

COAPS senior scientist Steve Morey to lead newly-funded project to improve predictive capabilities

The National Academy of Science Gulf Research Program recently announced the recipients of nine grants geared toward integrating or synthesizing existing data from different sources that, analyzed together, may provide additional insights, address important questions, or lead to new approaches to interpreting monitoring data. One of the projects funded, *Synthesis of historical observations using novel model approaches to improve understanding and predictability of deep Gulf of Mexico circulation*, will be lead by COAPS senior scientist [Dr. Steve Morey](#). The project researchers plan to synthesize a mix of historical observations with new models to better understand the unique currents that flow through the deep Gulf. Findings are expected to improve forecasting methodologies critical for safe design and operation of offshore oil and gas infrastructure, as well as improve our predictive capabilities for the transport of deep water organisms and contaminants.



Steve Morey



State climatologist David Zierden on Capitol Hill for El Niño "101"

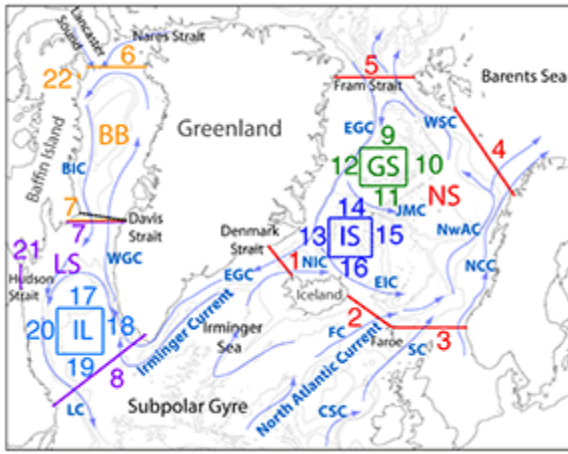
On November 23, Florida state climatologist [Dr. David Zierden](#) was one of four scientists invited to a congressional briefing in Washington, DC where he provided background and explained the implications of the 2015-16 El Niño event. The four panelists discussed how El Niño forms, what impacts can be anticipated from the current event, as well as the opportunities and challenges in understanding, monitoring, and predicting the El Niño. Zierden stressed the importance of increasing the prediction accuracy for El Niño to better plan global and regional responses. In Florida, where the 1997-98 El Niño had severe impacts, water planners and farmers are preparing responses to expected impacts of this year's El Niño. The briefing highlighted the importance of continued investment in data assimilation, model improvement, and communication to stakeholders and decision makers to better predict and prepare for future El Niño events. [Read more.](#)



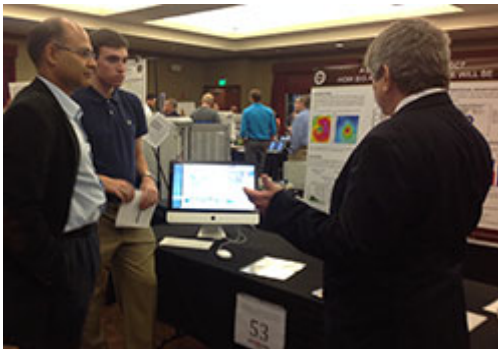
David Zierden

Greenland freshwater pathways in the sub-Arctic Seas from model experiments with passive tracers

A research article in the *Journal of Geophysical Research, Oceans* details a series of numerical experiments using a passive tracer to track the spreading of Greenland freshwater. The experiments, conducted as a part of the Forum for Arctic Ocean Modeling and Observational Synthesis effort, were led by COAPS scientist [Dr. Dmitry Dukhovskoy](#) in order to investigate the fate, pathways, and propagation rate of Greenland meltwater in the sub-Arctic seas. The models show that Greenland freshwater propagates and accumulates in the sub-Arctic seas, although the models disagree on the amount of tracer propagation into the convective regions. Results highlight the differences in simulated physical mechanisms at play in different models and underscore the continued importance of intercomparison studies. The online version can be found at <http://onlinelibrary.wiley.com/doi/10.1002/2015JC011290/full>.



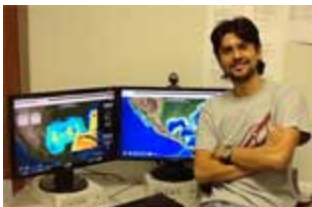
Activities & Achievements



Showcasing a new way to quantify hurricanes

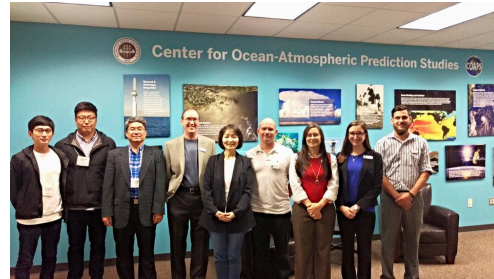
Inventors and innovators from FSU, FAMU and TCC participated in the 2015 Discovery on Parade, which was held at the Turnbull Florida State Conference Center in Tallahassee. COAPS senior scientist [Dr. Vasu Misra](#) and COAPS alum Michael Kozar showcased the Integrated Kinetic Energy (IKE) index -- a new way to quantify "how big and how bad" a hurricane really is. In comparison to the Saffir-Simpson scale, which is based on a one-minute average sustained wind speed measured at a single location of the tropical cyclone (a variable that is barely observed outside of the given location and instant), IKE takes into account the size and distribution of wind around the center of the tropical cyclone. This makes it possible to estimate the size of the tropical cyclone from the forecast of IKE. [Learn more](#) about the IKE index.

Congratulations!



Congratulations to [Olmo Zavala-Romero](#) who completed his PhD in Scientific Computing in December.

COAPS' Marine Data Center hosts delegation from Korea



The Marine Data Center at COAPS welcomed a delegation from the Korean Institute of Ocean Science and Technology (KIOST) in December to facilitate an exchange of technical ideas pertaining to [the SAMOS initiative](#). SAMOS provides routine access to accurate, high-quality marine meteorological and near-surface oceanographic observations from research vessels and select voluntary observing ships. KIOST is exploring development of a shipboard data management system and is considering modelling it after the SAMOS project. COAPS looks forward to future collaborations with KIOST on marine data management.

Postdoctoral Scholars Career Development Travel Award

Dr. Ekaterina (Kat) Maksimova received a Postdoctoral Scholars Career Development Travel Award from the FSU Office of Postdoctoral Affairs. She will be presenting her current research at the American Geophysical Union Fall Meeting in San Francisco in December. She will also attend the Honors Ceremony and Banquet with her former Ph.D.

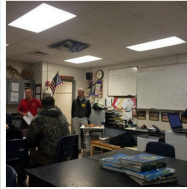


While at COAPS, he developed the [Deep-C Gulf of Mexico Map Viewer](#), a WebGIS site that displays daily outputs of the ocean model [HYCOM](#) as well as data collected by Deep-C scientists.

advisor, EOAS Professor and AGU fellow Dr. Allan Clarke.

Educational Outreach

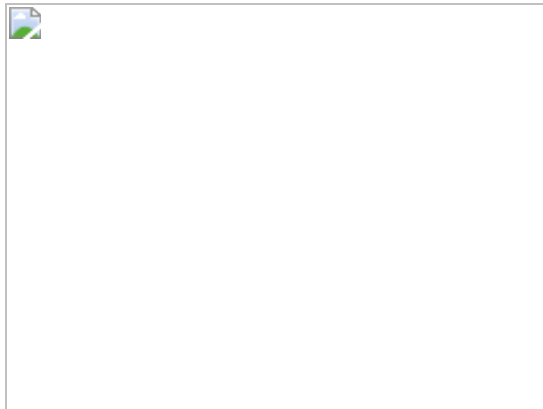
Students Get a "Birds Eye View" of Earth and Ocean Science



COAPS Director [Dr. Eric Chassignet](#) and Dr. Oscar Garcia-Pineda were in Pensacola last month at the West Florida High School of Advanced Technology to talk about how technology is being used in ocean and atmospheric science. The visit with Shawn Walker's marine science students included a discussion of the oil spill research conducted by the Deep-C Consortium, as well as a drone demonstration. While the demo was purely for fun, it was a great opportunity to show how recent advancements in low cost drone technology are revolutionizing aerial monitoring platforms for scientific observations.

ROV Maker Day Educates and Inspires

Students at Tallahassee's Cornerstone Learning Center built and tested their own underwater robots as part of an education/outreach event co-sponsored by COAPS and the Dauphin Island Sea Lab. The program is intended to increase understanding and appreciation for science and the marine environment by directly involving students in that environment with dynamic, hands-on activities. Innovative activities such as the ROV Maker Day help to instill in students some level of the wonder and awe we feel in discovery.



Sharing "lessons learned" from recent oil spill research at the 2015 FCR-STEM Conference



The FCR-STEM Conference in Orlando was a wonderful opportunity to share the Deep-C Gulf of Mexico Curriculum with teachers looking for ways to introduce students to real-world applications of science as well as examples of environmental disasters - their impacts on ocean ecosystems as well as nature's ability to and mechanisms for recovering from such events. The curriculum can be found at: <http://deep-c.org/education-and-outreach/gom-curriculum>.

"What I wish I knew about academia" A Woman's Perspective

Dr. Kat Maskimova participated in a panel discussion geared toward undergraduates and grad students in STEM fields. The event was sponsored by FSU, FSU Student Government, Graduate Women in Science, and the FSU Congress of Graduate Students.



"Science Night" at Killearn Lakes Elementary School

We had a great time at Killearn Lakes Elementary School's Science night, teaching students about ocean science through interactive activities. And hats off to all of the KLES students who entered the Science Fair earlier in the day. So many amazing projects by a talented group of future scientists!

Hands-on learning about weather

Many thanks to the Taylor County Extension for inviting us to share with local 4H youth. Assistant state climatologist Melissa Griffin presented to a large group of home-schoolers (kids and parents) interested in learning about weather. The [Florida Climate Center](#) at COAPS is committed to educating the public about meteorology, climatology and physical oceanography.



Recent Publications

COAPS authors are in **bold**.

Campagnolo, M.L., **Q. Sun**, **Y. Liu**, C. Schaaf, Z. Wang, M.O. Román, 2016. [Estimating the effective spatial resolution of the operational BRDF, albedo, and nadir reflectance products from MODIS and VIIRS](#), *Remote Sensing of Environment*, Volume 175, 15 March 2016, pp.52-64, ISSN 0034-4257

Conroy, B.J., D.K. Steinberg, **M.R. Stukel**, J. Goes, V. Coles, 2016. **Meso- and microzooplankton grazing in the Amazon River plume and western tropical North Atlantic**. in press.

Décima, M., M.R. Landry, **M.R. Stukel**, J.W. Krause, L. Lopez-Lopez, 2016. [Costa Rica Dome mesozooplankton biomass and grazing: Amplifying variability through the plankton food web](#).

Journal of Plankton Research, in press. doi: 10.1093/plankt/fbv091

Dukhovskoy , D.S., P.G. Myers, G. Platov, M.-L. Timmermans, B. Curry, A. Proshutinsky, J.L. Bamber, **E. Chassignet**, X. Hu, C.M. Lee, R. Somavilla, 2016. [Greenland freshwater pathways in the sub-Arctic Seas from model experiments with passive tracers](#) . *Journal of Geophysical Research*, online, doi:10.1002/2015JC011290

Landry, M.R., K.E. Selph, M. Décima, A. Gutierrez-Rodriguez, **M.R. Stukel**, A.G. Taylor, A.L. Pasulka, 2016. [Phytoplankton production and grazing balances in the Costa Rica Dome](#) . *Journal of Plankton Research*, in press. doi: 10.1093/plankt/fbv089

Lu, J., F. Wang, H. Liu, and P. Liu, 2016. [Stationary Mesoscale Eddies, Up-gradient Eddy Fluxes and the Anisotropy of Eddy Diffusivity](#). *Geophysical Research Letters*, doi: 10.1002/2015GL067384

Liu, B., T. Zhou, and **J. Lu**, 2015. [Quantifying contributions of model processes to the surface temperature bias in FGOALS-g2](#). *Journal of Advances in Modeling Earth Systems*, doi: 10.1002/2015MS000459

Lu, J., 2016. On "[Some Fundamental Problems of the General Circulation of the Atmosphere](#)". *Chinese Journal of Atmospheric Sciences*, 40:78-85.doi:10.3878/j.issn.1006-9895.1505.15140 (in Chinese with abstract in English)

Smith, S.R., K. Briggs, N. Lopez, and V. Kourafalou, 2015. **Numerical model evaluation using automated underway ship observations**. *Journal of Atmospheric Oceanic Technology*, in press.

Stukel, M.R., M. Kahru, C. R. Benitez-Nelson, M. Décima, R. Goericke, M.R. Landry, M.D. Ohman, 2015. [Using Lagrangian-based process studies to test satellite algorithms of carbon flux in the eastern North Pacific Ocean](#). *Journal of Geophysical Research: Oceans*. doi: 10.1002/2015JC011264

Stukel, M.R., C.R. Benitez-Nelson, M. Décima, A.G. Taylor, C. Buchwald, M.R. Landry, 2016. [The biological pump in the Costa Rica Dome: An open ocean upwelling system with high new production and low export](#). *Journal of Plankton Research*, in press.

Thoppil, P.G., E.J. Metzger, **H.E. Hurlburt**, O.M. Smedstad, H. Ichikawa, 2016. [The current system east of the Ryukyu Islands as revealed by a global ocean reanalysis](#), *Progress in Oceanography*, Available online, ISSN 0079-6611, <http://dx.doi.org/10.1016/j.pocean.2015.12.013>.

Vasubandhu, M., D. Groenen, A. Bharadwaj, and A. Mishra, 2016. **The warm pool variability of the tropical northeast Pacific**. *International Journal of Climatology*, accepted.

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