

# Increased Flooding Risk in Hampton Roads

How does an urban region like Norfolk adapt to the increased risk of flooding due to sea level rise and climate change?

Role of Old Dominion University

February 16, 2012

# President Broderick provided focus to our initiative and fully supports it

- We must take the increased risk seriously
- We live in a climate science fishbowl here in Hampton Roads
- I put my full support behind our University supporting action this region must take.



# ODU's Goals

- Known for research and education on response to climate change and increased flooding risk
- Focus: move beyond calling attention to the science toward engaging the public
- Effective Communication
- Research on topics of need and interest.



# Internally funded proposals \$250k

- The Disparate Impacts on Underserved Populations
- Public Engagement for Resiliency Policies
- A Decision-Support Model
- Scientific Awareness Through Theatre
- Virginia Legislators' Knowledge Concerning Sea Level Rise



# Research

- Local Climate Change Data
- SLR Impacts on Water-Shoreline Interface
- Innovative Infrastructure Alternatives
- Regional Physical Models
- Economic Impacts of SLR
- Human Response to SLR
- Decision Making Tools for SLR

# Engineering Research Forums

- Support the Hampton Roads Planning District Commission's efforts to assess impacts of rising levels on the region
- Establish a network with regional expertise to develop a framework to understand the impacts of sea level rise on infrastructure and the regional economy
- Identify research, workshops and other activities in support of the framework



# Forum Objectives

- Support the Hampton Roads Planning District Commission's efforts to assess impacts of rising levels on the region
- Establish a network with regional expertise to develop a framework to understand the impacts of sea level rise on infrastructure and the regional economy
- Identify research, workshops and other activities in support of the framework

# More Workshops

- Drainage Systems
- Tide Gauge Data Sharing
- Survey Monument Systems
- Mapping Requirements
- Regional and Local Subsidence
- Adaptive Management
- Risk Management
- Risk Based Design

# New hires

- Coastal engineer
- Senior coastal hazards sea level rise scientist-possibly more than one
- Project coordinator

# Raising Public Awareness

- “Navy's Top Oceanographer Speaking at ODU on Climate Change” Public forum –
- “Land sinking and seas rising” editorial
- “Front-Line City in Virginia Tackles Rise in Sea” NYT.
- “Rising Seas, Climate Change & the Virginia Coast” *On Point - NPR*



# ODU Feb 20 Forum Event

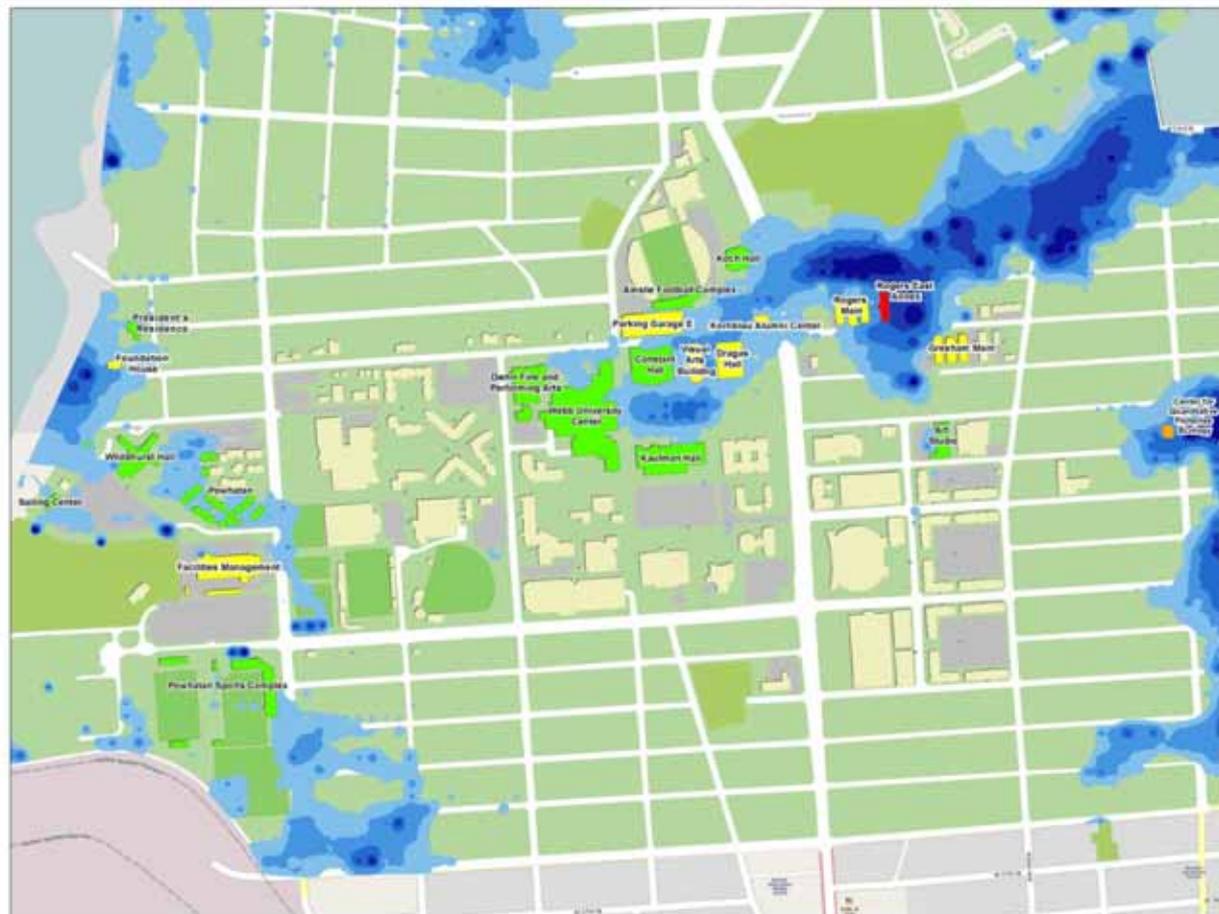
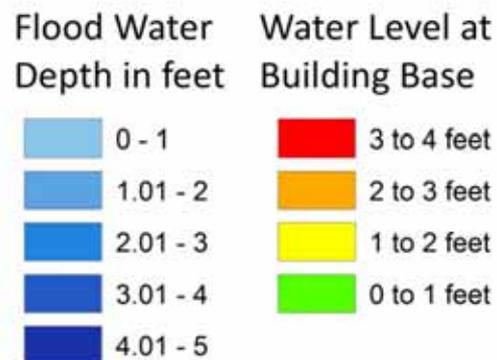


- Lindene Patton - Chief Climate Product Officer, Zurich Financial Services
  - Mitigating Climate Risk
  - Climate Change Product Development
  - Regulation/Litigation of Climate Issues
- 7 PM at the TED

# ODU Emergency Management and GIS group products



Area Shown at right



CONDITIONS MAY VARY WIDELY FROM THIS MAP AS STORM DETAILS CHANGE.



## Hurricane Irene Storm Surge Building Vulnerability

NWS MODEL, Category II, NNE Storm Track, 10 mph speed, High tide  
Last revised, Thursday August 25th 9pm

**GEOEOTIC PARAMETERS**  
Datum: Coordinate System: NAD 1983 StatePlane Virginia Zone 1802 Feet  
Projection: Lambert Conformal Conic  
Linear Unit: Feet\_US

Surge Water Generated using SLOSH  
with nested resolution of 4 - 20ft  
Topographic elevation data source: SRTM



GIS Project #  
**20**

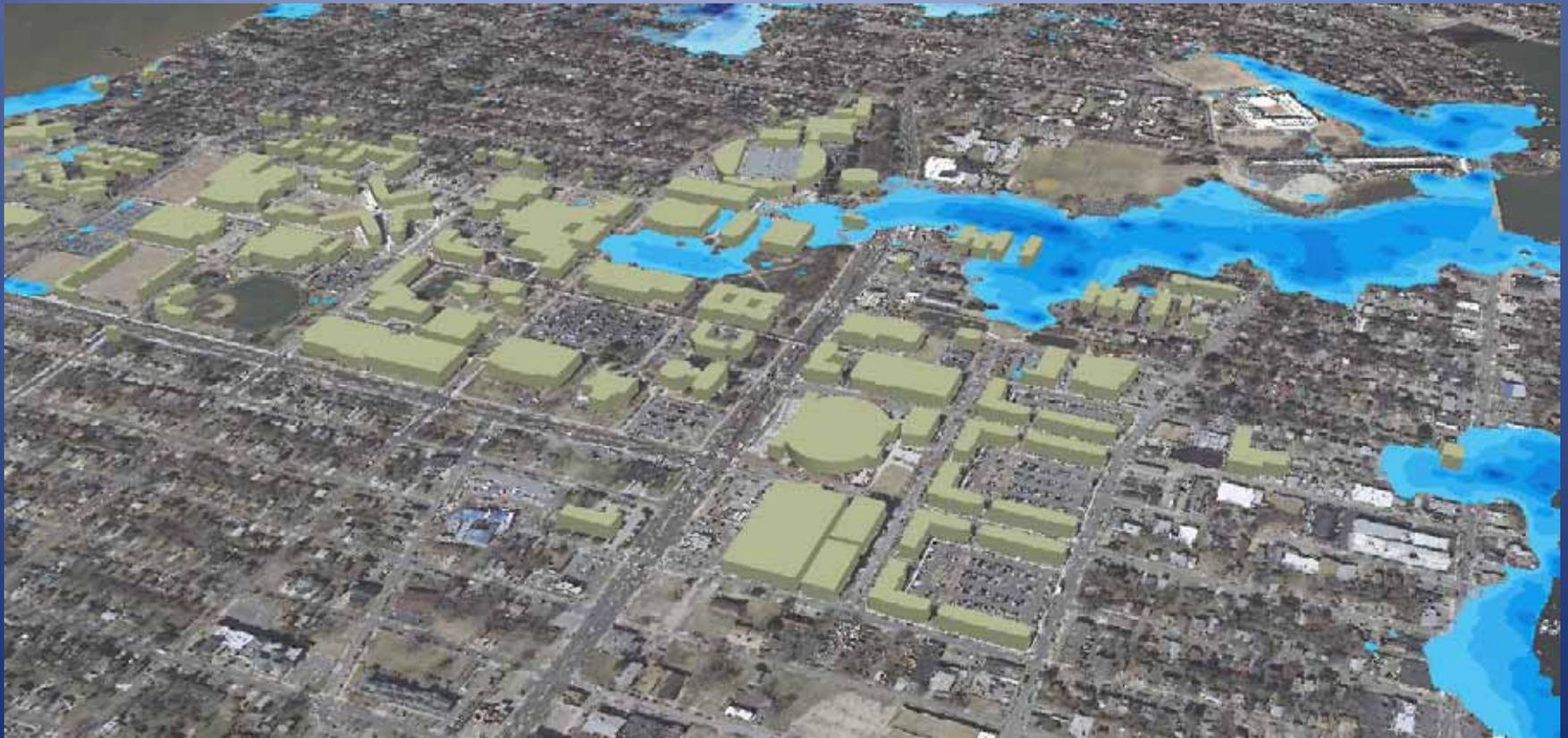
for ODU Emergency Management

Drawn By: ODU GIS (OCCS), G. McLeod

Checked by: G. McLeod

Date: 08.25.11

# 3D Models of Flooding Scenarios



# ODU Summary

- Public engagement – forums, etc
- Research – regional and beyond
- Internal planning and management
- Education

20 years from now

New York Times (on-line edition)

Hampton Roads is clearly the one region in the US that planned for and is managing the increased flooding we have seen the past decade.

Everyone should have done what they have done.

[ODU wants to be part of that success]

# ODU Climate Change and Sea Level Rise Initiative



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