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Commonwealth Center for Recurrent Flooding Resiliency: An Update


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Commonwealth Center for Recurrent Flooding Resiliency: An Update

Joint Subcommittee on Coastal Flooding, October 17th, 2016

Dr. Morris Foster, ODU

Dr. John Wells, VIMS



**WILLIAM & MARY
LAW SCHOOL**

VIRGINIA COASTAL POLICY CENTER

**OLD DOMINION
UNIVERSITY**

I D E A FUSION

VIMS | **WILLIAM
& MARY**

VIRGINIA INSTITUTE OF MARINE SCIENCE

Enabling Legislation: HB 903



*. . . RESOLVED by the House of Delegates, the Senate concurring, That the **Commonwealth Center for Recurrent Flooding Resiliency** be designated jointly at **Old Dominion University, the Virginia Institute of Marine Science, and The College of William and Mary**. The Center shall **serve, advise, and support** the Commonwealth by conducting **interdisciplinary studies** and investigations and to provide **training, technical and nontechnical services, and outreach** in the area of **recurrent flooding and resilience research** to the Commonwealth and its political subdivisions . . . all state agencies, political subdivisions, and authorities be encouraged to consult with the Center on matters of information, data, and services **to improve methods of data sharing, efficiency, and resilience** within the Commonwealth.*

Outline

- Role of CCRFR
- Current Activities of CCRFR
- Next Steps for CCRFR
- Contacts & Questions



Role of the CCRFR

- Provide coordinated research and technical support for planners and decision makers for adaptation to and mitigation of recurrent flooding in Virginia
- Integrate federal, state, local and nongovernmental data, and provide easy, useful access for all stakeholders
 - Real-time water level and tide gauge data across multiple agencies and jurisdictions
 - Socio-economic analyses and planning tools in support of resiliency planning
 - Legal and policy reviews and guidance related to implementing resiliency actions
- Leverage institutional resources through the Center to bring more federal, foundation and philanthropic support to address flooding resiliency in the Commonwealth



Mission of the CCRFR



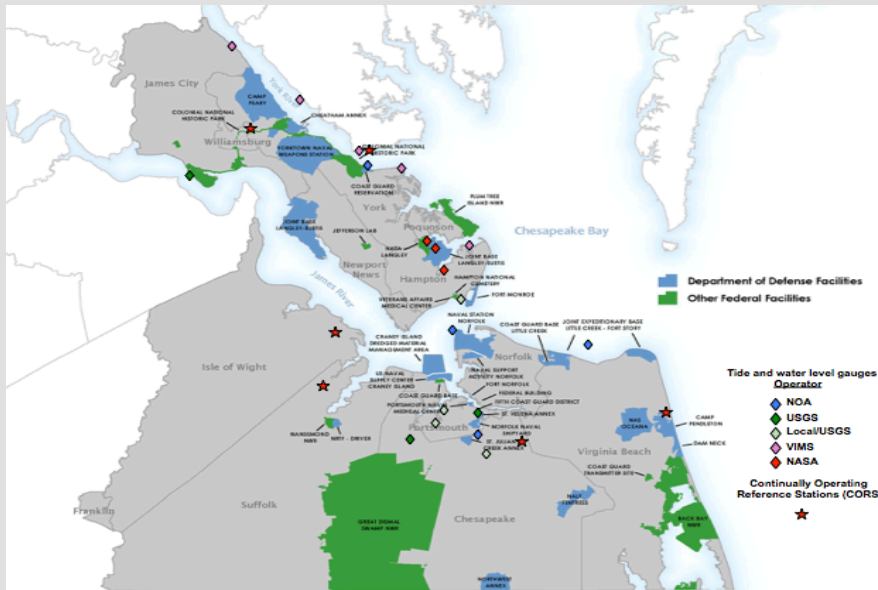
*The Commonwealth Center for Recurrent Flooding Resiliency engages the expertise, resources and intellectual vibrancy of **William & Mary and Old Dominion University** in support of **building resilience to rising waters**. The Center **serves, advises, and supports Virginia** by conducting interdisciplinary studies and providing training, technical and non-technical services, and policy guidance in the area of recurrent flooding resilience to the Commonwealth and its local governments, state agencies, industries and citizens.*

Building Critical Capacity

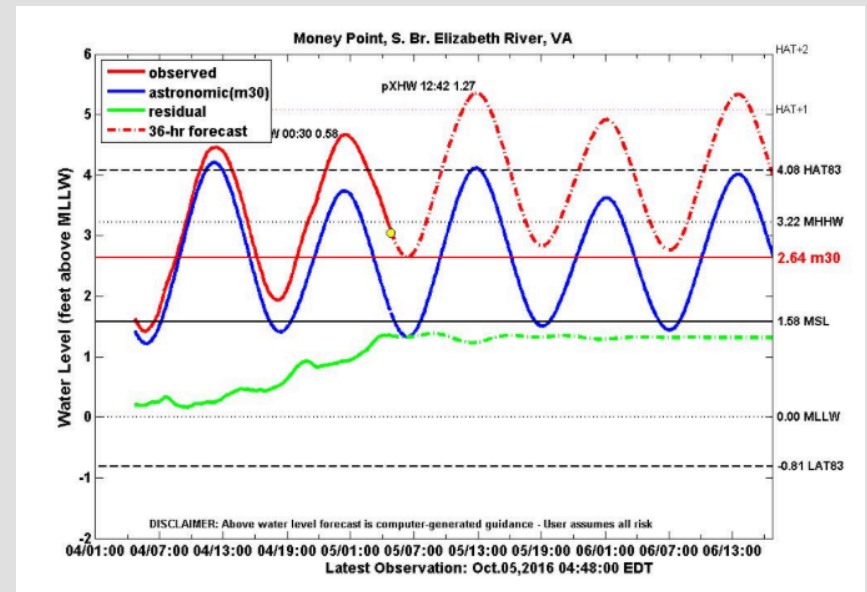


- Hire Center coordinator & help fund VCPC support
- Support water level data integration through Tidewatch & street level modeling
- Expand outreach to localities by VCPC, VIMS & ODU to develop long term initiatives
- Support various smaller projects in partnership with planners, emergency managers, etc.
- Provide flexible response to locality needs

Ongoing Projects: Data Integration - Tidewatch



Currently 20 tide gauge stations in the Hampton Roads area operated by different federal, state and local entities – more on the way.

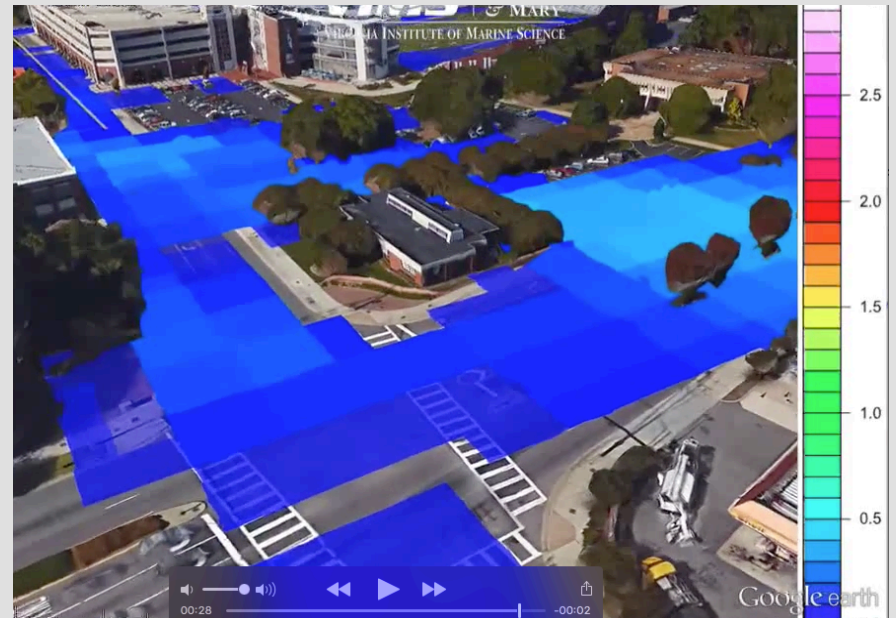


Tidewatch provides more accurate predictions of tidal heights up to 36 hrs. than NOAA predictions.

Ongoing Projects: Street Level Flood Modeling



State-of-the-Art, high resolution modeling from storm surge and rainfall can accurately predict street-level flooding. Applications for emergency management and resiliency planning

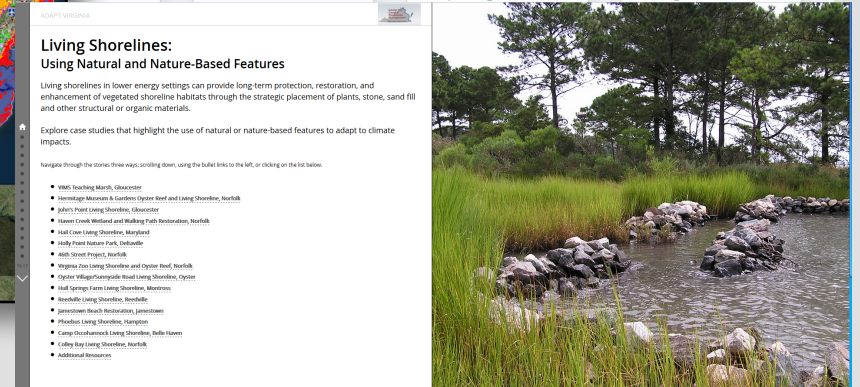
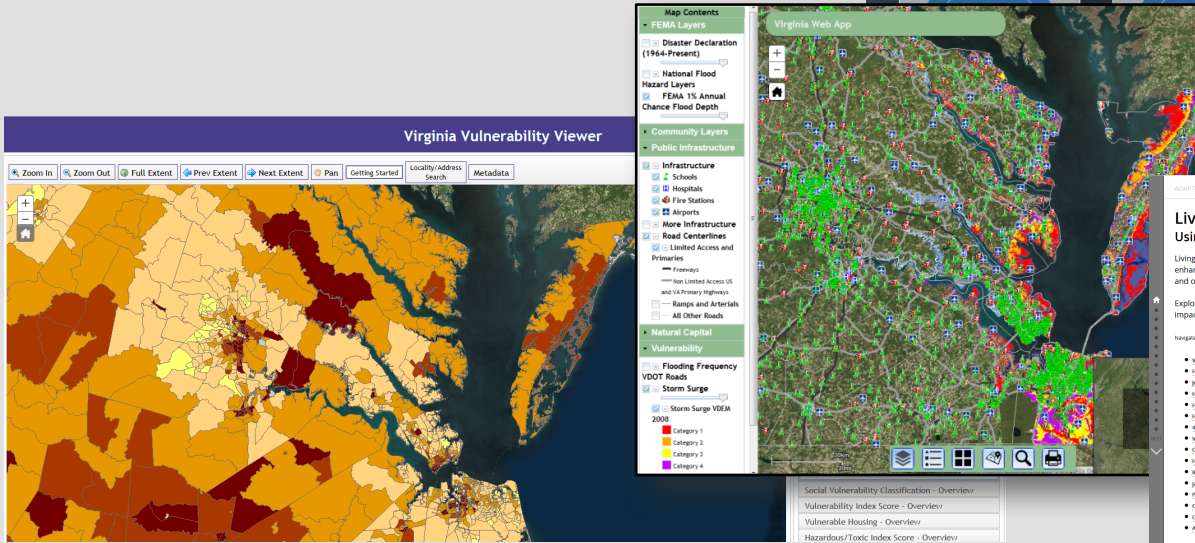
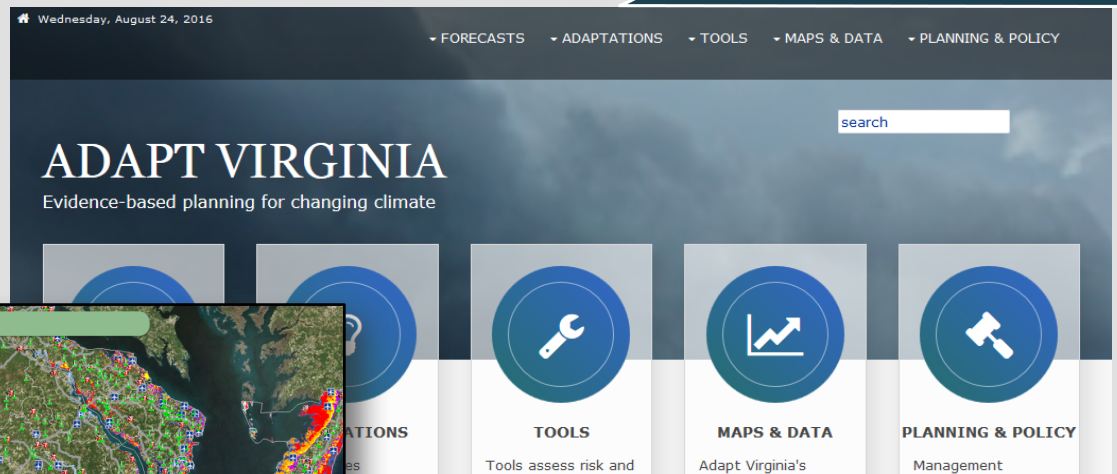


CCRFR is in the process of operationalizing this model throughout Hampton Roads

Ongoing Projects: Adapt Virginia



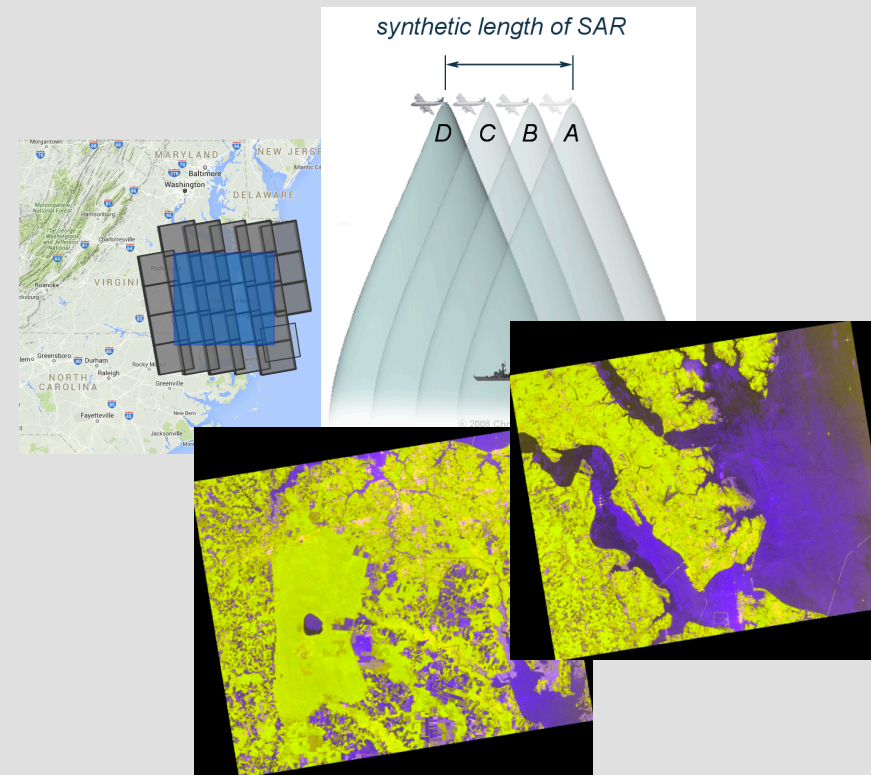
- Adapt Virginia “Data Portal” in partnership with DCR Floodplain Management, Wetlands Watch, and others will put tools, case studies, and more at users’ fingertips.
- Will feature ongoing research on sea-level changes and adaptation measures



Ongoing Projects: Subsidence



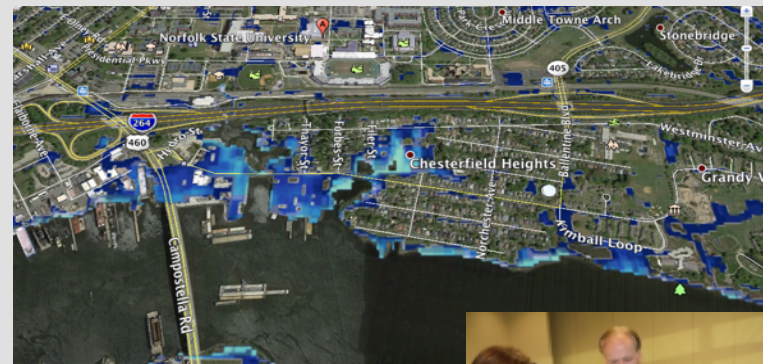
- Hampton Roads is impacted by subsidence but we do not have current and localized data
- We are using InSAR data taken by the same satellite at the same vantage point at different times to estimate localized subsidence
- This will generate improved localized subsidence map and show current trends with resolution in order of 10s of meters.



Ongoing Projects: Risk Communication



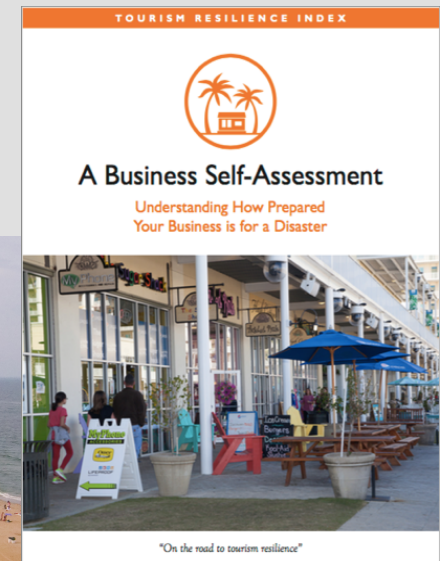
- Bringing together previous research on nuisance flooding communication & structured public involvement (IPP Case Study) with street level storm surge modeling capabilities and emergency manager feedback.
- Using innovative gaming strategies, to analyze and then enhance flood risk communication with specific groups of stakeholders using output from VIMS street level storm surge models.



Ongoing Projects: Tourism Resilience



- Modeled on a similar tool, the Tourism Resilience Index, developed by Mississippi – Alabama Sea Grant
- Needs Assessment & Info Gathering: In-person survey, with owners of tourism-related companies to determine current level of resilience and assess areas for improvement.
- Build Resiliency: Workshops, Coastal Virginia TRI, VB Tourism Resilience Assessment
- Policy Analysis: VCPC analyzing current laws & policies for resilience opportunities



Ongoing Projects: Economic Impacts Analysis



- Over time create series of white papers & database to couple with VIMS & VMASC modeling.
- Partnerships with Hampton Roads Economic Development Alliance & others
- Ongoing:
 - Cluster analysis of potential water management cluster in Hampton Roads,
 - Convening others conducting impact research to coordinate and communicate needs, etc.
- Sample Future Topics:
 - Resilient Zoning & commercial development
 - Flood risk (or perceived risk) impact on firm attraction & relocation
 - Individual and regional participation in NFIP program



Ongoing Projects: Western VA



- The Piedmont, Shenandoah Valley, and mountains are vulnerable to flooding events from a variety of processes:
 - "Backdoor storms" or tropical systems approaching from the west and southwest (e.g. Hurricane Camille)
 - Orographic precipitation amplification of tropical and extra tropical storm rainfall; and
 - Isolated airmass thunderstorms that can become "terrain-locked"
- Investigate and map these multiple flood hazards, identifying vulnerability
- In partnership with local officials, emergency managers, and floodplain managers inland



Photos: Nelson County Museum

Leveraging Resources

- NASA support of subsidence research a direct result of CCRFR funding
- NIST support of VIMS + Newport News/Hampton Smart Cities Project
- blue moon fund support of Adapt Virginia data portal
- Additional proposals submitted to NASA and NIST are still outstanding
- CCRFR will continue to partner with localities on grants and other funding opportunities to leverage resources.

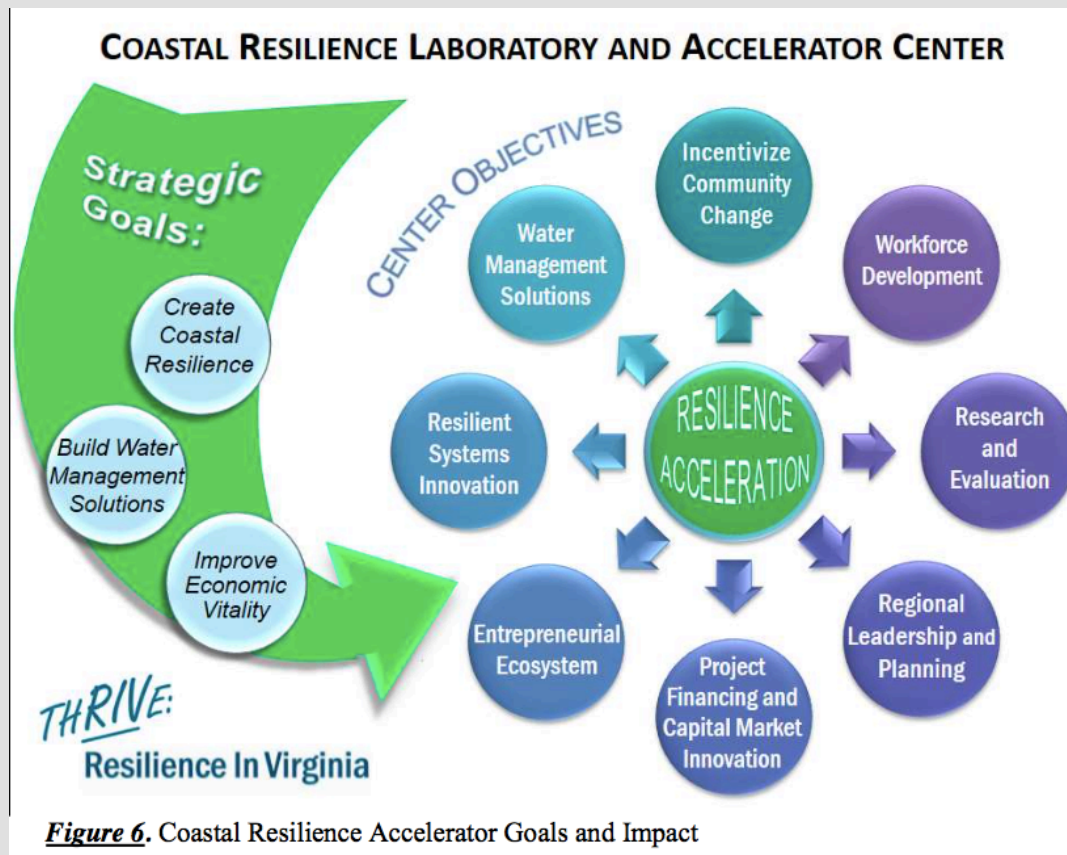


On the Horizon



- CRS Support - Working with localities to identify long-term projects that will benefit many localities
- Continued development of resources and identification of needs where CCRFR can have greatest impact
- Provide continued **liaison** with federal program directors and researchers (e.g. NOAA, NASA, USGS) and with the military concerning national security issues associated with sea level rise.
- Over time, accumulate data leveraging federal, state, local, NGO/Private, and university data to provide easy, **useful access for all stakeholders.**
- Expansion of efforts into western VA
- Provision of legal and policy advice to assist localities in moving research into action

Working together for resiliency: CCRFR & NDRC Accelerator



- NDRC Accelerator, an independent 501(c)(3) organization, will use resilience challenges as a catalyst for economic opportunity by driving innovation and taking advantage of our “natural testbed”
- CCRFR will support & collaborate w/ NDRC Accelerator by providing data and leveraging local partnerships & vice versa

Figure 6. Coastal Resilience Accelerator Goals and Impact

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