Commonwealth Center for Recurrent Flooding Resiliency

Joint Subcommittee on Coastal Flooding
June 20, 2018

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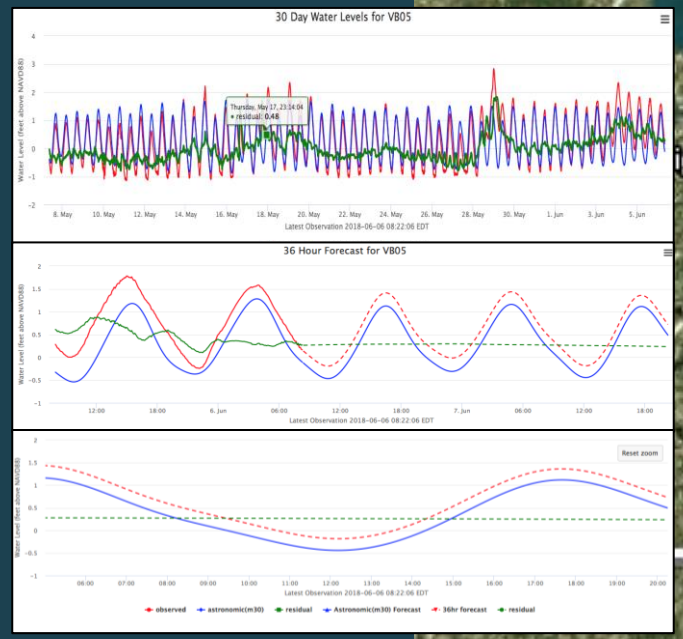
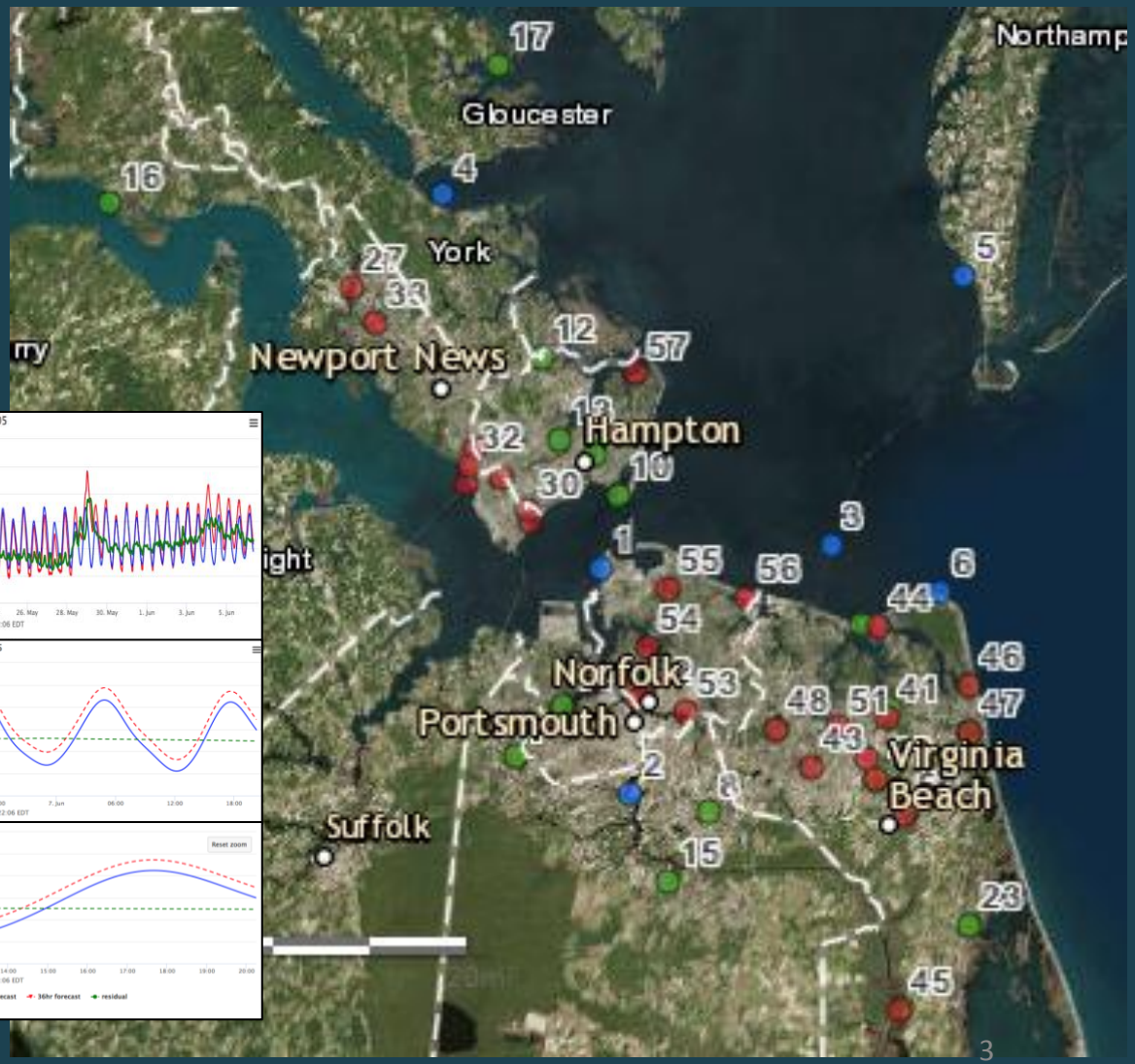
Outline

1. Project Updates
2. On the horizon
3. Discussion

Water Level Sensors

- Receiving data from all 54 tide gauges or other water-level sensors in Hampton Roads.
- 16 stations currently visible on the VIMS Tidewatch webpage.
- 28 others are live streaming water level data.
- 10 are in the early stage of data validation.
- Working with local governments to install more sensors and will add those data to our live web stream as they become available



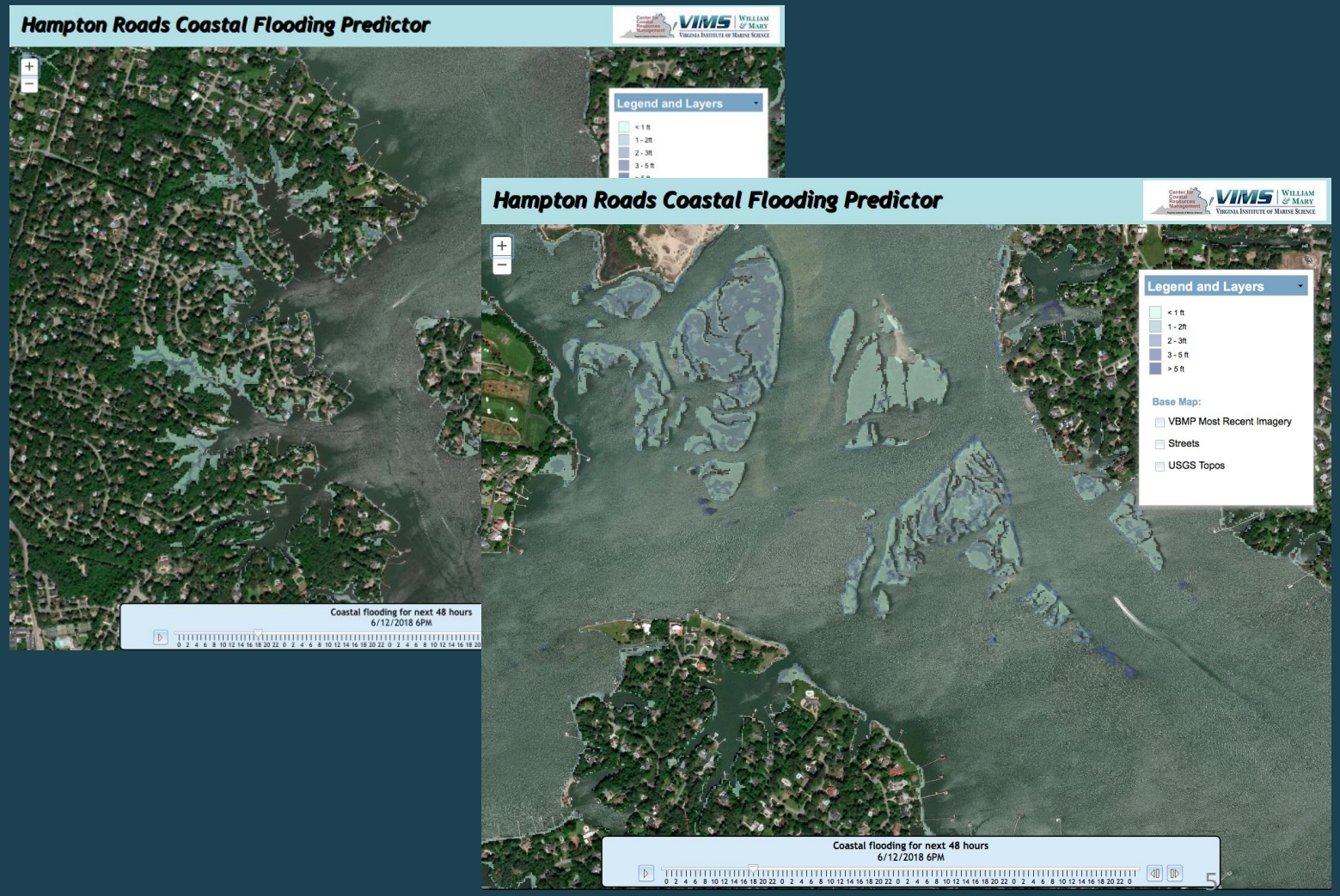


StormSense

- Enhance our ability to predict flooding resulting from storm surge, rain, and tides.
- Leveraging CCRFR funds: $[illegible],[illegible] in federal and private support (NIST, NDRC, Amazon, etc) to the Hampton Roads region
  - Installation of additional water level sensors
  - Data Management
- Next: Will be used in automated flood alerts that improve a localities' scores in the Community Rating System.

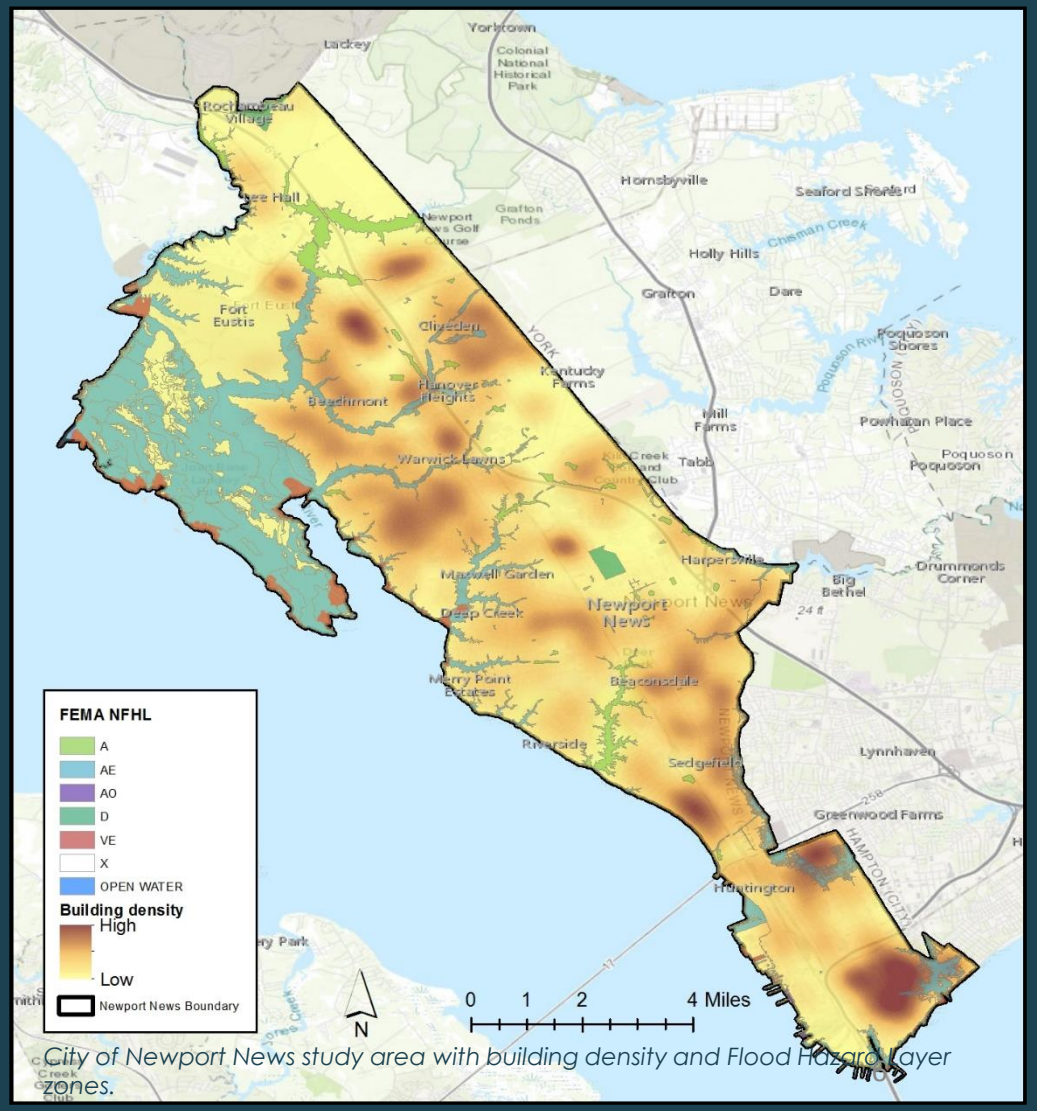
Hampton Roads Coastal Flood Predictor Tool

- Allows users to zoom into any area of HR and view predicted flooding in a local area
- Start-of-the-art model validated by water-level gauges and crowd sourced data.
- Improvements in visualization still underway



Collaborating with VDEM

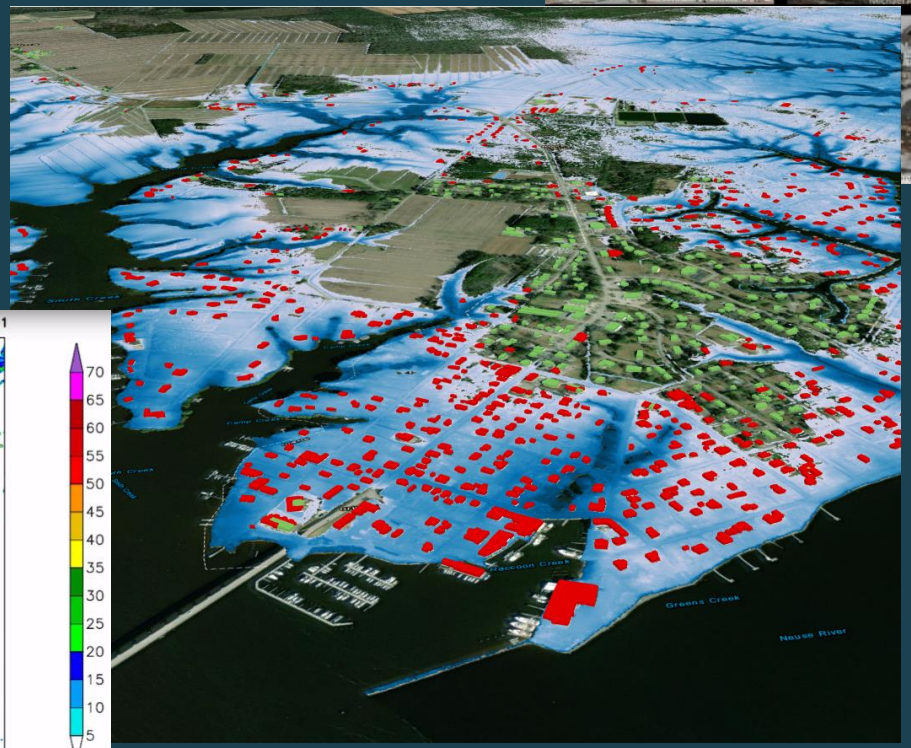
- Develop of hi-res Flood Depth Grids for Guidance in Building-Level Damage Assessments in Newport News, VA (pilot area), for IFLOWS

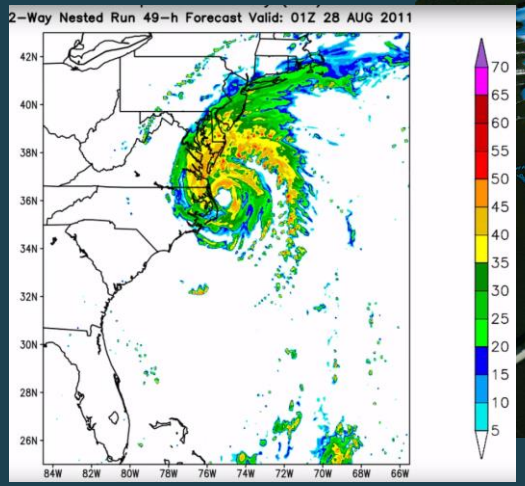


City of Newport News study area with building density and Flood Hazard Layer zones.

NASA Communities at Intensive Risk

- Reanalysis of Hurricane Irene 2011 in VA and NC at http://arcg.is/0qlyn0
- Demo GIS and integration for flood imapcts from storm surge models using VIMS SCHISM, satellite SAR, and LiDar elevations, in addition to local data and stakeholder engagement





Housing Prices & Time on Market

- ODU Economics faculty studied **the impact of Nor'Ida (2009) and Hurricane Irene (2011) on housing prices and the time on market** of residential properties in Hampton Roads using VIMS flood modeling and MLS data.
- Housing **prices of properties in 500-year flood plain fell by 7%** and this decrease lasted for 5 years.
- Homes in a the **100-year flood plan remained on the market 5-8 days longer**

Table 2: Selected Summary Statistics		
Variables	Non-NFIP Flood Zone	NFIP Flood Zone
	Mean	Mean
Sales Price (dollars)	228,989	238,754
Full Baths	1.933	1.928
Half Baths	0.519	0.493
Bedrooms	3.273	3.188
Colonial	0.058	0.081
Contemporary	0.092	0.117
Ranch	0.303	0.227
Townhouse	0.136	0.096
Traditional	0.200	0.204
Age	36.69	43.93
New Construction	0.128	0.112
Short Sale	0.053	0.049
REO	0.127	0.125
Waterfront	-	0.164
100 Year Flood Zone	-	0.474
500 Year Flood Zone	-	0.526
Notes: The summary statistics are for 144,794 observations from January 1, 2007 to December 31, 2016.		

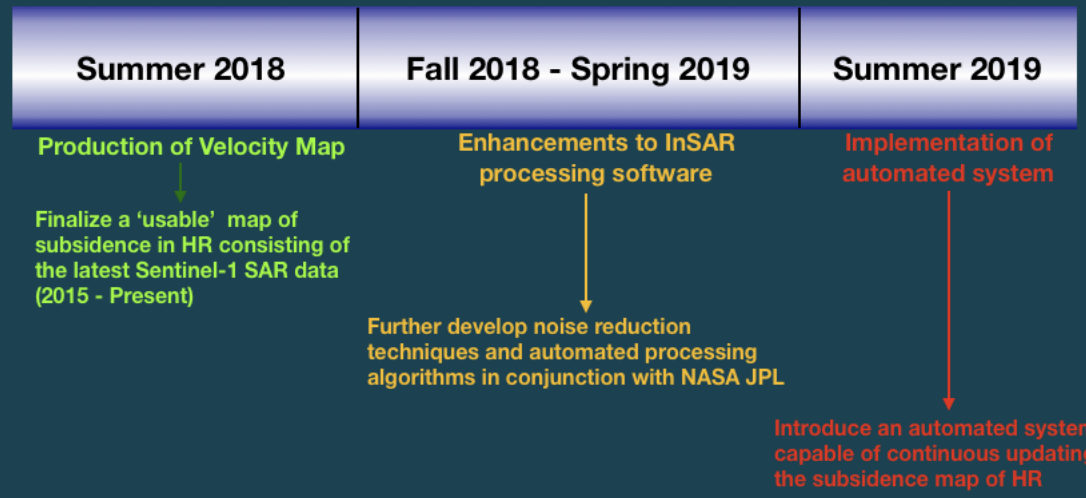
Resilience Impacts of Changing Building Practices

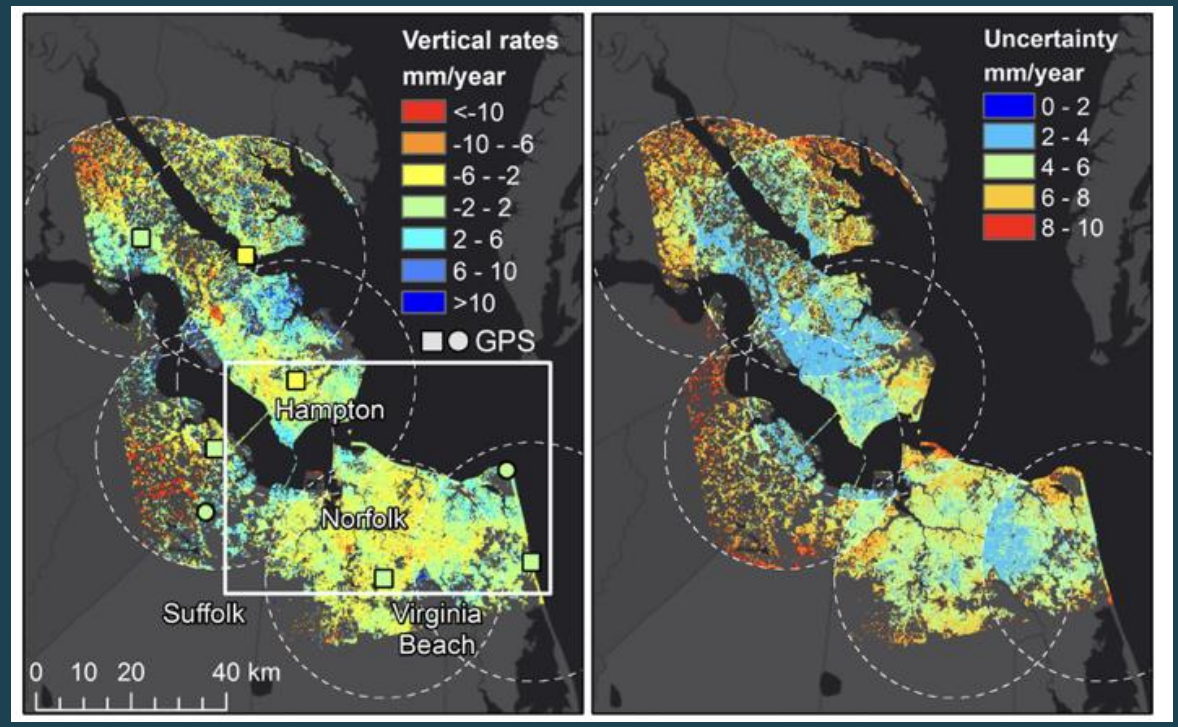
- Analysis of ROI and social, political, financial hurdles to adoption
  1. **Flood Vents**
  2. **Clustered Green Space Buy-outs,**
  3. **Raising Structures**
- Flood vents very rarely eliminate full impact to structure
- Buyouts have varying ROI (including displaced populations and health benefits) depending on targeting strategy

- **Next:**
  - Report on prelim results including policy
  - Listening sessions with localities and building community

Subsidence Monitoring & Mapping

- NASA JPL, USGS, HRSD Swift coordination and partnerships
- Great spatial variability
- The growing Sentinel-1 dataset is capable of reducing uncertainties





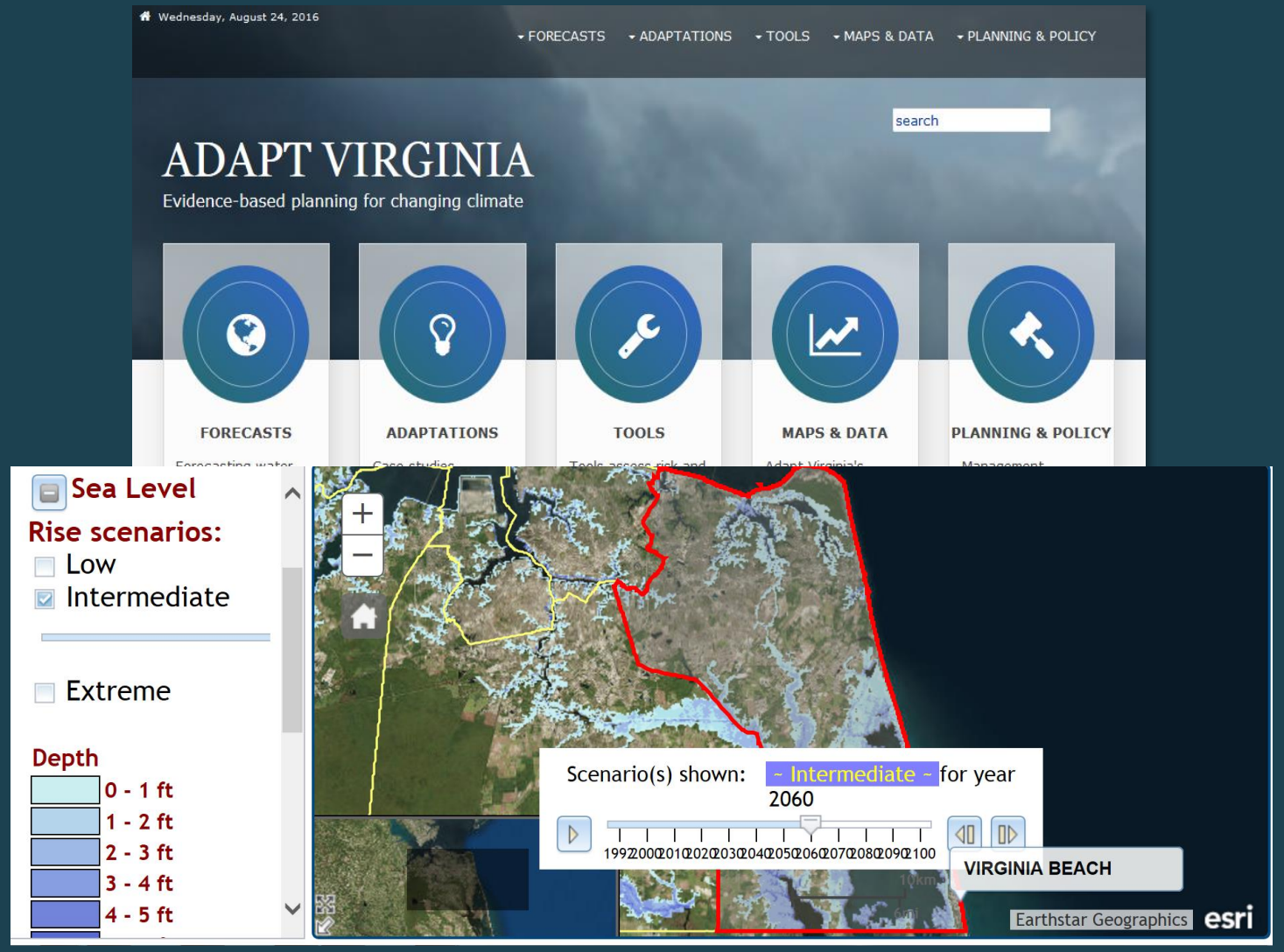
Subsidence rate-map (left) and corresponding uncertainties (right) as estimated from historic (Sept 2007-Feb 2011) ALOS SAR data

Tourism Resilience Workshops

- Workshops in Virginia Beach & Williamsburg (Feb 2018)
  - Target: Small Businesses
  - Attendees: Associations
- Continued outreach to business groups
- Online assessment: **bit.ly/Tourism_Resilience**

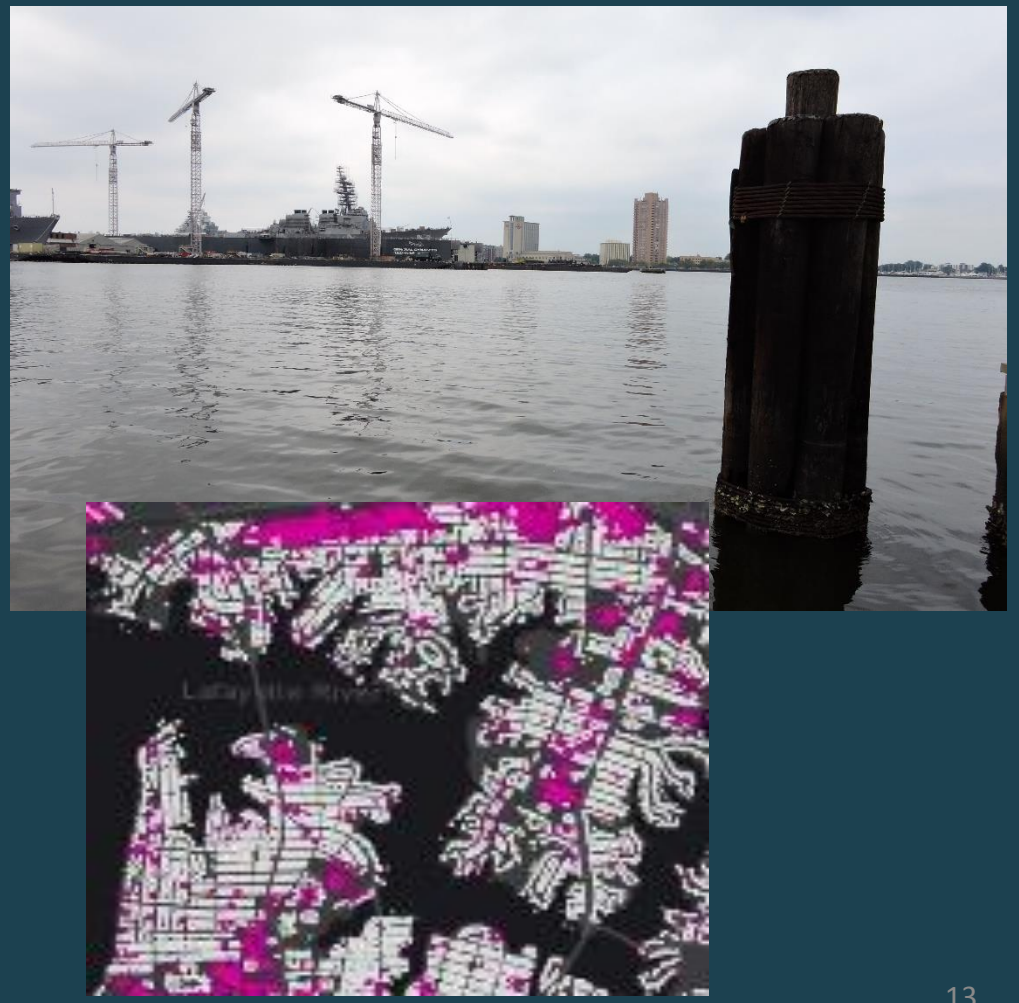
Adapt Virginia

- www.adaptva.org
- Adapt Virginia "Data Portal" provides forecasts, adaptation case studies, tools, maps, data, and planning and policy options in one location.
- Partnership with DCR Floodplain Management, Wetlands Watch, VCPC, and others
- Living tool – continuing updates for usability and to feature new case studies, local ordinances, research, etc

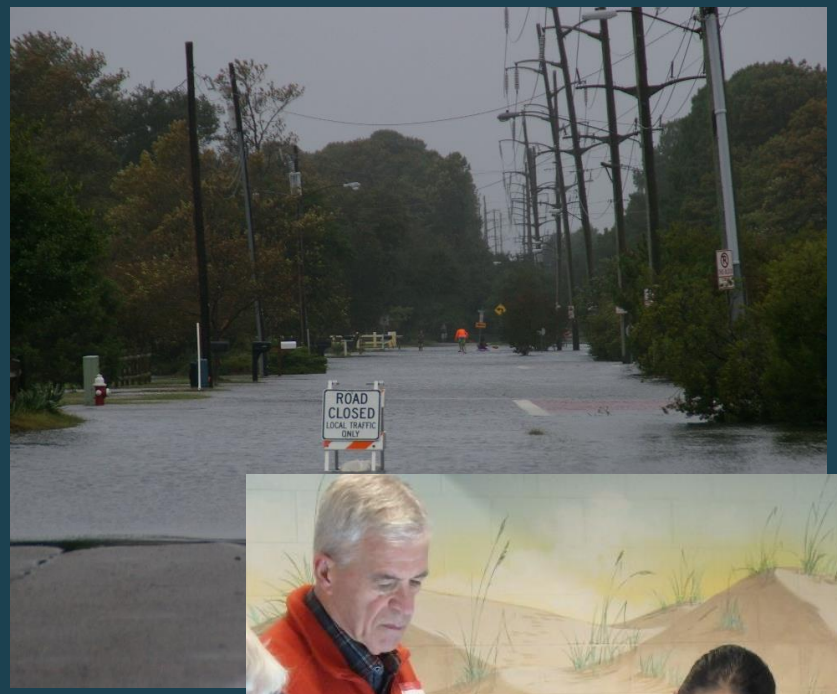


Other Ongoing Initiatives

- New legal & policy analysis and white papers: https://law.wm.edu/academics/programs/jd/electives/clinics/vacoastal/reports/index.php
- **Save the Date:** Annual VCPC fall conference "Building A Resilient Virginia" Friday, Nov. 2, 2018 at the William & Mary School of Education
- Analysis of septic issues and recurrent flooding
- Resilience Guide development
- Collaborations with RISE



2018-2019 Priorities



- Continue outreach and engagement
  - Respond to and prioritize needs
- Further development of signature initiatives:
  - TideWatch & StormSense
  - Economic Impacts & Opportunities
  - Subsidence Monitoring
- Leverage resources through partnerships & grants

Discussion

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