

Applied Science Associates Inc.
70 Dean Knauss Drive
Narragansett, Rhode Island 02882-1143
Phone: +1-401-789-6224
Fax: +1-401-789-1932
Email: asa@appsci.com
www.appsci.com
ADDRESS SERVICE REQUESTED

Applied Science Associates – South America
São Paulo, Brazil
+55 11 3444-3748

Asia-Pacific Applied Science Associates
Gold Coast, Australia
Phone: +61 (0)8 7 5574-1112
Perth, Australia
Phone: +61 (0)8 9226-2911

FIRST CLASS
U.S. POSTAGE
PAID
NORTH KINGSTOWN,
RI 02852
PERMIT NO. 15



**MARINE
ENVIRONMENTAL
NEWSLETTER**



A publication of Applied Science Associates, Inc.
Vol. 20, No. 3, November 2006

NEW FACES



Lee Dooley has joined ASA as a marketing specialist. Lee received his Master's Degree in Media Studies from New School University in 2003. He has a Bachelor's Degree from the University of Connecticut where he received a double major in Environmental Studies and Communication Science in 1996. Lee also has a graduate certificate in Marketing and Media Management. Lee brings 10 years experience in marketing strategy and project management for various interactive agencies and software companies. His main focus will be to implement ASA's marketing initiatives.



Jason Frezza has joined ASA as a software developer. Jason received his BS in Computer Information Systems from Rhode Island College in 2003. He has spent the last four years working at Brown University developing and supporting a wide range of software systems. His main focus will be upgrading the look and functionality of existing ASA software.



Dr. Oleg Makarynsky joined Asia-Pacific ASA as a Senior Environmental Scientist. Oleg studied Physical Oceanography and obtained his PhD in mathematical modeling of atmospheric and ocean processes at the Odessa Hydrometeorological Institute, Ukraine. He has extensive international research and consulting experience with special expertise in field measurement, data assimilation and forecasting of hydrometeorological parameters (winds, waves, sea levels, currents, etc.) and pollutant fates using artificial neural-networks and numerical modeling.

Dr. Rob Phillips, an environmental consultant with wide experience with the oil and gas and coastal development sectors, joined Asia-Pacific ASA as a Director, bringing expertise in oceanographic measurement and numerical modeling of pollutant dispersion.

Please visit our website at www.appsci.com for new ASA publications

The ASA newsletter is printed on recycled stock.

Upcoming Conferences

ASA will be presenting at the 2nd Annual Oil/Chemical Spill Conference in Nassau, Bahamas, 30 October - 2 November. ASA's presentation topic will be oil spill modeling and response tools.

Deborah French McCay will be presenting at the SETAC North America 27th Annual Meeting, Montreal, Canada on 9 November. Debbie's paper is entitled "Toxicity of Short-duration Exposures to PAHs After Oil Spills: With and Without Dispersant Use", coauthored by **Jill Rowe**, Walter Nordhausen from California Department of Fish & Game and Jim Payne from Payne Environmental Consultants. (<http://montreal.setac.org>)

Matt Ward will be attending the 2006 Scientific Conference on Chemical and Biological Defense Research 13-15 November, Fayetteville, NC. Matt will be presenting a paper entitled "Development of an HPAC/JEM Waterborne

Chemical and Biological Agent Transport Modeling Capability". (www.cbdefense.com)

Matt Ward will be attending the SpecOps2006: Warfighter Symposium and Expo 13-15 November, Hunt Valley, MD. Matt will be a member of the "Technology Support to Training, Planning and Tactics Panel" and will present a paper entitled "Ocean Modeling and Mission Planning Systems for Naval Special Warfare Support". (www.specops2006.com)

Deborah French McCay will be presenting on the use of oil and chemical spill models during emergency situations at the 2006 Emergency Preparedness and Prevention and Hazmat Spills Conference, Valley Forge Convention Center, PA on 3-6 December. (www.2006conference.org)

Eoin Howlett will be attending the Offshore Arabia Conference & Exhibition, 17-19 December at the Dubai International Convention Centre. (www.offshorearabia.ae)

ASA Summer Fun!



Surfing Lessons



Team Olympics

Predicting Coastal Vulnerability

Global mean sea level has been rising at an average rate of 1 to 2 mm/year over the past 100 years, a rate significantly larger than that averaged over the last several thousand years, and severe weather patterns and tropical storm intensities are predicted to increase in conjunction with global climate change. Exacerbated by recent disasters such as Hurricane Katrina, many organizations, businesses and media outlets are asking the question of what our coastlines and low-lying cities might look like when impacted by storms and rising sea levels.

ASA has become increasingly involved in mapping the impacts of storm surge flooding. The effort began in Boston, where the National Environmental Trust (NET) commissioned ASA to map the effects of a 100-year storm surge plus 100 years of sea level rise along the downtown coast. These images were used to promote a recently released EPA report, "Climate's Long Term Impacts on Metro Boston". ASA then mapped the effects of a Category II hurricane storm surge plus 100-years of sea level rise for Miami, Washington DC, and Manhattan. These images were released by NET in conjunction with the first Conference of the Parties of the Kyoto Protocol in December 2005. Vanity Fair also published artist renderings of the Washington DC and Manhattan model results in their May 2006 Green themed issue.

The mapping and visualization of the impacts of coastal storms is extremely effective for communicating the vulnerability and risk associated with many coastal areas. Of the 10 costliest hurricanes over the last 50 years, 8 have occurred in the last 5 years. By mapping the flood zones of real storms, not just the 100-year FEMA design storm, property owners and officials alike can easily visualize the risks associated with actual events and determine how to reduce vulnerability.

To make these tools more available to users and the public, ASA is conceptualizing an inundation module within the COASTMAP frame-

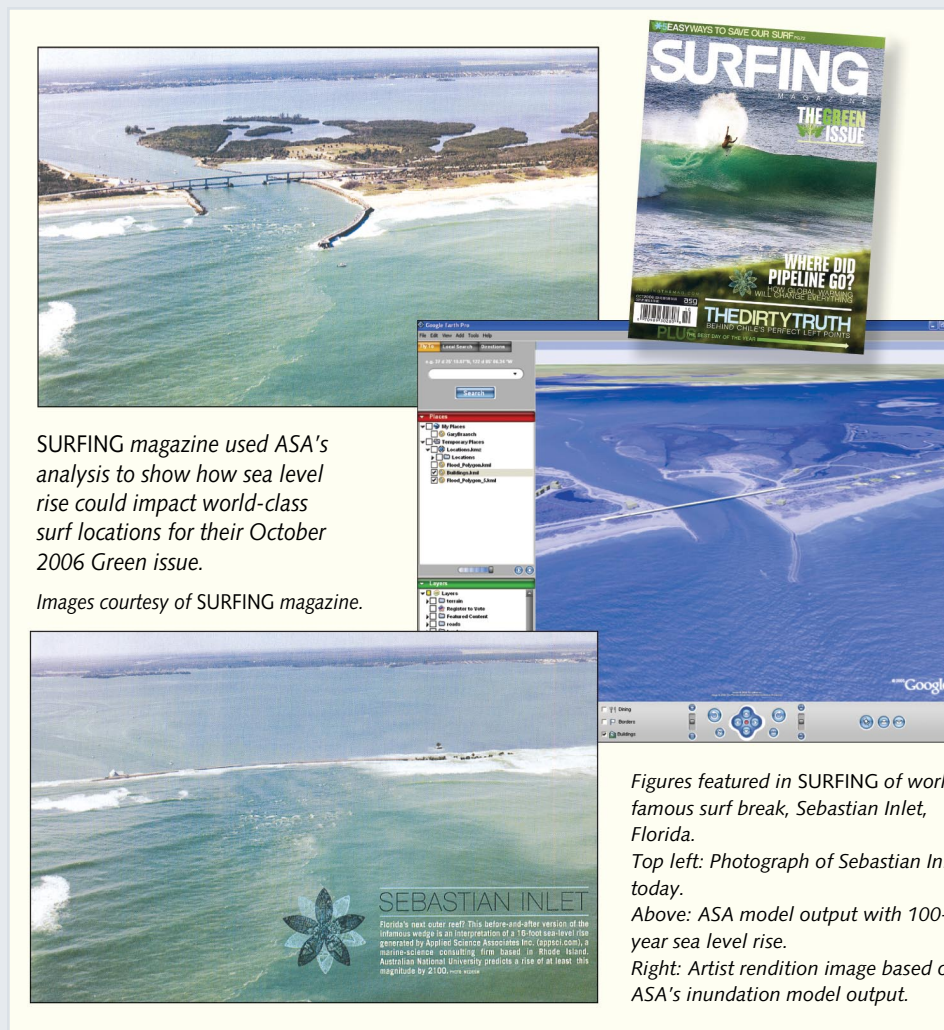
work. The COASTMAP Inundation Module is planned as a web based system that connects to various storm surge models using the COASTMAP Environmental Data Server (EDS). The EDS imports real-time weather, oceanographic and other environmental data and will run inundation models to generate maps of areas at risk from predicted storm surges. These maps can easily be distributed to the public via a variety of websites, and also automatically emailed to interested par-

THE INSIDE STORY

- OILMAP Accurate in Oil Spill
- Personnel News
- New Faces
- Upcoming Conferences

ties, including local planners, emergency workers, and television networks. These maps would allow planners to better allocate resources and to publicize the risk to vulnerable areas while allowing the public to be proactive in preparing for flooding.

For more info contact Kelly Knee, kknee@appsci.com.



SURFING magazine used ASA's analysis to show how sea level rise could impact world-class surf locations for their October 2006 Green issue.

Images courtesy of SURFING magazine.

Figures featured in SURFING of world famous surf break, Sebastian Inlet, Florida.

Top left: Photograph of Sebastian Inlet today.

Above: ASA model output with 100-year sea level rise.

Right: Artist rendition image based on ASA's inundation model output.

OILMAP Accurate in Canadian Oil Spill

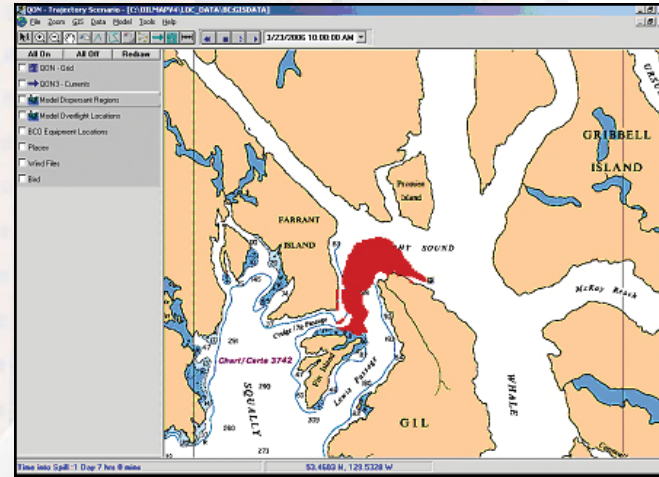
ASA's OILMAP was used by Western Canada Marine Response Corporation/Burrard Clean Operations to mitigate and contain the diesel fuel spill that resulted when the *Queen of the North* ferry hit a rock off Gil Island in Wright Sound, British Columbia, Canada and sank just after midnight on 22 March 2006.

Mark West, of Burrard Clean Operations, was called immediately and he quickly developed an initial trajectory model using OILMAP. West, a long-time OILMAP user, imported the latest available weather data from Environment Canada into OILMAP along with hydrodynamic data previously developed at British Columbia's Institute of Ocean Sciences. Within one hour, he had developed a preliminary trajectory model that closely matched the actual trajectory of the spill.

West later said, "I've used ASA's OILMAP software hundreds of times on exercises and potential spill scenarios, but this was the first opportunity I've had to test it on a real spill...it felt pretty good. Everything from our response process, to the OILMAP software, all functioned exactly as it was supposed to and this directly transformed a grave situation into one with a miraculous outcome with astonishingly low human and environmental harm."

All concerned (British Columbians, the responders, and BC Ferries representatives) realize that although this was a tragedy, the outcome could have been much worse in terms of human toll, environmental damage, and economic impact to the region.

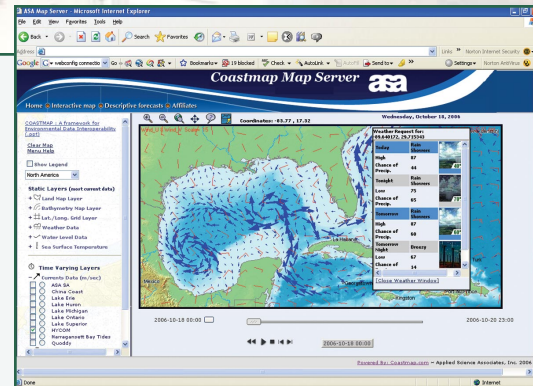
For more information contact Eoin Howlett, ehowlett@appsoci.com.



OILMAP simulation displaying the trajectory of the diesel fuel oil, which matched field observations.



Diesel fuel oil contained by boom during spill response.



COASTMAP Map Server displaying: NOAA's Global Forecast System (GFS) winds; HYbrid Coordinate Ocean Model (HYCOM) currents; and the weather window an ASA service that accesses NDFD weather data.

ASA at NOAA Coastal Services Center in Charleston, SC

As a component of the IOOS demonstration project for NOAA and the U.S. Navy, Eoin Howlett and Mark Wholey delivered software components to the NOAA Coastal Services Center (CSC) in Charleston, SC on 22 August. The NOAA CSC office is devoted to serving the nation's state and local coastal resource management programs. Eoin and Mark met with CSC staff to discuss the implementation of the delivered components:

- ArcGIS extension for NetCDF and OPeNDAP access
- ArcGIS TimeSlider extension for managing disparate time varying data
- OGC Web Mapping Services (WMS) for NetCDF/OPeNDAP
- OGC Web Feature Services (WFS) for NetCDF/OPeNDAP

The discussion focused on the challenges involved in integrating ocean science data with GIS, and identified some solutions.

In Transition: Eric Anderson

Eric Anderson, who for many years provided fodder for the Personnel News section with his travels to exotic and not-so-exotic locations, retired from ASA at the end of April after 26 years.

Eric joined ASA as a computer programmer in 1980 shortly after the company was founded in 1979. Through the next two decades he became increasingly involved in supporting ASA's worldwide clients in the oil exploration and development industry. As a senior project manager, he handled a variety of complex projects for the protection of infrastructure from oil spills and more recently in developing integrated systems for crisis management. For the last decade of his career, he served as ASA's President and helped guide the company's growth and development in a variety of foreign markets. Eric was widely known for his interpersonal skills and the extraordinary amount of international travel he did on ASA's behalf. We wish Eric well as he retires to his beloved home in Maine and has more time to pursue his other passions.



PERSONNEL

On 6-8 June Deborah French McCay and Nicole Whittier presented at the 29th annual Arctic and Marine Oilspill Program (AMOP) Technical Seminar in Vancouver, BC. Debbie presented two oil modeling papers: "Modeling Potential Impacts of Effective Dispersant Use on Aquatic Biota" (coauthored by Jill Rowe, Walter Nordhausen from California Department of Fish & Game, and Jim Payne from Payne Environmental Consultants, Inc.) and "Data Needs to Reliably Hindcast a Spill's Impact: The PEPCO Pipeline Spill of April 2000 as Case Example" (coauthored by Jill Rowe, Subbaya Sankaranarayanan, and Dagmar Schmidt Etkin from Environmental Research Consulting). Nicole presented a chemical spill modeling paper entitled "Chemical Spill Modeling and Spill Hazard Evaluation".

Eoin Howlett spent 18-21 June in Abu Dhabi with ADNOC's crisis management coordinator, Nick Glover. Eoin and Nick trained ADNOC staff and responders from ADNOC, ZADCO, ADMA, and other operating companies on the use of OILMAP for oil spill response. They also visited the ADNOC Oil Spill Center in Ruwais and upgraded the existing ASA systems installed there.



Craig Swanson presented a paper (coauthored by Tatsu Isaji) entitled "Modeling Dredge-Induced Suspended Sediment Transport and Deposition in the Taunton River and Mt. Hope Bay, Massachusetts" at the Western Dredging Association (WEDA) conference held in San Diego, CA from 25-28 June. The paper focuses on dredging issues from a proposed LNG terminal in Massachusetts.

Kelly Knee presented a paper entitled "Visualizing Storm Surge Flooding and Sea Level Rise" at the ESRI International User's Conference in San Diego, CA on 8 August. The paper detailed the process of preparing images of storm surge flooding and sea level rise for the National Environmental Trust.

Eric Comerma provided a 4-day refresher training course to the Spanish Maritime Safety and Rescue Agency (SASEMAR) in mid July. This course coincided with the new deliveries of OILMAP and SARMAP version 6.0.

Malcolm Spaulding and Craig Swanson recently had a manuscript accepted as a chapter in *Ecosystem-based Estuary Management: A Case Study of Narragansett Bay* to be published by Springer as part of their Springer Series on Environmental Management. The manuscript, "Circulation and Pollutant Transport Dynamics in Narragansett Bay", is one of 20 chapters focusing on nutrient loading, biochemistry, circulation, and biological and ecological trends in Narragansett Bay.

ASA and SAES Sign Cooperative Agreement

In June, Eoin Howlett, Nicole Whittier and Xiongping Zhang were invited to present ASA's oil and chemical spill simulation technology at a workshop at the Shanghai Academy of Environmental Science. More than 40 people from 12 different agencies attended the workshop. SAES is a comprehensive research institution under the Shanghai Environmental Protection Bureau. SAES is using OILMAP and CHEMMAP to model spills in the Shanghai Huangpu River in Shanghai. ASA and SAES are working together to integrate the best available hydrodynamic models and environmental data in China with ASA's GIS and modeling tools.



Craig Swanson presented several papers at the OCEANS '06 conference held in Boston, MA from 18-21 September. The paper titles were "Analysis of Intake and Discharge Salinity Regimes for a Desalination Plant" (coauthored by Christopher Mueller and Stephen Barrett of BlueWave Strategies), "Transport and Fate of Sediment Suspended from Jetting Operations for Undersea Cable Burial" (coauthored by Tatsu Isaji and Christopher Galagan), and "A New Approach to Simulation of LNG Spills in the Ocean" (coauthored by Malcolm Spaulding).

As a member of the Science Advisory Committee, a component of the Narragansett Bay and Watershed Planning Commission, Craig Swanson was invited to participate in the Governor's Narragansett Bay and Watershed Summit held on 26 September in Providence. Rhode Island Governor Donald Carcieri convened the summit to review accomplishments over the past three years, assess current and future challenges, and discuss future plans and activities for continued improvement of the health of the state's waters.

Craig Swanson was appointed Chairman of the Rhode Island Chapter of the Environmental Business Council (EBC) of New England. EBC is an organization of member companies interested in issues affecting environmental business. He assumed his duties at the 28 September meeting held in Providence which hosted as speaker Michael Sullivan, Director of the Rhode Island Department of Environmental Management.



On 11-13 July Nicole Whittier conducted an ATOM and AIRMAP training course for Alyeska Pipeline in Valdez, AK. The course was held over a three-day period and included hands-

on training with ATOM's oil trajectory and fate (surface and 3-D) models and the link to AIRMAP's atmospheric dispersion model. Alyeska uses ATOM and AIRMAP in their oil spill response in Prince William Sound, AK.

Malcolm Spaulding and Eric Comerma were invited lecturers in the Coastal Dynamics Modeling Summer School in Toulon, France. They provided an overview of the marine environmental monitoring and modeling system COASTMAP, with emphasis on its application to support modeling of oil and chemical spills and search and rescue operations.

Daniel Zacharias presented a series of lectures for high school students of the Sao Judas Tadeu School, with the subject "Environmental Research in Antarctica". The subject was discussed in the context of geography, and the students will complement the presentation with further research and presentations.

Daniel Zacharias participated in the expedition Huayhuash and Blanca, in the Peruvian Andes (June/July 2006), and took the ASA South America logo to the top of the mountains Diablo Mudo (5350m), Urus (5495m) and Ishinca (5500m). This region was immortalized in the film "Touching the Void", due to the great danger to climbers in the region.



The Perth office of Asia-Pacific ASA has relocated to larger premises, closer to our Perth-based clients. The new office is at Unit 2B in the Shafto Lane complex at 872 Hay Street, Perth. Our new phone number is 08 9226 2911 (international dial +61 8 9226 2911). We welcome enquiries and visits.

This summer Sasha Zigic and Zandra married and enjoyed a relaxing honeymoon in Tasmania, Australia.