seat of the Hanseatic League, a powerful trade organization. This legacy left Bremen with a tradition of independence and

Bremen Congress Centre, site of the OCEANS '09 conference

free thinking that the residents are proud of today. The city has a rich and diverse cultural background making it a great place to visit. The pictures below document a few of the city sights enjoyed by those at the conference.

Bremen Park, a spacious open area with numerous walking trails, featured blooming rhododendrons of every color

A panorama of the Bremen town square. Still a dynamic location in the center of commercial and government sectors

A fairy tale by the Brothers Grimm tells a story of four animals known as the Bremen town musicians who have an adventure together. Located just off the town square, this statue reminds visitors of the story. In this picture, OES Treasurer Diane DiMassa holds the front hooves of the donkey; tradition says this can make wishes come true

A windmill in one of Bremen's parks draws your attention with a serene beauty punctuated by bright colors

Reception and Banquet

On Wednesday evening a reception was held in the historic Rathaust Upper Hall of the Town Hall followed by a banquet in the Town Hall Cellar, a restaurant boasting the largest and oldest wine cellar in the region.

The upper hall of the Town Hall was richly decorated with model ships and paintings depicting the early days of Bremen as an important port and trading center. This served as the venue for our reception

Model ships suspended from the rafters of the upper hall.

After the reception and on the way to the banquet we were treated to some local characters telling their version of the story of the Bremen town musicians

Local Organizing Committee

(Standing): Christoph Waldmann, Gerrit Meinecke, Thorsten Klein, Oliver Zielinski, Gerold Wefer, (Seated): Eberhard Sauter, Barbara Donner, Jana Stone, Manfred Schlösser, Albert Gerdes

Planning and hosting a conference like this is a monumental undertaking that requires a team of dedicated professionals. The great success of this conference can be attributed to this team. Many thanks to all of them for a job well done.

Martina Pätzold, Student Program Chair, Jana Stone, and Barbara Donner, Local Arrangement Chair, receive flowers at the reception as a small token of thanks for their many efforts

Oceans '09 Student Poster Program

Norman D. Miller, OES Student Activities Coordinator

The 24th student poster program of the conference series was held in Bremen, Germany as a part of OCEANS'09. Once again there were many outstanding posters representing a wide variety of work. The students came from Asia, Australia, Africa, Europe, Canada and the UK and the United States. Fifty nine student poster abstracts were received and twenty students were selected to present their posters. Two students did not show up and one was late in arriving. However eighteen posters were displayed and judged. The posters were located in a good location in the Exhibition Hall. As you entered the hall, the posters immediately caught your attention.

The Student Poster program and competition has been an integral and important part of the OCEANS conferences since 1989. The program is designed to foster and promote student involvement in technical societies and conferences and to provide a forum for students to interact with marine professionals. The poster program is open to engineering and science graduate and undergraduate students of any tertiary level university or college worldwide. The program is supported by a grant from the US Navy's Office of Naval Research.

The Poster program began with a briefing and review of the rules on Tuesday morning. Each student then gave a short description of the poster to the fellow students and judges. Following the plenary session the posters were mounted in their assigned places and the program began.

The Judging Team met Wednesday afternoon to review the results and select the winning posters. After some deliberation the winning posters were selected as follows:

1st Place – Thibaut Lurton
2nd Place – Marcos Sastre and Shyam Kumar Madhusudhana
3rd Place – Valentin Soulenq, Grant Pusey, and Ismael Aymerich

The climax of the program came on Wednesday evening at the gala reception in the Old Town Hall. This magnificent room was a fitting way to honor the students for their work and participation in this program. The students assembled in front of the podium and were introduced by Mr. Norman D. Miller, IEEE/OES Student Activities Coordinator. Mr. Miller gave a brief history of the program and then announced the winning posters. Dr. Martina Pätzold in turn gave the award certificate to Dr. Christoph Waldmann and he gave it to the student. At the completion of the awards ceremony all of the students received a round of applause for their work. Many photos were taken and congratulations abounded.

Abstracts of each of the winning papers are presented below and the full paper of the first place winner is presented after that.

First Place Award

Simulation of the Radar Observation of a Sea Patch Using the TLM Electromagnetic Method – Thibaut Lurton

Thibaut Lurton was born in Versailles, France, in 1983. He graduated from Telecom Bretagne (formerly ENST Bretagne, engineering school in telecommunications) in 2005, obtaining his degree jointly with a MSc in Spacecraft Technology and Satellite Communications at University College London. He is currently in his third year of PhD studies at Telecom Bretagne, working on the radar observation of the sea surface.

Abstract—We propose the simulated rendition of the observation of a variety of small sea patches by radar. These patches include random sea surface of variable state, with possibly the presence of a manufactured, metallic object in its middle. The simulation in itself draws upon two different techniques which are combined: for the free-space propagation, a simple geometrical ray tracing method is used. On the other hand, we rely on a discrete calculation of the propagation of the electromagnetic waves in the vicinity of the sea surface, using the TLM method. Different aspects of this particular electromagnetic method are discussed in this paper. The originality of the approach is the combination of a geometrical calculation with a discrete, exact computation, each of them being devoted to a precise part of the simulation. Further matter in the article extends onto the explanation of some techniques developed for the need of our study, presentation and annotation of some results along with computation times, and overall discussion.

Second Place Awards

Backscattering of Sound from Salinity Fluctuations: Measurements off a Coastal River Estuary – Marcos Sastre

Marcos M. Sastre-Córdova is a Principal Systems Engineer at Raytheon Company Seapower Capability Center in Portsmouth, Rhode Island (USA), where he has worked since 2000. Marcos is involved in the development of future naval capabilities, primarily in the design, integration and test of sonar systems, modeling and simulation of underwater sound propagation, and analysis of at-sea data. He holds degrees in physics (1997) and physical oceanography (2000) from the University of Puerto Rico Mayagüez and an MBA (2004) from the University of Rhode Island. He is currently a doctoral candidate at the University of Massachusetts Dartmouth and a Raytheon Advanced Study Program Scholar.

Abstract—In this work a set of near co-located acoustic intensity observations and environmental measurements is presented which allowed quantification of the source of the acoustic scattering and confirmation of backscattering contributions from salinity microstructure. Observations were made by the T-REMUS Autonomous Underwater Vehicle (AUV) in a fresh water plume off a coastal river estuary characterized by strong salinity stratification and intense turbulence. Velocity and density microstructure measurements were used to calculate the expected acoustic backscattering cross-section from salinity fluctuations, which was then compared to near coincident acoustic intensity measurements. Surrogate measures of discrete particle scattering sources (i.e., biologic and mineral) for comparison with measured backscattering were also obtained. A series of regression analyses (single and multi-variable) were performed in an attempt to account for the observed acoustic variability. It was found that most of the variability in the acoustic return signal was explained by a linear combination of the independent variables selected. The results suggest that most of these regressions were dominated by biological and microstructure sources, with a fair amount of cases that were either completely biologically or microstructure dominated. The results led to the conclusion that measurements of salinity backscattering agree with theoretical predictions within experimental error of $+/-2$dB (on average) for a wide range of turbulence levels, with an observed underestimate of the salinity backscattering of at least 1.5dB under high turbulence conditions. These results strongly support the idea of performing an inversion of the acoustic signal to obtain the salinity variance dissipation rate.

Blue Whale B and D Call Classification Using a Frequency Domain Based Robust Contour Extractor – Shyam Kumar Mahusudhana

Shyam Kumar Madhusudhana, 26, graduated with a Masters degree from San Diego State University (SDSU) in May 2009. After obtaining his Bachelors of Engineering degree in Computer Science & Engineering from Visveswaraya Technological University, Belgaum, India, he moved to San Diego in 2005 to pursue higher education with emphasis on research. His research interests are in the field of statistical pattern recognition as applied to acoustic signals. His Masters thesis involved development of a computer based automatic classifier for recognizing blue whale B and D calls in long term underwater acoustic recordings. He has worked with Dr. Marie Roch (Associate Prof., SDSU) and researchers from Dr. John Hildebrand's whale acoustics group, at Scripps Institution of Oceanography (SIO), for over three years. He is presently employed at LumenVox LLC, an Automatic Speech Recognition solutions provider. He is looking forward to begin a PhD program and continues to work with Dr. Marie Roch and other researchers at SIO.

Abstract—Passive acoustic monitoring of blue whales (*Balaenoptera musculus*) has been used to gain insight into their presence and behavior. Many of their calls have been shown to be detectable through spectrogram correlation due to the low variation in these stereotyped calls. In this work, we describe rule based classifiers for tonal B and D calls using the pitch/frequency contour information obtained from a contour extractor. B calls can be detected by spectrogram correlation, but the D calls are highly variable and are therefore difficult to detect using spectrogram kernel methods. Experiments on four hours of evaluation data from different field seasons show that 91.3% of B calls and 85.8% of D calls were correctly retrieved. For both types of calls, less than 2% of the retrieved calls were false positives.
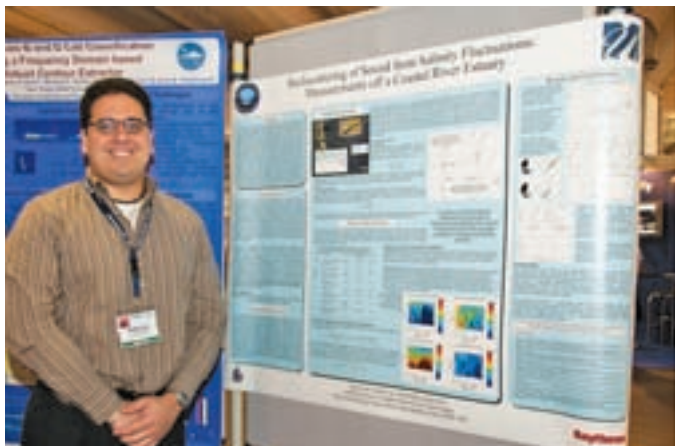
Third Place Awards
A Voice Recognition System for a Submarine Piloting – Valentin Soulenq

Valentin Soulenq is a 21 year old French student. After graduating from high school, he studied at the University Paul Cezanne in Marseille (France) in dual education with the company "Société Marseillaise du Tunnel Prado-Carénage" (SMT-PC, France) where he worked in the maintenance department as an electronic technician. After two years of experience, he enrolled in a French Engineering School, the "Institut Supérieur de l'Electronique et du Numérique" (ISEN-Toulon, France) to deepen his knowledge in telecommunications and signal processing. He participated in the student poster competition within the scope of a school project, throughout the second year of the engineering cycle.

Abstract—Nowadays, many voice recognition systems are used in our daily live. In most cases, the transmission canal is the air and they integrate some microphones. The purpose of this study is to develop such a system able to recognize pre-defined words under water. To identify those commands sent after their propagation in shallow water (use of the ray tracing theory to simulate the propagation in shallow water), we suggest to use a wedding between the dynamic time warping (DTW) algorithm and a multi-resolution analysis algorithm: the Mallat algorithm. To be a real-time algorithm, we propose an implementation in a 32-bit microcontroller, coupled to electronic chains to treat signals exiting out the sensor.

Analysis of Acoustic Modem Performance for Long Range Horizontal Data Transmission – Grant Pusey

Abstract—As offshore oil and gas extraction progresses towards deeper waters and more rugged terrain, a real time method of transferring monitoring data to shore without the use of sea surface infrastructure is needed. This study investigates the horizontal performance of acoustic communication to better determine its suitability for relaying data directly to land based stations. Modelling of both deep and shallow underwater acoustic propagation was performed using the ray tracing model, Bellhop. This determined that the position of the modems is important to ensure optimum signal to noise ratio due to the refraction throughout the medium. In shallow water, multipath effects including selective fading and inter-symbol interference become the dominant source of problems.
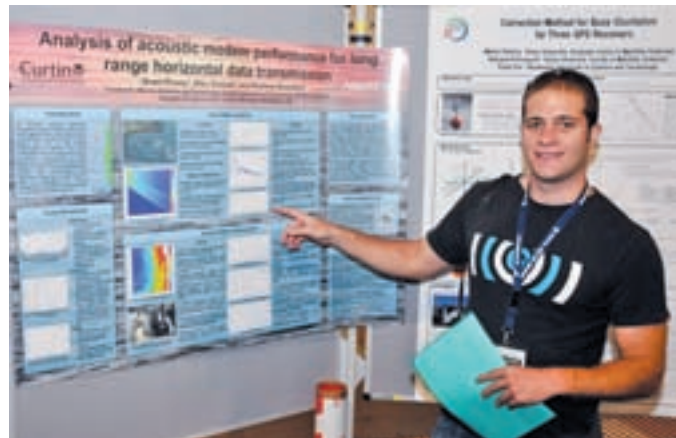
Fast Phytoplankton Classification from Fluorescence Spectra: Comparison Between PSVM and SOM – Ismael Aymerich

Abstract—Evaluation of phytoplankton communities is an important task in the characterization of marine environments. Fluorescence spectroscopy is a powerful technique usually used for this goal. This study presents a comparison between two different techniques for fast phytoplankton discrimination: Self-Organizing Maps (SOM) and Potential Support Vector Machines (P-SVM), evaluating its capability to achieve phytoplankton classification from its fluorescence spectra. Several cultures representing different algae groups were grown under the same conditions and their emission fluorescence spectra were measured every day. Finally, the classification results obtained from both techniques, SOM and P-SVM, are presented. In the case of using emission fluorescence spectra, the results show that we are able to reduce the acquisition time required for some of the existing techniques, obtaining encouraging classification performance.

Roster of All Student Posters
Mohamed Abdel-Salam, Alexandria University, "Designing high speed monohull small crafts (HSMSC) using neural networks guided CFD based optimization"

Ismael Aymerich, University of Marine Technology (UTM-CSIC) Spain, "Fast phytoplankton classification from fluorescence spectra: comparison between PSVM and SOM"

Hermann Bertram, Bremen University, MARUM, "Developing and IDE interface for the SNAP module"

Adrian Bodenmann, The University of Tokyo, "Visual Mapping of Internal Pipe Walls using Sparse Features for Application on board Autonomous Underwater Vehicles"

Marcel Farre', University of Bremen, MARUM, "Sensor Network based on IEEE 1451 for ocean sensors"

Yanzhe Fu, Jacobs University, Bremen, "Forward modeling of paleo heat flow: a case study of Kristin Field, Mid-Norwegian continental shelf"

Sabine Graf, University of Bath, "Acoustic Modeling of Dolphin Sound Reception and Implications for Biosonar Design"

Mathew Johnson-Roberson, University of Sydney, "Fast phytoplankton classification from fluorescence spectra: comparison between PSVM and SOM"

Tanio Lado, University of Rhode Island, "Offshore mussel aquaculture: new or just renewed?"

Thibaut Lurton, Telecom Bretagne, France, "Simulation of the Radar Observations of a Sea Patch using the TLM Electromagnetic Methods"

Shyam Kumar Madhusudhana, San Diego State University, "Blue Whale B and D Call Classification Using a Frequency Domain Based Robust Contour Extractor"

Grant Pusey, Curtin University of Technology, Australia, "Analysis of acoustic modem performance for long range horizontal data transmission"

David Sarria, Technical University of Catalonia (UPC), SARTI Spain, "Control and acquisition system design for an Expandable Seafloor Observatory (OBSEA)"

Marcos Sastre, University of Massachusetts Dartmouth, "Backscattering of Sound from Salinity Fluctuations: Measurements off a Coastal River Estuary"

Saad Sharaf, Alexandria University, "WCLES: An innovative environmental friendly combustionless engine for marine applications based on low-current electrolysis technology"

Midori Shimizu, Kobe University, "Correction Method for Buoy Oscillation by Three GPS Receivers"

Valentin Soulenq, ISEN, Toulon, France, "A voice recognition system for a submarine piloting"

Yusuke Yamane, Kobe University, "Improvement for Detection Distance of Sonar by Flat Acoustic Reflector"

Are You Up To a Challenge?

Editor's Note: The piece below is reprinted from a book titled More Maritime Melodies published in 1894 by the Commercial Publishing Company in San Francisco. I offer this as a challenge to all of you who love the sea; write something poetic about the sea or your work and send it to me at j.gant@ieee. org. Show me what you are made of.

The following poem was written by the late Colonel E.D. Baker, the celebrated orator and soldier, under interesting circumstances. Many years ago, he was walking home from church one Sunday with a lady when she complained of the buffeting of the winds for which San Francisco was, and still is, famed. She declared the wind to be the most unmannerly and prosaic thing in nature, and at his remonstrance challenged him to say anything poetic of it. The next morning she received the following verses and note:

TO THE OCEAN WIND
E.D. Baker

SEAWARD the mists lie dense and deep,
And wild the tempests blow,
The sea-gull circles round the steep,
And waves are white below.
Speed – speed – ye winds, your viewless flights,
But landward as ye roam
Bear on your rustling wings to-night
Health to her distant home.

Ye come from Isles of spice and bloom,
Where palm tree line the strand,

Yet mingling with your rich perfume
Airs from a colder land.
Loud tho' ye rage, and wild ye roar,
Sweet is your breath, and free,
And full of blessings to the shore
The storm that sweeps the sea.

But if those eddying blasts have power
A wish or word to bear,
Seek ere ye sleep, my loved one's bower
And leave my greeting there.
Whisper it gently in her ear
When stars are in the sky,
And kiss away the starting tear
When none but you are nigh.

Tell her I love her – in that word
Soul, heart, thought, impulse thrill,
Tell her that every vow she heard
I've fondly kept, and will.
Tell her – but, no, I soon shall see
The "love light" in her eye.
Till then my only word shall be
Love – blessing – and good-bye.

Mr. Baker presents his respectful compliments to Mrs. ___ and sends the trifle enclosed as a proof (of which said proof she of all persons needs least) that a lady's commands impel the commonest imagination into the forms of poetry even when the spirit is most wanting.

Simulation of the Radar Observation of a Sea Patch using the TLM Electromagnetic Method

Thibaut Lurton, Student Member IEEE, Christophe Sintès, Member IEEE and René Garello, Fellow IEEE

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Abstract— **We propose the simulated rendition of the observation of a variety of small sea patches by radar. These patches include a random sea surface of variable state, with possibly the presence of a manufactured, metallic object in its middle. The simulation in itself draws upon two different techniques which are combined: for the free-space propagation, a simple geometrical ray tracing method is used. On the other hand, we rely on a discrete calculation of the propagation of the electromagnetic waves in the vicinity of the sea surface, using the TLM method. Different aspects of this particular electromagnetic method are discussed in this paper. The originality of the approach is the combination of a geometrical calculation with a discrete, exact computation, each of them being devoted to a precise part of the simulation. Further matter in the article extends onto the explanation of some techniques developed for the need of our study, presentation and annotation of some results along with computation times, and overall discussion.**

I. Introduction

The observation of the sea surface through the means of radars has many direct applications, the most numerous being considerations on the geophysical parameters (sea state, steepness of waves, roughness, currents, winds, etc.) What is more, the detection of objects in sea clutter, crucial as it is in certain fields, is an operation whose difficulty is directly related to the sea state, the radar characteristics, and the size of the spotted objects. A good knowledge of all this set of parameters is thus a key point to the mastering of the radar imaging of the ocean. In this paper, we perform a simulation of the radar observation of complex (i.e. including sea clutter and/or object) sea scenes on a small zone. The reason why we focus on a simulation process is the lack of general knowledge about the interactions between the radar electromagnetic wave and the different parts of a sea scene (waves, objects). Our work could yield clues about this prospective area of remote sensing.

The state of the art in the field of radar propagation simulation over the sea is quite diverse. It ranges from pure analytical methods [1], whose complexity is high, to semiempirical techniques [2], [3]. A good, comprehensive survey of the different methods encountered in the scientific literature can be found in [4]. Our approach will be based on a purely numerical simulation. We will expose throughout the article how we proceed to limit the weight of the calculation process.

The main idea in our simulation is to use a discrete, exact method to calculate the propagation of the radar electromagnetic fields. Because such methods are very heavy to implement due to the number of variables to handle, we have to restrain ourselves to a small portion of space. In this respect, we choose to define an area around the sea surface—where the reflection process arises—where the discrete calculation is performed. Out of this zone, the electromagnetic wave propagates in free space and therefore can be modeled by a simple ray-tracing method.

The electromagnetic propagation implementation retained is the TLM (Transmission Line Matrix) method, which will be described in paragraphs to come. Its efficiency for this particular type of problem is larger than similar methods such as the FDTD [5], and its capacity to integrate modules such as Perfectly Matched Layers [6] and to link bonds with the ray-tracing algorithms are much appreciated.

We have overall three main parts in our simulation program: first, the ray-tracing module, which operates on the largest zone of the studied space and is the lightest in terms of time of computation; then the TLM module, which performs the electromagnetic propagation calculation in the direct vicinity of the sea surface, in a very precise way but with large times of computation; finally, we use specific modules to transfer data from ray-tracing to TLM, and back.

We use this double-method algorithm to simulate the propagation of a radar signal from a single point in space to a defined patch of water, and back to the emission point (monostatic configuration).

In a first part, we will give details about how our simulation program is implemented. We will discuss a certain number of points which had to be solved during our study, then we will go through some specific simulations we achieved and the appended results, and we will conclude with a discussion regarding the efficiency of the method.

II. Description of the simulation program

Three parts will be detailed, corresponding to the three main modules of our program. First, the ray propagation device, then the TLM computation module, and finally the linking between the two.

A. Ray tracing

Our method to propagate electromagnetic waves through free space is really basic. It is sheer geometrical propagation, with no reflection since no obstacle is encountered. Therefore, it only consists in a phase adaptation and a spheric divergence amplitude factor.

In a first step, we perform a projection of the rays from the source point to the discrete area enclosing our sea patch. To each of the points needed to initiate the fields in the TLM zone we affect an amplitude factor and a phase corresponding to a straight line propagation. At any time of the TLM computation, initiating fields can be easily derived from those data and the waveform. With this projection method, any waveform can be used in the process, and we do not have to reiterate the projection at each temporal step of the TLM run, which constitutes an appreciable gain of time.

Because of the symbolic nature of the calculation performed, any distance can be considered from the radar to the TLM zone. Defining a radar object carried by an airplane or by a satellite will not make any difference in terms of computation times.

B. The Transmission-Line Matrix (TLM) method

Regarding the discrete computation, we use the TLM method. This technique is widespread for antenna studies in the microwave field, and was invented in the 1970s by Johns and Beurle [7]. It is a cousin method to the FDTD technique, being both discrete in time and in space; the main difference is that the FDTD method relies on the linear approximation of derivatives, whilst the TLM method is based on the electromagnetic equivalence between a virtual mesh in space and lines of currents (hence its name).

This paper does not aim at comprehensively presenting the TLM method, as its theory is complex. The study we propose draws upon previous works led at Telecom Bretagne [8], [9] to which the reader can refer for further explanation. We will limit ourselves to a rapid overview of the method.

The TLM spatial mesh consists in elementary nodes, arranged on a Cartesian grid, each of which possessing six "arms" that bond with the surrounding other nodes in the three dimensions. The TLM method runs as a basic algorithm of energy exchange between nodes through their arms: at every temporal step, transfers of energy are operated from one node to another, considering their own permittivity, the presence of electromagnetic frontiers between them, etc. It can be seen as a "stand-alone" process, as no outside intervention is needed: for example, if we define a reflecting electromagnetic plane on certain cells and initialise an incident field upon it, the energy will propagate "by itself" from node to node, and the TLM method will naturally produce the physical response of the scene awaited, i.e. a reflection of the incident wave.

C. Switching from ray-tracing to TLM and back

The adaptation of the two methods described in the previous paragraphs is performed through the use of particular elements of the electromagnetic theory, some virtual surfaces on which
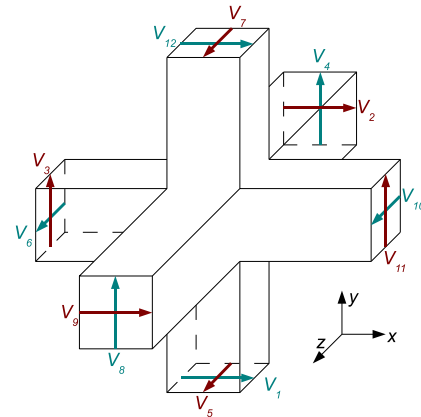
Fig. 1.   TLM elementary node, with its six arms and twelve voltages transferring energy.

the field values are considered in order to process calculation. There are two of these surfaces: the *Huygens* surface is used to initiate the field values inside the TLM zone, whereas the *Kirchhoff* surface is used for an integration of the local electromagnetic fields, yielding the value of any component of the electromagnetic field in any point of space, which is useful whenever we want to calculate our backscattered signal.

How the Huygens surface works is really simple: it merely consists in an initialisation of field values through the projection process we saw previously. The Huygens surface is a virtual box (theory states it has to be closed) on the side of which electromagnetic values are defined at each TLM step. These values are transmitted step after step from node to node, thus feeding the whole grid with incoming energy.

As for the Kirchhoff surface, its theory is slightly more difficult, as it induces the use of discrete integral calculation. We shall not enter into details. Basically, the algorithm gathers the values of fields and derivatives on a box-shaped area enclosing the Huygens box, and derives from those the field value in a given point, which can be located in either near or far field zone. This calculation can be performed at any temporal step, and therefore fields can be monitored throughout time.

The use of both the Huygens and Kirchhoff surfaces in link with the TLM method was fully validated at Telecom Bretagne's Microwave Department [8].

III. IMPLEMENTATION OF THE SIMULATION

In this section, we will go through a certain number of points that have to be cleared before any simulation is led. Though it may seem technical, this part was written to enlighten how several problems were dealt with in our study, and notably how some solutions helped simplifying the whole simulation process.

A. Discussion over the shape of Huygens's and Kirchhoff's surfaces

As we briefly saw in the previous section, there are theoretically three major conditions to fulfill in the use of Huygens's and Kirchhoff's surfaces:
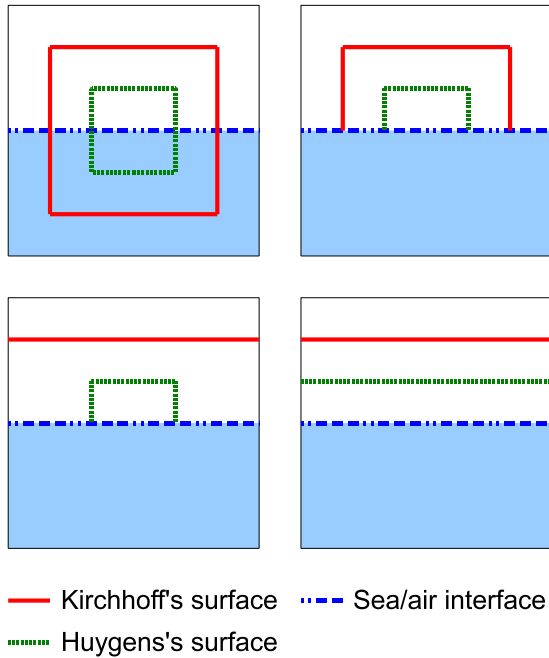
Fig. 2. Four proposed configurations for the disposal of Huygens's and Kirchhoff's surfaces.

Fig. 3. Comparison of the responses of three of the detailed configurations.

1) Kirchhoff's surface must encompass Huygens's surface;
2) Kirchhoff's surface must contain all electromagnetic sources of the problem;
3) the surfaces have to be closed.

These conditions yield difficulties with our scheme. First, assuming that our two Huygens's and Kirchhoff's surfaces contain the (secondary) sources of the problem—i.e. the surface of the sea—, then one can see that the sides of the surfaces have to cross the water/air interface. At this point, we should note that no development in the theory of Huygens's surface yet allows us to declare fields in two mediums simultaneously. It is simply out of bounds regarding the state of the art of the electromagnetic theory today. The same problem arises with Kirchhoff's surface. Therefore, we cannot use box-shaped surfaces (figure 2 top left) and we will have to work with open surfaces. Those will be approximations, and we will have to ensure they provide with good results.

A first guess would be to use cup-shaped surfaces (figure 2 top right), with Kirchhoff's surface still enclosing Huygens's surface. This configuration should not be too remote from the "box" configuration, since the penetration of waves in the water medium is very shallow at high frequencies. Anything happening below the air/water interface should then be negligible.

The problem with this configuration is that we have to ensure that the sides of the cups strictly follow the geometry of the surface: a cell-to-cell spatial adaptation has to occur so that no space is left between the edge of the cup and the air/water interface, and so that the edge does not penetrate into water either. If the sea surface is rough, then the side panel of the cup will have to be cut out accordingly. This can be
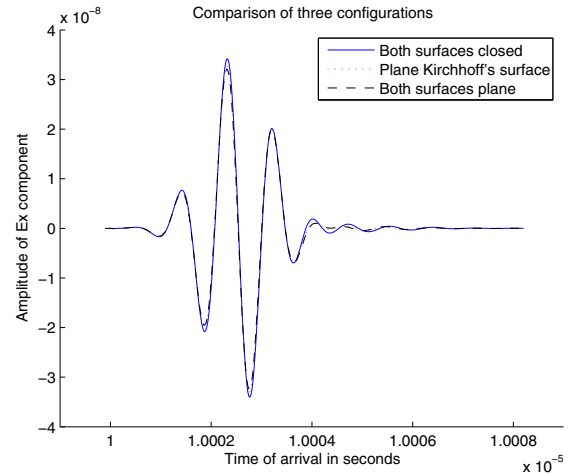
heavy to implement. As a solution, we propose the use of flat surfaces (figure 2 bottom). They are indeed extensions of the cup configurations, as if the horizontal dimensions of the cup were infinite.

As we can see, the flat surfaces are the simplest configuration, as they require the handling of one side only.

The graph shown on figure 3 displays the responses of three basic scenes including a flat electromagnetic mirror to the same excitation signal, the differences bearing on the setting up of Huygens's and Kirchhoff's surfaces. A remarkable agreement is found between the three response plots, demonstrating that the geometry of Huygens's and Kirchhoff's surfaces is indeed flexible.

For the sake of simplicity, we decided to use flat surfaces for both Huygens's and Kirchhoff's in the rest of our study.

The next paragraph deals with the overall number of nodes and its link to the efficiency of computation.

B. Sizing the number of nodes

As for any numerical method, there are some constraints on the size of the TLM nodes. Namely, the grid should sample space at a period smaller than $\lambda_{min}/10$ or $\lambda_{min}/8$ depending on the acceptance—we will stick to $\lambda_{min}/10$—, where λ_{min} is the smallest wavelength emitted. As an example, working at $10\,\mathrm{GHz}$ would yield a spatial increment of $\delta l = 3\,\mathrm{mm}$. Now, this relation has to include a supplementary parameter when the TLM space contains different mediums. We have then:

$$\delta l = \frac{\lambda_{min}}{10\sqrt{\epsilon_{max}}} \qquad (1)$$

where ϵ stands for the relative permittivity. For sea water, we can easily expect the $\sqrt{\epsilon_{max}}$ term to be of a few unities. Considering again our example at $10\,\mathrm{GHz}$, we have $\epsilon \approx 50$, and so $\delta l \approx 4.3 \times 10^{-4}\,\mathrm{m}$. The division of the spatial increment finds an echo at the power of three in the total number of nodes (here, multiplication by ≈ 350).

As we can see, the presence of sea water entails tiny cell sizes, and leads to cumbersome numbers of nodes on a whole

(a)

(b)
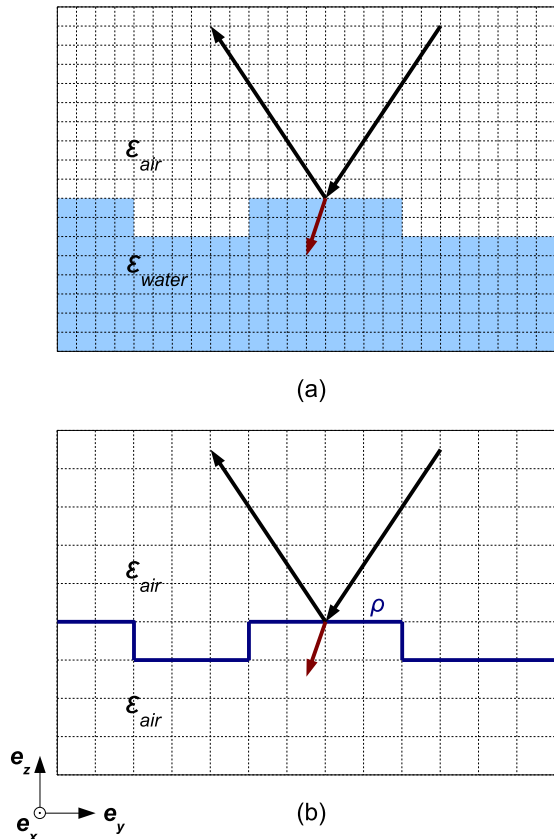
Fig. 4. Comparison of the two solutions proposed for the spatial meshing. (a) Comprehensive meshing, with water and air blocks. (b) Lighter meshing, with presence of an electromagnetic frontier. Arrows depict incident/reflected/refracted waves.

Fig. 5. Comparison of the response of the two solutions proposed for the spatial meshing.

area. The method we are exposing in the next paragraph allowed us to reduce the number of nodes and therefore to save computation time.

The basic idea in our node-reducing principle is the equivalence between the air/sea interface and an electromagnetic frontier as can be defined between two TLM nodes. Figure 4 shows the meshing of the same volume of space, including a simulated sea patch, in two different ways: in the first method, two blocks of materials are defined, one whose permittivity is 1 (air) and the other whose permittivity is ϵ_w (water). Because of the presence of this block of water, the whole space has to be meshed with a spatial period of $\lambda_{min}/10\sqrt{\epsilon_w}$, so on a thinner grid than if it had been air alone. The reflection process at the interface between the blocks of air and of water will occur as an inherent part of the TLM propagation algorithm. In the second method, both blocks are considered to be constituted of air. The limit between water and air is modeled by an electromagnetic frontier to which a certain reflection factor ρ is assigned to produce reflection. In this scheme, the meshing can be loosened to $\lambda_{min}/10$ because no water block is involved anymore.

In the configuration where an electromagnetic frontier is used, each of the boundary nodes must be given a reflection factor. Sea water does not constitute a perfect electromagnetic mirror. Therefore, its reflection factor is not purely (-1). What is more, the reflection factor is affected by the angle of incidence of the electromagnetic wave on the water surface. Thus we have to consider the incidence angle between the illumination direction and every facet of the air/sea electromagnetic interface. (Note that this incidence angle is not the same depending on whether the facet we are dealing with is on the top of a node, or on one of its sides.) We relied on the tables given in [10] for an estimation of the sea water reflection factor of an electromagnetic wave at a given frequency and with a defined incidence angle. Those values are *reflection* factors, i.e. given for one incidence angle and its equal reception angle. A slight, simple trigonometry correction is needed to adapt the factor to our case, where the Cartesian TLM grid makes energy travel along the axes.

The graph displayed in figure 5 shows a comparison between two signals issued from the same scene, including a small mirror enlightened by a $30°$-incident electromagnetic wave. What is measured is the far-field response of the mirror through time. The difference between the two signals is the method adopted for the spatial meshing. One simulation was carried out using comprehensive meshing, and the other using an electromagnetic frontier. Concordance between the two simulations is found to be good. We conclude that, as both methods are equivalent, we can freely choose to use the lighter to perform our computations (i.e. the configuration with the electromagnetic frontier).

C. Scene generation

In order to implement a sea surface within our discrete TLM zone, we have to generate the shape of the interface. The method we retained is a spectral one. It is based on the works by Elfouhaily et al. [11], and the main idea is that a random sea surface can be described by the means of its power spectrum, which varies as k^{-4}, k being the wave-number. A variety of directional functions are available to give our sea
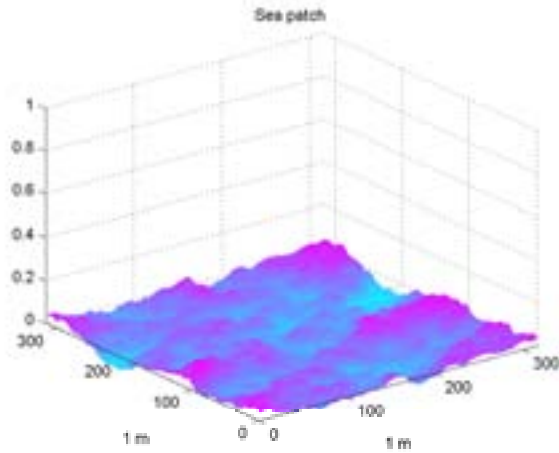
Fig. 6. An example of the generation of a sea surface using Elfouhaily's spectrum.
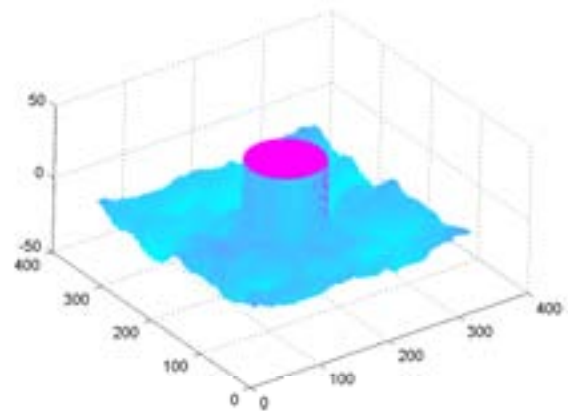
Fig. 7. Illustration of the configuration including sea surface and a cylindrical, metallic object on surface.

state an alignment regarding the propagation of waves.

Figure 6 shows an example of a small sea patch generated through the use of Elfouhaily's spectrum.

Once the sea surface has been generated, it is easily imported into the TLM mesh (as it is already a discrete surface) and translated in terms of elementary frontier facets. Each of the facets is then given a particular reflection coefficient.

The inclusion of an object within the scene is done in a much similar way to the generation of the sea surface: the given surface is then geometrical (sphere, cylinder, cube...), and the reflection coefficient is set to (-1) for the generic case of a metallic object.

The next part will detail the setting up and results of a few simulations.

IV. SIMULATIONS

The current section presents a bunch of simulations carried out using the whole program. We worked on $1\,\mathrm{m}^2$-patches of sea, and illuminated them with a 45°-incident, VV-polarised, X-band signal (9.5 GHz carrier shaped by a 0.3 ns-wide Gaussian) issued from a point at altitude 3000 m. We chose to generate a calm sea patch, an agitated sea patch, and a patch with medium sea conditions including a cylindrical, metallic object on the surface (figure 7).

A. Response graphs

Figures 8, 9 and 10 show the electromagnetic response through time of the three scenes we simulated. One can notice a coherent signal backscattered from the first two scenes (sea only), with a higher level of energy and a greater signal-to-noise ration for the agitated sea. This is due to specular reflection, as more facets are likely to reflect energy toward the radar in the second configuration. As for the third graph, the signal is much more complex.

From these graphs, backscattering cross section of the patch observed can easily be derived.

To this end, we will consider the amplitudes of the signals. The emitted signal in our simulations was normalised to a
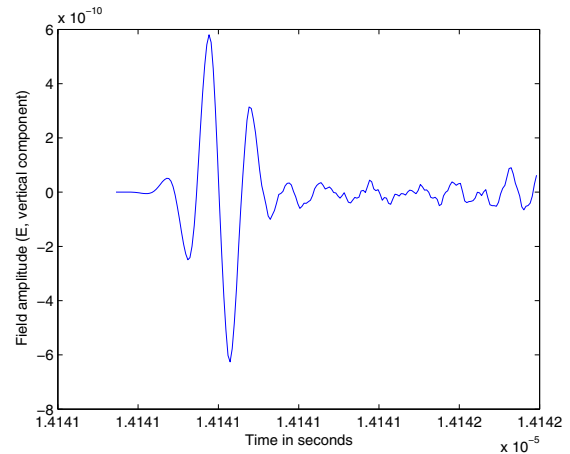
Fig. 8. Response of the calm sea patch.
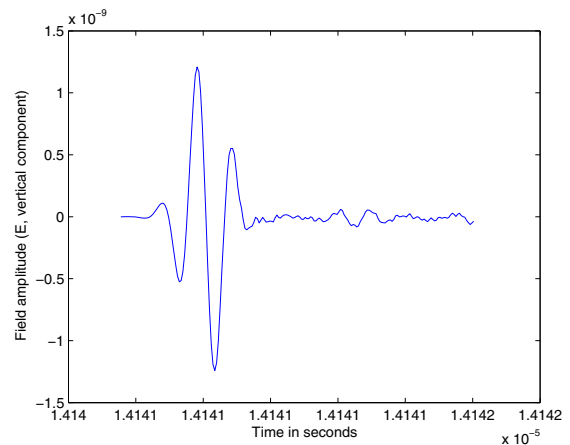
Fig. 9. Response of the agitated sea patch.
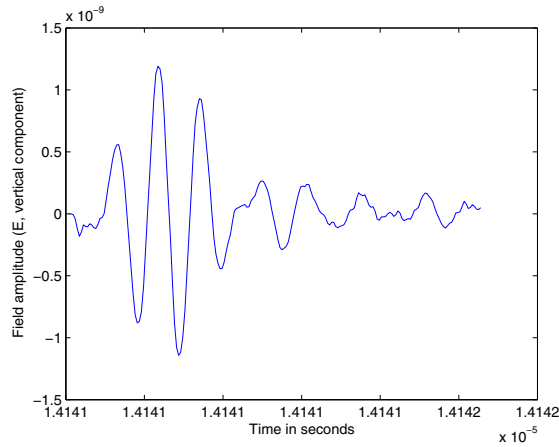
Fig. 10.   Response of the sea patch including an object.

TABLE I
BACKSCATTERING CROSS SECTION

	Backscattering cross section (dB)
Calm sea	-15.7
Agitated sea	-9.3
With object	-10.1

peak amplitude of $1\,\mathrm{V.m^{-1}}$; as for the received signals, the maximum amplitude E_r can be read on the corresponding graphs. The patches observed are of area $1\,\mathrm{m^2}$, however in order to obtain the normalised backscattering cross section we must consider the instantaneous illuminated area, given by:

$$A = \frac{cT}{2\sin\theta} \times 1 \qquad (2)$$

T being the length of the signal ($0.3\,\mathrm{ns}$) and θ the incidence angle. We find $A = 0.0636\,\mathrm{m^2}$.

The normalised backscattered cross section is then:

$$\sigma^0 = 20\log\left(E_r R^2\right) + 10\log(\frac{4\pi}{A}) \qquad (3)$$

Our calculations are reported in table I. We can compare these values to those found in papers such as [12], and find that the order of magnitude is in fair agreement with the theory.

As can be noticed in table I, the backscattering cross section is stronger for an agitated sea than for a calm sea. Indeed, under our 45° incidence, a calm and flat sea provides with less facets reflecting the energy toward the sensor. With the sea state growing, this number of specular reflectors rises, enhancing the response of the sea patch.

As for the backscattering coefficient of the third scene, the cross section is comparable to the second case. One could object that a stronger response could have been awaited because of the presence of the metallic object. We can explain this value by the fact that, because of its shape, the metallic object presents indeed few facets to reflect the signal back to the emission point.

TABLE II
COMPUTATION TIMES

	Scene size	Number of nodes	Run time
Calm sea	$346 \times 346 \times 90$	10 774 440	46 min
Agitated sea	$346 \times 346 \times 140$	16 760 240	1 hr 19 min
With object	$346 \times 346 \times 130$	15 563 080	1 hr 4 min

### B. Computation times

Table II sums up the computation times needed to perform our calculations. The patches were observed over 200 TLM iterations. All calculations were carried out by a standard workstation clocked at $2.4\,\mathrm{GHz}$ with $4\,\mathrm{GB}$ RAM.

As we can see, computation times are quite important, though not cumbersome. Note that we chose the X-band for the realism of the simulation. Changing it to L-band for example would loosen drastically the mesh, and therefore lead to much more efficiency in the computation, with run times of one to two minutes only.

V. DISCUSSION

The work on the backscattering cross section coefficients is on its beginnings. We saw that the first results were quite satisfactory, however, some more development is awaited, for example for simulations with different angles of incidence in order to check whether or not accordance with the reflection theory is still verified.

Some technical points within the simulation are still matter of discussion. In particular, because we have to affect a given incident angle to every facet of the electromagnetic frontier, multiple rebounds (i.e. with a changing incident angle) cannot be modeled accurately. We will have to estimate whether this issue can be neglected or not.

As for computation times, our performances are reasonable, depending on the size of the patch we want to observe. We saw that working with lower radar frequencies could speed up the process and give faster times than those exposed in this article.

VI. CONCLUSION AND PERSPECTIVES

In this paper, we have shown the possibility of linking ray tracing calculation to a discrete, local computation of electromagnetic fields in order to simulate the propagation of a radar wave. Thanks to the TLM method, inherited from the microwave domain, and with the use of a few technical tricks that have been detailed throughout the article, we can achieve fairly acceptable times of computation and obtain the simulated response of small sea patches to an incident radar wave. An idea for further development is for this kind of signals to be gathered in a sort of bank of generic responses, which would be classified by sea-state, slope, surface composition, etc. Any large-size rendition of a sea surface could then be divided into small patches, and each of them associated with the corresponding generic response. This way, a map of reflectivity of a large zone illuminated by a radar could

be rapidly derived. The main issue arising would be energy exchange between the defined patches.

Further processing such as the collection of many illuminations so as to form a synthetic aperture image is theoretically possible, though achievable with difficulty for the moment because of computation times. We shall be working on this type of up-level processing.

As for speeding up the process, several ways could be proposed. In our study, though we used some cell loosening, we restrained ourselves to a comprehensive meshing of space. A large number of nodes though are not vital to the process, for example those situated under the sea surface. The development of an adaptive, non-parallelepipedic zone of calculation could lighten the computation.

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IEEE Fellows from OES

The grade of IEEE Fellow recognizes unusual distinction in the profession and is conferred by invitation of the Board of Directors upon a person of outstanding and extraordinary qualifications and experience in IEEE designated fields, who has made important individual contributions to one or more of these fields, that have been reflected in an improved quality of life for society. The following OES members were selected in 2009:

- Rodney Coates – For contributions to underwater acoustics education.
- Jean Pierre-Hermand – For contributions to geoacoustic inversion techniques for adaptive signal processing in ocean acoustics.
- Junzo Kasahara – For contributions to submarine seismic technology.

Editors Note: In this issue we feature Jean Pierre-Hermand. The other IEEE fellows will be featured in future issues.

Jean-Pierre Hermand earned the Ingénieur Civil degree in Electrical and Mechanical Engineering in 1981 from the Université libre de Bruxelles (U.L.B.). In 1994 he received the PhD in Applied Sciences also from the Université libre de Bruxelles. Between 1985 and 2000 he held several research positions at the SACLANT Undersea Research Centre in La Spezia, Italy, conducting research and experiments on a wide range of topics in underwater acoustics and oceanography with emphasis on model-based signal processing and inverse problems. In 1991 he became the Principal Investigator of a grant from the Office of Naval Research to develop environmentally-adaptive signal processing at the Naval Underwater Systems Centre in New London, USA. In 1993 he was appointed Principal Scientist to the SACLANT-CEN Environmental Research Division to lead the research and development of acoustic remote sensing techniques and inversion methods for the physical characterization of the subseafloor in shallow water environments. He has been Chief Scientist of many multidisciplinary experiments at sea. He has had adjunct appointments at the A.I.L.U.N. Free University of Nuoro, Sardegna, and the Ca' Foscari University of Venice, Italy, and has been a consultant to industry and government on applied ocean acoustics and environmental measurements. Presently, he is Professor of

Physics-Acoustics, Research Director at the Université libre de Bruxelles and founder of the Environmental Hydroacoustics Laboratory. Since 2001 he coordinates research activities on integrated acoustic observatories, shallow-water tomography and data assimilation in cooperation with European and international institutions.

The author on over 100 publications and co-editor of two books, Dr. Hermand has been serving on technical committees for the IEEE Ocean Engineering Society, the Acoustical Society of America, the European Optical Society, the European Conferences on Underwater Acoustics, and the International Conferences on Theoretical and Computational Acoustics and Underwater Acoustic Measurements. He co-organized the first and second workshops on Experimental Acoustic Inversion Methods for Exploration of the Shallow Water Environment in 1999 and 2004. His current research interests lie in the integrated use of acoustics to remotely sense and characterize the ocean to very shallow aquatic environments, and in particular the physical and biological monitoring of marine habitats. Dr. Hermand is a Fellow of the Acoustical Society of America.

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Ambrose A. Tamunobere	Abuloma PH, Rivers	Nigeria
Isiawe O. Nyecinyere	Swikoyi, Lagos	Nigeria
Stefanie Rettig	Bremerhaven	Germany

Reinstated Members April 2009

William D. Shallcross	Bristol, RI	USA
Christine L. Cropp	Ashburn, VA	USA
June M. Light	Las Vega, NV	USA
Franklin H. Castle	Panama City Beach, FL	USA
Hugh A. Murphy	Jamestown, RI	USA
John W. Hansen	Maple, ON	Canada
Srinivas Chamarthi	New Delhi	India
Yvan Petillot	Edinburgh	United Kingdom
Moira E.Grainger	St. Andrews	United Kingdom
Marc Carreras	Girona	Spain
Taku Suto	Yokohama	Japan

Reinstated Members May 2009

Cory W. Huyssoon	Crofton, MD	USA
Fabian Vergara	Montreal, Quebec	Canada
Hong Liang	Beijing	China

Dr. David Weissman Awarded Jean Nerken Distinguished Professorship in Engineering

Hofstra University, Hempstead, NY– Professor of Engineering David Weissman, PhD, who has taught at Hofstra for more than four decades, has been awarded the Jean Nerken Distinguished Professorship in Engineering, Dean Bernard Firestone of the Hofstra College of Liberal Arts and Sciences announced.

The award was established in 1990 through the generosity of the late Albert Nerken, a chemical engineer, industrialist and philanthropist, in honor of his wife. The professorship is designed to recognize and encourage outstanding teaching, research, and leadership in the field of engineering sciences. Past recipients of the professorship include Sina Rabbany, PhD, and David Burghardt, PhD.

Dr. Weissman also will be honored by the IEEE (Institute of Electrical and Electronics Engineers) Geoscience Remote Sensing Society with a certificate of recognition for his contributions and leadership to the organization. The award will be given July 13 in Cape Town, South Africa.

Dr. Weissman, a faculty member at Hofstra since 1968, has been actively involved in radar remote sensing and measurements for defense and environmental applications for four decades. He has developed and participated in innovative experiments and studies with colleagues at the NASA Langley Research Center, the Jet Propulsion Laboratory in Pasadena, the Naval Research Laboratory and other major educational and government organizations. Starting in the late 1980's his efforts were focused on developing the ability of a satellite CW-radar (scatterometer) to measure the wind speed and wind stress over the global oceans. Beginning with the launch of the first NASA scatterometer into space in 1996, his activities have centered on the interpretation and application of the satellite scatterometer and other data. Since 1999, sponsorship by the New York City Office of the National Weather Service has led to a new area of rain measurements and its impact on the spaceborne scatterometer.

In 2006, Dr. Weissman initiated an educational outreach to demonstrate the benefits of collaboration between engineers and scientists and the museum community. He was awarded a $29,000 grant from the IEEE Foundation and Geoscience and Remote Sensing Society that resulted in a pioneering collaboration with the Cradle of Aviation Museum in Garden City. This led to a new interactive exhibit that shows museum visitors and students how weather radar performs its vital functions.

His most recent publications include "Measurements of the effect of rain-induced sea surface roughness on the QuikSCAT scatterometer radar cross section", Weissman, D.E. and M.A. Bourassa, 2008: accepted for publication, IEEE Transactions on Geoscience and Remote Sensing, October 2008; "Correcting Scatterometer winds by removing rain effects", Weissman, D.E., G. Apgar, J.S. Tongue and M.A. Bourassa, 2005; Bulletin of the American Meteorological Society, May 2005; and "Calibrating the QuikSCAT/Seawinds radar for measuring rainrate over the oceans", Weissman, D.E., M.A. Bourassa, J.J. O'Brien and J. Tongue, IEEE Transactions on Geoscience and Remote Sensing, December 2003.

Prior to teaching at Hofstra, Dr. Weissman was an electrical engineer for Dorne & Margolin, Inc., in Westbury from 1961–63, and from 1963–68 was a research engineer with the Stanford Research Institute in Menlo Park, California.

Dr. Weissman received his PhD in electrical engineering from Stanford University, a Master's Degree in Electrical Engineering from New York University, and Bachelor's Degrees in economics and electrical engineering from New York University. He is a Life Fellow with the IEEE, ex-officio member of Administrative Committee, Geoscience & Remote Sensing Society; ex-officio member of Administrative Committee, Oceanic Engineering Society; a member of the American Meteorological Society American Geophysical Union; and serves on the national committee of the International Scientific Radio Union.

Hofstra University is a dynamic private institution where students can choose from about 150 undergraduate and more than 160 graduate programs in liberal arts and sciences, business; engineering; communication; education, health and human services; and honors studies, as well as a School of Law. With a student-faculty ratio of 14-to-1, our professors teach small classes averaging 22 students that emphasize interaction, critical thinking and analysis. Hofstra offers a faculty whose highest priority is teaching excellence. The University also provides excellent facilities with state-of-the-art technology, extensive library resources and internship programs that match students' interests and abilities with appropriate companies and organizations. The Hofstra community is driven, dynamic and energetic, helping students find and focus their strengths to prepare them for a successful future.

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IEEE Oceanic Engineering Society

OES

www.ieeeoes.org

National Ocean Science Bowl 2009

Norman D. Miller, OES Student Activities Coordinator

The Final Competition for the 12th Annual National Ocean Sciences Bowl (NOSB) was held in the Washington, DC area April 25–27, 2009. The NOSB is a nationwide academic competition among teams of high school students. Regional competitions are held around the U.S. in February with the final national competition held in April. The NOSB tested students' math and science skills as applied to topics on ocean biology, chemistry, geology, physics, technology, history, and economics. High school teams of four students, one alternate, and a coach competed in question and answer matches during the day-long competition. The competition format was a 6-minute buzzer round, 2 team challenge questions, and another 6-minute buzzer round. The Team Challenge Questions required analysis of data presented and synthesis of several scientific and mathematical concepts. The students worked as a team to answer questions, with the opportunity to win 20 points. The Oceanic Engineering Society has been a sponsor of the NOSB since its inception and provides the funding for the 5th–8th Place winners. These teams receive a $500 gift certificate for scientific equipment from Fischer Scientific and $450 for marine science textbooks for the team's school.

The 25 competing teams gathered in the Baird Auditorium of the Smithsonian Museum of Natural History for the opening welcome and address. There were eleven teams competing this year that had not previously been in the Finals. This was followed by a tour of the museum and dinner in the Rotunda. Following the dinner more time was available for touring the museum. The students were then loaded on buses and transported to the 4H Center in Chevy Chase, Maryland where housing was provided. The competition began Sunday morning following a welcome and review of the rules in the auditorium. Lunch was provided and then the competition continued. At mid afternoon all gathered in the auditorium for an exhibition and a film on the NaGISA Project made by students from Niceville, MS. This proved to be most interesting and excited a lot of the students. The Double Elimination Rounds began at 3:00 PM and continued through Round 4. Following dinner the students assembled once again in the auditorium for a presentation by Dr. Ellen Prager who described her work at the Aquarius Reef Base in Key Largo, FL.

Monday morning all hands assembled in the Baird Auditorium of the Smithsonian Museum of Natural History and in the 4th Floor Conference Room for the Double Elimination Rounds. The final elimination rounds were held in the Baird Auditorium. This became exciting as in the final elimination round the winning team had been beaten in the Round Robin by the losing team. This necessitated a second elimination round. The winning team from the first round soundly beat the losing team. There were huge cheers from the audience for the victory. This was the first time that a second elimination round was necessary and thus a history making event. Following lunch all assembled in Baird Auditorium for the awarding of the prizes.

The Awards Ceremony began with the introduction of distinguished guests by Dr. Robert Gagosian. One guest in particular was recognized and duly honored, ADM James D. Watkins, the founder of the National Ocean Sciences Bowl. Following remarks from some of the distinguished guests, the awards ceremony began. Dr. Gagosian called COL Norman D. Miller, from the Oceanic Engineering Society, to present the awards to the 5th through 8th place teams. Each team Captain came forward and received the award certificate for their respective team.

The following teams were awarded prizes:
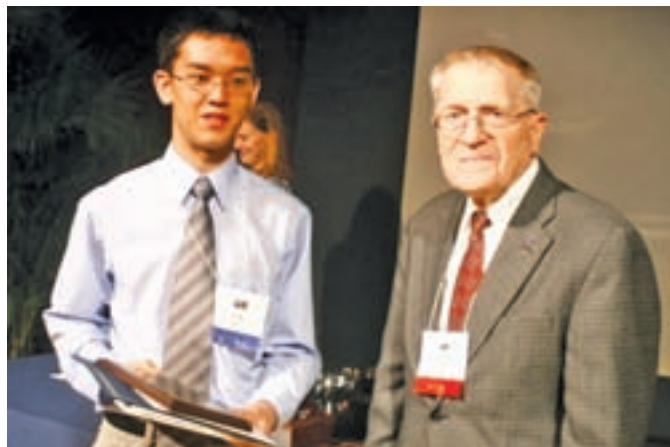
8th Place – State College Area High School – State College, PA

7th Place – Raleigh Charter High School – Raleigh, NC

6th Place – La Jolla High School – San Diego, CA

5th Place – North Hollywood
High School – North Hollywood, CA

The balance of the awards were then presented in order:

4th Place – Mission San Jose
High School – Fremont, CA

3rd Place – Cranston High School West – Cranston, RI

2nd Place – Lexington High School – Lexington, MA

1st Place – Marshfield High School – Marshfield, WI

The last award to be given was the Admiral James D. Watkins Award. It was instituted to recognize the team that best exemplifies the ideals of sportsmanship during the final competition of NOSB. The recipients of this award have been respectful to their team mates, fellow competitors, and the NOSB Volunteers and Staff. The winner of this award is selected by the student teams. The winner of the 2009 Watkins Award was Canterbury School of Florida. The team was called up on stage and Admiral Watkins came up and congratulated each member of the team. This was a fitting closing to an outstanding NOSB.

Admiral James D. Watkins Award – Canterbury
School of Florida

The roster of teams competing –
- Punahou – Aloha Bowl – Hawaii Regional
- Mount Sinai High School – Bay Scallop Bowl – New York Regional
- Bishop Sullivan Catholic High School – Blue Crab Bowl – Mid Atlantic
- Raleigh Charter High School – Blue Heron Bowl – North Carolina Reg
- Lexington High – Blue Lobster Bowl – Massachusetts Regional
- Thomas Jefferson High School for Science & Technology – Chesapeake
- Bay Bowl – Washington DC Regional
- Lee High School – Dolphin Challenge – Texas Regional
- Dexter High School – Great Lakes Bowl – Midwest Regional
- Long Beach High School – Hurricane Bowl – Central Gulf Coast Regional
- La Jolla High School – La Jolla Bowl – Southern California Regional
- Marshfield High School – Lake Sturgeon Bowl – Wisconsin Regional
- Star Charter – Loggerhead Challenge – Texas Regional
- North Hollywood High School – Los Angeles Surf Bowl – Southern California Regional
- Hileah-Miami Lakes Senior High School – Manatee Bowl – Florida Regional
- Smoky Hill High School – Mountain Mariner Challenge – Colorado Regional
- Contoocook Valley Regional High School – Nor'easter Bowl – Northern New England Regional
- ExCEL Academic League – Orca Bowl – Washington Regional
- State College Area High School – Penguin Bowl – Ohio/Pennsylvania Regional
- Cranston High School West – Quahog Bowl – Connecticut/Rhode Island Regional
- Neah-Kah-Nie High School – Salmon Bowl – Oregon Regional
- Mission San Jose High School – Sea Lion Bowl – Central California Regional
- Marine Academy of Science and Technology – Shore Bowl – New Jersey Regional
- Oconee County High School – Southern Sting Ray Bowl – South Carolina/Georgia Regional
- Canterbury School of Florida – Spoonbill Bowl – West Florida Regional
- Juneau-Douglas High School – Tsunami Bowl – Alaska Regional

OES Scholarship Program

The OES Scholarship has been increased to $2,000.00. Scholarship applications can be submitted throughout the year. Please see our website www.oceanicengineering.org for the details and application form. The application will be acted on as it is received.

What's the Best Caption?

Can you come up with a good caption for the cartoon below? Send your suggestions to the editor at j.gant@ieee.org.

Artwork courtesy of Rob Gant
www.robertgant.deviantart.com

Technology Committee in the Spotlight – Underwater Connectors

Dr. Georgeanne Purvinis

There are currently eighteen technology committees within OES, all geared towards providing focus on a particular specialty within the broad field of ocean engineering. The Underwater Connector Committee has recently reformed, after a few years of absence, and I am honored to serve as the new Chair. But this Committee needs a co-chair and a vice-chair, and with many of you having tremendous knowledge of this field, I hope to solicit your service and participation to this often taken-for-granted important technology area! But first, and for fun, let's take a look at the brief history of underwater connectors, as documented by stories from the field and from journal papers. As we take a fond look at the history, may we be thinking of how many of you have advanced the field and have much to share, and how bright the future looks for the industry.

Very few underwater connectors existed before WWII. The earliest electrical connectors consisted of conventional pin and socket terminals, covered in a piece of surgical rubber tubing overlapping the jacket on either side. The ends of the tubing were then tied tightly with string to mechanically seal the electrical conductors. Underwater connectors did not appear on the commercial market until the 1950s. These first connectors were called Type I connectors. The two halves were made of rubber. Silicon grease was applied to the conductors to form a water tight seal, and when mated above water, these connectors provided successful connections. Since the 1950s, other approaches, particularly to wet connectors, made their appearance. These technologies include diaphragm puncture (patented in 1955), inductive power transfer, grease or fluid filled with diaphragm, oil-filled piston wiping, pin and socket, vented pin and socket, and fiber optic connectors. Many technological strides have now evolved connectors into devices able to mate-demate multiple conductors and optical fibers, either as wet connections or dry connectors.

Today underwater connectors are a critical component in oceanic systems; with applications in scientific endeavors, port security, oil and gas, military, and communications. The continued development of connectors is driven by the need for high reliability in increasingly hostile environments and by the desire for greater bandwidths. The goal of the Underwater Connector Committee is to provide an avenue for technical information exchange, and promote cooperation and coordination among small technology companies, and large defense contractors, military, government, academia, and not-for-profit communities. The Committee encourages free and open discussion of all relevant topics and provides workshops focusing on all aspects of underwater connector technology and economics. I look forward to serving this committee!

If you would like to participate and/or assist with this committee, please contact me at purvinis@ieee.org.

OCEANS '09 Conference Returning to Biloxi

Looking for a mix of the traditional conference experience and something new? The OCEANS '09 MTS/IEEE Biloxi conference is coming soon. OCEANS '09 will be held at the Mississippi Gulf Coast Coliseum and Convention Center October 26–29, 2009.

The conference, hosted by the Marine Technology Society and the Institute of Electrical and Electronic Engineer's Oceanic Engineering Society, will feature the traditional topics presented at all OCEANS conferences, as well as topics of local interest selected by the organizing committee. In addition, new programs and events have been added to enhance the attendees' experience.

For the professional, the traditional OCEANS topics have been augmented with four topics of local interest: Coastal Restoration, Ocean Observing Systems, Operational Oceanography, and Lessons Learned from Gulf of Mexico Storms. Special sessions submitted for consideration include Nutrient Sensors, Ocean Renewable Energy, Ocean Data Visualization, Integrated Ocean Observing Systems Regional Associations, and the Role of Information Technology in Oceanography. The plenary session, as well as keynote speakers in each local topic area, will present new directions for marine science and technology on national and local levels.

Conference events have been augmented as well. In addition to OCEANS luncheons, receptions, and gala, a Thursday lunch in the exhibit hall has been added. OCEANS '09 teamed with the Gulf of Mexico Foundation and the Environmental Protection Agency for the Gulf Guardian Awards Ceremony. The Gulf Guardian Awards were established in 2000 to allow the Environmental Protection Agency's Gulf of Mexico Program Partnership to recognize environmental stewardship in the five Gulf States. The ceremony features project awards in seven categories with video summaries of each stewardship project. OCEANS '09 attendees can attend the ceremony for a discounted rate available through OCEANS registration. The event will be held Thursday, October 29th beginning at 6:00 pm.

For students in a marine field, OCEANS '09 created a new patron opportunity to allow more posters in the conference competition. The "Sponsor-A-Student" patron opportunity allows organizations able to donate $2500 to bring a student selected to participate in the Student Poster Competition to the conference. Traditionally, a grant from the Office of Naval Research covers expenses for between 20 and 25 students; the OCEANS '09 goal is to increase that number to at least 30. Interested organizations can obtain information on "Sponsor-A-Student" and other patron opportunities at www.oceans09mtsieeebiloxi.org.

For exhibitors, OCEANS '09 Biloxi promises heavier traffic as all attendees must enter the conference through the exhibit hall. Extra events and scattered lounge areas will bring attendees to various areas of the exhibit hall more frequently. The Biloxi venue is located within driving distance of numerous Federal and State agencies, large marine technology companies,

The Mississippi Coast Coliseum and Convention Center is our host for the technical portion of the conference, the exhibition hall, and selected conference events. Located on the shores of the coast, the Convention Center has been recently renovated.

OCEANS '09 Local Organizing Committee

of local universities to help inform students in marine science programs along the coast what opportunities are available in our area and across the nation. Additionally, other students attending the conference from other U.S. and foreign universities will also be invited to submit their resumes for consideration. Finally, seasoned professionals looking for a change may also find what they are looking for at the fair.

MTS will match job postings with potential candidates and point candidates to organizational booths at the fair. Additional space

innovative small businesses, and business development organizations. A VIP tour of the exhibit hall featuring our conference patrons is planned.

For sight seers, there are a number of tours to help show off southern hospitality and history. Tours begin the Saturday prior to the conference (October 24) with a cooking demonstration and lunch from Chef Emeril Lagasse's Island View Kitchen. One tour option includes lunch at Chef John Besh's La Provence Restaurant. Other tours include a shrimping excursion, and visits to museums, quaint shopping areas, and local gardens. The final tour on Friday, October 30, is a full-day tour of New Orleans.

OCEANS '09 will host new programs as well. The first is a High School Outreach Program. Students from area schools will be treated to an e-mission created by NASA's Challenger Centers. The selected e-mission, Operation Montserrat, features an erupting volcano and a category 3 hurricane plaguing the small Caribbean island. Students use simulated satellite data to create information that is used to evacuate all island residents to safety. During the second half of the day, students will help create an artificial reef that will be deployed in the Gulf of Mexico and named after the conference. As such, the reef will be marked on navigation charts and students will be able to fish the reef in the future. Other activities are planned and include a demonstration by the Marine Advanced Technology Center of their Remotely Operated Vehicle (ROV)-in-a-bag.

Another new program is a career fair. Any exhibitor at the OCEANS '09 conference will be able to have a second tabletop booth at the career fair at no cost. The idea is to attract as many companies, local agencies, and other entities interested in expanding their employee base of marine technology professionals. Available and/or upcoming positions will be posted. Individuals seeking employment with these organizations will be able to submit resumes. The fair is being advertised to a number

will be available for private interviews. The fair will be held the Monday prior to the conference (October 26) at the host hotel, the Beau Rivage.

Another new program, the Educators' Professional Development Program, will bring local teachers to Stennis Space Center to inform them about local issues in the Gulf of Mexico and train them in the use of tools they can use in the classroom. Teachers will receive Continuing Education Credits for their participation and may even win an ROV-in-a-bag to bring back to their classroom. The ROVs are one of the in-classroom tools to be demonstrated during the program, as will online tools created by the American Meteorological Society. Finally, teachers will tour the Center for Higher Learning Visualization Center and experience 3D models of a storm inundation model and the new Infinity Science and Technology Center opening in 2010. The Educators' Professional Development Program will be held on Saturday, October 24th beginning at 8:00 am and ending at 4:00 pm.

The conference is also looking for ways to serve as a good steward of our environment. If enough conference bag patrons are identified, the conference bag will be made of recycled materials and made in the US. The Organizing Committee is working with the Mississippi Coast Convention Center to use recyclable materials whenever possible for meals and breaks. Information on patron opportunities, registration, exhibiting, and conference events can be found on the conference website.

OCEANS '09 Biloxi will be hosted by two honorary chairmen. From industry, Charles Zang of Science Applications International Corporation will serve as the Honorary Co-Chair. From the government, Rear Admiral David Titley of the Commander, Naval Meteorology and Oceanography Command will serve as Co-Chair. With these prominent organizations leading the way, OCEANS '09 promises to be a conference to remember.

OCEANS '10 IEEE Sydney Conference and Exhibition

The first IEEE OCEANS conference to be staged 'Down Under' will take place in Sydney, 24–27 May 2010, with the theme 'Showcasing Advances in Marine Science and Engineering.' The Conference General Chair, Dr. Brian Ferguson, has issued the following invitation: 'Let me encourage you to make the journey and be part of this international event. You may sample the OCEANS experience at a magnificent venue in a unique city that is graced by the world's finest natural harbour and the splendour of its ocean beaches. This OCEANS conference and exhibition has been planned to provide each of you with an unforgettable human experience underpinned by Aussie humour, hospitality and friendliness.'

Sydney is undoubtedly one of the most beautiful cities in the world with a reputation for a cosmopolitan lifestyle, excellent shopping facilities and world-class entertainment. Local attractions and activities include the Opera House, harbour cruises, Taronga Zoo and the Harbour Bridge climb. Those wanting to venture further afield can visit Uluru (Ayers Rock), in Australia's red centre, or the Great Barrier Reef in Queensland. The Conference and Exhibition will be held at the Sydney Convention and Exhibition Centre at Darling Harbour, just minutes from Sydney's central business and shopping district.

OCEANS '10 IEEE Sydney follows in the fine tradition of OCEANS conferences around the world. In addition to the OCEANS conference topics, the special topics for the Sydney conference are:

• Advances in Marine Observing Systems;
• Advances in Marine Management;
• Advances in Underwater Imaging and Mapping;
• Advances in Understanding of the Southern Oceans;
• Advances in Exploration and Recovery for the Offshore Oil and Gas Industry;
• Advances in Understanding of the Impact of Climate Change on the Oceans; and
• Advances in Understanding of Marine Environments in the Western Pacific.

In Sydney we will be able to showcase internationally Australia's capabilities in marine science and ocean engineering. The conference and exhibition will bring together experts, practitioners, industry representatives and students from a range of disciplines and perspectives to exchange knowledge, develop expertise and build collaborative ties in ocean science and technology areas. The exhibition will enable us to see and feel the latest sensors, systems, structures, information processing and display tools that are used to probe, measure, monitor and manage the world's oceans.

During the recent OCEANS '09 Conference in Bremen, Germany, an Australian opal jewellery prize was drawn in the OCEANS '10 IEEE Sydney booth. We are delighted to announce that the winner of the opal cuff links prize was Christophe Sintes of Brest, France. Congratulations Christophe!

Venture down under for an unforgettable OCEANS experience! For further information about the conference and exhibition, and the attractions of Sydney and Australia, please see our website—www.oceans10ieeesydney.org—or contact us at info@oceans10ieeesydney.org.
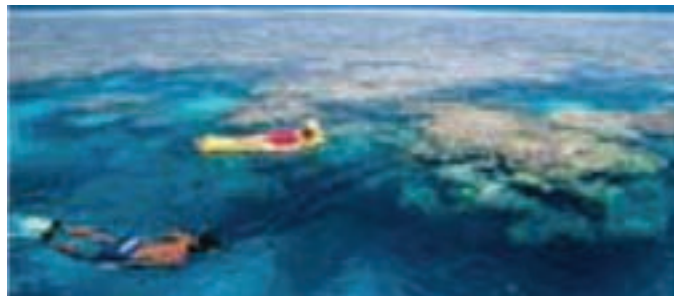
Sympol 2009

The Tenth biennial Symposium on Ocean Electronics, 2009(SYMPOL 2009) is organized as an international conference, addressing the global oceans, systems and technologies. The conference will be held 18–20 November, 2009 at Cochin University of Science and Technology. The first symposium of this series was organized 18–20 December 1991, to mark the occasion of the formal opening of the Centre for Ocean Electronics established in the Department of Electronics of Cochin University of Science and Technology as a joint venture of the Ministry of Human Resources Development (Govt. of India) and University Grants Commission. This symposium is intended to provide a forum for the researchers to interact with one another and present their innovative ideas and research findings in the fields of Ocean Electronics and allied areas.

The technical sessions of the Symposium include presentation of contributed research papers and invited talks on some of the current and emerging topics in Ocean Electronics. These invited talks are intended for working engineers/scientists to update their skills and knowledge in some of the highly specialized and fast developing areas in Ocean Electronics. Details about the conference, including registration information can be found at http://sympol.cusat.ac.in

IEEE Oceanic Engineering Society (OES) Administrative Committee (AdCom) Meeting Report Summary

This article is a summary of the IEEE Oceanic Engineering Society (OES) Administrative Committee (AdCom) Meeting, held in Bremen, Germany on 11 May 2009. Only the highlights are presented here.

The IEEE OES AdCom Meeting commenced at 8:30 A.M. at the Bremen, Germany Convention Center. Jerry Carroll, the OES President, introduced Roger D. Pollard, IEEE VP Technical Activities Elect. He then gave a presentation on IEEE activities.

In summary, Jerry began the meeting by stating that:
- In his column in the Newsletter, he discussed the value of being an IEEE member as well as an OES member. This year is the 125th Anniversary for the IEEE. As a member there are many programs we need to take advantage of.
- The IEEE depends on volunteers and the value of the time provided by the volunteers is estimated to be in the billions of dollars each year.
- The OES has a $20K scholarship program for 2009 with a maximum award of $2K per individual.
- The OES needs news releases for things we are involved with like the Wuxi, China workshop with streaming video, and benefits of membership like student scholarships. Jim Collins as VP Professional has the responsibility for this.
- There will be a Journal of Oceanic Engineering Review on 25 June, and Chris de Moustier is the lead on this effort.
- Marinna Martini is the lead for the Electronic Newsletter but needs to have information forwarded to her.
- Mal Heron is now the new Tutorials Coordinator replacement for Diane DiMassa.
- There will be an OES Society Review at the IEEE Technical Activities Board (TAB) Meeting in November 2009.
- Diane DiMassa was nominated to be the TAB Representative to the IEEE Women in Engineering (WIE) committee.
- The Baltic 2010 Conference is scheduled for mid June in Riga, Latvia.
- The South American Symposium will now be scheduled in early April 2010 in Buenos Aires in conjunction with the IOC (50th Anniversary), Argentina and Chile-200th Anniversary celebrations.
- Marinna Martini will be the OES POC on the IEEE Technical Navigator Project.

Diane DiMassa, the OES Treasurer, reported on expenses:
- 2009 has been proceeding and 2010 is in construction.
- The 2009 Biloxi conference has many patrons and has sold 150 booths already.

Sandy Williams, VP of Technical Activities, gave his report. Example issues were:
- In regards to the Technology Committees, there were several motions to have new members serve as technical committee members.
- The wording of Air/Space Ocean Remote Sensing needs to be changed to Air/Space Remote Ocean Sensing.
- The ICEO asked for budget support for 2009 or 2010 for core activities.

Stan Chamberlain added that, as part of the 125th IEEE Anniversary, the IEEE Conference on the History of Technical Societies will be held from 6–8 August 2009 in Philadelphia, PA. He will be giving a presentation on the history of the OES. Also, Stan reported that the suite of OES History technical papers has been completed for inclusion in Xplore as a distinct set.

Bob Wernli gave his presentation on his RECON activities. He stated that:
- The conference approval process chart was reviewed and updated to match his review of the OCEANS manual.
- The future OCEANS Conference in San Diego is on track with the Town and Country contracts reviewed and almost signed.
- Spain is ramping up with their new leaders after the two top players on the committee retired earlier.
- Korea has a major endeavor with the World Expo and is on track for an OCEANS 2012 Conference in Yeosu.
- Bergen, Norway made their bid for the 2013 OCEANS Conference.
- Taipei and Shanghai will both make bids for the 2014 OCEANS Conference.
- The MTS wants Baltimore, MD over St. John's, Newfoundland in 2014, so perhaps the latter should move to 2016 if Baltimore is approved.
- Genoa, Italy, will make a bid for the 2015 OCEANS Conference.
- Aberdeen, Scotland would like to host the 2017 OCEANS Conference.
- Monterey or the San Francisco Bay Area are potential sites for the 2015 OCEANS Conference as reported from the MTS survey.
- The 2012 OCEANS Conference in Hampton Roads, Virginia was presented to the MTS at OTC/ExCom in Houston, May 2009, and approved by MTS.
- Anchorage, Alaska submitted a bid for the 2015 OCEANS Conference.

Rene Garello, VP of Conference Operations, gave his report. Issues discussed were:

- The operational policy manual needs some revisions.
- A committee made up of MTS and OES people will meet so they can make recommendations at the next JOAB meeting.
- The web tools need to deal with the tutorials. The tutorials can be ranked so we know which are best.
- We should not open abstract submission until a previous conference is completed.
- Seattle is maybe the first conference to follow our OCEANS Conference Operational Policy Manual.
- Video recordings of two plenary talks are on the web site for advertising of the conferences. It could be done for tutorials with permission of the lecturer.
- Conferences in 2010 are Argentina in first week of April, US/EU Baltic mid June, Support to Sea Tech Week – Brest 21–25 June including Passive '10 workshop, and Arctic OTC in November.

Norman Miller reported on the recent Ocean Sciences Bowl for High School students, which was held in the Washington, DC area:

- OES is one of the sponsors of the games and awards prizes to the 5th through 8th place teams. The 4H Center in Chevy Chase, Maryland was the headquarters for the competition this year.
- 25 High School teams, each winner in their respective regional competitions, competed in the finals. The program began on Saturday night, April 25th with a tour of the Smithsonian Natural History Museum. The competitions began Sunday morning at the 4H Center and ran through the day. The final competition and the awards ceremony were held in Baird Hall at the Smithsonian Natural History Museum on Monday. There were eleven new schools competing in this year's competition.
- With the scholarship program, we have awarded one scholarship so far this year and have two applications currently under review.
- The Bremen Student Poster program received 59 student abstracts. 20 Students were invited to attend and present their posters. The posters were set up near the entrance to the Exhibition Hall.

Jim Gant, the new OES Newsletter Editor, gave the following report

- The April 2009 Newsletter will be mailed out on May 14.
- The next Newsletter issue will be published in July. This issue will include OCEANS 2009 Bremen Conference, the OCEANS 2009 Biloxi Conference, and the 2010 Baltic Conference.
- We would like to increase the amount of content and feedback from readers. Future issues can have more editorials, responses, and rebuttals.
- We would like to feature a technical committee with each issue.
- The Newsletter should be put on the Web Site for downloading as well as paper copy.
- Diane DiMassa should do a report on the pirate captured captain when he comes to Massachusetts Maritime Academy.
- Discussed featuring companies in the newsletter. OES doesn't have company memberships like some other organizations so it's not clear how to select a company.
- Advertising can be done as long as revenue doesn't exceed the cost of production for which there isn't much chance.
- An idea has been floated to include news items from relevant RSS sources. We need more investigation and discussion of this idea. Concerns noted are that the RSS feeds that might form an external source may be too dated to be of interest in a quarterly newsletter but some might be appropriate. Another concern is whether there might be copyright issues associated with using RSS feeds.
- We would like to feature one or more student activities in every issue.
- Mal Heron suggested there should be criteria for how an exhibitor gets invited.

Todd Morrison described the new Web Site with its dynamic behavior. Barbara Fletcher will take this over, Todd becomes webmaster emeritus. Barbara is approved as web site master.

Jim Collins, Vice President of Professional Activities, gave his report. Issues discussed included:

- The second edition of the Newsletter is off at the publisher. June 19 is the deadline for new material for the next Newsletter. IEEE is still doing the printing because of the changes in Editorship and the changes in IEEE printing have made it too complicated to change now.

- Membership is at 1503 as of the end of March – it is up 4.3% with a few more students. Only 47 students are members though.
- Jim Gant should send the PDF to Barbara Fletcher and send 20 copies to Liz Creed.
- There was a motion for job advertising to be posted in the eNewsletter. This motion was voted upon and passed unanimously with a friendly amendment added.
- We have 20 Chapters, some in dubious shape. Increased effort is needed to reenergize (or deactivate) these chapters.
- Jim is very positive on an Autonomous Marine Robot (AMR) Sports Movement.
- There was a motion from Jerry Carroll, to approve our recurring contributions for the Ocean Science Bowl, MATE, Human Powered Submarine (every other year), and Foundation for Underwater Research.

In summary, there were fifteen new motions and no new action items created. The meeting was then adjourned at 4:45 PM on 11 May, 2009.

New Student Activities Logo

We recently developed a new logo that we will use in conjunction with student activities materials. The new logo captures the many facets of ocean engineering and communicates to students a wide variety of interests for them to explore.

The graphic was drawn by Dirk I. Tiede. Dirk is the creator of the graphic novel series, "Paradigm Shift". He is a founding contributor to premiere comics portal Modern Tales, and continues to serialize his comics online and in addition to the print collections. His work is also showcased in the books Toon Art: "The Art of Digital Comics" and "Webcomics", and appears in the documentary "Adventures In Digital Comics". Dirk currently lives and works in the Boston area as a professional cartoonist and freelance illustrator.

OES Administrative Committee Elections – Class of 2010–2012

In accordance with the Oceanic Engineering Society's Constitution and Bylaws, new Administrative Committee (AdCom) members are elected annually for a three year term by the society membership. The officers of the society are elected by the AdCom. Therefore, it is essential that the membership vote to have a governance body that will reflect the membership interests.

Beginning this year the election will be accomplished by electronic voting. This should make the voting process more timely and easier to accomplish. Each member will receive a ballot via e-mail from IEEE. The electronic ballot will include the instructions to submit your choices. The results of the vote will be available in the fall.

The statement of each candidate and their biographies are included below in this issue of the newsletter. Please vote in a timely manner.

M.A. Atmanand

Statement: As an advisory committee member, he proposes to enlarge the IEEE network of ocean engineers in India and neighbouring countries. In view of the large potential in terms of shipping, oil and gas and other offshore industries, it is essential to have a strong IEEE Oceanic Engineering Society in the Indian Ocean area.

As has been done after the formation of the OES India chapter, it is also proposed to hold more workshops, technical symposia and co-sponsored conferences with an additional motive of attracting new members to the OES. Discussions are on for starting of Chapters or sub-Chapters at major Indian coastal cities in order to have more interaction among fellow members. The specific problems in this part of the world with regard to ocean engineering will also be addressed. A tie up with the leading academic institutes, such as the Indian Institute of Technology, in order to network the graduate and undergraduate students is another task to be undertaken.

Finally one of the main programmes to be undertaken is to strengthen technology development between the Indian Ocean rim countries in order to warn against Tsunami and other natural disasters. To this end I intend to work closely with neighbouring OES Chapters and members. I ask for your support for election to AdCom in achieving these important goals.

Bio-sketch: M.A. Atmanand (M'97–SM'06) obtained his B.Tech. degree in Electrical & Electronics Engineering from University of Calicut in 1983. He took his M.Tech. and PhD from Indian Institute of Technology, Madras in 1985 and 1997 respectively. From 1985 to 1997 beginning, he worked in the area of fluid flow measurement and control at Fluid Control Research Institute, the standard laboratory for flow in India. From 1997, he has been working at National Institute of Ocean Technology, in the area of deep sea technologies, initially in the field of underwater instrumentation and power systems and currently as Project Director of a group developing underwater mining systems. This group has designed, developed and tested an in-situ soil tester at 5200 m water depth in the Central Indian Ocean Basin under his guidance, for the first time in India.

He is a member of a UNESCO committee for Indian Ocean Tsunami warning and mitigation systems.

Dr. Atmanand has to his credit one patent and twenty five research publications included in IEEE and other international referred journals. He also contributed a chapter on "Extensometers" for the electronic version of "Wiley Encyclopaedia of Electrical and Electronics Engineering", edited by John G. Webster, published by John Wily & Sons, Inc. – 2002.

He is currently a Senior Member of the Oceanic Engineering Society (OES), the Instrumentation and Measurements Society, the Robotics and Automation Society and the Control Systems Society. He has been active with the IEEE Madras Section and as Secretary, organized various technical lectures in 2006. He was member of Executive committee in 2007 and Vice Chair of the Madras Section 2008 and 2009. He has organized the commencement of new OES Chapter under the India Council, which was approved in May 2008. He is currently the Chair of this OES India Chapter and has organised programmes including speakers such as Dr. James McFarlane of International Submarine Engineering, Dr. Sergey Sukonkin, of Experimental Design Bureau of Oceanological Engineering, Russia and most recently by Mr. Unnikrishnan of Underwater Research Laboratory (URA lab), University of Tokyo.

The OES India Chapter was Technical Co-sponsor of the International Conference on Ocean Engineering (ICOE) in Chennai. Technical Co-sponsorship with IEEE OES of the International Symposium on Ocean Electronics, (SYMPOL) to be held in November 2009 in Cochin has also been approved.

James V. Candy

Statement: If elected to the Administrative Committee of the IEEE Oceanic Engineering Society, I would actively focus my attention on the technical aspects of the society and endeavor to motivate more technical participation especially from those colleagues in signal processing related areas (ocean acoustics, imaging, etc.). I believe that the heart of any technical society is its members and their technical efforts that lead to high interest both inside and outside OES (e.g. papers, conferences, workshops, etc.). I would like to see a more organized and focused effort on tutorials and education, since this is typically an area that our members seek to gain technical knowledge and direction especially when entering a new technical area. More Technical Committee participation should be pursued in order to recommend potential tutorial/short course instructors that actively engage in "educating" our OES members in areas of high interest.

Bio-sketch: James V. Candy is the Chief Scientist for Engineering and former Director of the Center for Advanced Signal &

Image Sciences at the University of California, Lawrence Livermore National Laboratory. Dr. Candy received a commission in the USAF in 1967 and was a Systems Engineer/Test Director from 1967 to 1971. He has been a Researcher at the Lawrence Livermore National Laboratory since 1976 holding various positions including that of Project Engineer for Signal Processing and Thrust Area Leader for Signal and Control Engineering. Educationally, he received his BSEE degree from the University of Cincinnati and his MSE. and PhD degrees in Electrical Engineering from the University of Florida, Gainesville. He is a registered Control System Engineer in the state of California. He has been an Adjunct Professor at San Francisco State University, University of Santa Clara, and UC Berkeley, Extension teaching graduate courses in signal and image processing. He is an Adjunct Full-Professor at the University of California, Santa Barbara. Dr. Candy is a Fellow of the IEEE and a Fellow of the Acoustical Society of America (ASA) and recently elected as a Life Member (Fellow) at the University of Cambridge (Clare Hall College). He is a member of Eta Kappa Nu and Phi Kappa Phi honorary societies. He was elected as a Distinguished Alumnus by the University of Cincinnati. Dr. Candy received the IEEE Distinguished Technical Achievement Award for the "development of model-based signal processing in ocean acoustics." Dr. Candy was selected as a IEEE Distinguished Lecturer for oceanic signal processing as well as presenting an IEEE tutorial on advanced signal processing available through their video website courses. He was nominated for the prestigious Edward Teller Fellowship at Lawrence Livermore National Laboratory. Dr. Candy has recently been awarded the Interdisciplinary Helmholtz-Rayleigh Silver Medal in Signal Process/Underwater Acoustics by the Acoustical Society of America for his technical contributions. He has published over 225 journal articles, book chapters, and technical reports as well as written three texts in signal processing, "Signal Processing: the Model-Based Approach," (McGraw-Hill, 1986) and "Signal Processing: the Modern Approach," (McGraw-Hill, 1988), "Model-Based Signal Processing," (Wiley/IEEE Press, 2006) with a fourth entitled "Bayesian Signal Processing: Classical, Modern and Particle Filtering" (Wiley/IEEE Press, 2009) in press. He was the General Chairman of the inaugural 2006 IEEE Nonlinear Statistical Signal Processing Workshop held at the Corpus Christi College, University of Cambridge. He has presented a variety of short courses and tutorials sponsored by the IEEE and ASA in Applied Signal Processing, Spectral Estimation, Advanced Digital Signal Processing, Applied Model-Based Signal Processing, Applied Acoustical Signal Processing, Model-Based Ocean Acoustic Signal Processing and most recently Bayesian Signal Processing for IEEE Oceanic Engineering Society/ASA. He has also presented short courses in Applied Model-Based Signal Processing for the SPIE Optical Society. He is currently the IEEE Chair of the Technical Committee on "Sonar Signal and Image Processing" and was the Chair of the ASA Technical Committee on "Signal Processing in Acoustics" as well as being an Associate Editor for Signal Processing of ASA (on-line JASAEL). He has recently been nominated for the Vice Presidency of the ASA. His research interests include Bayesian estimation, identification, spatial estimation, signal and image processing, array signal processing, nonlinear signal processing, tomography, sonar/radar processing and biomedical applications.

William M. Carey

Statement: My objectives if elected the AdCom will be to work for the advancement of the technical, literary, and educational aspects of the Oceanic Engineering Society as well as to stimulate the discussion and the development of high professional and ethical standards.

As an Associate Editor of the Journal of Oceanic Engineering (JOE) and Co-Chair of Energy TC, I will use the role of an AdCom member to promote cooperation and exchange of technical information among OES members through our publications and meetings. The OES has a unique technology character and industrial participation is terribly important. As a member of the AdCom I would assist the Awards Committee under the cognizance of the Junior Past President to have a current list of OES members deserving of awards and/or promotion. It is terribly important that the selection of the Distinguished Technical /Service awards be carefully considered because of the significance to our members. As a member of the AdCom I would urge restructuring of the OES Fellows Committee to ensure a fair and balanced society approval of fellow nominations.

Bio-sketch: William Carey received the BS degree in Mechanical Engineering, the MS degree in Physics, and the PhD degree in Nuclear Science from The Catholic University of America, Washington, DC, in 1965, 1968, and 1974, respectively.

He was the Editor and currently serves as an Associate Editor of the Journal of Oceanic Engineering. He is also an Associate Editor for Underwater Acoustics, the Journal of the Acoustical Society of America. Currently he is a Professor of Mechanical Engineering at Boston University, an Adjunct Professor of Applied Mathematics at the Rensselaer Polytechnic Institute, and an Adjunct Scientist at the Woods Hole Oceanographic Institution. Previously, he was a Physicist with the Naval Undersea Warfare Center and the Advanced Research Projects Agency assigned to the MIT Department of Ocean Engineering, where he taught graduate courses in Acoustics. He has also been a Research Physicist and Engineer at the Naval Underwater Systems Center, The Naval Oceanographic Research and Development Activity, and the Naval Research Laboratory. At the University of Chicago's Argonne National Laboratory, he was an Associate Scientist and Section Manager of acoustic surveillance. He has been a consultant to both industry and government in the areas of nondestructive testing, nuclear science/environmental measurements, and applied ocean acoustics.

Dr. Carey is an IEEE Fellow and has received the IEEE-Oceanic of Engineering Society's Distinguished Technical Achievement Award, Distinguished Service Award, and an IEEE Millennium Award.

Dr. Carey recently received the Pioneers of Underwater Acoustics Medal from the Acoustical Society of America and is Fellow of that society. He is also a full member of Sigma Xi, a

member of the Connecticut Academy of Science and Engineering, and a member of the Cosmos Club.

He has served as Journal Editor and Associate Editor, member of the AdCom, IEEE Fellow Committee, and as Co-Chair of the Energy TC.

James C. Collins

Statement: I have been involved with autonomous marine robotics since 1979. I see autonomous marine robots (AMRs) as doers and transporters of increasingly valuable instrument, sensor and effector based tasks. AMR's currently include AUVs, chemically and wave energized gliders, autonomous sailing craft, amphibians and solar powered surface AMR's. At the same time I see the OES with a growing Chapters structure around the world. These Chapters can help to nourish the peaceful development of AMR uses by providing a forum for the racing and design competition of classes of similar AMRs. The networking opportunity provided by this activity would be invaluable to both the participants and the OES worldwide.

Internally it is time to do some OES housekeeping. We need to revisit our Constitution and Bylaws to ensure that the very substantial approved changes introduced in January 2006 are providing the best service to our members. Also a Policy and Procedure document, not yet written, is required for guiding the OES on a day-to-day basis and for ensuring that new volunteers can succeed in their new positions after a change of personnel.

When is the last time you saw any information on the financial status and operation of the OES? Where does our revenue come from and where is it spent? I would like to have this financial data from IEEE OES more readily available in our newsletters.

I am privileged to have served the IEEE Oceanic Engineering Society as a volunteer in many capacities, currently as Vice President for Professional Activities. It is a pleasure to work with the other Administrative Committee members to provide OES members and the ocean community with valuable publicity, Chapter and student programs. I will continue to work with other members of the Society management to give you the programs you want for your continued professional and intellectual achievement.

I ask for your support. If you have any questions please contact me at j.s.collins@ieee.org, JamesSCollins at Skype or Phone +1 250 595 6928.

Bio-sketch: Jim Collins has served as IEEE OES Vice President for Professional Activities since 2004 and is responsible for Membership Development, Chapters, Newsletter, eNewsletter, Website and Student Activities. He chaired the OES Constitution and Bylaws Committee which was responsible for a complete rewrite of the OES Constitution and Bylaws approved in 2006. Collins served as OES Vice President of Technical Activities in 1994–6, Membership Development Chair for 1998-2003 and elected member of AdCom from 1994 to 1999. As OES Chapters Coordinator he was instrumental in the formation in 2008 of an India Council OES Chapter and a Joint Chapter in New South Wales, Australia. He is OES Chapter Chair of the Victoria Section, Victoria, British Columbia, Canada as well as a member of the IEEE Women in Engineering affinity group.

As Chair of the IEEE Victoria Section in 1984 he organized the creation of the Victoria OES Chapter. He chaired the 1993 OCEANS Conference in Victoria which was very technically and financially successful.

In recognition of his service he received the IEEE Millennium Medal in 2000 and the OES Distinguished Service Award in 2002.

Jim Collins received the PhD in Electrical Engineering from the University of Washington, Seattle. In 1979 he joined the Department of Engineering at Royal Roads Military College (RRMC), Victoria and subsequently became Engineering Department Head. He is active in the development of AUV applications and owner and President of Collins Technologies Inc. as well as an Adjunct Faculty member of the Electrical and Computer Engineering Department of the University of Victoria.

Barbara E. Fletcher

Statement: I have been privileged to be involved with a number of technical societies over the course of my 27 year career, and have found these activities to be invaluable resources to my career and personal growth. One of the most rewarding parts for me has been the teamwork between Government, Industry, and Academia that the societies have fostered. I would like to see this synergy continue to grow, bringing in the cross fertilization from different disciplines and groups. Working in the area of undersea robotics, I see many different societies and groups addressing this area, each bringing something a little different to the table. In this day of information overload, it can be very difficult to keep up with it all, even with the best of intentions. Coordination and Cooperation between these groups with conferences, meetings, and publications could greatly facilitate the information exchanges for all concerned. As a member of the OES AdCom and working as the OES site webmaster, I'd like to continue to work at broadening our inter-society relationships, bringing a fuller view of the resources available to the society membership.

Bio-sketch: Barbara Fletcher is an ocean engineer and project manager at the Space and Naval Warfare Systems Center – San Diego (SSC), specializing in unmanned undersea vehicle (UUV) applications. She is one of the co-authors of the US Navy's UUV Master Plan (April 2000) and Master Plan Update (Nov 2004), providing the guidelines for the Navy's future use and development of unmanned undersea vehicles. Currently, she is the project manager for the SSC portion of the Hybrid Remotely Operated Vehicle project, working in league with the Woods Hole Oceanographic Institution to build an 11,000 m capable vehicle. As a vehicle expert, she has performed vehicle, sensor, and mine sweeping studies for a variety of Navy users. From 1993–1998, she was a founding member and systems engineer at Imetrix, Inc., a small marine sciences company. During her previous 10 years at the Naval Ocean Systems

Center in San Diego, CA and Kaneohe, HI, she worked in areas of underwater security, mine countermeasures, deep submergence, and ocean surveillance. She has a BS and MS in Mechanical Engineering from Stanford University, and is a Registered Professional Engineer in the state of California. She has been active in a range of professional societies since 1982, joining the IEEE Oceanic Society when she was the Arrangements Co-Chair for the highly successful OCEANS 2003 conference in San Diego. In addition to serving on the OES AdCom, she is the webmaster for the OES website, and she is currently serving as the chair of the San Diego Chapter of the Marine Technology Society.

James M. Gant

Statement: OES, like all other professional societies, strives to provide venues facilitating meaningful technical exchanges among its members. These venues include written publications like the OES journal and newsletter and meetings such as the OCEANS conferences where members are able to meet and network and exchange technical knowledge. The society and its outlets serve as a social lubricant enhancing the data flow and therefore furthering the theory and practice of electrotechnology in all waterborne environments. Therefore, both the opportunities and challenges facing the society are defined by ways to enhance and promote the free exchange of new ideas, old ideas, salty experience, and a strong social network among all the practitioners of the art and science of ocean engineering.

An important aspect of what we should be doing is to reach out and be as inclusive as possible in all that we do; not to say that this is a shortcoming, but it must remain a high priority. All that are involved in the work that we do have different insights that can be shared to further our goals. We must continually reach out to encourage an open, vigorous, and yet respectful dialog to ventilate these ideas. Another area that we should pay attention to is to include and encourage the exchange of day to day practical experience so that we are not restricted to purely academic discussions.

The steps to advance the OES, therefore, are to continue and expand the avenues of technical data exchange that have been established and to widen the participatory audience of these discussions, debates, and presentations thereby leaving our legacy and experience to the next generation of engineers, technicians, and other practitioners.

Bio-sketch: With over 28 years experience in the design, operation, testing, and maintenance of complex electromechanical systems and components, Jim Gant is an experienced systems engineer, project manager, and line manager. He has over 20 years of experience as a Systems Engineer and Project Manager involved with the design, fabrication, and testing of deep sea systems, specializing in the development and management of test programs for these systems. Prior to that, he was a submarine officer in the US Navy.

Jim was born into a military family. As a child he lived in various locations in the US, Germany, and Okinawa. By the time he reached high school his family had settled near their extended family in Oklahoma. He attended the University of Oklahoma where he met his wife, Anne Marie, and earned a BS in Nuclear Engineering.

Upon graduation in 1979 he was commissioned in the US Navy and became a submarine officer. After completing the required training in Naval nuclear propulsion and basic submarine training he served on the USS Norfolk (SSN-714). After completing his submarine qualifications and engineer qualifications Jim deployed with the ship to the Mediterranean Sea. Upon their return Jim was transferred to San Diego, CA where he served on the Deep Submergence Rescue Vehicle Avalon (DSRV-2). Here he qualified as a deep submergence Pilot and made numerous dives on the DSRV for submarine rescue training and object recovery missions.

After completing his tour on DSRV Avalon in 1987, Jim resigned his commission and began a second career as a Systems Engineer with Westinghouse Electric Corporation in Annapolis, MD. During the next fourteen years Jim worked as a systems engineer on a variety of integrated systems functioning in the ocean environment containing a variety of sensors and electromechanical components. He specialized in the verification and testing of highly integrated systems that were deployed at sea. In this capacity he planned and executed system test programs at the factory and then led teams of field engineers in the final verification and validation of the system in the working environment. During this period Jim earned a master's degree in Ocean Physics from the Johns Hopkins University's Applied Physics Laboratory. Following this Jim became an adjunct faculty member at the Anne Arundel Community College teaching a course in oceanography. The course was a multidisciplinary survey of physical, chemical, meteorological, biological and geological aspects of the oceans.

In 2001 Jim joined Battelle Memorial Institute in Columbus, OH. For the last several years he was a systems engineer and project manager in the Equipment Development and Mechanical Systems product line. His work served a variety of US Navy customers including ONR, NAVSEA, and USSOCOM.

Jim joined IEEE and OES in 2008 and now serves as the newsletter editor. Jim and his wife live near Columbus, OH and have four children, now scattered to the four winds. Their hobbies include gardening and brewing their own beer and wine.

Marinna Martini

Statement: I have been attending OCEANS conferences for most of my 23 year career, and have found these meetings to be valuable to being effective in my job and to my professional development. I would be honored to continue my contribution to an organization that has helped me so much. In my work with the USGS, I have gained considerable experience in long and short term project management, field operations and last minute problem solving. I can contribute effectively in either a leadership or support role.

During my 2006–2009 AdCom tenure I have served on the organizing committee for the Current Measurement Technology Conference (CMTC) as the treasurer and on other steering

committees for nationwide USGS meetings. Other highlights of my AdCom contributions have been to help with student poster competitions and scholarships, and experimenting with a "lost instrument" web site at my own expense. I will become the electronic newsletter editor this year, gradually expanding my involvement.

Having seen the OES from the administrative side, I am convinced that OES is perfectly positioned as a bridge between academia, government and industry internationally. If re-elected I will concentrate my time on efforts that provide tangible benefit to the membership and the profession, such as marketing of the scholarship program, working towards better visibility of the OES on and offline, and continued service to workshops and meetings such as OCEANS and the CMTC. I see online visibility efforts in particular (such as Linked-In groups) as particularly useful to networking members who are spread across the globe.

Bio-sketch: As the lead engineer for sediment transport instrumentation and field operations at the U.S. Geological Survey's Woods Hole Science Center, I provide technical consulting services to USGS scientists nationwide in support of physical oceanographic and sediment transport studies. This work includes mooring design, electronics, instrumentation, software development, leading scientific field operations and coordinating with engineers and scientists nationwide. Our office often receives requests for information and advice from other science organizations worldwide. I have also contributed to field work and scientific meetings at the international level. My credentials include an M.S. from the University of New Hampshire, (ocean engineering, instrumentation), a B.S. from the, United States Merchant Marine Academy, (marine & systems engineering), a current U.S. Coast Guard Merchant Marine License, 3rd Assistant Engineer, unlimited horsepower. I completed the Engineer in Training Exam in 1987. I am in my third year as a contributing member of the OES Administrative Committee (AdCom).

Robert Wernli

Statement: My involvement within the professional societies has been driven by a desire to excel, especially in the international conference circuit. I've had the pleasure to chair 14 international MTS and IEEE/OES conferences where we initiated the first conference tutorials, web page, CD ROM proceedings, CD ROM Advance Program, DVD Proceedings and also took the ROV conference to three international

locations (Aberdeen, Scotland; Bergen, Norway; Vancouver, BC). I am now chairing the OES Reconnaissance (RECON) committee where my goal has been to create a process that allows a group of society volunteers to effectively and efficiently plan and run OCEANS conferences around the world. This process has resulted in the initiation of upcoming OCEANS conferences in Germany, Australia, Spain, Korea and Norway. I've been active in working with other society members in creating documentation and refining the process of initiating and running future conferences. I feel my experience will help IEEE/OES fulfill its goal of developing a successful international conference program that not only showcases the breadth of our technologies but also encourages and promotes future international networking and cooperation. As a prior AdCom member ('03–'08), I welcome the opportunity to again join the AdCom in advancing the goals of the Oceanic Engineering Society.

Bio-sketch: Robert L. Wernli (M'97-SM'06) received the B.S. degree in mechanical engineering from the University of California Santa Barbara in 1973 and the M.S. degree in engineering design from San Diego State University, San Diego, CA in 1985. He retired in 2005 from his career at a navy laboratory in San Diego where he specialized in the field of underwater robotics research and development. As president of First Centurion Enterprises, he has begun his second career as an underwater technology consultant and a writer. His most recent technical publication is The ROV Manual; in fiction, he published his second novel in 2008. He has over 30 technical publications and was also editor and co-author of the book Operational Effectiveness of Unmanned Underwater Systems, published on CD-ROM in 1999 by MTS.

He has been actively engaged in promoting the oceans, including the use of remotely operated vehicles, by creating and chairing the first 10 Remotely Operated Vehicle conferences (ROV '83-ROV '92), and co-chairing the following: OCEANS MTS/IEEE '95, '03, the upcoming OCEANS MTS/IEEE '13 (San Diego), Underwater Technology '04 (Taiwan), '07 (Tokyo) and '09 (Wuxi, China).

Mr. Wernli is a member of the American Society of Mechanical Engineers, the Institute of Electrical and Electronics Engineers' Oceanic Engineering Society, and a member and fellow of the Marine Technology Society (MTS). He is a recipient of the MTS Special Commendation and Award and the MTS ROV Committee's Chairman Award. During his career with the government he received the Exemplary Service Award, the Navy Meritorious Civilian Service Award and the prestigious Lauritsen-Bennett award for Excellence in Engineering.

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

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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

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