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Positioning Accuracy for the HUGIN Detailed Seabed Mapping UUV. — Bjorn Jalving & Kenneth Gade

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Tuesday 3 h 50 p.m. — Room G
Antonio Pascoal, IST, Portugal / John Beukers, Navigation Management, USA

AUV Navigation: Increased Robustness and Efficiency by Fusion of Active and Passive Modes — M. João Rendas & Isabel M. G. Lourtie

Underwater Communications 1
Wednesday 8 h 30 a.m. — Room G
Roland Person, IFREMER, France / Maurice J. Moroney Jr. Volpe National Transportation Systems Center, Cambridge, USA

Long Range Acoustic Communications — Alain Plaisant

Underwater Communications 2
Wednesday 10 h 10 a.m. — Room G
Gérard Loubet, LIS-CNRS, INPG, France / Robert Houghton, ISTI, Sacramento, USA

Underwater Acoustic Modem Configured for Use in a Local Area Network (LAN). — Maurice Green, Joseph A. Rice & Steve Merriam
An Underwater Communication Testbed for Telesonar RDT&E — Vincent K. McDonald, Joseph A. Rice & Chris L. Fletcher
Time, Frequency and Angular Dispersion Modelling in the Underwater Communications Channel — S. Appleby & J. Davies

Underwater Communications 3
Wednesday 1 h 30 p.m. — Room G
Joel Labat, ENSTB, France / John D. Illgen, Illgen Simulation Technologies, USA

A Frequency Domain Adaptive Coded Decision Feedback Equalizer for a Broadband UWA COFDM System — W.K.Lam, R.F. Ormonroyd & J.J. Davies
Trellis Coded Modulations Schemes for Underwater Acoustic Communications — L. Venkata Subramaniam, B. Sundar Rajan & R. Bahl .................................................. 800
Blind Decision Feedback Equalizer: Application to Underwater Communications — J. Labat, J. Trubuil & M. Nicot ................................................................. 805
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**Wednesday 3 h 50 p.m. — Room G**

*Hayri Sari, Loughbourough University, UK / Robert Houghton, ISTI, Sacramento, USA*

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Test of an High Data Rate Acoustic Link in Shallow Water — Dominique Albonico, Franck Fohanno & Joël Labat .................................................. 1028
Using Normal Mode Channel Structure for Narrow Band Underwater Communications in Shallow water. — A. G. Silva & S. M. Jesus ................................................................. 1033
Spreading Sequences for Underwater Multiple-Access Communications — C. Boulanger, J. R. Lequepeys & G. Loubet .................................................. 1038
Acoustic Impulse Response Mapping for Acoustic Communications in Shallow Water. — Frank M. Caimi, Rangsan Tongta, Michael Carroll & Syed Murshid .................................................. 1739

**Underwater Communication Systems**

**Thursday 8 h 30 a.m. — Room G**

*Oliver Hinton, University of Newcastle, UK / Maurice J. Moroney Jr., Volpe National Transportation Systems Center, Cambridge, USA*

Comparison of Adaptive Algorithms for Multichannel Adaptive Equalizers. Application to Underwater Acoustic Communications. — Vittorio Capellano & Geneviève Jourdain .................................................. 1178
Underwater Voice Communications Using a Modulated Laser Beam — H. Sari & B. Woodward . . . 1183

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**Thursday 10 h 10 a.m. — Room G**

*François Régis Martin Lauzer, Gesma, France / John D. Illgen, Illgen Simulation Technologies, USA*

Global Harmonization of Radionavigation Systems — John M. Beukers & Robert W. Lilley .......................... 1329
The Need for Conformity in GPS Navigation/Pilotage Systems — Maurice J. Moroney .......................... 1336
Performance Assessment of GPS Augmentation Systems — Rob Houghton, Tom Strellich, Cal Cluff & Jeff Valine .................................................. 1340
Using GPS at Sea to Determine the Range between a Moving Ship and a Drifting Buoy to Centimeter Level Accuracy — James A. Doutt, George V. Frisk & Hugh Martell .................................................. 1344
Advanced Tools for Waterway Pilotage — David A. Phinney .................................................. 1839

**Interactive poster session**

**Wednesday 2 h 50 p.m.-3 h 50 p.m.**

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Argos Second and Third Generations: Enhancements Finely Tuned to Oceanographic Applications — Christian Ortega .............................. 845
Using A Priori Current Knowledge on AUV Navigation — Nathalie Vasquez & M. João Rendas .......... 849
A Spread-Spectrum Radio Data Link Buoy for Underwater Sensing Applications — J. Mark Stevenson, Susan G. Briest, & Alan D. Fronk .......... 854
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Topic 5: DATA ACQUISITION AND PROCESSING

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Freddy Pohner, Kongsberg SIMRAD Subsea, Norway / Edward Cough, APL University of Washington, USA

Objective Analysis of Temperature and Salinity Historical Data Sets over the Mediterranean Basin —
D. Jourdan, E. Balopoulos, M. J. Garcia-Fernandez & C. Maillard ........................................ 82
Supporting Meteorological and Oceanographic Nowcasting through In-Situ Data Acquisition, Real-Time Processing and Information Transfer. — Andrew K. Rogers & Charles E. Brooks .......... 88
An Oceanographic Data Acquisition System (ODAS) for Ethernet LANs on Spanish Research Vessels. (SADO) — J. Sorribas, A. Tudela, A. Castellon, O. Chic, Z. Garcia, J. Prades & D. Montero ... 93

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Simon Boxall, University of Southampton, UK / Edward Gough, APL University of Washington, USA

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Marine GIS
Thursday 8 h 30 a.m. — Room F
Jean Claude Salomon, IFREMER, France / Norman Miller, Norman Miller Associates, USA

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Modeling and Simulation
Thursday 10 h 10 a.m. — Room F
Roger Proctor, Proudman Oceanographic Laboratory, UK / Norman Miller, Norman Miller Associates, USA

A Comprehensive Study of Coastal Currents in Mediterranean Sea : Use of an Embedded Model — O. Raillard, L. Mortier & S. Deleville .......... 1306
A Numerical Model of the Gibraltar Exchange (CANIGO Project) — F. Martel .......... 1309

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Berroir & Gilles Mazars .......................................................... 1319
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Measurements Compared with Analytical Modelling. — Katell Guizien, Caroline Ramirez, Eric
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Real-Time Altimeter Data Assimilation Experiments in an Eastern North-Atlantic Monitoring and
Prediction System. — Sylvie Giraud, E. Dombrowsky & P. Bahurel .................................. 871
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Valerie Harscoat & Francine Loubrieu .................................................. 875

Topic 6: REMOTE SENSING

HF Radars
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Philippe Forget, Université de Toulon et du Var, France / Malcom L. Heron, James Cook University, Australia

Validation of Routine Wave Height Measurements on HF Ocean Radars — Malcom L. Heron, Hans
C. Graber & Scott F. Heron .................................................. 454
Analysis of Second Order HF Radar Sea Spectra Recorded in Storm Conditions — SP Kingsley,
A. Matoses & LR Wyatt .......................................................... 459
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K.-W. Gurgel, H.-H. Essen & T. Schlick .................................................. 467

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Luc Leviandier, Thomson Marconi Sonar S.A.S., France / Alfred Ramamonjarisoa, IRPHE CNRS, France

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J. A. Rodenas & R. Garello .................................................. 613
Experimental imaging of internal waves by a mm-wave radar — G. Connan, H.D. Griffiths,
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— Edzard Romaneessen & Susanne Lehner .................................................. 1802
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Wednesday 1 h 30 p.m. — Room F

John Thomas, Oxford Computer Services, UK / René Garello, ENST Bretagne, France

A Comparison Study between SAR Derived Wave Information and Wave Modeling Results in Coastal Zone. — Philippe Forget, Antoine Mangin & Stéphane Rousseau


Spatial Frequency Restoration — Charles Penman, John O. Thomas & Alan C. Edwards

Halifax Harbour Drained: Integration of Multibeam, Elevation, and SAR Data — Timothy A. Kearns

Ocean Color and SST

Wednesday 3 h 50 p.m. — Room F

Farid Askari, Saclantcen, Italy / Virginie Lafon, Université de Bordeaux, France


Seawifs Data Interpretation in Relationship with In-Situ Measurements in a Coastal Area — JM. Froidefond, S. Lavender, A. Herbland, P. Laborde, V. Lafon & H. Depuis

A Hopfield Neural Network to Track Drifting Buoys in the Ocean — V. Parisi, E. Garcia, J. Cabestany, J. Font & J. Salas

A Neural Network Architecture for Automatic Extraction of Oceanographic Features in Satellite Remote Sensing Imagery — Farid Askari & Benoit Zerr

Radar Laboratory Experiments

Thursday 1 h 30 p.m. — Room F

Hugh Griffiths, University College London, UK / Martin Gade, Hamburg University, Germany


Laboratory Measurements of Artificial Rain Impinging on a Water Surface. — Martin Gade, Nicole Braun & Philipp A. Lange

Rain Cells over the Sea Monitored by Synthetic Aperture and Weather Radars: a Comparison — Christian Melsheimer & Martin Gade

Interactive poster session

Wednesday 2 h 50 p.m.—3 h 50 p.m.

Remote Sensing


Microwave Radar Backscatter from the Sea Surface — Alexei Nekrassov

An Approach to the General Interpretation of Internal Wave Imagery — Alan C. Edwards, John O. Thomas & Charles Penman

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André Quinquis, ENSIETA, France / Franck Caimi, Harbour Branch, USA

Robust feature tracking in underwater video sequences — T. Tommasini, A. Fusiello, V. Roberto & E. Trucco ...................................................... 46


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Vittorio Murino, University of Udine, Italy / Andrea Trucco, University of Genoa, Italy

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Wednesday 8 h 30 a.m. — Room D

Yann Stephan, CMO - EPSHOM, France / D. Micklovic, AETC Corp., San Diego, USA

TexAn: Textural Analysis of Sidescan Sonar Imagery and Generic Seafloor Characterisation — Ph. Blondel, L.M. Parson & V. Robigou .......................................... 419


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Andrea Trucco, University of Genoa, Italy / Vittorio Murino, University of Udine, Italy

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Fish School Analysis from Multibeam Sonar Image Processing. — Laurent Lecornu, Valérie Burdin, Carla Scalabrin & Chafiaa Hamitouche .......................................................... 587
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Alan C. Edwards, Oxford Computer Services, UK / Marwan Simaan, University of Pittsburg, USA

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Didier Billon, Thomson Marconi Sonar S.A.S., France / Stanley Chamberlain, Raytheon Systems, USA

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Theoretical Performance and Experimental Results for Synthetic Aperture Sonar Self-Calibration — D. Billon & F. Fohanno 965

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Thursday 8 h 30 a.m. — Room D
Freddy Pohner, Kongsberg SIMRAD Subsea A/S, Norway / Christian de Moustier, Scipps Inst. of Oceanography, USA

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Precision Analysis of Bathymetry Measurements Using Phase Differences — Xavier Lurton 1131
Multibeam Data Cleaning for Hydrography using Geostatistics — Herve Bisquay, Xavier Freulon, Chantal de Fouquet & Christian Lajaunie 1135
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Thursday 10 h 10 a.m. — Room D
Geneviève Jourdain, LIS-CNRS, INPG, France / Roger Dwyer, USA

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Thursday 1 h 30 p.m. — Room D
Isabelle Herlin, INRIA, France / Richard Nadolink, N.U.W.C., USA

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A New Order Selection Method for Auto-Regressive Processes — Mahmood Karimi & Mohammad Hassan Bastani ................................................................. 1413
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Georges Bienvenu, Thomson Marconi Sonar S.A.S., France / Marwan Simaan, University of Pittsburg, USA

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André Quinquis, ENSIETA, France / Sam Smith, Florida Atlantic University, USA

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Real Time Processing of Video Data  
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*Christian de Moustier, Scripps Ins. of Oceanography, USA*

DSP Hardware Implementation of Transform-Based Compression Algorithm for AUV Telemetry —  
Donna M. Kocak & Frank M. Caimi  

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*Signal, Image & Information Processing*

Magnetically Quiet Shipboard-Type Electrical Equipment Methods in Design and Manufacturing —  
Pavel Dobrodejev, Serge Volokhov & Alexander Kildishev  
Relative Orientation and Roto-rectification of Stereoscopic Underwater Images — José Francisco Zelasco & Diego Amin Dagum  
Wavelet Compression in Marine Seismic Data — Marwan A. Simaan  
Frequency Line Extractor Using Multiple Hidden Markov Models — D. Van Cappel & P. Alinat  
Simplified Formulas for Performance Analysis of MUSIC and Min Norm — Philippe Forster & Eric Villier  
Nonlinear Filtering for a New Nimble Jammer — J.P. Costa, T. Pitarque & P. Rostaing  
Real-time Architecture for Cable Tracking Using Texture Descriptors — A. Grau, J. Climent & J. Aranda  
Reverberation Characterization and Suppression by Means of Principal Components — T.A. Palka & D.W. Tufts

**Topic 8: COASTAL MANAGEMENT AND OCEAN RESSOURCES**

Ocean Monitoring Modeling and Management  
Tuesday 1 h 30 p.m. — Room E  
*Georges Pichot, Management Unit of the North Sea Models, Belgium / Jerry Carroll, CNMOC, Stennis Space Center, USA*

A Calibrated 3-D Hydrodynamic and Transport Model for Managing the Salinity Regime of the Indian River Lagoon — Gary A. Zarillo  
Processes Controlling Circulations on the Shelf and Shelf Edge Region off the North-East Coast of Spain: a Modelling Study — Jiuxing Xing & Alan M. Davies  
Response Actions at Offshore Hazardous Waste Sites — J. A. Lindsay, H. Karl, P. McGillivary, P. Vogt, R. Hall, I. MacDonald & B. W. Coles

Integrated Coastal Zone Management  
Tuesday 3 h 50 p.m. — Room E  
*Didier Sauzade, IFREMER, France / Takeo Kondo, Nihon University, Japan*

Sustainable Fisheries: the South Florida Experience — N. Thompson, J. Bohnsack, J. Browder, J. Hunt, T. Schmidt
Role and Use of Technologies in Relation to Integrated Coastal Zone Management — Michele Capobianco, Francesco Gasparoni & Gian Mario Bozzo .............................................................. 295
Impact of an Industrial and Urban Sewage Output Off a Coral Fringing Reef at Mauritius (Indian Ocean): Modeling of Plumes, Distribution of Trace Metals in Sediments and Effects of the Eutrophisation on Coral Reef Communities. — B.A. Thomassin, Ph. Gourbesville, B. Gout & A. Arnoux ................................................................. 301
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Sediment Transport 1

Wednesday 8 h 30 a.m. — Room E

André Monaco, CNRS URA 715, France / Albert J. Williams 3rd, W.H.O.I., USA

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Huib De Vriend, University of Twente, The Netherlands / Albert J. Williams 3rd, W.H.O.I., USA

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Wednesday 1 h 30 p.m. — Room E

André Monaco, CNRS URA 715, France / Ronald Waterman, Ministry of Transport, The Netherlands

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Joe Vadus, Global Ocean, USA / Aldo Drago, Council for Sciences and Technology, Malta

The ultimate ocean Ranch — Fujio Matsuda, Tom Tsurutani, James Szyper & Patrick Takahashi
Sustainable Salmon Aquaculture and Tidal Flushing in a Macrotidal Ecosystem: Cobscook Bay, Maine — David A. Brooks, Michael W. Baca & Yao-Tsai Lo
Thermocline Driven Desalination: Status for Cape Verde. — Armand J. Silva, Robert L. Methot, Michael Panich, Joseph van Ryzin & John C. Whanon
A Parametric Study of the Hydroelastic Response of a Mat Type Floating Runway in Regular Waves — R. C. Ertekin & J. W. Kim
Coastal Marine Facilities Created from Large Floating Ice Structures — Joseph R. Vadus, Takeo Kondo & Toshiaki Nakamura
The Blue Millennium — Takeo Kondo, Tadashi Matsunaga, Joseph Vadus & Patrick Takahashi

Coastal Networks
Thursday 8 h 30 a.m. — Room E
Robert Woolsey, University of Mississippi, USA / Philippe Marchand, IFREMER, France

MAREL : Automated Measurement Network for the Coastal Environment — Patrice Woerther & Anne Grouhel
Development of Operational Oceanography in Greece by Means of the POSEIDON System — Takvor H. Soukissian, George Th. Chronis & Seraphim Poulos
The Digital Seagauge Network of the French Navy Hydrographic and Oceanographic Service: RONIM. — Serge Allain
Metrological Control for Autonomous Marine Environment Monitoring System — L. Delauney, C. Le Gall & J.M. Vercelli

Coastal Observing Systems
Thursday 10 h 10 a.m. — Room E
Didier Sauzade, IFREMER, France/ John Noakes, University of Georgia, USA

Dual Frequency Acoustic Classification of Seafloor Habitat Using the QTC VIEW. — James L. Galloway & William T. Collins
The Measurement of Nearshore Processes in the Field and Laboratory Using Video Imagery — M. Alport, G. Mocke, K. Govender & A. Marais
Estimating Hurricane Storm Surge Amplitudes for the Gulf of Mexico & Atlantic Coastlines of the United States — Edwin P. Russo

Ocean Energy
Thursday 1 h 30 p.m. — Room E
Cengis Ertekin, University of Hawai / Jean Marvaldi, IFREMER, France

On Control Approaches Relevant to Efficient Primary Energy Conversion in Irregular Waves — Umesh A. Korde
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Thursday 2 h 50 p.m.-3 h 50 p.m.
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— G. Chronis, S. Poulos & T. Soukissian .................................................. 1529

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Determination of the Turbulent Transfer Parameters in a Coastal Sea Area by Application of the ADCP Devices — V.V Gorbatsky, D.V. Ivanov & A.D. Litvin .................................................. 1535


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WHOI Cable: Time Domain Numerical Modeling of Moored and Towed Oceanographic Systems — Jason I. Gobat & Mark A. Grosenbaugh .................................................. 1681

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A Miniaturised Fourier-Transform Infrared Spectrometer for Seawater Monitoring — M. Kraft, M. Jakusch & B. Mizaikoff .................................................. 1701

Optimum Array Signal Processing in the Presence of Imperfect Spatial Coherence of Wavefronts — Giuseppe Montalbano & Georgij V. Serebryakov .................................................. 1704

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Three-Dimensional Measurement of the Shelf Environment using Along Track Video (ATV)’ —
I.M. Williams, J.H.J. Leach, V. Wadley & B. Barker .................................................. 1797