

DHS Flood Apex Program

Program Title: Flood Apex

Division/Group: FRD/MCS



Program Description

Flood Apex focuses on three goals for improving the performance of the flood management community. Each of these can be addressed to a significant extent by transitioning new technologies, new analytics and new policy approaches that leverage the R&D advances that Flood Apex is sponsoring/partnering.

- Improve Disaster Response and Event Management
- Enhance Individual and Business Flood Resilience
- Enhance Community Resilience

Research has now been largely completed. The program will be expanding its community pilots and operational experiments to support final R&D and transition activities in alignment with the program lifecycle. For transition, Flood Apex is working intensively with FEMA and other transition partners to plan for hand-offs of Flood Apex material solutions and knowledge products

TRL at Start: N/A

TRL at Project Completion: N/A

Planned Demos & Deliverables / Transitions

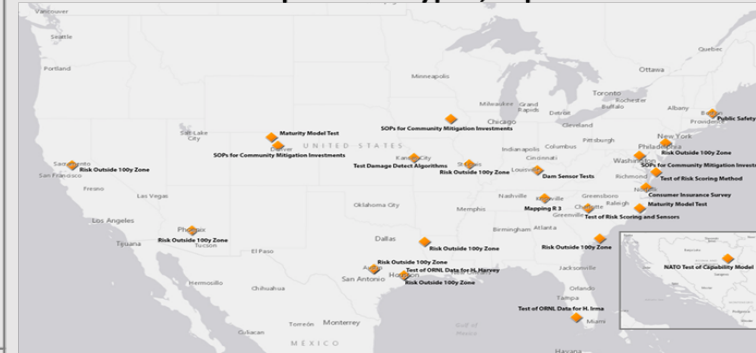
Target Date

1. Observed Flood Extents Product	FY20 Q4
2. Web-based Hurrevac	FY20 Q4
3. SBIR IoT Flood Sensors	FY20 Q3
4. National Structures Inventory	FY21 Q4
5. Future of Flood Insurance	FY20 Q1
6. Flood Proofing Standards	FY20 Q4
7. DSS-WISE Enhancements	FY19 Q4
8. Dam Monitoring/Reporting Criteria/Recommendations	FY19 Q4

Cost Projection & Milestones	FY14	FY15	FY16	FY17	FY18	FY19	FY20	Tot. FY14-20 (\$M)
Allocated Funding (\$M)*		\$5M	\$5M	\$5M	\$5M	\$10M	\$10M	\$40M
Demos/Go/No-Go Decision								
Deliverables/Transitions								

* Only Congressionally Appropriated Funding Levels

Locations of Flood Apex Prototypes, Experiments and Tests



Sample Project Performers: MIT-LL, Radiant, ORNL, Wharton, CMSWS, Kentucky DOW

Transition Products*

- HAZUS Software Tsunami Model (FY17 Q2) - Completed
- Wharton Flood Insurance Market Report (FY17 Q3) - Completed
- Xchange CORE (SABER) (FY19 Q3)

*Only products transitioned thru FY19 Q1.

R&D Strategy Priority Area: Structure Level Risk Scoring, Remote Sensing for Flood Decision Support, Community Threat & Mitigation Planning

Letter of Intention/TTA Status: TBD as required

Transition Path: FEMA, FIMA, Private Sector

- Cost
- Schedule
- Technical

CRC Support to DHS Flood Apex Program

- Research Review Board

- September 2015 to Present
- 15 Meetings to Date
- Functions
 - Help refine concepts, requirements, and target users.
 - Provide input on existing systems and analytical tools.
 - Provide input on gaps in knowledge, available data, and technology.
 - Help define, provide input to, and review Flood Apex research projects.
 - Identify transition pathways to help ensure Flood Apex end products are appropriate for target users, particularly as they may have differing levels of capability and capacity.

2020 Flood Apex Research Review Board	
Board Member	Title/Affiliation
Michelle Bensi	Assistant Professor, University of Maryland
Doug Bellomo	Vice President, AECOM
Chad Berginnis	Executive Director, ASFPM
Sam Brody	Professor, Texas A&M University at Galveston
Dave Canaan	Director, Mecklenburg County Water & Land Resources
	Section Chief, DHS Cybersecurity and Infrastructure Security Agency
Jeff Czajkowski	Director, Center for Insurance Policy & Research, National Association of Insurance Commissioners
	Coastal Hazards Specialist, NOAA
Sandra Knight (Board Chair)	President, WaterWonks LLC
Rick Luetlich (Ex Officio Member)	Lead PI, Coastal Resilience Center
	Community Resilience Group Leader and Program Manager, NIST
Phetmano Phannavong	Sr. Project Manager, Atkins
Ashley Ross	Assistant Professor, Texas A&M University at Galveston
Kathleen Schaefer	PhD student, University of California at Davis
Katherine Schlef	Assistant Professor, Western New England University
Gavin Smith	Professor, North Carolina State University
	Chief, Flood and Storm Protection Division, CHL, ERDC
Larry Weber	Professor, University of Iowa

CRC Support to DHS Flood Apex Program

- Landscape Survey of Decision Support Tools and Systems (RAND Corporation)
- Hurricane Floyd/Hurricane Matthew Empirical Disaster Resilience Study (AECOM)
- Flood Analytics Colloquium ➡
- FEMA Model Evaluation Study (WaterWonks, LLC)
- RISE 2019 Conference
- Eighth International Conference on Flood Management



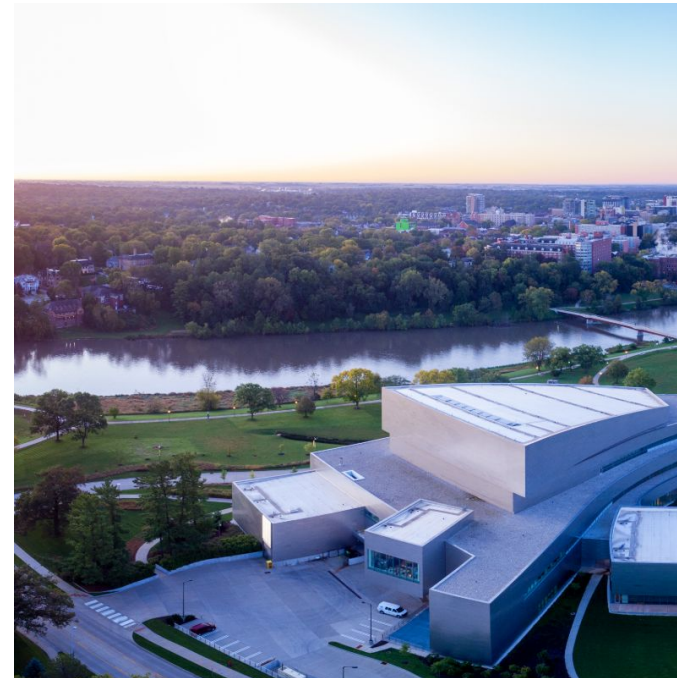
RISE 2019 Conference

- Resilience In Sustainable rEconstruction (RISE)
- November 18-20, 2019 @SUNY Albany
- Series of workshops on how universities can strengthen disaster preparedness, response, and recovery
- Close partnership with the National Council for Science and the Environment
- CRC Contributions
 - Financial support
 - Two panel sessions
 - Panel members
 - Student participants



Eighth International Conference on Flood Management

- “Lowering Risk by Increasing Resilience”
- August 17-19, 2020 @University of Iowa
- 100th Anniversary of IIHR
 - **The Big Splash! is a spectacular three-day (August 14–16, 2020) celebration on the banks of the Iowa River.** This party of epic proportions will include aquatic high-diving demonstrations, evening concerts, a water parade on the Iowa River, science experiments, high-wire performances by The Flying Wallendas, etc.
- CRC Contributions
 - Two special sessions of Conference
 - Final meeting of Flood Apex Research Review Board



Joint Port Resilience Assessment Project

- Partnership between DHS and Corps of Engineers
 - Cyberstructure and Infrastructure Security Agency (CISA)
 - Engineer Research and Development Center (ERDC)
- Develop Port Resilience Assessment and Decision Guide
 - Holistic understanding of
 - Port operations
 - Supporting infrastructure systems
 - Analysis methods
 - Functional resilience
 - Investment decisions
 - Variety of stakeholders and end users



CRC Support to Joint Port Resilience Assessment Project

- Technical Review and Advice
 - CRC and other DHS Centers of Excellence
 - Selected Subject Matter Experts
- Case Study of an Inland Waterway System (Vanderbilt University Center for Transportation and Operational Resiliency) – Guide Appendix
- Lessons Learned from Port Vulnerability Assessments and the Regional Resilience Assessment Program (RRAP) (Austin Becker, University of Rhode Island) – Guide Chapter
- Review of Draft Guide (CRC and WaterWonks, LLC)
 - Other DHS COE's
 - SME's
 - Review Workshop