



Recommendations for a Resilient Path Forward for the Marine Transportation System, *and other activities of the CMTS*

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Transportation Oversight in the Federal Government

Air: Federal Aviation Administration (DOT)

Highways: Federal Highway Administration (DOT)

Rail: Federal Railroad Administration (DOT)

Marine: 30+ Federal Agencies and Offices



Standard Matrix of the Federal Marine Transportation System

By Department/Agency

		USDA					DOC					DoD		DOE	DOI				DOJ	DOL		DHS				DOS	DOT						FMC	NTSB	EPA				
FEDERAL INTEREST	MAJOR CATEGORIES	FAS	FSA	APHIS	NRCS	AMS	BIS	Census	EDA	ITA	NOAA	USACE	Navy	TRANSCOM		USFWS	BOEM	BSEE	USGS		BLS	OSHA	TSA	USCG	FEMA	CBP		OST	BTS/RITA	SLSDC	FHWA	MARAD	FRA	Treasury	FMC	NTSB	EPA		
Enhance Safety	Safety										X	X	X				X	X		X	X		X	X			X		X		X	X	X				X	X	
Protect the Environment	Environmental Protection			X	X				X		X	X	X		X	X	X	X	X	X				X	X		x	X		X		X	X	X					X
Facilitate Commerce	Trade Facilitation	X	X	X		X	X	X		X	X					X				X				X		X	x	X		X		X		X		X			
	Trade Promotion	X	X	X		X				X																		X		X	X			X		X		X	
	Vessel Construction																							X		X		X			X	X		X					
	Vessel Operations										X							X		X				X		X		X		X		X					X		
	Federal Channels, Waterways, and Sea Lanes										X	X			X	X		X	X					X	X		X	X	X	X			X				X		
	Port/Modal Transfer Infrastructure								X		X	X			X									X				X			X	X	X	X				X	
Ensure National Security	Security										X	X	X	X	X		X			X			X	X	X	X	X	X	X			X							
Cross-Cutting	Research & Development						X		X	X	X	X	X		X		X	X	X					X				X	X			X		X				X	
	Human Resources										X	X	X					X		X				X	X			X				X						X	

Authorization of the CMTS

U.S. Ocean Action Plan (2004)

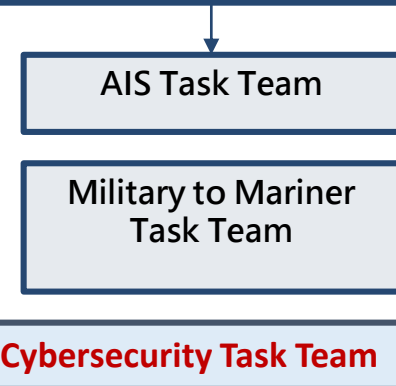
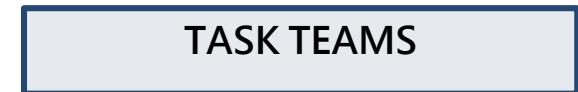
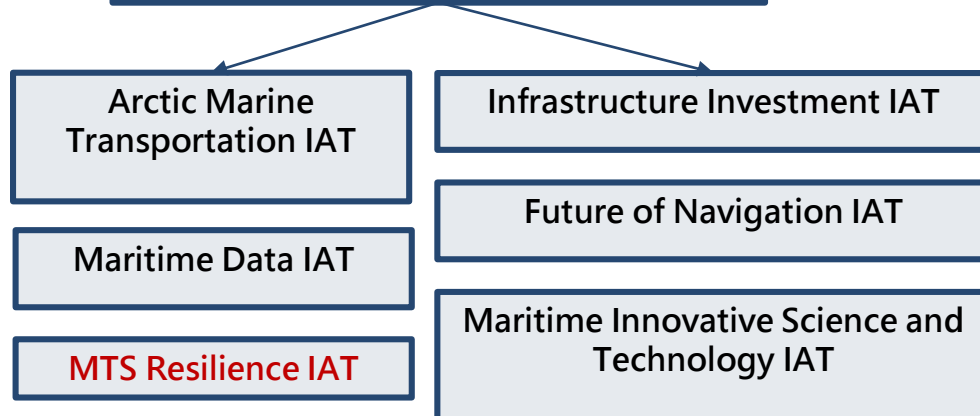
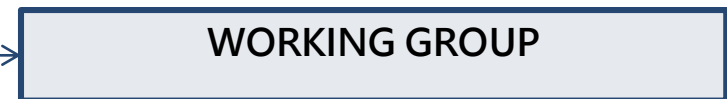
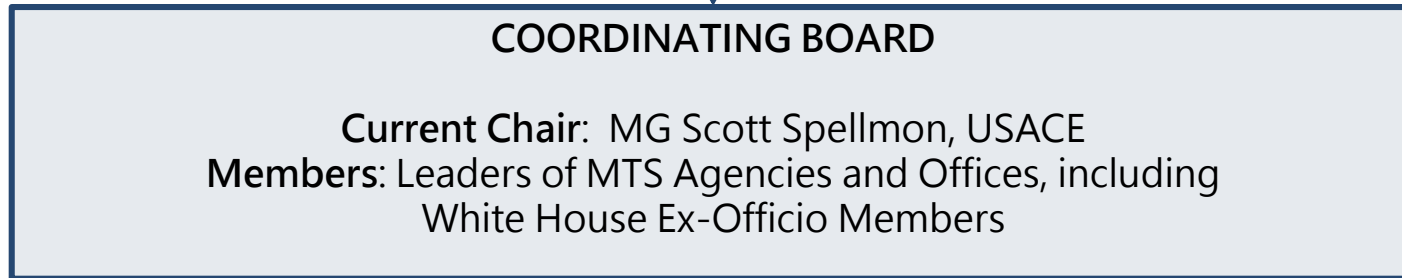
This Plan contained a Presidential Directive to establish a cabinet-level interagency committee on the marine transportation system (MTS)

Coast Guard and Maritime Transportation Act (2012), PL 112-213

The CMTS shall serve as a federal interagency coordinating committee for the purpose of:

- Assessing MTS adequacy
- Promoting MTS integration with other modes of transportation and marine environment uses
- Coordinating, improving the coordination of, and making recommendations related to MTS relevant federal policy





14 Recommendations under 5 Priority areas:

- System Performance
- Safety
- Security
- Energy Innovation
- Infrastructure Investment

National Strategy
for the
Marine Transportation System:
Channeling the Maritime Advantage
2017-2022



2018-2019 Work Plan

- MTS Infrastructure Investment Economic Benefit
- **MTS Resilience – Hurricane Response Analysis**
- Navigation Safety Services and Technologies Integration
- **Maritime Cyber Security Touchstone Project**
- U.S. Arctic Marine Transportation Assessments
- Ocean Policy and the Maritime Nexus
- Maritime Data Coordination/Enhancing Access to AIS
- Supporting Veterans Hiring and Military to Mariner
- Promoting the value of the MTS and the Federal Role



Maritime Cyber Security Touchstone Project

- “Support interagency and stakeholder collaboration for maritime security, including cybersecurity, to provide foundational information with which to enhance the Federal engagement and response.”
- **TASKER:** Engage Federal maritime security stakeholders to address gaps regarding maritime cybersecurity understanding and response.
- **In other words: what is the threshold for Federal engagement and to whom does one report?**





- Input from offices within 12 agencies
- Identifies key activities necessary for the restoration and return to normal MTS operations
- Identifies key interdependencies with non-Federal systems and organizations
- Presents best practices employed during 2017 hurricane season
- Suggests recommendations to increase MTS resilience

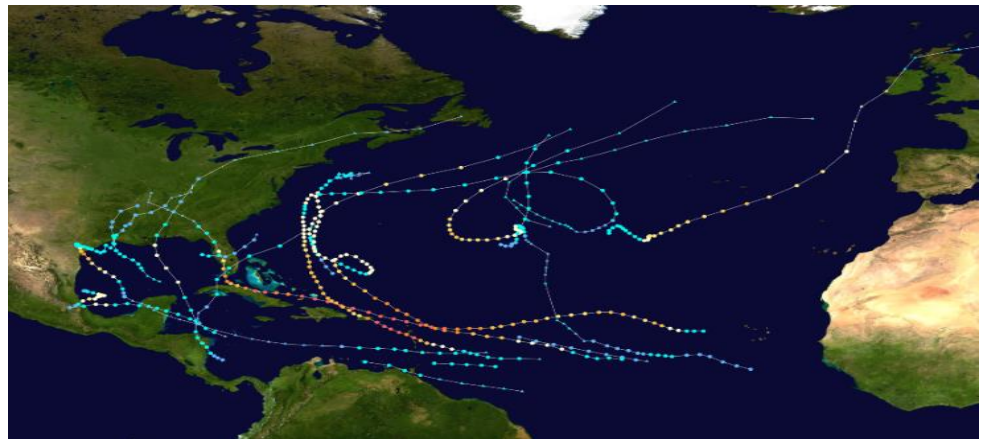


2017 Hurricane Season

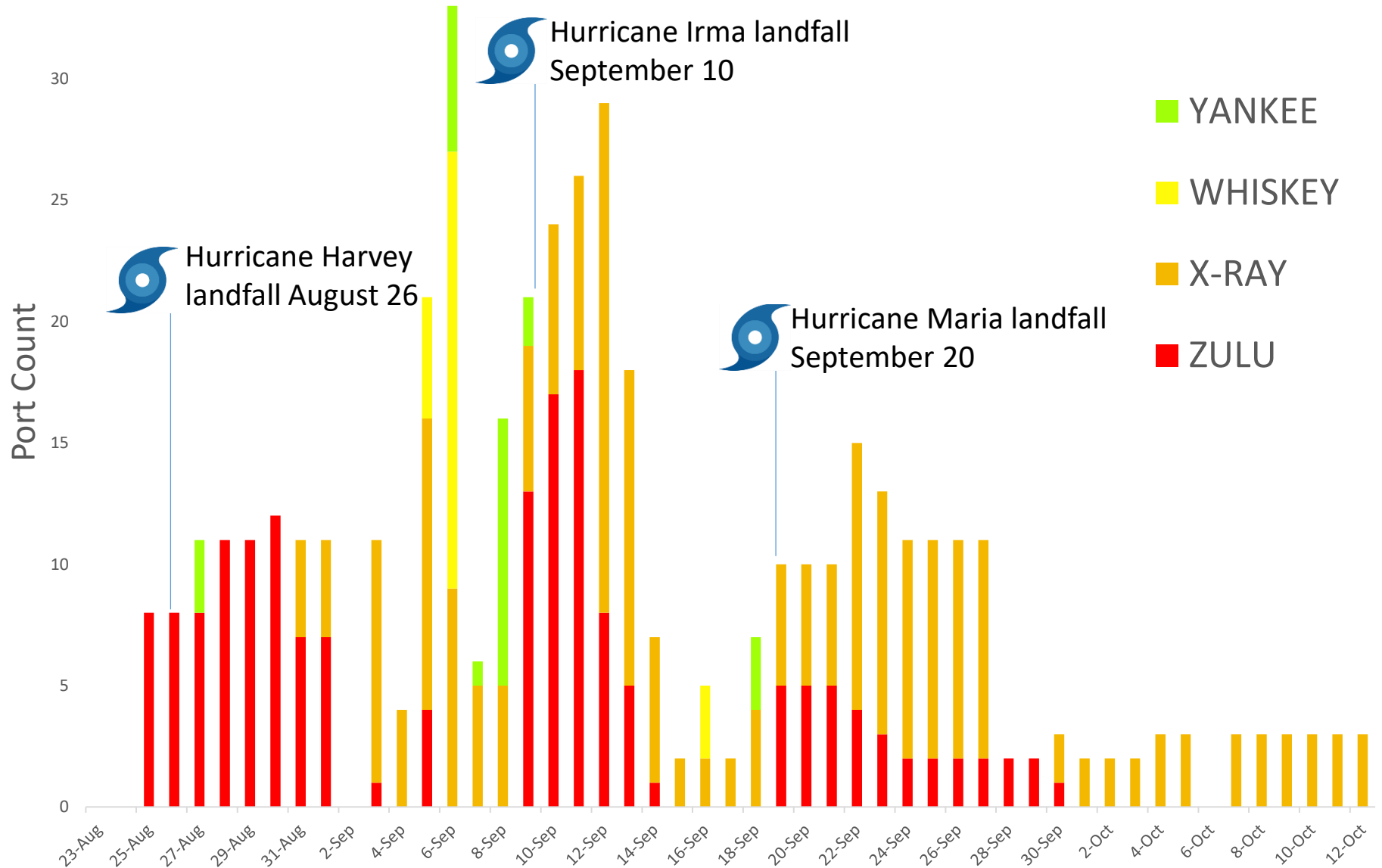
- 17 named storms
- 7 U.S. landfalling storms
 - 3 major hurricanes: Harvey, Irma, Maria
- 25.8 million people affected
- 4.6 million registered for federal assistance with FEMA
- Weather events in 2017 amounted to \$306.2 billion in cumulative costs which included hurricanes Harvey (\$125B), Irma (\$50B), and Maria (\$90B)*



Satellite image of three hurricanes in the Atlantic at once on Sept. 8: Katia, Irma and Jose. (NOAA/NASA)



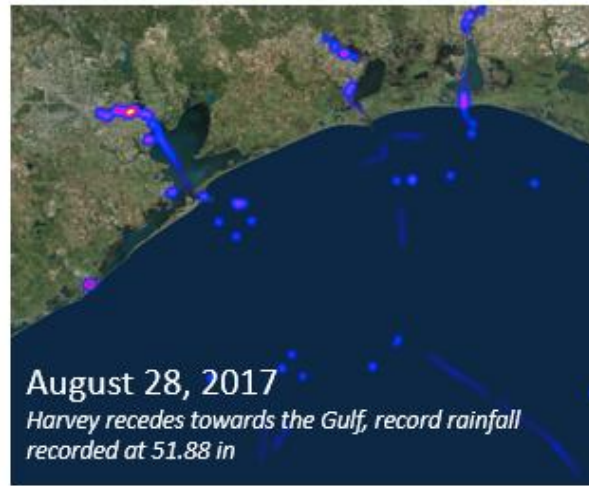
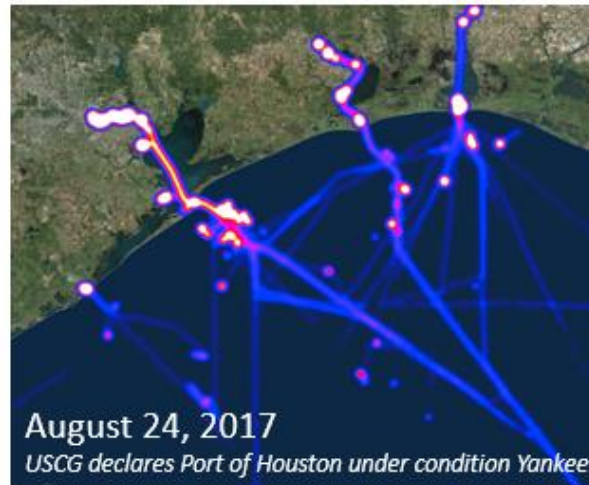
IMPACTED PORTS ACROSS TX, FL, PR, and VI



Gulf Region Vessel Movements

Hurricane Harvey Cargo and Tanker Vessel Signal Density Plots

Created with ERDC Automatic Identification System Analysis Package (AISAP)



ERDC Navigation Data Performance Team: Katherine Touzinsky, Kenneth N. Mitchell, Patricia Dijoseph, Marin Kress



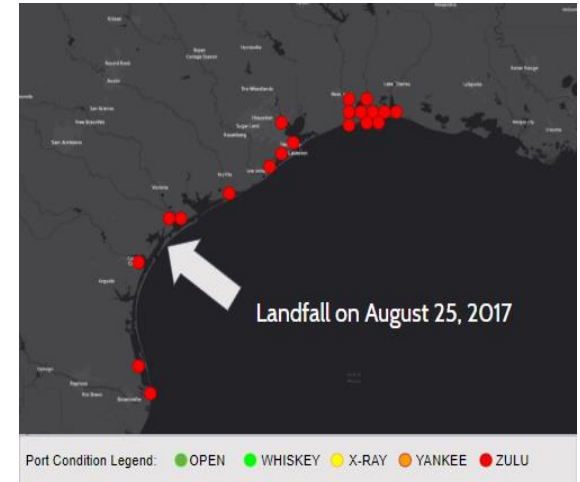
Hurricane Harvey

- **Challenges**

- Flooding caused indirect impacts to supporting infrastructure
- Lack of knowledge management and collaborative tools regarding port condition or status
- Redundant information requests

- **Successes**

- Early communication
- Centralized information distribution
- Pre-prioritized resource placement
- Execution of drills and training
- Early closure of energy facilities
- Efficient restoration of ATONS following storm
- Cross agency communication
- Engagement with public sector for resource needs
- Delegation of FEMA mission assignments



Hurricane Irma

- **Challenges**

- Power outages
- Debris removal between storms
- Resource allocation between commerce, tourism, & EM
- Equipment pre-positioning in FL
- Availability of resources and funds

- **Successes**

- Early communication on critical ports and supporting infrastructure
- Critical Aids to Navigation identified in advance
- Updated coastal imagery for fast surveys
- Transportation and accommodation arrangements
- Mobile integrated Survey Team kits when operating vessels of opportunity
- Repurposing vessels directed to Texas
- Coordination with local business advisory councils and initiatives



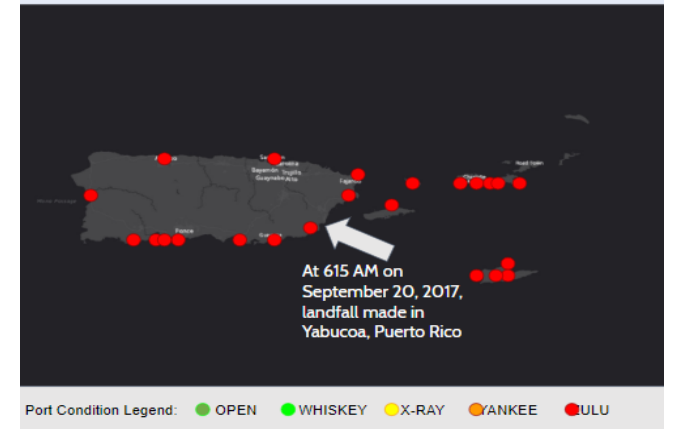
Hurricane Maria

- **Challenges**

- Lack of space for shipping & seaport operations
- Lack of supporting infrastructure (road, electric, water)
- First responder challenges
- Balancing emergency supply with commercial supply



Maria - USVI & Puerto Rico - Sept 20, 2017



- **Successes**

- First responders with Spanish language skills
- Interagency collaboration and sharing of information
- AIS-ATON utilized to help facilitate re-opening of San Juan by rapidly triaging ATONS in the field



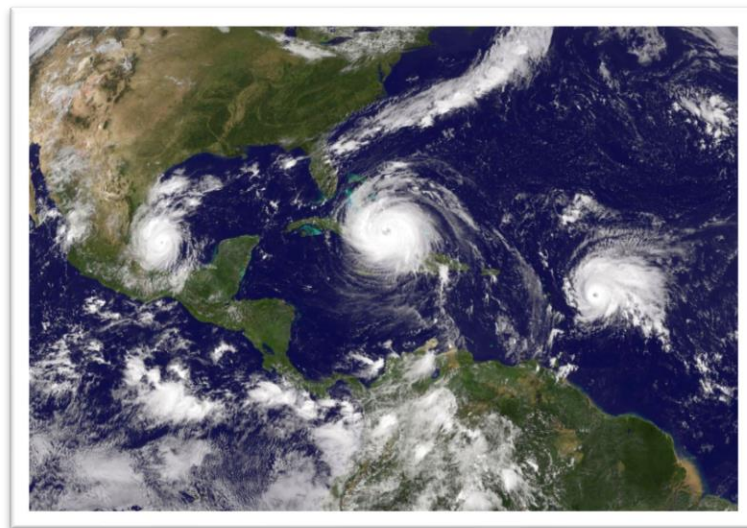
Summary: Best Practices for MTS Response and Recovery

- Established communication networks!
 - Hurricane Season Kickoff Meeting – held at start of hurricane season
 - Full Scale Hurricane Exercises
 - Area Port Coordination Committees
- Pre and post-storm port assessments
- Interagency efforts for navigation channel reopening
- ATON verification and resiliency



Summary: Opportunities to Enhance Response and Recovery

- Need for tools & protocols for prioritization at the regional or national level
- Pre-staging of survey teams & equipment
- Evaluating Port Status vs. Channel Status
- How to aid port employees returning to work



MTS Resilience – Examination throughout the Cycle of Resilience

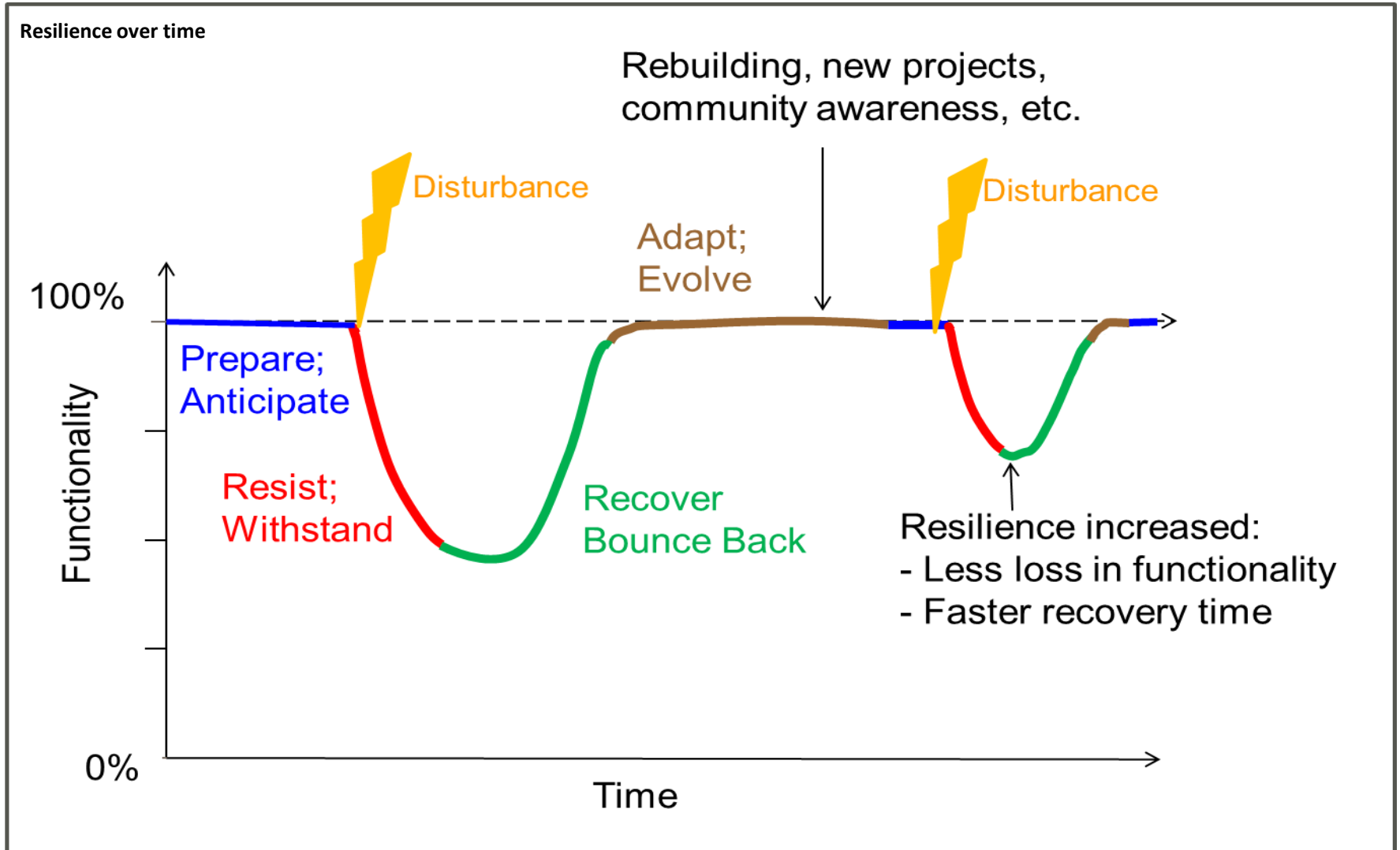
- Anticipate and plan for disruptions,
- Resist loss in operations and/or absorb the impact of disturbances or stressors,
- Rapidly recover afterwards, and
- Adapt to short- and long-term stressors, changing conditions and constraints.



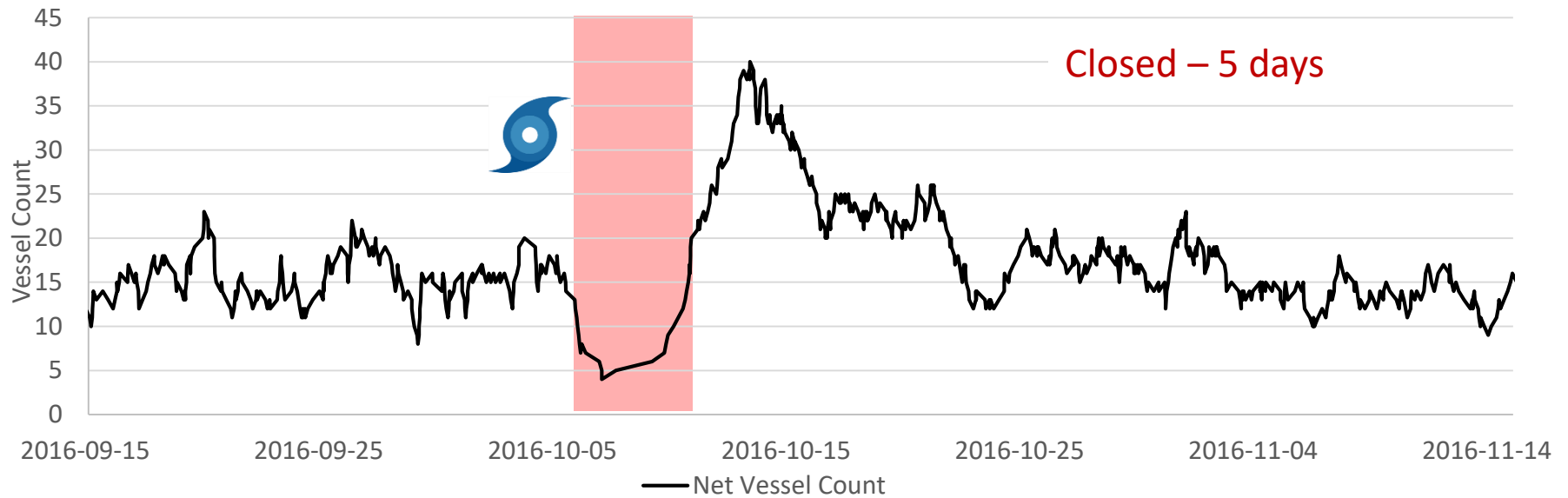
Through data and operations experts, we can gather information on *how* the MTS was able to Resist and Recover to inform future Adaptation and Preparation.



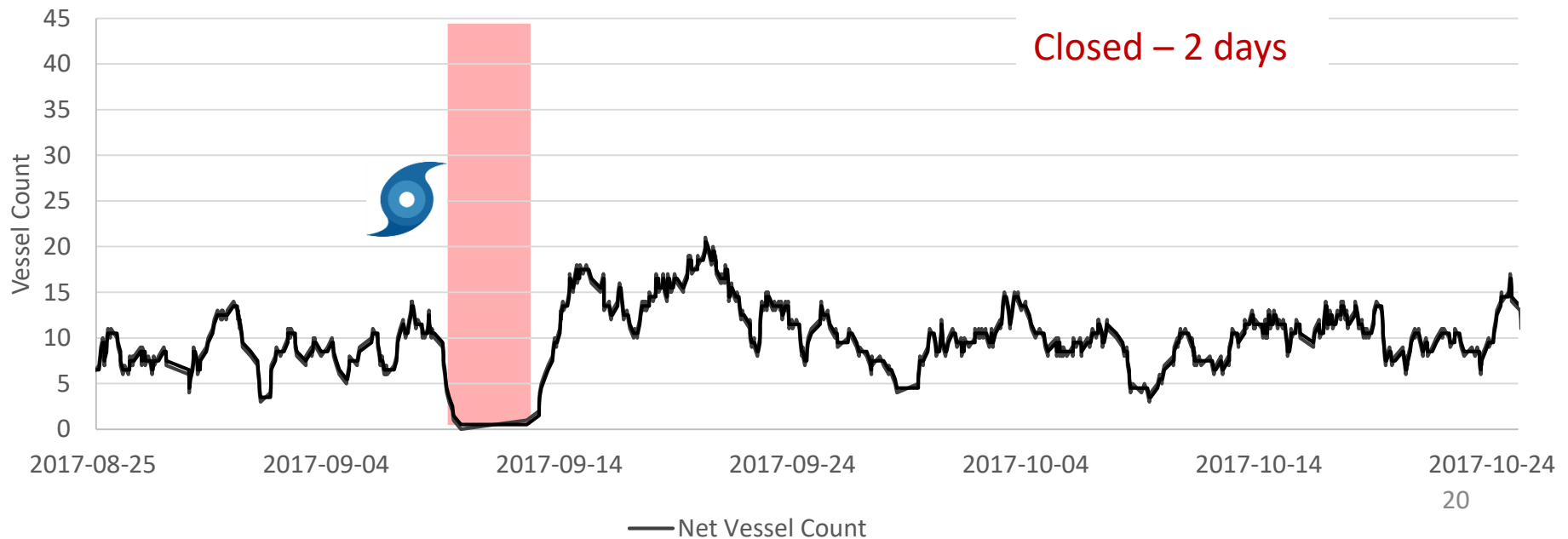
MTS Resilience – Improvement over Time



Port of Savannah – Net Vessel Count for 2016 Hurricane Matthew



Port of Savannah - Net Vessel Count for 2017 Hurricane Irma



Federal Actions to Minimize Disruption and Enhance Resilience

Findings were identified by applying the Resilience Framework and separated into categories:

- Preparation actions
- Response and recovery actions
- Adaptation actions



Recommendations to Increase Resilience

PREPARE

- **Build relationships beforehand** – coordination teams, contracting mechanisms, resource staging
- **Prioritize key infrastructure systems and critical infrastructure interdependencies**

ABSORB/RESIST

- **Share data** across Federal agencies for recovery projects through interagency teams and data-sharing platforms

ADAPT

- Develop a **common operating picture** of the port system interdependencies and authorities and prioritizations of essential land and maritime functions
- Hold proactive **planning scenario exercises** and interagency training sessions where recommendations from the past season are communicated and incorporated
- Promote or consider **new cutting-edge methodologies** to understand infrastructure redundancies and reduce vulnerabilities to hazards and to improve port services or support in times of operational failure



Conclusions

- MTS community was generally successful in quickly reopening ports for business during an unprecedented season
- Partnerships between Federal, State, and Local and Industry leaders are critical to the establishment of communication networks and resource management practices that ensures the rapid resumption of MTS operations.
- Opportunities to improve resilience include continuing to learn from past disruptions and leveraging new technology for:
 - *Better understanding how our MTS depends on supporting infrastructure systems*
 - *Managing and synthesizing data and information across stakeholders*
 - *Assessing strategies for resilient infrastructure investments*



US Committee on the Marine Transportation System

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