

**Important Upcoming Dates & CoML Expeditions: Watch the project websites for news and cruise diaries!**

1 April 2009: Draft synthesis papers due for potential inclusion in Paul Snelgrove's "Census Digest Book"

June 2009: CeDAMar – DIVA cruise (<http://www.cedamar.org/eXpedition-log>)

**Top News!**

**CoML Layer Now in Ocean in Google Earth!**



Google Earth 5.0 was released on 2 February 2009 to the delight of the ocean community and CoML researchers worldwide. The latest version, which now contains an ocean layer and enhanced ocean content, **automatically provides access to CoML explorations** through a specific drop-down menu built into the application. Now everyone has the opportunity to go below the surface of the ocean and explore the ocean floor, thanks to a more detailed bathymetric map, or visit the deepest parts of the ocean, learn about shipwrecks or follow tagged marine mammals. Thousands of data points, which include amazing images of sea life, video and descriptions of marine species, were supplied not only by CoML, but also by GTOPP (Global Tracking of Pelagic Predators), National Geographic, BBC Earth and the Cousteau

Ocean World. The CoML layer takes users to all the remote and previously unexplored regions of the ocean where CoML researchers, due in part to their adventurous and inquisitive spirits, have found new species just about everywhere they have studied.

**2008 CoML Awards for Outstanding Achievement!**

The **CoML Outstanding Achievement Awards** were presented at the **Synthesis Workshop** aboard the *RMS Queen Mary* in February 2009 in Long Beach, California, USA.

The recipients included:

- Science - **CeDAMar**
- Societal Impact - **TOPP**
- Education and Outreach - **HMAP**
- Data, Knowledge and Visualization - **ICoMM**
- Partnership and Collaboration: *Within* the CoML Community - **Deep Sea Projects (Mar-ECO, COMARGE, ChEss, CeDAMar, CenSeam)**
- Partnership and Collaboration: *Outside* the CoML Community - **CReefs**
- Technology - **CMarZ**
- Synthesis - **FMAP**
- CoML "Citizenship" - **COMARGE & ArcOD**
- Major Award - *Which CoML Project, NRIC or other group most demonstrated overall achievement in the categories above and a sense of what it means to belong to the larger CoML community?* – **CAML**



**Congratulations to all!**

## Scientific Steering Committee (SSC)

The Scientific Steering Committee (SSC) **met aboard the Queen Mary in Long Beach, CA on 5 February 2009**. The SSC meeting was held in conjunction with the Synthesis Workshops, held from 1-6 February. The SSC reviewed the numerous synthesis products, focusing on progress issues, roll-out and proper credit to key partners, finalized the SSC members' contributions to the overall synthesis products, and discussed options for the London 2010 celebratory events.

The **SSC next meets in Cape Town, South Africa** on 15-17 June 2009, where the focus will be on finalizing the content of the "2010 Big Messages" and review of the early draft synthesis papers.



CoML Founder and SSC Chair Emeritus **Fred Grassle was awarded the 2009 Benjamin Franklin Medal** in Earth and Environmental Science. The Medal places Grassle within the ranks of such notable prior recipients as Thomas Edison, Max Planck, Albert Einstein, and Stephen Hawking. Fred's specific award citation reads: *The 2009 Benjamin Franklin Medal in Earth and Environmental Science is presented to J. Frederick Grassle for pioneering research leading to our understanding of the unique ecosystems near volcanic vents at the sea floor, the first ever found fueled by chemical energy from the Earth's interior instead of sunlight.* The award will be presented on 23 April in Philadelphia, PA, USA. Congratulations on this

honor, Fred! For more information on the Franklin Medal and for Fred's bio please visit the Franklin Institute website.

## Synthesis

**On April 1<sup>st</sup> any available drafts of synthesis papers are due** to Paul Snelgrove for potential inclusion of content in the "Census digest book." Important synthesis documents & updates are always available at the Synthesis webpage.



During the first week of February 2009, nearly 160 **CoML participants from around the globe met aboard the historic Queen Mary in Long Beach, CA** for a series of CoML Synthesis Workshops. The meeting focused on the many facets of CoML Synthesis, including many of the products - books, videos, animations, and others - described, in greater detail, in other sections of this newsletter. Important plenary sessions allowed participants to review the progress of the vast synthesis products and activities undertaken by CoML projects, ensuring each has comprehensive content and a cohesive look and feel for dissemination in 2010. Special training sessions were held by the Education and Outreach and Mapping and Visualization teams, which were heralded as a great help to those working on the growing list of final products. Cyndy Parr of the Encyclopedia of Life (EOL) also held a session on how to contribute to EOL and use their new tools for assembling data.

David Sandwell at Scripps Institution of Oceanography has produced a **new bathymetric map that the Synthesis Group suggests CoML projects utilize** in lieu of older editions. The new map is especially good for the continental shelves. More information is available at UCSD Satellite Geodesy website.

The **CoML 2010 media briefing, symposium and celebration – "Census of Marine Life 2010: A Decade of Discovery"** – are scheduled for 4-7 October in London. Mark your calendars!

## Mapping & Visualization

After the excitement of the launch of Ocean in Google Earth (a.k.a Google Earth 5) in early February 2009, the **CoML Mapping and Visualization (M&V) team is now ready to help CoML projects build fly-through animation products**. They have created three fly-through/tour demonstrations and an online guidance page. These demonstrations provide a sense of they type of animations that can be built and serve as a starting point for conversations (by sharing the same knowledge of the features, terminology,

etc). Please take a look at the guidance page. There are links to the demonstrations with descriptions about what can be seen and hints for your animation products. The M&V team can be contacted at [info@comlmaps.org](mailto:info@comlmaps.org).



He was here a minute ago! M&V team leader Pat Halpin was highlighted in *The News & Observer*, a North Carolina, USA newspaper in early February 2009. The article discussed Halpin's participation in many projects, including his contributions to Google Earth, OBIS SEAMAP and a segment of National Geographic's "Wild Chronicles". Interestingly, the article suggested "it might be more interesting to tag Halpin himself and map his movements." To read the article, please visit the *News & Observer*.

### Education and Outreach

The E&O team was busy in mid-February with the press release highlighting how CoML explorers found hundreds of **identical species thriving in both the Arctic and Antarctic**. ArcOD (Arctic Ocean Diversity) and CAML (Census of Antarctic Marine Life) researchers were startled to find the Polar oceans share 235 species. Earth's unique, forbidding ice oceans of the Arctic and Antarctic revealed a trove of secrets to CoML explorers, who were especially surprised to find at least 235 species live in both polar seas despite an 11,000-kilometer distance in between. These International Polar Year (IPY) results are milestones towards the historic 1st global ocean Census of Marine Life. To view the press release, please visit the CoML Portal.



Become a fan of **Census of Marine Life on Facebook!**

### Policy Briefings

CoML and the International Union for Conservation of Nature (IUCN) jointly organized a side event during the UN Food and Agriculture Organization Committee on Fisheries (COFI) the first week in March in Rome. The goal of the event, "**Biodiversity, Ecosystems and Fisheries**," was to present and discuss with fisheries managers new scientific findings and initiatives relevant to fisheries. There was a special focus on the deep seas (CenSeam) and new technologies (TOPP, OTN) that are being developed to help manage these remote areas. About 65 people attended the lunch-time event including members from country delegations, regional fisheries managers, FAO staff, and representatives from NGOs. The discussion afterwards highlighted the need for quality science and technologies, such as from the Census of Marine Life, in order to effectively manage fisheries. Presentations and images from the event are available at the CoML Secretariat website.

### Database: Ocean Biogeographic Information System (OBIS)

ICES, the International Council for the Exploration of the Seas, has made part of its extensive data holdings available for publication through EurOBIS and OBIS. **ICES data are already visible on EurOBIS**, and will soon be on the iOBIS portal. ICES is one of the oldest marine science organizations, based in Copenhagen, Denmark, and one of its main tasks is to advise European governments on fisheries and general state of the seas. OBIS has long been involved with ICES activities.

**OBIS is discussing potential avenues for continuation post 2010** – one of which involves OBIS being adopted by the Intergovernmental Oceanographic Commission (IOC) as one of its programs. In order to explore this option, a meeting was organized with representatives of OBIS, Global Biodiversity Information Facility (GBIF), and the International Oceanographic Data and Information (IODE) program of the IOC. IODE is the data branch of the IOC. A final decision will depend on governmental support expressed during the IOC General Assembly, planned for June 2009 in Paris, France.

**New data sets are available through the OBIS portal.** OBIS has now reached 17 million records. These records are from 14 new datasets, 6 new replacements (for 2 older datasets) and 3 updates contributed from EurOBIS, the Australian Antarctic Data Centre (AADC), the Online Zoological Collections of

Australian Museums (OZCAM), ICoMM, and AfrOBIS. OBIS also has new datasets from first-time providers ECOCEAN and the CoML TOPP project.

### **Oceans Past: History of Marine Animal Populations (HMAP)**

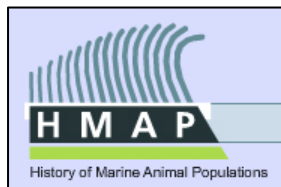
HMAP researcher Loren McClenachan published a paper in *Conservation Biology* discussing the decline of large trophy fish in the Florida Keys. The article, titled "**Documenting Loss of Large Trophy Fish from the Florida Keys with Historical Photographs,**" details the use of historical photographs of trophy fish from the waters around Key West, Florida, USA to determine changes in mean individual size and species composition over time. The results of the article suggest that since 1957 large predatory fish, such as grouper, are less prevalent and that average shark sizes have declined by 50%. The abstract is available online from Wiley Interscience.



HMAP is in the process of developing a **global atlas of historical fishing grounds** to aid in synthesizing the work and data of all its research projects. In order to develop synthesis products, Stefan Claesson designed an online survey and Google Earth interface to solicit expert knowledge and historical assessments of HMAP researchers and participants. Recent improvements have been made to the Fishing Grounds Atlas: voice and video tutorials are now available to show you how to use the Google Earth mapping interface and OpenLayer map tools. A link to the tutorials is available online as well. Additional information is also now available for viewing and download, including a detailed description of the process and steps to complete and edit an atlas entry, a PDF file showing the structure of the atlas database, and a PDF file with a sample atlas entry for Stellwagen Bank in the Gulf of Maine. To view the information you must register and log in.

HMAP's **Oceans Past II conference**, scheduled for 26-28 May 2009 in Vancouver, Canada, is open for registration. The aim of the conference is to discuss the dynamics of long-term marine environmental change. To view the program and register please visit the HMAP website.

The **HMAP International Summer School** in Trieste, Italy (31 August - 4 September 2009) is open for registration. The summer school is designed to address the framework of marine environmental and ecological history studies in the Mediterranean and Black Sea area and to help facilitate relationship building, especially among young scientists. More information is available online.



The **latest issue of HMAP's newsletter is now available**. The March newsletter highlights HMAP work in the Black Sea, New Zealand's historical right whale population, HMAP's Atlas of Historical Fishing Grounds, Asia Synthesis Workshop, among other stories. To view the newsletter please visit the HMAP website.

### **Oceans Future: Future of Marine Animal Populations (FMAP)**

Is jellyfish sushi the future for seafood lovers? FMAP's Boris Worm was quoted in *Marie Claire UK* in an article describing the alarm many marine biologists feel over the changes in marine ecosystems due to issues such as climate change and over-fishing. **'If we continue as we have been, in 50 years there may not be much left to take from the ocean.'** It noted that many of the current commercial fish and seafood species may face collapse by 2050. To read more, please visit *Marie Claire* online.

FMAP postdoc Derek Tittensor, in collaboration with SYNDEEP, published a study on **"Predicting global habitat suitability for stony corals on seamounts"** in the February 2009 issue of the *Journal of Biogeography*. Scleractinian (cold-water stony) corals are widely accepted to have great ecological importance, yet records of scleractinian corals on seamounts are patchy and simply not available for most of the global ocean. Tittensor and the SYNDEEP team compiled a database of all accessible records and used two new modeling approaches to predict global habitat suitability for seamount scleractinians: maximum entropy modeling (Maxent) and environmental niche factor analysis (ENFA). Habitat-

suitability maps were generated and a cross-validation process was used to evaluate the performance of the models. Highly suitable habitat for seamount stony corals was predicted to occur at most modeled depths in the North Atlantic, and in a circum-global strip in the Southern Hemisphere between 20° and 50° S and shallower than ~1500 m depth. Seamount summits in most other regions appeared much less likely to provide suitable habitat, except for small near-surface patches. High levels of aragonite and oxygen, and low levels of dissolved inorganic carbon, nitrate, phosphate and silicate were positively associated with high predicted habitat suitability. The models predict environmental conditions likely to play a role in determining large-scale scleractinian coral distributions on seamounts, and provide a baseline scenario on a global scale. The high vulnerability of cold-water corals to human impacts makes such predictions crucial in developing global conservation and management strategies for seamount ecosystems.

FMAP Principal Investigators **Boris Worm** and **Heike Lotze** have contributed to several recently published books, including *Bottomfeeder: How to Eat Ethically in a World of Vanishing Seafood* (Taras Grescoe, Bloomsbury USA, 2008), and *Sea Sick: The Global Ocean in Crisis* (Alana Mitchell, McClelland & Stewart, 2009).

**Boris Worm** is interviewed in *The End of the Line*, a feature-length film on overfishing based on a 2004 book by Charles Clover, which premiered at the Sundance Film Festival in January 2009. The film featured interviews with many notable fisheries scientists and marine ecologists around the globe. Boris has also been acting as a scientific advisor for the writers/directors of an upcoming five-part miniseries about the state of the world's oceans on CBC's popular science television program *The Nature of Things*.

### **Ocean Present: Realm Field Projects**

#### **Near-Shore: Natural Geography In Shore Areas (NaGISA)**

In January 2009, CoML Program Director **Jesse Ausubel** visited **Niceville High School** in Okaloosa, Florida, USA to survey their NaGISA field program and give a presentation about the CoML. Niceville was the first high school to join the NaGISA program, and since joining has helped train other schools around the world on utilizing the NaGISA standardized protocol. Their travels have included Japan and Tanzania and, later this year, will include the island of Crete in Greece. They will be presenting the NaGISA project and protocols before officials from the Hellenic Center for Marine Research as local and national level politicians and local media, and will collaborate with Greek high school students in setting up their own NaGISA program. Their trip and their NaGISA work will be used to promote student participation in science to the Greek government.



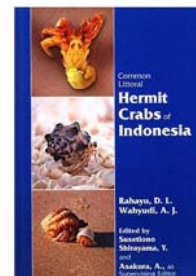
**NaGISA's Polar Seas regions are involved with the Circumpolar Biodiversity Monitoring Program (CBMP)**, which is a part of the Circumpolar Arctic Flora and Fauna (CAFF). Chaired by Norway and the U.S., the Marine Expert Group of the CBMP held its first planning workshop to develop plans for a circum-Arctic marine biodiversity program in Tromso, Norway, in January 2009. NaGISA's Polar Seas regional lead, Katrin Iken, is a marine expert representative of the U.S. for the CBMP. It is NaGISA's Polar Seas aim to include coastal areas in this important Arctic endeavor.



NaGISA and the Japan Society for the Promotion of Science (JSPS) held a **Bivalvia Taxonomy Training Workshop**, hosted by Professors Zulfigar Yasin and Aileen Tan Shau Hwai (Universiti Sains Malaysia), in Penang, Malaysia from 8-10 March 2000. Fifty two participants from five countries (Thailand, Vietnam, Indonesia, Philippines, and Malaysia) learned about the taxonomy of bivalves. Participants identified specimens from their own samples under the supervision of Professor Akihiko Matsukuma (Kyusyu University Museum, Japan). To see photos from the workshop, please visit the NaGISA website.

Dr. Gerhard Pohle from NaGISA's Atlantic Ocean Region talked to CoML videographer Rick Morris about NaGISA and its goals. **Check out the video** in the CoML video gallery.

NaGISA recently published a guide to the **Common Littoral Hermit Crabs of Indonesia** (Kyoto University Press). The book serves as a simple guide to hermit crabs in Indonesian littoral waters, or the area influenced by tides. The hermit crabs featured in the book were collected from mangroves, seagrass beds, rocky, sandy or muddy shores, and coral reefs. The families covered include Coenobitidae, Diogenidae and Paguridae.



### Reefs: Census of Coral Reefs (CReefs)

In December 2008, CReefs collected 7 ARMS (Autonomous Reef Monitoring Structures) that yielded 68 jars, 12 tubes and 11 plates, each with 96 samples. In December, CReefs Hawaii organized a **workshop to develop the best way to process the ARMS**. The workshop goals were to (1) determine the retrieval and sampling protocols (shipboard and land-based) for the ARMS that have been deployed and (2) develop molecular methods to analyze the biodiversity of the ARMS in a whole community approach. Experiments are ongoing to compare results for a voucher-based approach using “traditional barcoding” and a “whole community” approach using mass parallel sequencing.

The COI sequencing of organisms collected in the three field trips to Australia is ongoing. As of December 2008, **150 crustaceans from Lizard Island and 200 crustaceans from Ningaloo Reef were sequenced**.

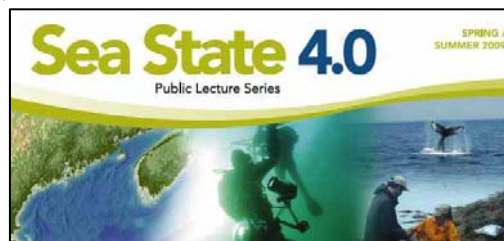
The **second Lizard Island survey** took place in February 2009.

A partnership has been established between renowned photographer Susan Middleton, CReefs, NOAA, the Northwestern Hawaiian Islands Marine National Monument, Scripps, Australian Institute of Marine Science (AIMS), Smithsonian and the U.S. Fish and Wildlife Service to create a web presentation prototype from the 2006 French Frigate Shoals photographs. The goal is to **engage the general public with powerful imagery to convey the importance of understanding marine biodiversity** and the function of lesser known organisms in coral reef ecosystems. Funding is provided by the 2008 International Year of the Reef Initiative.

“The Terebridae of Vanuatu,” a 118 page full-color monograph, was recently published by Yves Terryn and Mandë Holford. It is a **result of the Santo 2006 expedition**, an affiliated component of CReefs which received Sloan Foundation funding. Philippe Bouchet wrote the introduction “From the *Santo 2006 Expedition* to the *Marine Barcoding of Life* Project: A New Era in Marine Molluscan Taxonomy.” The Terebridae are a family of marine snails, also known as “auger shells”.

### Regional Ecosystems: Gulf of Maine Area Program (GoMA)

GoMA and the Gulf of Maine Research Institute have initiated an **ongoing public lecture series, titled "Life in the Gulf of Maine: Past, Present, and Future,"** which opened on 12 February 2009 in honor of the 200th Anniversary of the birth of Sir Charles Darwin, whose legacy has been arguably one of the most influential to modern biological science. His book *On the Origin of Species* revolutionized the way biologists look at species changes over time. The first lecture was entitled “Still Life: Historical Pictures of a Changing Ecosystem.” Four remaining lectures of the series will cover marine archaeology, ecosystem change, human influence, and diversity of the Gulf of Maine. For more information and lecture dates please visit the GoMA website.



Rick Morris, the CoML videographer, has created a **series of three videos on the GoMA project, titled “GoMA What?”** The videos, which cover some of the people and equipment conducting research carried out in the Gulf of Maine, can be viewed online on the Dive Photo Guide website (simply search for GoMA).

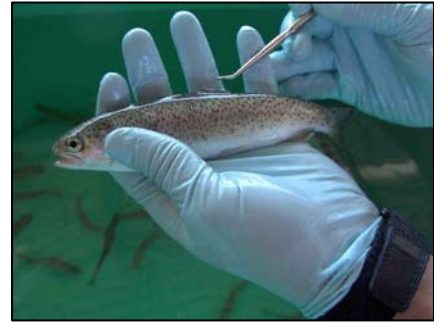
In early February, a graduate student involved with GoMA, **Erik Pietrowicz, received the Charles Darwin grant from the Society for the Study of Evolution**, for research that promotes evolutionary sciences. Suzy Ryan, also with GoMA, is working with Pietrowicz to develop a series of lectures, courses

and educational resources for a project titled “University of Southern Maine Celebrates Darwin”. Congratulations, Erik! To read more about how GoMA is ‘Celebrating Darwin’, please visit the GoMA website.

**Reminder: GoMA now publishes a newsletter.** To subscribe, please visit the ‘[About Us](#)’ section of the GoMA website.

### **Continental Shelves: Pacific Ocean Shelf Tracking (POST)**

POST and the Tagging of Pacific Predators (TOPP) researchers published an article, entitled “**Advances in conservation oceanography: new tagging and tracking technologies and their potential for transforming the science underlying fisheries management**” in the March 2009 issue (Vol. 22, No.1) of the journal *Oceanography* which discussed the emerging field of conservation oceanography from the point of view of tagging and tracking and their application to fisheries management. Using the examples of bluefin tuna tagging in the Atlantic and Salmon tagging in the Pacific, researchers suggested that the stage is set for change in fisheries management science and that new technologies in tagging and tracking can help drive that change. They concluded, however, that additional support and collaboration between managing agencies and scientists is necessary so that the data collected by tagging programs can be transformed into data products that adequately convey their ecological significance.



POST was recently highlighted by ABC7News. The news story documented how POST is helping National Oceanic and Atmospheric Administration (NOAA) researchers track salmon along the coast of California, where many species are in peril, and green sturgeon in the state of Washington. The research in Washington **has revealed some important information regarding the migration of the sturgeon.** Until recently, it was unknown that the green sturgeon migrated as far north as south-east Alaska and spent the winters along the coast of British Columbia. POST currently has 300 deployed receivers along the seafloor and hopes to expand their array from the Aleutian Islands, Alaska to Cabo San Lucas, Mexico to learn more about where fish travel and how best to protect their populations in the future. The clip can be viewed at ABC7News.

**POST delivered a keynote speech at the State of the Salmon conference** (2-5 February) in Vancouver, British Columbia, Canada. The conference brought together distinguished guests from around the North Pacific to discuss issues critical to wild salmon conservation. POST and CoML were both prominently featured during a co-hosted reception at the Vancouver Aquarium on February 3<sup>rd</sup>.

**POST held a meeting of its Management Board** on March 18-19 in Seattle, WA. The Board wishes the best of luck to Vice Chair, Paul Kariya, who has decided to end his term with the POST Board. Paul dedicated several years of service to POST, moving it from an idea to a success. The Board will appoint a new Vice Chair at its next meeting on 9-10 July 2009.

### **Continental Margins: Continental Margin Ecosystems on a Worldwide Scale (COMARGE)**

Two COMARGE researchers **recently described a new genus and new species of a clam** associated with seeps. The paper, titled “A new genus and new species of Vesicomysidae (Mollusca, Bivalvia) from cold seeps on the Barbados accretionary prism, with comments on other species” can be read [here](#).



COMARGE researcher **Philippe Bouchet has published a book celebrating shells** and the molluscs that make them. This book, titled simply "Shells" and available from Abbeville Press, details the beauty of shells and discusses them in the context of biodiversity, new discovery, anthropogenic pressure, and natural history.

### Abyssal Plains: Census of the Diversity of Abyssal Marine Life (CeDAMar)



CeDAMar research has been featured in a deep sea exhibit which recently opened at the Senckenberg Museum in Frankfurt, Germany. The exhibit showcases deep sea life from around the world and deep sea research technologies in interactive displays. One novel display features a 35 foot long submersible which museum patrons can enter to experience virtual dives. Visual materials, books (*Deeper than Light*) and children's coloring books are all available for purchase to extend the experience for museum-goers. A website (in German) highlights the

exhibit and displays some of the incredible images that it includes. For more information please visit the Senckenberg Museum website.

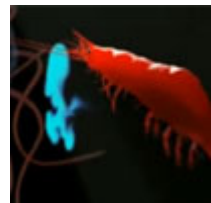
The CeDAMar project ANDEEP has been honored as a name for a genus of amphipods! Amphipods are a very diverse, common group of shrimplike crustaceans. This genus (*Andeepia*) has two very peculiar looking legs in the front of its thorax, called gnathopods (“jaw feet”), because they aid in handling food items. Much of the diagnostic set of characters for the new genus is in the distribution of setae along the legs, something only a specialist can see under the microscope. The species, *Andeepia ingradae* (Biswas, Coleman & Hendrycks, 2009), was collected in the Southern Ocean in about 3000 m depth during the expedition ANDEEP (ANTarctic benthic DEEP-sea biodiversity) III.

The next CeDAMar cruise (DIVA) will take place in June 2009.

### Mid-Ocean Ridges: Mid-Atlantic Ridge Ecosystem Project (MAR-ECO)

Natalia Chernova and Peter Rask Møller of MAR-ECO confirmed a new species of snailfish! During the *G.O. Sars* cruise in 2004 a few specimens of the family Liparidae were caught. Due to the gelatinous flesh and fragile skin of these fishes, they are notoriously difficult to identify, so the onboard identification was tentative. The snailfishes are distributed in all oceans and are especially common in Polar and deep-sea habitats. Records from the Mid-Atlantic Ridge, were almost unknown before MAR-ECO, and were therefore an exciting catch. Three of the specimens caught at depths of 1950 and 2107 m were assignable to the genus *Paraliparis*, but the dark color did not match any known species in the North Atlantic. It was similar to the *Paraliparis copei* complex in many characters such as vertebral number, teeth mainly uniserial, gill opening pore-like, opercular flap undeveloped and eight caudal-fin rays. It was, however, clear that the specimens differ from other members of this group in number of vertebrae, dorsal fin ray counts and body color. They were therefore described as a new species to science and named *Paraliparis nigellus* after the dark coloration. The description was published in Marine Biology Research.

An animation produced by Aberdeen University students in collaboration with UK-based MAR-ECO researchers, has won the Scottish portion of the Royal Television Society awards for student documentary. This success has entered their animation into the next round, a UK-wide competition. The animation, entitled “The Luminous Deep” features the story of a whale fall as it is colonized by the various bioluminescent life of the deep ocean. The animation can be downloaded (large file, 117 Mb) from Blueprint Animation.



### Seamounts: Census of Marine Life on Seamounts (CenSeam)



Seamounts Online, the collaborative work of CenSeam and the San Diego Supercomputer Center, has been disseminating data on seamounts and associated species since 2005. The goal of the Seamounts portal is to make

previously hard to find data on seamounts readily available to managers, researchers and conservationists in one easy to use online resource. Recently, this free informational portal has received a facelift and the addition of new spatial searching tools. This new user interface, and the new data searching features, will be demonstrated at the upcoming Seamounts '09 meeting being held on 19-21 March 2009 at Scripps Institution of Oceanography in La Jolla, California. More information is available in a recent article at [Eurekalert.org](http://Eurekalert.org).



## Vents & Seeps: Biogeography of Deep-water Chemosynthetic Ecosystems (ChEss)

An exhibition, “Beyond the Edge of the Sea – Diversity of life in the deep-ocean wilderness,” which showcases the work of CoML scientist **Cindy Lee Van Dover** and artist Karen Jacobsen, moved from the Muscarelle Museum at the College of William and Mary in Virginia, USA to the North Carolina Maritime Museum, where it showed from 17 January to 15 March 2009. The exhibit features paintings and sketches of deep ocean life, especially organisms associated with chemosynthetic communities. A full description of the show, its history and inspiration, and examples of the artwork are available on the exhibit’s website. The exhibit will be traveling, although its schedule is yet to be announced.



The first ChEsSo (ChEss in the Southern Ocean) cruise has been completed and exciting results are still emerging! During the cruise, researchers could be followed on the Classroom@Sea website. The website provided information on where the researchers were going, what they were doing and who's who. The researchers wrote regular blogs about life on a research vessel, along with photos and stories from the RRS *James Clark Ross*!

ChEss is teaming up with the Woods Hole Oceanographic Institution and InterRidge to host a workshop and colloquium entitled “**Deep-Sea Mining of Seafloor Massive Sulfides: A Reality for Science and Society in the 21st Century.**” The workshop, scheduled to take place from 1-2 April 2009 in Woods Hole, Massachusetts, USA, will draw together scientists, conservation groups, economists, industry representatives, policy specialists, and the public to discuss the issues of sustainability and environmental impact associated with the extraction of metal deposits from seafloor vents systems. The science and policy workshop will be followed by a public colloquium and discussion panel. Attendance at the workshop is limited and by invitation. Those wishing to attend should contact InterRidge. For more information about the workshop and colloquium, please visit the WHOI website.

The **report from the ChEss Workshop** “*Siboglinidae: a model system for the understanding of evolution, adaptive radiation, microbial symbioses and ecology at extreme environments*” is now available for download on the ChEss website.

A **video on ChEss research**, by CoML Videographer Rick Morris can be viewed at DivePhotoGuide.com. The video highlights Dr. Chris German of the Woods Hole Oceanographic Institute and his research to find deep ocean vents and seeps.

## Arctic: Arctic Ocean Diversity (ArcOD)

In February 2009, ArcOD was prominently featured in a **photo exhibition celebrating Polar regions** and their connections to the global environment, exploration, and economics. This exhibition was part of the only pure outreach project in the International Polar Year Arctic Marine Biodiversity Cluster, which is entitled “Our Polar Heritage.” The lead investigator, photographer Christian Moral, accompanied ArcOD scientists on their Spring 2008 Bering Sea expedition. Six of Moral's photos from this expedition formed part of the exhibition that was displayed at the United Nations in Geneva, Switzerland. For more information please visit: Our Polar Heritage.



Six ArcOD papers were cited in the U.S. National Marine Fisheries Service’s November 2008 draft of an Arctic Fisheries Management Plan (FMP) for the U.S. Exclusive Economic Zone (EEZ) of Alaska, USA. This **report summarized the knowledge about current fisheries resources in U.S. Arctic waters** and their potential for commercial harvest. ArcOD members Norcross and Holladay contributed fish data considered in the plan. At this point, all “commercial fishing in this region is likely to be restricted until more information is available to support sustainable fisheries management.” The Council has scheduled

final action on the Arctic FMP for February 2009. For more information, please visit the NOAA Fisheries Alaska Regional Office website.

**ArcOD researchers are gearing up for the 2009 field season** with ArcOD-relevant expeditions planned to the Bering, Chukchi and Beaufort Seas. Several International Polar Year projects will continue beyond the end of IPY in March 2009.

An ArcOD report, “**Arctic Ocean Synthesis: Analysis of Climate Change Impacts in the Chukchi and Beaufort Seas with Strategies for Future Research**,” sponsored by the North Pacific Research Board (NPRB), is now available for download on the ArcOD website.

#### **Antarctic: Census of Antarctic Marine Life (CAML)**

**Reminder: The University of Guelph and CAML are offering CoML participants the opportunity to sequence Antarctic material** in their barcoding facility. If you have samples from recent Antarctic voyages which you would like to have barcoded with the CO1 gene, in collaboration with the Canadian Centre for DNA Barcoding, 20x96 well plates available. Please follow these conditions: 1. Material must be recent (<2years old); 2. The plate must be filled with samples from the same Phylum; 3. There must be no known problems with amplifying the CO1 gene in this group; 4. If you have primers you can recommend or send, this would be good but not essential; 5. The following groups work nicely with developed group specific standards: vertebrates, cephalopods, pycnogonids, crustaceans, echinoderms, gastropods/polyplacophora. Challenging groups, due to PCR issues include polychaetes and bilvalves. The spaces will be allocated on a first come, first served basis so please contact Rachel Grant (CAML barcode coordinator- [rachelannegrant@googlemail.com](mailto:rachelannegrant@googlemail.com)) as soon as possible, giving details of the number of samples and the taxonomic groups included.

**SCAR-MarBIN V2.0 is ready for a large scale test drive** with a completely new, more powerful and more attractive data portal (temporary portal address). This is still a BETA version, so some fine-tuning is still needed and SCAR-MarBIN counts on feedback from the community to help improve the tool. At the end of IPY, SCAR-MarBIN has reached and surpassed all of its objectives: a new data portal, complete register of marine species (RAMS), 122 datasets connected (objective was 100) and 1,015,204 records available (objective was 1,000,000). For more information, including a new poster, brochure and newsletter, visit: SCAR-MarBIN.

#### **Top Predators: Tagging of Pacific Predators (TOPP)**

A brief meeting report for the 3<sup>rd</sup> International Biologging Science Symposium, co-hosted by TOPP and the Tag-A-Giant Foundation in September 2008, was accepted for publication in *Biology Letters*. The report, “**New frontiers in biologging science**” can be read online at *Biology Letters*.



**TOPP celebrated its 2009 Elephant Seal Homecoming Days!** TOPP researchers from the University of California Santa Cruz Long Marine Lab attached satellite tags to 20 female and 10 male elephant seals during the summer of 2008. The elephant seals were given names that reflect their history or the history of their surroundings, and interestingly, this year two male elephant seals were named after two of America’s favorite late-night reporters – Stephen Colbert and Jon Stewart. The seals, including “**Stelephant Colbert**” and “**Jon Sealwart**,” were then tracked

over the past eight months as they fed and migrated in the North Pacific Ocean. Fifteen of the named elephant seals were followed back to shore where the TOPP researchers recorded their arrival date and whether any of the female elephant seals now had pups. Please visit the Elephant Seal Homecoming Days website to learn more about the TOPP project and the tagged seals.

#### **Zooplankton: Census of Marine Zooplankton (CMarZ)**

A recent National Geographic television special, “**Into the Abyss**”, featured **footage from two CoML research expeditions**. Highlighting the biodiversity of the Celebes Sea in Southeast Asia’s “Coral Triangle,” this documentary utilized video footage captured by remotely operated vehicles



during the CMarZ/NOAA Celebes Sea expedition in 2007 and the ArcOD/NOAA Hidden Ocean Arctic Expedition in 2005. The show originally aired on 14 March 2009 in the U.S. on the National Geographic Channel. For more information, please visit: [Into the Abyss](#).

Tracey Sutton, of the Virginia Institute of Marine Science and a CMarZ Steering Group member, has found a missing link: the only specimen known so far of a larva changing into the adult female whalefish. **This discovery has corrected a long-standing error in fish taxonomy.** Previously, the females, males and larvae were all placed in different families due to the fact that they exhibit vastly different morphology. Tracey's discovery, which was highlighted in an article on Science News, has clarified this piece of the taxonomic tree. A full journal article detailing this work was published online at Biology Letters and appears in print in the 23 April 2009 issue.



The March issue of the popular German magazine, GEO, contains **an interesting article about the CMarZ cruise from Germany to South Africa** in November 2007 aboard the icebreaker *Polarstern*. It includes beautiful pictures of some of the fascinating zooplankton found in the eastern Atlantic Ocean. More images by photographer Solvin Zankl can be viewed at his website and are well worth the visit!

### **Microbes: International Census of Marine Microbes (ICoMM)**

**Data from ICoMM's Keck projects will soon be released.** Many projects are already past the 180 day limit from the date of final sequencing. The data report is available at the MICROBIS website.

The ICoMM-led cross-project synthesis group, **Roles of Rare Taxa (RARE)**, held its first meeting on 4 February, during the CoML Synthesis workshops on the Queen Mary in Long Beach, California, USA. RARE group members present included Mitch Sogin, Linda Amaral-Zettler, Julian Caley, Nancy Knowlton, Pedro Martinez, Karen Stocks, and Edward Vanden Berghe. Also attending were Anne Thessen, Jan de Leeuw, John Baross, Lucas Stal, and Loka Bharathi. Members discussed several concepts that were differently perceived by people working on metazoa versus microbes. For example, metazoan ecologists would find the issue of "roles" for rare taxa to be a foreign concept. From the metazoan perspective, rarity is a consequence; there is a process which leads to rarity. The group overall discussed the need to define "What is rare?" for different organisms. There was concern that it may be impossible to define rarity in a microbial world because temporal and spatial heterogeneity are rampant. RARE next met in March in La Jolla, CA, where group members proposed datasets that could be analyzed as part of the synthesis.

### **National and Regional Activities**

#### **Canada**

The **Canadian Healthy Oceans Network (CHONe)** was launched to the media in January, announcing its five year plan to gather information to better manage Canada's coastline and oceans. Led by Paul Snelgrove, the CHONe network includes researchers from 15 universities across Canada, as well as the federal Department of Fisheries and Oceans and seven other government laboratories. It is aimed at ensuring sustainable management of the country's ocean biodiversity resources. CHONe also produced its first newsletter. The website is under development, but the first newsletter issue can be found there.

#### **Caribbean**

Last year, Juan M. Díaz, CoML Caribbean's Colombian country coordinator, **discovered a Caribbean living fossil** while diving in an inlet of the National Natural Park Tayrona, not far from the city of Santa Marta, at the Colombian Caribbean coast. *Pholadomya candida* Sowerby, 1823 is an anomalodesmatan bivalve belonging to the ancient family Pholadomyidae, a group of burrowing bivalves living on earth since at least the Early Carboniferous (330 million years B.P). The genera *Pholadomya* is likely one of the only living representatives of this ancient lineage. *Pholadomya candida* is the only living species of the nominal genus, occurring in shallow settings at certain places in the Caribbean. It is also relatively well represented in the fossil record of Northern South America since the Miocene (ca. 15 million years B.P.). *P. candida* had been collected alive only twice and not for nearly 140 years, so scientists

considered the species to be extinct. Recent discoveries of fresh-looking shells from Venezuela and Colombia provided evidence that it still lived, and Juan Díaz collected a living specimen during his dive. This new specimen is particularly important because it is the only one that is now available for genetic studies.

### Europe

Krishnan John Davidson, 6 lb, 12 oz., was born on 22 February 2009. **Congratulations to Bhavani Narayanaswamy, and her husband Keith Davidson, on their new arrival!**

A call for proposals has been issued for **the next Euroscience Open Forum**, scheduled to take place in Torino Italy from 2-7 July 2010. The theme of the forum is "Passion for Science." CoML relevant topical areas include *Evolution, development and adaptation of organisms, Responding to global needs, Science, knowledge and belief, and Policy-what follows?*, among other topics pertaining to sustainability, science, and energy. Proposals that address these issues in science and technology, as well as scientific and cultural trends and ethical and social concerns/challenges, will be accepted until 15 June 2009. For more information, guidelines, or to submit, please visit: ESO2010.



### Indonesia

CoML-Indonesia, in collaboration with the Ministry of Marine Affairs and Fisheries, Indonesian Institute of Sciences and the UN Development Programme, has published ***Marine Biodiversity Review of the Arafura and Timor Seas***. The book is beautifully produced and covers taxonomic groups including plankton, fish, crustaceans, holothurians, marine mammals and turtles.

### Indian Ocean



A report on the one-day national **workshop on barcoding of marine life** has been produced. IO-CoML organized the workshop in Goa, India on 1 December 2008. The invitees were comprised of key individuals from the International Barcode of Life (iBOL) initiative, scientists actively involved in barcoding of marine life and representatives from three major governmental funding agencies in India.

### South America

Victor Gallardo and Jesse Ausubel recently visited Mocha Island, a small island located in the Pacific Ocean off the coast of Chile. **Their visit was featured in the Concepcion, Chile based daily *El Sur***. The island has become an attraction as a living laboratory for scientists world-wide. The article notes that the discovery of a perfectly spherical microalgae is one example of the interesting natural phenomena on the island. A German institute has also opened a laboratory on the island and runs seismographs from which ground motion data is collected every six months. To read more of the article (in Spanish), please visit the Diario El Sur website.

### USA

The U.S. National Committee (USNC) **recently held its biannual meeting from 11-12 March 2009** at the Consortium for Ocean Leadership offices in Washington, D.C. The meeting focused on the USNC contributions to the international synthesis activities and a variety of methods for ensuring an impact within the U.S., including presentations, videos and a 2010 roll-out event in the U.S. Other key discussions included the future of CoML within the U.S. after October 2010 and new opportunities given the recent change in Administration in the U.S. On the afternoon of 12 March, the U.S. Synthesis Writing Team met to discuss progress on the development of a regional chapter that will become part of a CoML global assessment of the current state of knowledge on marine biodiversity.

On 5 February 2009, in Long Beach, CA, CoML U.S. National Committee member and ocean advocate, **Sylvia Earle** was awarded the prestigious **2009 TED Prize** for her life long devotion and advocacy for the ocean and the creatures that inhabit it. Sylvia has been dedicated to educating the public about the importance of the global ocean in our daily lives and how it affects the overall health of the planet. The Technology, Entertainment, and Design (TED) 2009 Conference brought together this year's who's who of the technology, science, business, and arts industries. Three prize winners, each a leader in their chosen field of work, were awarded for their "unconventional viewpoint and vision to transform the world." The winners received a monetary prize plus "One Wish to Change the World - No Restrictions," which, in the past, have lead to inspiring ideas with far-reaching impacts. **Sylvia made the following wish: "I wish you would use all means at your disposal -- films! expeditions! the web! more! - to ignite public support for a global network of marine protected areas, 'hope' spots large enough to save and restore the ocean, the blue heart of the planet."** Please join us in congratulating Sylvia in this grand achievement. To read more about Sylvia, her "One Wish to Change the World," and what can be done to help bring her wish to fruition, please visit: [Ted Prize](#).



In mid-February, the U.S. CoML Program Office organized a session at the American Association for the Advancement of Science Annual Conference in Chicago, IL. The session, titled "***Making Ocean life Count: Applying Biodiversity to Marine Policy***" featured presentations by USNC Chair Andy Rosenberg, Sant Chair at the Smithsonian Institution's National Museum of Natural History and CoML project PI Nancy Knowlton, and National Geographic Fellow Enric Sala. USNC member Paul Sandifer moderated the session while SSC member Mike Sinclair helped provide international context and lead discussions after the presentations. The goal of the session was to clearly demonstrate how important and relevant studies of marine biodiversity are to the management of resources and in general to human life on the Earth. The presentations are available on the U.S. CoML web site. This marks the first time that a session with a general CoML focus was accepted at this prestigious conference. For more information of the week's proceedings, including a talk by former Vice President, and Nobel Prize winner Al Gore, please visit [AAAS](#).

For more USNC news, [view the latest newsletter](#) online.

### **Barcode of Life**

The **Marine Barcode of Life project (MarBOL)** is hosting a series of three workshops at three locations between April and May 2009: In Europe: Alfred Wegener Institute for Polar and Marine Research Bremerhaven, Germany on 16-17 April 2009; In USA: Woods Hole Oceanographic Institution, Woods Hole, MA, USA on 30 April - 1 May 2009; In Asia: Ocean Research Institute, University of Tokyo, Tokyo, Japan on 21-22 May 2009. At each location, there will be a one day DNA Barcoding Symposium featuring invited keynote speakers, who will provide overviews on topics of general scientific interest and practical importance for the MarBOL effort. The Symposium will also include contributed talks by researchers from the region, and a student poster session. The language of all three workshops is English. Participation at the MarBOL workshop is by invitation. All interested researchers, staff, and students are invited to apply using the form available on the MarBOL project websites.

### **Encyclopedia of Life**

From 1-3 June 2009, the Encyclopedia of Life and the Natural History Museum of London will be sponsoring **e-Biosphere 2009, an international conference on biodiversity informatics**. The goal of the conference is to discuss the ever-changing world of biodiversity informatics and the role of online taxonomic databases in aggregating, integrating, and



disseminating biodiversity related data. The conference is designed to bring together researchers in the fields of ecology, taxonomy, and genetics, computer scientists and software engineers, and end-users such as policy makers, environmental managers, conservation groups, and the like. Sessions include: Impact and Integration of Biodiversity Informatics, Biodiversity Informatics at Work, discussions of challenges and current initiatives, and a look towards the future. An Online Conference Community (OCC) has been created for pre-conference discussions and one of the sub-communities on the OCC is devoted to marine data. The conference organizers have created a series of electronic discussion forums under the umbrella of the OCC to provide researchers and users of biodiversity informatics the opportunity to interact and prepare for the conference. For more information please visit e-Biosphere 09.

## SCOR

The SCOR Panel on New Technologies for Observing Marine Life **continues work on its synthesis of the technologies used by CoML**. A series of papers will be published in the open-access journal *PLoS One*. The Panel also is planning its **Workshop on Ocean Biology Observatories**, to be held in Mestre, Italy on 16-18 September 2009. The goal of the workshop is to bring together biologists, the observing community, and the technology community to develop ocean biology observatories that could address the challenges of observing ocean life and its response to global change. Discussions will include observation systems designed to detect changes in ocean biology that result from ocean acidification and oxygen depletion, as well as changes in community structure, from microbes to zooplankton; distribution and movement of marine organisms and changes in ocean properties; vertical movements of predators and prey in relation to physical/chemical structures; trophic structures; and benthic dynamics. The new web site for the Panel is available on the CoML Portal. The site provides links to documents created by the Panel, as well as photos, videos, and animations of technology used by CoML. Registration for the Workshop on Ocean Biology Observations is now open. Please register online. Information about the workshop is available on the SCOR website. Please contact Ed Urban ([Ed.Urban@scor-int.org](mailto:Ed.Urban@scor-int.org)) if you have any problems with the registration system or have any questions about the workshop.

**Several different products for different audiences are planned from the second symposium on the Ocean in a High-CO<sub>2</sub> World**, which took place October 2008. The Research Priorities Report has been completed and posted on the web, summarizing the science presented at the symposium, as well as the discussions that took place in the breakout sessions. A shorter version is being prepared for publication in *Oceanography* magazine. A Summary for Policymakers is being developed and the special issue of the journal *Biogeosciences* is underway. Twelve papers have been submitted and some already have been accepted for publication. All of the documents and materials from the meeting are available online. Planning should begin late in 2010 for the third symposium in 2012.

The **3<sup>rd</sup> SCOR Summit of Marine Programs took place** at the University of Delaware (USA) on 30 March – 1 April 2009. For more information, visit the SCOR web site.

The Partnership for Observation of the Global Oceans (POGO) and its partner, the Scientific Committee on Oceanic Research (SCOR), have announced the **POGO-SCOR Fellowship Program for 2009**. This program is designed to promote training and capacity building leading towards a global observation system for the oceans. Visiting fellows have the opportunity to receive professional training at oceanographic research centers for periods of up to 3 months. Other related fellowship opportunities would place a successful candidate on an Atlantic Meridional Transect Cruise and support short visits by distinguished scientists as visiting professors in developing countries. The application deadline for all the above fellowships is 12 April 2009. More information and application forms are available through POGO.

## Ocean Tracking Network

The Ocean Tracking Network (OTN) headquarters team at Dalhousie University in Halifax, Nova Scotia has **released its first public metadata record called the Global Ocean Tracking Network Metadata and Data Atlas**. OTN researchers worldwide are pressing for standards and protocols to allow universal storage and sharing of a broad spectrum of biological and physical oceanographic information. Where animals go, what conditions they experience, how they interact and how individual behaviors change on

timescales relevant to climate change is information that scientists and managers need in order to protect and restore ocean productivity. OTN intends to deliver these as part of the permanent monitoring functions of the Global Ocean Observing System. OTN, a pilot project of the Global Ocean Observing System (GOOS), is an affiliated project of the Census of Marine Life, and is itself organized into 14 ocean regions.

### **Funding & Employment Announcements**

Information regarding Calls for Proposals and other opportunities (jobs, fellowships, post-docs, etc.) can be found at the CoML Secretariat website: [www.comlsecretariat.org](http://www.comlsecretariat.org), under “**Announcements of Opportunity.**”

### **Calendar of Upcoming Events**

This is a snapshot of upcoming events relevant for the Census of Marine Life. For the full calendar, visit: <http://db.coml.org/schedule/>.

#### *April 2009*

- 1-3 ChEss-InterRidge Colloquium on Precious Metals from Deep-Sea Vents, Woods Hole, Massachusetts, USA
- 16-17 MarBOL Workshop, Bremerhaven, Germany
- 21-23 Roles of the Rare Synthesis Meeting, Woods Hole, Massachusetts, USA
- 27-30 ICES Deep-Sea Symposium, Horta, Azores, Portugal
- 30- May 1 MarBOL Workshop, Groton, Connecticut, USA

#### *May*

- 11-15 World Ocean Conference, Manado, Indonesia
- 13- Jun 3 CReefs Ningaloo Reef Expedition No. 2, Australia
- 21-22 MarBOL Workshop, Tokyo, Japan
- 25-28 Second Oceans Past Conference, Vancouver, British Columbia, Canada

#### *June*

- 1-5 e-Biosphere conference, London, UK
- 14 CoML Synthesis Group Meeting, Cape Town, South Africa
- 15-17 CoML SSC Meeting, Cape Town, South Africa
- 17 CoML Synthesis Group Meeting, Cape Town, South Africa
- 22-26 GLOBEC Third Open Science Conference, Victoria, BC, Canada

#### *July*

- 26-31 Xth SCAR International Biology Symposium, Sapporo, Japan

#### *August*

- 4-8 First World Congress of Environmental History, Copenhagen, Denmark
- 20-21 Synthesis Group meeting, Woods Hole, Massachusetts, USA

#### *September*

- 16-18 SCOR Panel on New Technologies for Observing Marine Life Workshop on Ocean Biology Observatories, Mestre, Italy
- 21-25 OceanObs'09- Ocean Information for Society: Sustaining the Benefits, Realizing the Potential, Venice, Italy
- TBD CoML U.S. National Committee Meeting, Honolulu, Hawaii, USA

#### *October*

- 4-9 Gulf of Maine Science Symposium, St. Andrews, NB, Canada
- 11-14 BioMarine 2009, Vancouver, Canada

20-22 39th SCOR Executive Committee Meeting, Beijing, China  
TBD CoML SSC Meeting, Paris, France

*November*  
17-18 Group on Earth Observations (GEO) VI, Washington, DC, USA