

# Sea Level Rise and Inundation Workshop

## What? So What? Now What?

**Oceans 2012 Conference, Virginia Beach, VA  
1230 to 1700 on 15 October 2012**

### SESSION I – WHAT?

#### **Why Does Sea Level Rise? The Components of Relative Sea Level Rise**

**Description:** What’s involved with sea level rise and why does sea level rise? This panel will explain and discuss the various factors that contribute to the relative sea level rise that is occurring in the Middle Atlantic region.

Several factors contribute to sea level rise as seen by a person on land in the Mid-Atlantic region, called relative sea level rise. One factor is that the global ocean volume expands as the water temperature increases with global climate change and additional freshwater enters the ocean from melting of ice caps and glaciers. However, this rise is not evenly distributed around the globe because of global ocean circulation patterns and gravity factors. The land surface is also subsiding regionally because of isostatic changes taking place since the end of the last Ice Age. Subsidence has been much greater in some local areas because groundwater is being removed for drinking water.

<b>Why the global ocean sea level rises</b>	<b>Volume changes and circulation factors –</b> Describes the factors that affect ocean volume and circulation that cause the sea level to rise. Factors discussed include thermal expansion of the water, new water inputs from melting of glaciers and ice caps, and global ocean circulation patterns that can result in regional differences in the amount of sea level rise.	Dr. John Boon Virginia Institute of Marine Science Gloucester, VA
<b>Why the land subsides in the Middle Atlantic region</b>	<b>USGS regional subsidence study –</b> Describes why and how much the Mid-Atlantic region is subsiding and discusses how local activities such as ground water withdrawal can also affect local subsidence rates.	Dr. Milan Pavich US Geological Survey Reston, VA (Subject to confirmation)
<b>How storm frequency and intensity could change</b>	<b>The effect of global climate change on hurricane intensity and frequency -</b> How will the frequency of the most intense Atlantic hurricanes change in the current century due to human-caused climate change? <a href="http://www.gfdl.noaa.gov/21st-century-projections-of-intense-hurricanes/">http://www.gfdl.noaa.gov/21st-century-projections-of-intense-hurricanes/</a>	Dr. Robert Tuleya Old Dominion University Norfolk, VA

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### SESSION II – SO WHAT?

#### **Tools and Methods for Determining the Societal Effects of Sea Level Rise**

**Description:** So what if sea level rises? Does it matter? This panel will describe and demonstrate some tools and methods that are now available to forecast and analyze the possible societal effects that could occur with higher sea levels.

Rising sea level will flood areas now dry land and will create a new shoreline. Nor'easter storms and hurricane storm surge that occur with higher sea levels will flood areas not now flooded during these events. Storm intensity, frequency, duration, and tracks could change as the global climate changes. Infrastructure and society will be affected by flooding changes. Elected officials, planners, citizens, and all decision makers need actionable information about how flooding could change in the future and what could be affected by the flooding. This information is needed to determine the possible infrastructure and societal effects that is needed to determine what to do about it.

<b>How to map flooding from sea level rise</b>	<b>Mapping tool and techniques for visualizing coastal flooding from sea-level rise</b> - Showing a map that visualizes the potential height and inland extent of water is a very effective way to illustrate the impacts and consequences of sea level rise. NOAA has developed a next-generation sea level rise and coastal flooding viewer based on lessons learned from investigating pilot sea level change mapping applications. Presents a brief history of previous sea level change visualization pilot projects and demonstrates a new NOAA method - <i>the Sea Level Rise and Coastal Flooding Impacts Viewer</i> .	Mr. Doug Marcy Coastal Hazards Specialist NOAA Coastal Services Center Charleston, SC
<b>How to forecast and show storm surge flooding at high resolution with sea level rise</b>	<b>The Chesapeake Inundation Prediction System</b> – Demonstrates the capabilities now available to forecast at 10-meter resolution the land area that could be flooded by storm surge with higher sea levels in the future.	Dr. Harry Wang Virginia Institute of Marine Science Gloucester, VA
<b>How to identify and analyze societal effects of sea level rise</b>	<b>Analyzing Sea Level Rise Societal Effects in the Hampton Roads, Virginia, Region</b> – Presents the results of an analysis of the possible effects of sea level rise on the built environment, infrastructure, the economy, and the natural environment.	Mr. Ben McFarlane, Planner, Hampton Roads Planning District Commission Chesapeake, VA

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	<p><b>Analyzing storm surge and sea level rise societal effects on Sarasota County, FL</b> – Shows the method used for and presents the results of a workshop at which various types of stakeholder groups in Sarasota County, FL analyzed maps of projected storm surge flooding with several levels of sea level rise to determine what would be the effect of the flooding on the subject area of each stakeholder group and what might be done about it.</p>	<p>Dr. Tim Frazier University of Idaho Moscow, ID</p>
<p><b>How to measure the risk involved</b></p>	<p><b>Quantifying risk for sustaining coastal military assets and mission capabilities</b> - Demonstrates an example of an integrated, multi-criteria, multi-hazard risk assessment framework that can be used to evaluate changes in risks from sea level rise and associated phenomena. The method was developed and applied to coastal military installation assets and mission capabilities in the Hampton Roads, VA region and focuses on Naval Base Norfolk, which is the largest navy base in the world.</p>	<p>Ms Kelly Burks-Copes Engineer Research and Development Center US Army Corps of Engineers Vicksburg, MS</p>

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### SESSION III – NOW WHAT?

#### **Responding and Adapting to the Impacts of Sea Level Rise**

**Description:** So how do we respond to the forecast societal effects of sea level rise? This session will illustrate how some local jurisdictions, states, and the insurance industry are taking action now to respond and adapt to forecast effects of sea level rise as actionable information becomes available.

Elected officials, officers of public and private sector agencies and organizations, and individual citizens will need to take action to respond to the forecast effects of sea level rise that will affect their interests, responsibilities, property, and infrastructure. Some are beginning to take action now. Others are still evaluating the issue to see if and when action may be required. However, it is inevitable that at some point in the future all will need to decide what to do.

<b>How to work with the public to help identify the best way to adapt to sea level rise</b>	<b>Virginia Legislators’ Knowledge, Awareness, and Perceived Risks of Sea Level Rise</b> - Presents policy viewpoints among Virginia’s leaders concerning sea level rise. In particular, this study has surveyed Virginia’s state legislators’ understandings of sea level rise facts and risks, credibility of sea level rise information sources, and potential effective policy options.	Dr. Burton St. John Department of Communication & Theater Arts Old Dominion University Norfolk, VA
	<b>Hampton Roads Adaptation Forum</b> – Describes establishing a knowledge management network to spur innovation and help determine and adopt best practices for adapting to sea level rise.	Mr. Ben McFarlane, Planner Hampton Roads Planning District Commission Chesapeake, VA
<b>What a city is doing to prepare for sea level rise</b>	<b>Norfolk, VA: Comprehensive Flooding Strategy for a Hotspot</b> - The City of Norfolk has been working actively to mitigate flooding city-wide.	Mr. John White, P.E. (Invited) Department of Public Works Norfolk, VA
<b>What a state is doing to understand the effects of sea level rise</b>	<b>North Carolina Sea Level Rise Impact Study</b> – Presents the results of assessing the potential flood consequences of sea-level rise and changes in storminess associated with climate change in coastal North Carolina. The study goal is to inform policymakers about the potential impacts of sea level rise and contribute information that can help develop policies to deal with and adapt to what could happen.	NC Office of Geospatial and Technology Management (invited) Raleigh, NC