



*Old Dominion University  
Climate Change and Sea Level  
Rise Initiative*

Summer 2012



**OLD DOMINION**  
UNIVERSITY

IDEA FUSION

# Old Dominion University Climate Change and Sea Level Rise Initiative

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Summer 2012

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*Nuisance flooding in Norfolk on July 11, 2012 (WAVY TV:  
<http://interactives.wavy.com/photomojo/gallery/3447/1/flooding-in-hampton-roads-71112/standing-water-in-portsmouth/>)*

## Thoughts from the Director

By Larry Atkinson, Slover Professor of Oceanography, Department of Ocean, Earth and Atmospheric Sciences

Since the initiative started in 2010 we have seen our faculty become better informed about climate change and sea level rise. The Hampton Roads region has also progressed towards discussions of adaptation. Awareness of ODU's interdisciplinary research initiative in climate change and sea level rise has spread with several groups now seeking us out for collaborative projects. Internally new collaborations are also forming among faculty who until recently didn't know each other. Following are some additional thoughts and news items:

External Funding - CCSLRI started just when federal (and state) funding began to get much tighter and that trend continues. Individual faculty and the CCSLRI leadership are constantly looking for new opportunities. Our presence at the recent Climate Extremes workshop at Stevens Institute led to two new connections regionally and globally that will lead to additional funding opportunities for faculty.

Partnering Assistance – Developing a competitive proposal often involves partnering. If you are contemplating a proposal in CCSLRI topics please contact Larry or Liz for help finding partners in other research areas here on campus or at other universities and organizations.

LIDAR - The region will soon have better surface elevation data thanks to the efforts of George McLeod (GIS/OCCS) and colleagues at other institutions. Once acquired, the data will be available for our research and teaching activities. This is as they say "A big deal". Accurate elevation data has held back studies and decision making for years. Finally we will have an accurate digital elevation database publicly available.

ODU faculty have been participating in the City of Norfolk's Flood Awareness Expert Advisory Group, which meets quarterly and is chaired by Assistant City Manager, Ron Williams. ODU is playing a key role in the community by providing feedback to the City's flood awareness and mitigation plans.

Finally, we are trying to employ the latest, and most effective, collaboration software for the CCSLRI:

- **ODU CCSLRI Sharepoint Site** - This is the place to go for up-to-date information about the CCSLRI. <https://odushare.odu.edu/research/CCSLRI/SitePages/Home.aspx> You need your MIDAS account information to initially login. Team discussions can be set up here.
- **ODU Basecamp** - Basecamp is provided by the Office of Research (Lisa Kelch) for active research teams. It is a collaborative environment to facilitate team efforts. It is, for example, being used by the Adaptation Forums team. Contact Liz Smith for more information and initial access.

## Climate Change and Sea Level Rise Mini-Symposium

A Climate Change and Sea Level Rise Mini-Symposium was held in March. It was sponsored by the Office of Research and the Provost's Office to showcase the following internally sponsored research projects.

*The Disparate Impacts of Sea Level Rise on Hampton Roads' Underserved Populations Residing in the Chesapeake Bay's Coastal Zone: A Multidisciplinary Approach to Understanding the Impact of Various Remediation Policy Options to Address Contaminated Environments* **Rafael Diaz**, Research Assistant Professor, Virginia Modeling, Analysis and Simulation Center (VMASC); **Hua Liu**, Assistant Professor, Political Science and Geography; **Michael Finewood**, Visiting Instructor, Political Science and Geography; **Joshua Behr**, Associate Professor, VMASC; and **Paula Jasinski**, Analyst, Chesapeake Environmental Communications.

*Human Dimensions in Public Engagement and Support for Environmental Resiliency Policies* **Maura Hametz**, Associate Professor, History; **Poornima Madhavan**, Assistant Professor, Psychology; **Leona Tam**, Assistant Professor, Marketing; and **Cynthia Tomovic**, Professor, STEM Education and Professional Studies.

*A Decision-Support Model Addressing Issues Related to Sea Level Rise in Hampton Roads* **Michael Robinson**, Research Assistant Professor, VMASC; **Saikou Diallo**, Research Assistant Professor, VMASC; **Jose Padilla**, Research Scientist, VMASC; and **Peter Foytik**, Senior Project Scientist, VMASC.

*Scientific Awareness Through Theatre: Inspiring Young People to Value Scientific Practice as We Adapt to Sea Level Rise and Climate Change* **Jenifer Alonzo**, Assistant Professor, Communication and Theatre Arts; **Victoria Hill**, Research Assistant Professor, Ocean, Earth and Atmospheric Sciences; **Fred Dobbs**, Professor, Ocean, Earth and Atmospheric Sciences; **Amy Adcock**, Associate Professor, STEM Education and Professional Studies.

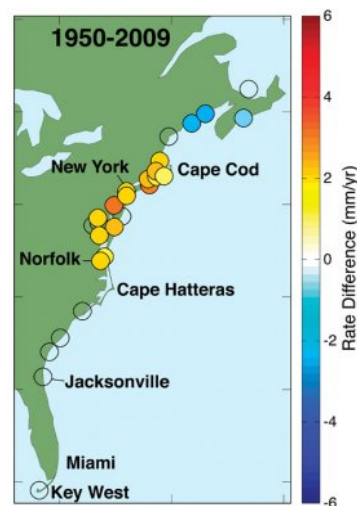
All presentations from the mini-symposium will be available on the CCSLRI Sharepoint site: <https://odushare.odu.edu/research/CCSLRI/SitePages/Home.aspx>

## Faculty News

**Larry Atkinson** (Ocean, Earth and Atmospheric Sciences, College of Science and CCSLRI Director) is collaborating with Asbury Sallenger of the USGS, to write a paper explaining the various aspects of sea level rise for planners and engineers. Sallenger published an important paper recently in *Nature-Climate* titled "Hotspot of accelerated sea-level rise on the Atlantic coast of North America". Part of the abstract reads: "...Here, we present evidence of recently accelerated SLR in a unique 1,000-km-long hotspot on the highly populated North American Atlantic coast north of Cape Hatteras..." [http://www.nature.com/nclimate/journal/vaop/ncurrent/full/nclimate1597.html?utm\\_source=NHC+Master+List&utm\\_campaign=e85c0b18fc-DR\\_589&utm\\_medium=email](http://www.nature.com/nclimate/journal/vaop/ncurrent/full/nclimate1597.html?utm_source=NHC+Master+List&utm_campaign=e85c0b18fc-DR_589&utm_medium=email)

In May, **Larry Atkinson** was an expert presenter at the American Geophysical Union's Science Policy Conference in Washington, D.C.. Video-on-demand and e-posters from the conference are available: <http://sites.agu.org/spconference/>

**David Burdige (Ocean, Earth and Atmospheric Sciences)** will be teaching *Understanding Global Climate Change* this Fall 2012. This course will examine the science behind global climate change. How reliable are forecasts of future global warming? This course will examine these questions to evaluate the



likelihood and potential severity of anthropogenic climate change in the coming centuries. It will include an overview of the physics of the greenhouse effect, the global carbon cycle and its role as a global thermostat, and an examination of predictions and reliability of model forecasts of future climate change, and an examination of local impacts of global climate change (e.g., sea level rise in the Tidewater area). (OEAS 108N. Lecture, 3 hours; Lab, 2 hours. 4 credits)

**Tal Ezer (Center for Coastal Physical Oceanography, OEAS) and Bryce Corlett (recent graduate from ODU in Oceanography and Civil Engineering)** have submitted a paper to Geophysical Research Letters entitled "*Is sea level rise accelerating in the Chesapeake Bay? A demonstration of a novel new approach for analyzing sea level data*". They use a sophisticated statistical technique confirming Sallenger *et al's* results and give more detail to local sea level rise acceleration rates.

**Holly Gaff (Mathematics) and Jenifer Alonzo (Communication and Theater Arts)** will be presenting "Communication in Collaboration: Learning to Lead Collaborative Groups" at the University of Tennessee, Knoxville on July 29-30, 2012. This is a project of the Interdisciplinary Communication Laboratory for Undergraduate Biology (iCLUB), a National Science Foundation funded RCN-UBE Incubator. [http://www.nimbios.org/workshops/WS\\_communication](http://www.nimbios.org/workshops/WS_communication)

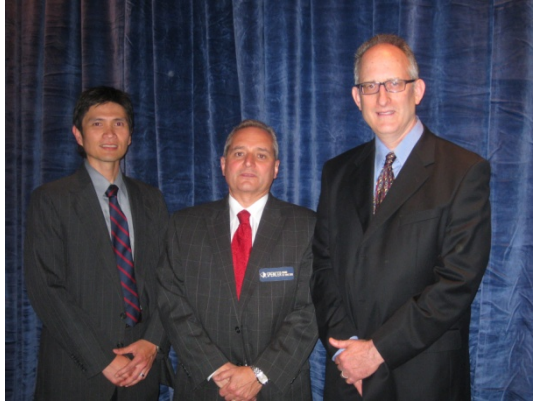
**Lisa Horth (Department of Biology) and Iordanka Panayotova (Department of Math & Statistics)** are developing a model that incorporates global climate change in addition to potential effects from oil spills on the persistence of rare fish genotypes. Preliminary results demonstrate some important effects on rare genotypes, even when a species is found in high abundance.

**Poornima Madhavan (Department of Psychology)** recently became a member of the newly established Social Science Action Team of the Chesapeake Bay Program's Management Board (through her participation on the Scientific and Technical Advisory Committee). As more and more focus is directed towards the human dimensions component of Bay restoration, this Team aims to showcase social science projects to the Bay community, as well as increase the awareness and demonstrate the value of social science to the Bay Program.

**Michael McShane (Insurance and Financial Services Center)** will be the faculty host for CCLRI Visiting Scholar - Diane Horn. Dr. Horn, Department of Geography, Environment and Development Studies, Birkbeck College, University of London will be a CCLRI Visiting Scholar at ODU in Spring 2013. She is collaborating with Dr. McShane on a comparison of flood insurance policy in the UK and USA.

**Ariel Pinto (Engineering Management and Systems Engineering) and Michael McShane** received a grant from FM Global (<http://www.fmglobal.com/>) to develop instructional modules in Loss Prevention & Control. FM Global is a U.S.-based insurance company, with offices worldwide, which specializes in loss prevention services primarily to large corporations. The company uses a non-traditional model whereby risk is determined by engineering analysis centered on the notion that significant losses can be prevented by sound engineering practices.





Picture (L-R): Ariel Pinto, Brion Callori. Sr. Vice President Engineering and Research at FM Global, and Michael McShane

**Ariel Pinto and Larry Atkinson (Ocean, Earth and Atmospheric Sciences)** are PIs, together with Ben McFarlane of the Hampton Roads Planning District Commission and Troy Hartley of the Virginia Sea Grant, on a 2-year project entitled, “*Hampton Roads Adaptation Forum: Knowledge Management Network to Spur Innovation and Adoption of Adaptation Best Practices.*” Funded in April 2012 by the National Sea Grant, the project will address the Hampton Roads climate adaptation challenge, by assembling a local community-university team to build adaptation capacity by:

- Supplying the knowledge management system and facilitative services for the Hampton Roads Adaptation Forum that enhances information sharing and effective, efficient community adaptation responses and improves the capacity of coastal communities;
- Identifying and addressing the greatest risks and vulnerabilities in specific sub-systems within Hampton Roads, with feasible, widely adoptable solutions;
- Producing demonstrable outcomes through enhanced knowledge management and on-the ground adaptation activities by local authorities that directly contribute to community adaptation activities;
- Fostering and building a comprehensive adaptation response in Hampton Roads that facilitates and promotes local-state-Federal synchronization.

Other participants from ODU include: **Poornima Madhavan (Psychology)**, **David Pezza (Civil and Environmental Engineering)**, **Burton St. John (Communications)**, **Jenifer Alonzo (Communications)**, **Max Siangchokyoo (Engineering Management and Systems Engineering)**, and **Liz Smith (Ocean, Earth and Atmospheric Sciences)**. <http://ww2.odu.edu/ao/ia/insideodu/20120628/topstory1.php>

**Liz Smith (OEAS and CCLRI Coordinator)** was the invited speaker at the League of Women Voters South Hampton Roads luncheon on July 26, 2012. The title of her remarks, “A Primer on Sea Level Rise in Hampton Roads.”

**John Klinck (OEAS/CCPO)** is part of a group including researchers at Ohio State and New York University studying ice melt in the Antarctic. They are modeling the multi-disciplinary processes impacting the Antarctic Ice Sheet. Understanding the mass balance of the Antarctic Ice Sheet is critical for projecting global sea-level change. The Antarctic Ice Sheet also responds to climate phenomena with signatures on the decadal time scale, such as the El Niño-Southern Oscillation, the Southern Annular Mode, and the Pacific Decadal Oscillation. Important mesoscale phenomena in the atmosphere and ocean deliver heat

to the bottom of the floating Antarctic ice shelves, such as those in the Amundsen Sea embayment. Therefore, a mesoscale approach is required to treat the system processes that melt Antarctic ice shelves. Several students have traveled to the Antarctic with the project.

## Recent Events

**Dr. Kathryn Sullivan**, the Assistant Secretary of Commerce and Deputy Administrator for the National Oceanic and Atmospheric Administration (NOAA), told an Old Dominion forum audience on June 7 that she is "tremendously impressed by the fusion of expertise" brought together by the university's Climate Change and Sea Level Rise Initiative. ODU presentations at the campus forum were:

- *Human Dimensions in Public Engagement and Support for Environmental Resiliency Policies* by **Poornima Madhavan** (Psychology), **Maura Hametz** (History), **Leona Tam** (Marketing) and **Cynthia Tomovic** (STEM Education)
- *Scientific Awareness Through Theatre: Inspiring Young People to Value Scientific Practice as We Adapt to Sea Level Rise and Climate Change* by **Jenifer Alonzo** (Communication and Theatre Arts), **Victoria Hill** and **Fred Dobbs** (Ocean, Earth and Atmospheric Sciences) and **Amy Adcock** (STEM Education)
- *College of Engineering Outreach* by **David Pezza** (Civil and Environmental Engineering)
- *Quantifying Risk and Resilience to Prioritize Flooding Mitigation Projects in Urban Coastal Environments* by **David Basco** (Civil and Environmental Engineering) .

From Inside ODU June 14, 2012 - <http://ww2.odu.edu/ao/ia/insideodu/20120614/topstory5.php>

**Extreme Climate Events and the Urban Coast** - **Larry Atkinson** and **Jenifer Alonzo** attended a forum at Stevens Institute in May. The meeting was a great opportunity to network with leaders in climate change adaptation in New York, Boston and Philadelphia. The meeting confirmed the effectiveness of our broad interdisciplinary approach. The meeting was hosted by the Consortium for Climate Risk in the Urban Northeast (<http://www.ccrun.org/>). We are working on joining that consortium.

At its July 19<sup>th</sup> quarterly meeting, the **Hampton Roads Planning District Commission** approved the final report entitled, "*Climate Change in Hampton Roads: Phase III – Sea Level Rise in Hampton Roads, Virginia.*" This report provides a summary of the third and final year of the Hampton Roads Planning District Commission's Climate Change Adaptation project, funded by the VA Coastal Zone Management Program. That report can be downloaded here:

[http://www.hrpdc.org/Documents/Phys%20Planning/2012/HRPDC\\_ClimateChangeReport2012\\_Full\\_Reduced.pdf](http://www.hrpdc.org/Documents/Phys%20Planning/2012/HRPDC_ClimateChangeReport2012_Full_Reduced.pdf)

## Funding Opportunities

NASA Solicitation and Proposal Integrated Review and Evaluation System (NSPIRES) research announcement: **Development and Testing of Potential Indicators for the National Climate Assessment:** <http://nspires.nasaprs.com/external/viewrepositorydocument/cmdocumentid=332904/solicitationId=%7B8AC220BE-64D7-415C-C527->

[AE3E843C8D12%7D/viewSolicitationDocument=1/A.47%20INCA%20Amend%2010.pdf](http://www.odu.edu/~latkinso/odupdf/AE3E843C8D12%7D/viewSolicitationDocument=1/A.47%20INCA%20Amend%2010.pdf) Letters of Intent are due August 3<sup>rd</sup>, 2012 and full proposals will be due on October 5<sup>th</sup>, 2012. ODU will be submitting a proposal; please contact Larry Atkinson if you would like to participate (latkinso@odu.edu).

**Belmont Forum Coastal Vulnerability** letter of intent - During the meeting Stevens Institute of Technology (Hoboken, NJ) meeting we met with Hans-Peter Plag (Stevens and UV Reno) who invited ODU to join in a letter of intent to an announcement (<http://igfagcr.org/index.php/coastal-vulnerability-call>). The title of the proposed project is *Climate Vulnerability of Urban Coasts: An Evidence-Based Best Approach to Prioritizing Adaptation*. This puts ODU into a group with leaders from the UK, Germany and the US. If requested, a full proposal will be due September 20<sup>th</sup>, 2012.

**Roger Harvey and KC Filippino (both of Ocean, Earth and Atmospheric Sciences)** and colleagues from OEAS are preparing an NSF proposal to the Research Experiences for Undergraduates program to focus on Climate Change. Full proposals are due September 12<sup>th</sup>, 2012. The PIs would like to invite CCLRI faculty from the social sciences, business, engineering and communications to participate as guest lecturers. The program would take place for 10 weeks each May, June and July in 2013-2015.

## Upcoming Events

**August 28<sup>th</sup>-30<sup>th</sup>** – **Joint Conference of Harbor Safety Committees and Area Maritime Security Committees. *America's Maritime Infrastructure: Investing for Safety, Security and Prosperity.*** Pittsburgh, PA <http://www.cvent.com/events/joint-conference-of-harbor-safety-committees-and-area-maritime-security-committees/event-summary-d78f581337fc41ffbdb2633da5404de5.aspx>

**October 14<sup>th</sup>-19<sup>th</sup>** – **Oceans'12 Marine Technology Society/IEEE Hampton Roads: *Harnessing the Power of the Ocean.*** Virginia Beach Convention Center, Virginia Beach, VA. As Host University for this important conference, ODU is facilitating exhibit booth space and funding support for faculty and students. A workshop on coastal vulnerability is planned.  
<http://www.oceans12mtsieeehamptonroads.org/>

**October 22<sup>nd</sup>-24<sup>th</sup>** – **Office of Naval Research Biennial Naval Science & Technology Partnership Conference.** Hyatt Regency Crystal City in Arlington, VA. Goal is to improve access to program staff, ONR will reintroduce "Pitch a Principal" which allows members of industry and academia to request one-on-one meetings with ONR decision makers to pitch proposal ideas for possible collaboration or development. Those interested in participating can submit a request through the conference website, and all pitches will be considered. For those selected, dates and times will be scheduled with the relevant ONR program officers. <http://www.onr.navy.mil/en/Conference-Event-ONR/science-technology-partnership.aspx>

## Interdisciplinary Research

The CCLRI is one of several Interdisciplinary Research (IDR) projects at ODU. Since the terminology is confusing here is some information on IDR published by the National Academy ([Facilitating Interdisciplinary Research](#) (2004) that you might find interesting.

First, some definitions:

**Types of Academic Structures**  
(From least to most integrated)



**Unidisciplinary** – A process in which researchers from a single discipline work together to address a common research problem. *(A single piece of fruit, like an orange.)*

**Multidisciplinary** – A sequential process whereby researchers in different disciplines work independently, each from his or her own discipline-specific perspective, with a goal of eventually combining efforts to address a common research problem. *(A fruit salad, which includes oranges and other types of fruit.)*

**Interdisciplinary** – An interactive process in which researchers work jointly, each drawing from his or her own discipline-specific perspective to address a common research problem. *(A fruit smoothie, as different ingredients combine and change form.)*

**Transdisciplinary** – An integrative process in which researchers work jointly to develop and use a shared conceptual framework that synthesizes and extends discipline-specific theories, concepts, methods, or all three to create new models and language to address a common research problem. *(The metaphor for this group is a new fusion cuisine that might include a fruit smoothie as part of the meal.)*

Here are examples of what Universities can do:

- Provide more flexibility in promotion and tenure procedures, recognizing that the contributions of a person in IDR may need to be evaluated differently from those of a person in a single-discipline project.
- Establish interdisciplinary review committees to evaluate faculty who are conducting IDR.
- Extend the venue for tenure review of interdisciplinary scholars beyond the department.
- Increase recognition of co-principal investigators' research activities during promotion and tenure decisions.
- Develop mechanisms to evaluate the contribution of each member of an IDR team.
- Establish institutional advisory committees of researchers successful in IDR to evaluate new proposals prior to implementation.
- Require regular reviews of IDR centers and institutes and establish sunset provisions, where appropriate, when they are initiated.
- Give high priority to recruitment of appropriate faculty and other researchers whose focus is interdisciplinary; this can be accomplished in part by allocating substantial resources to centrally funded, multi-departmental hiring of faculty and postdoctoral scholars and admission of graduate students.
- Coordinate hiring across departments and centers to maximize collaborative research and teaching possibilities.
- Develop joint IDR programs and internships with industry.
- Allow for the longer startup time required by some IDR programs.
- Gather information about the extent, quality, and importance of IDR in the institution and make the information available to faculty.
- Provide mechanisms to build a community of interdisciplinary scholars across the institution similar to the community that is in a department.

Old Dominion University already has in place policies and seed funding that encourage IDR. The Offices of Academic Affairs and Research are working toward implementation of several of the other examples listed. This Newsletter is one approach to gathering and disseminating information about the extent of

ODU's IDR activities that are related to the Climate Change and Sea Level Rise Initiative. We encourage you to contribute a short summary of your CCSLRI-related work for future editions of the Newsletter.