



NOAA Update

*American Association of Port Authorities
Harbors and Navigation Committee Meeting*

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Center for Operational Oceanographic Products and Services

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Three things you should know

- 1) Precision Navigation Initiative
- 2) Office of Coast Survey
- 3) Physical Oceanographic Real Time System[®]

What is Precision Navigation?

U.S. ports and waterways are the economic gateways to the world, moving 95% of U.S. foreign trade

Ships are increasing in size and draft, putting a strain on existing and emerging marine transportation infrastructure.



- **Precision navigation is the next generation of marine navigation tools** - rather than multiple streams of predictions/observations, precision navigation will seamlessly integrate the relevant port-specific data to provide the mariner with 'bottom line' information they need to make navigational decisions in any condition
- NOAA's current generation of information-based navigation infrastructure—charts, sensors, and models— address many of these challenges, but the **Nation will need a new generation of navigation tools to keep pace with maritime transportation sector growth**



Precision Navigation pilot – Port of Long Beach, CA



NOAA products and services supported the Port of Long Beach precision navigation project and will soon save vessels ~\$10 M/year in lightering costs. And, for every extra foot of draft allowed by the port, tank vessels can load \$2M of extra product.

Public-private partnership between NOAA, the port of Long Beach, and ProTide (software developer) to allow the port to be as **efficient and safe as possible while bringing in maximum cargo**.



Office of Coast Survey: NATIONAL CHARTING PLAN

A strategy to transform nautical charting

Purpose Improve NOAA nautical chart coverage, products, and distribution

Improvements

Reduce
unwarranted
alarms



Convert to metric



Provide
timelier data



Improve
chart coverage



Create an
orderly layout



Reduce
uncertainties



Improve chart
update information



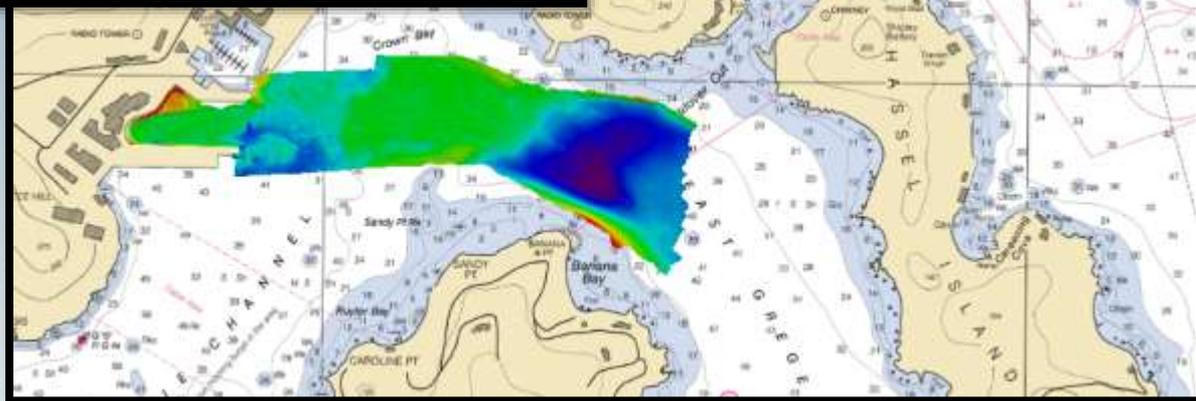
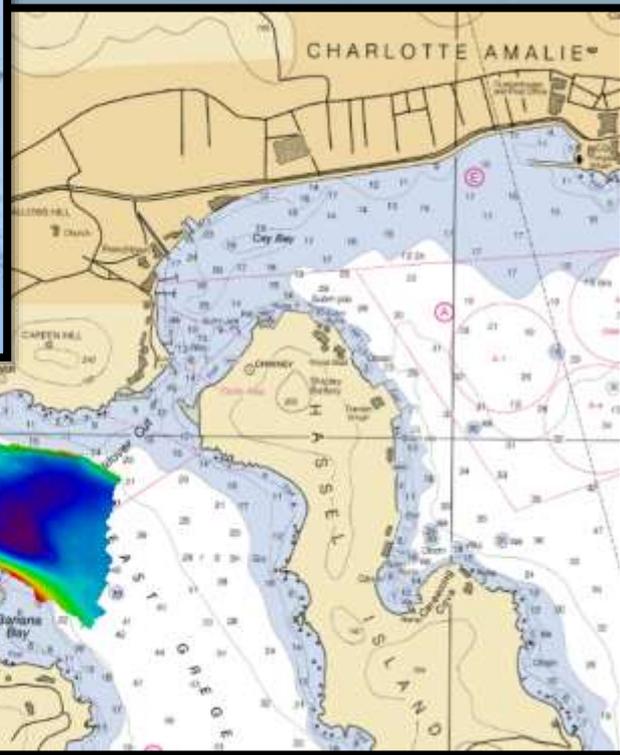
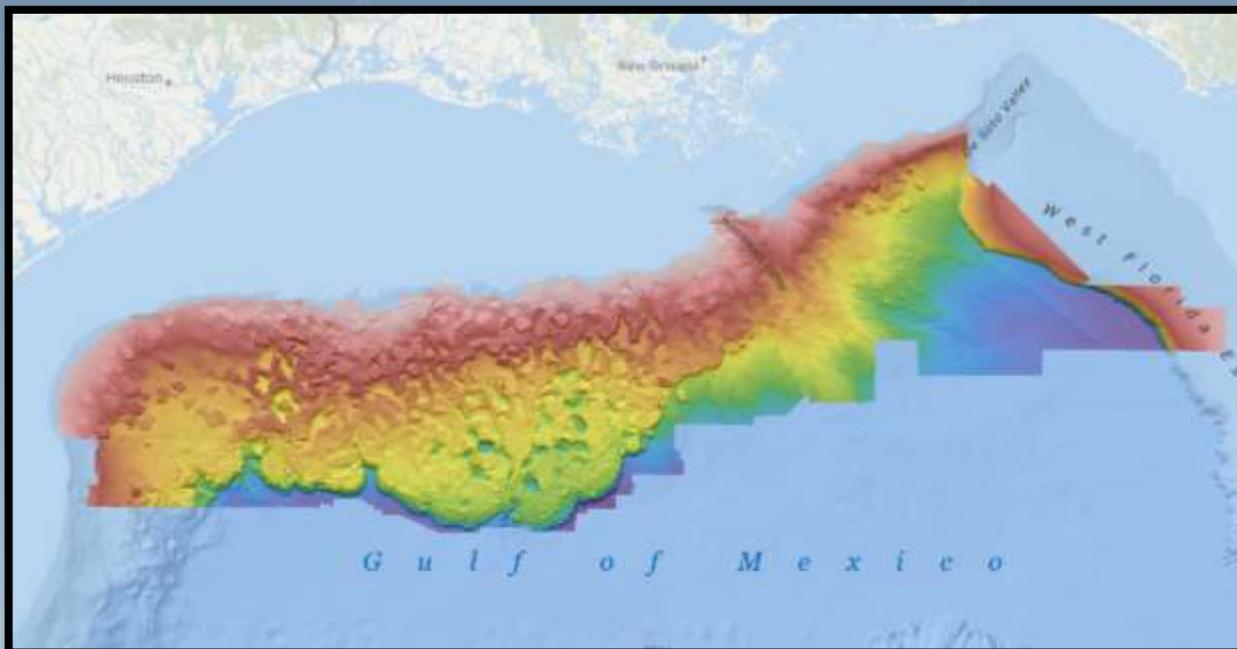
Increase
efficiency



Outcome Ease of access to more precise, higher-resolution charts that deliver the most up-to-date navigation information possible

Thank you for your comments.

Office of Coast Survey: External Source Data



Office of Coast Survey: Unmanned Systems



CO-OPS Observing Systems

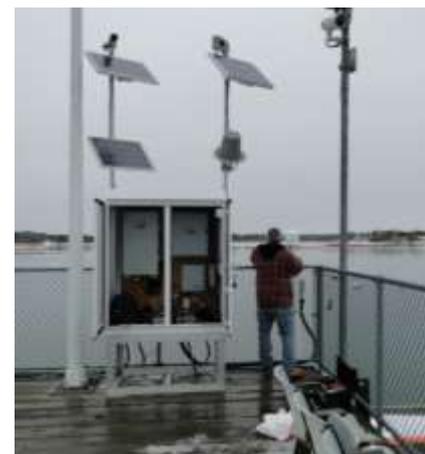
Turning oceanographic data into meaningful information for the Nation

- **National Water Level Observation Network (NWLON):**

- Water level, wind speed / direction, barometric pressure, air and water temperature, conductivity

- **National Current Observations**

- Short-term current meter deployments



How did PORTS[®] get started?

Sunshine Skyway Bridge

- May 9, 1980
- Tampa Bay, Florida

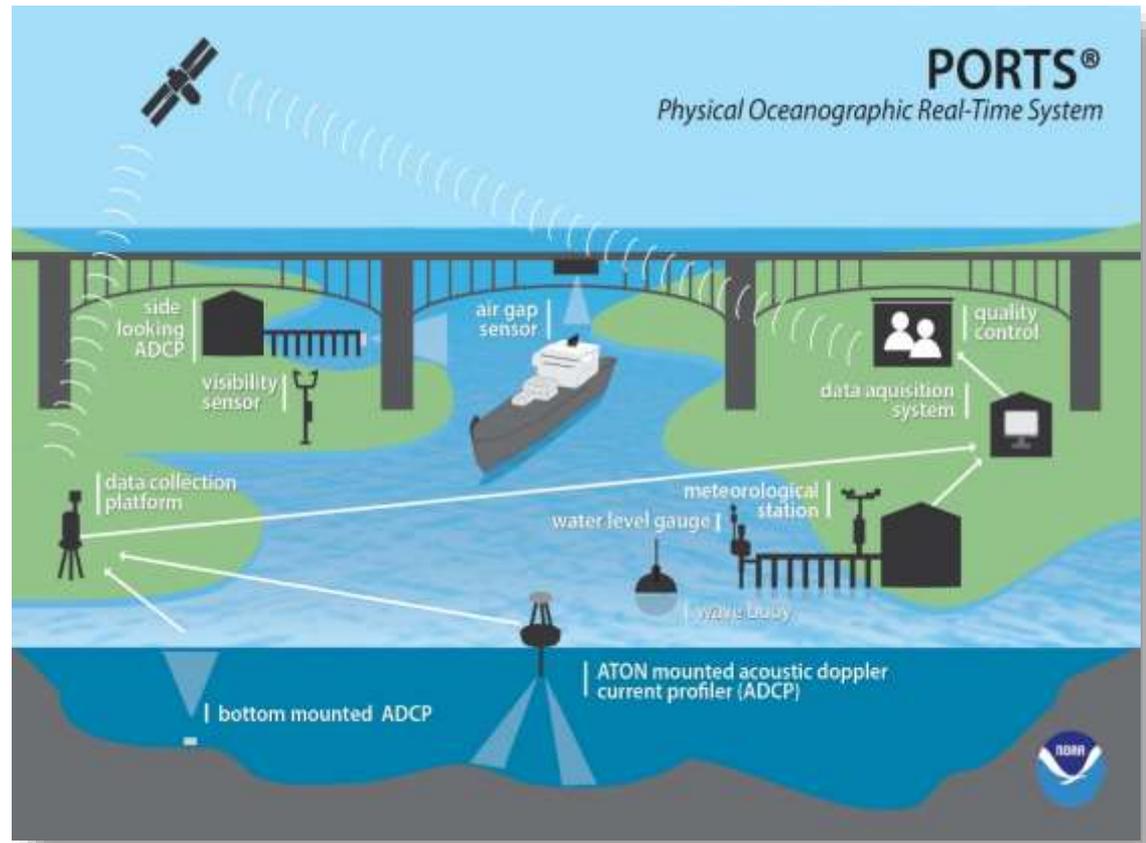


What Is PORTS[®]

Local Observing System

Measures and disseminates observations and predictions

- **Water levels**
- **Currents**
- **Salinity**
- **Air gap**
- **Meteorological parameters**
- **Visibility**
- **Waves**



What Is PORTS®

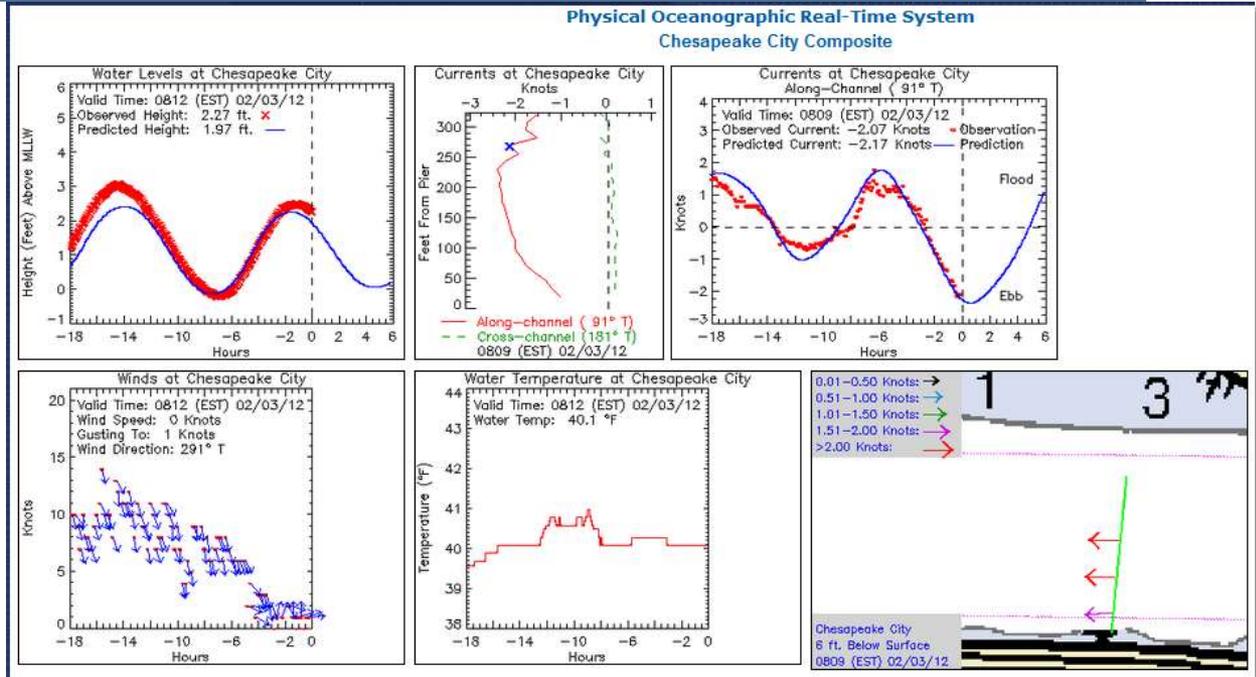
Data Products and Tools

- Real-time data dissemination

- Internet
- Voice response
- Mobile

- Products

- PORTS Pics
- MyPORTS
- ARNS

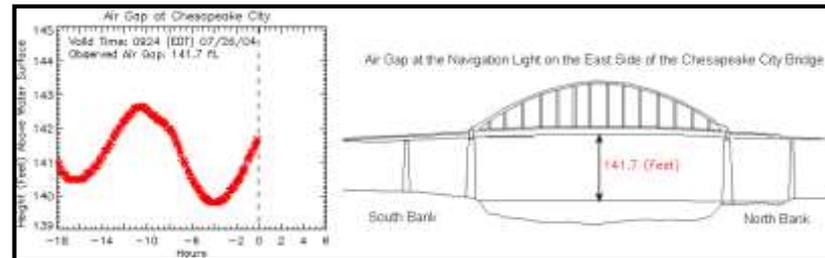


Mobile Application

Automated Real-Time Narrative Summaries (ARNS)

Observations for Sabine Neches PORTS 2014-10-14 12:51:52 CDT

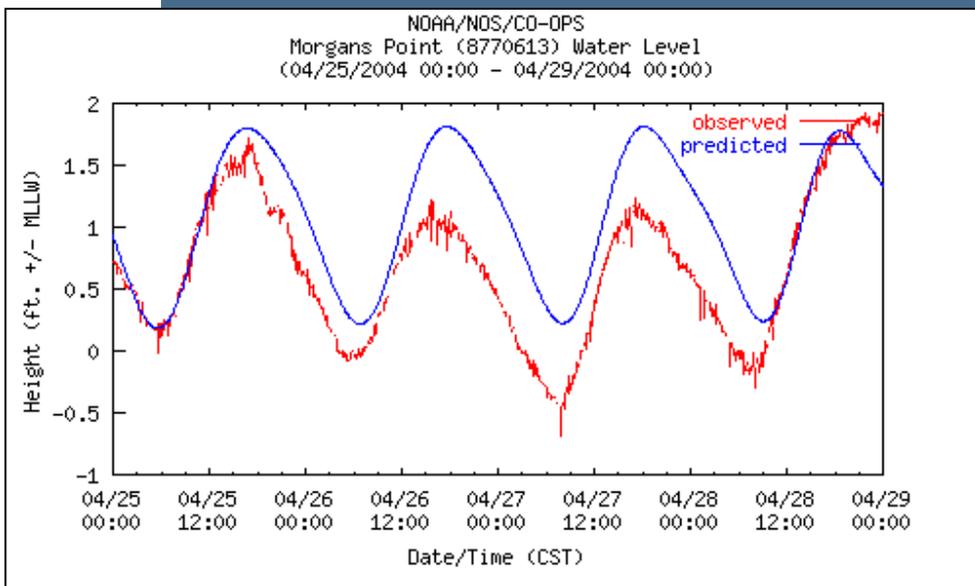
- Water levels are falling at Sabine Pass N. Levels are below predictions by up to 1.2 feet at Rainbow Br and Sabine Pass N. Water level at Rainbow Br is below MLLW, by 0.3 feet.
- Currents are flooding at Port of Beaumont, Sabine Front Range, and USCG Sabine. Currents are slack at Port Arthur.
- Winds at Sabine Pass N are from the northwest at 10 knots, with gusts to 21 knots.
- Air temperature at Sabine Pass N is 72°F, and water temperature is 78°F.
- Barometric pressure at Sabine Pass N is 1018 mb and falling.



Bridge Clearance (air gap)

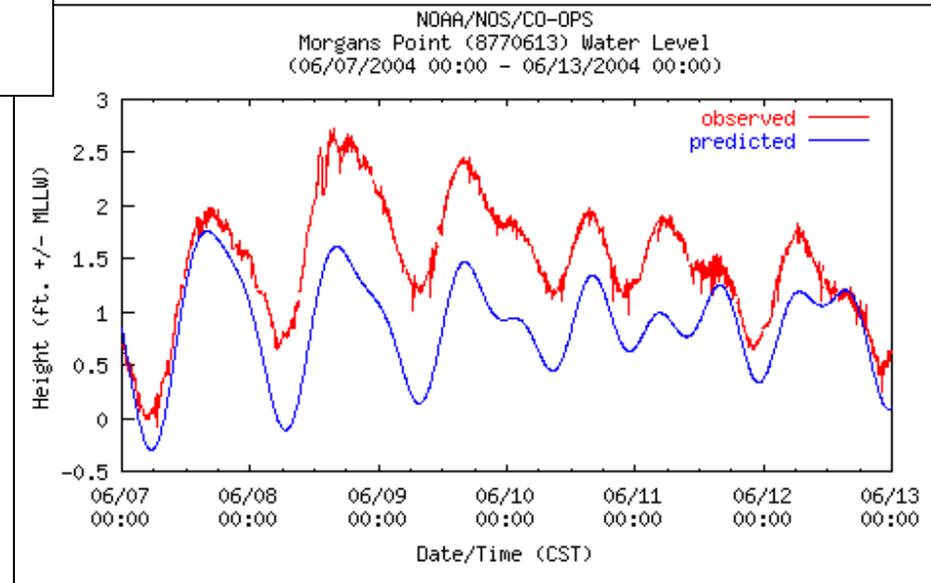


Benefit of PORTS[®]



Improved
Safety

Economic Efficiency
– More (or less)
Cargo?



PORTS[®] Partnership Program

PORTS[®] is a **partnership** with responsibility shared between NOAA and the local maritime community.

NOAA

- Program management
- Data collection and infrastructure
- Data dissemination
- 24/7 quality control
- National standards
- Development for future enhancements



Partner

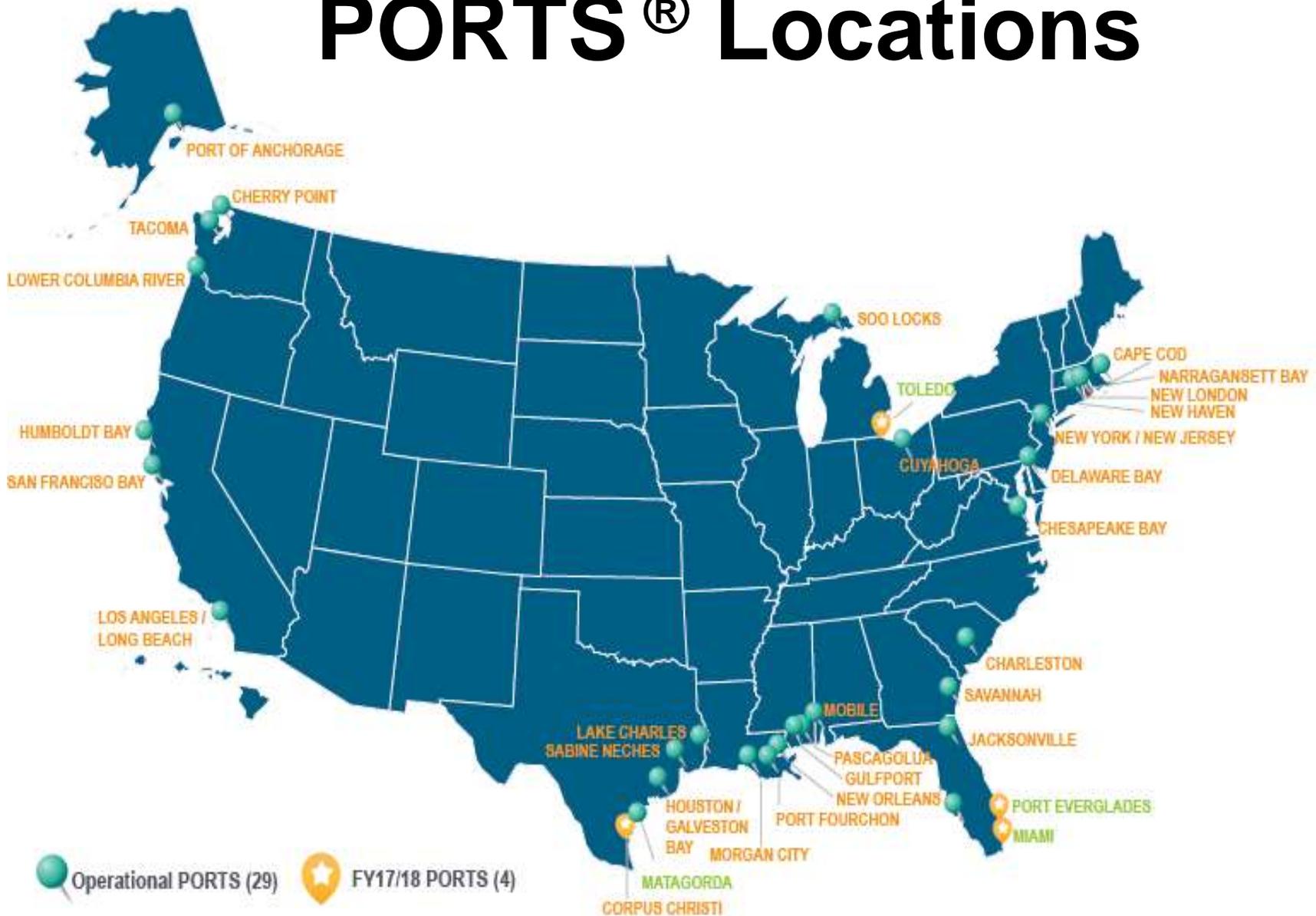
- Site selection for a user-defined system
- Funding for local:
 - Equipment
 - Installation
 - Operation & Maintenance

PORTS[®] Partners

- Port Authorities
- Marine Exchanges
- Pilots
- US Navy
- U.S. Army Corps of Engineers
- Private sector
- State agencies



PORTS[®] Locations



 Operational PORTS (29)

 FY17/18 PORTS (4)



Existing PORTS® Capability at the Nation's 175 Top Seaports in Total Tonnage

These 175 seaports are grouped into 50 PORTS® service areas represented by the dots on the map.



Increased Safety

Accidents have been reduced at seaports currently served by PORTS®.



Collisions and Groundings

↓ 59%

Groundings

(33% when groundings are combined with collisions)

↓ 37%

Property damage

↓ 45%

Injuries

↓ 60%

Deaths

Oil spills have been reduced at seaports currently served by PORTS®.



Oil Spills

↓ 21%

Reduction in oil releases due to collisions and groundings at seaports currently served by PORTS®.

Estimated Economic Benefits of a Fully-Built National PORTS® System

Potential Value of an Expanded PORTS® System Serving 175 Major U.S. Seaports

Benefit Area	Potential Annual Value	Potential Ten-Year Net Present Value
Improved Safety		
Reduced Commercial Marine Transportation Accidents <i>Property Damages</i> <i>Injuries and Deaths</i>	\$7.7 \$19.1	\$64.4 \$156.3
Reduced Recreational Boating Accidents <i>Property Damages</i> <i>Injuries and Deaths</i>	<\$0.1 \$0.4	<\$0.1 \$3.1
Reduced Oil Spill Remediation	\$5.2	\$42.3
Increased Efficiency		
More Efficient Commercial Marine Transportation	\$265.5	\$2,172.3
Enhanced Fishing Productivity <i>Commercial Fishing</i> <i>Recreational Fishing</i>	\$1.8 \$0.3	\$15.1 \$2.5
Total	\$300.0	\$2,456.0

(Millions of 2010 dollars)

(Ten-Year Net Present Value is the sum of discounted benefit values for the next 10 years.)



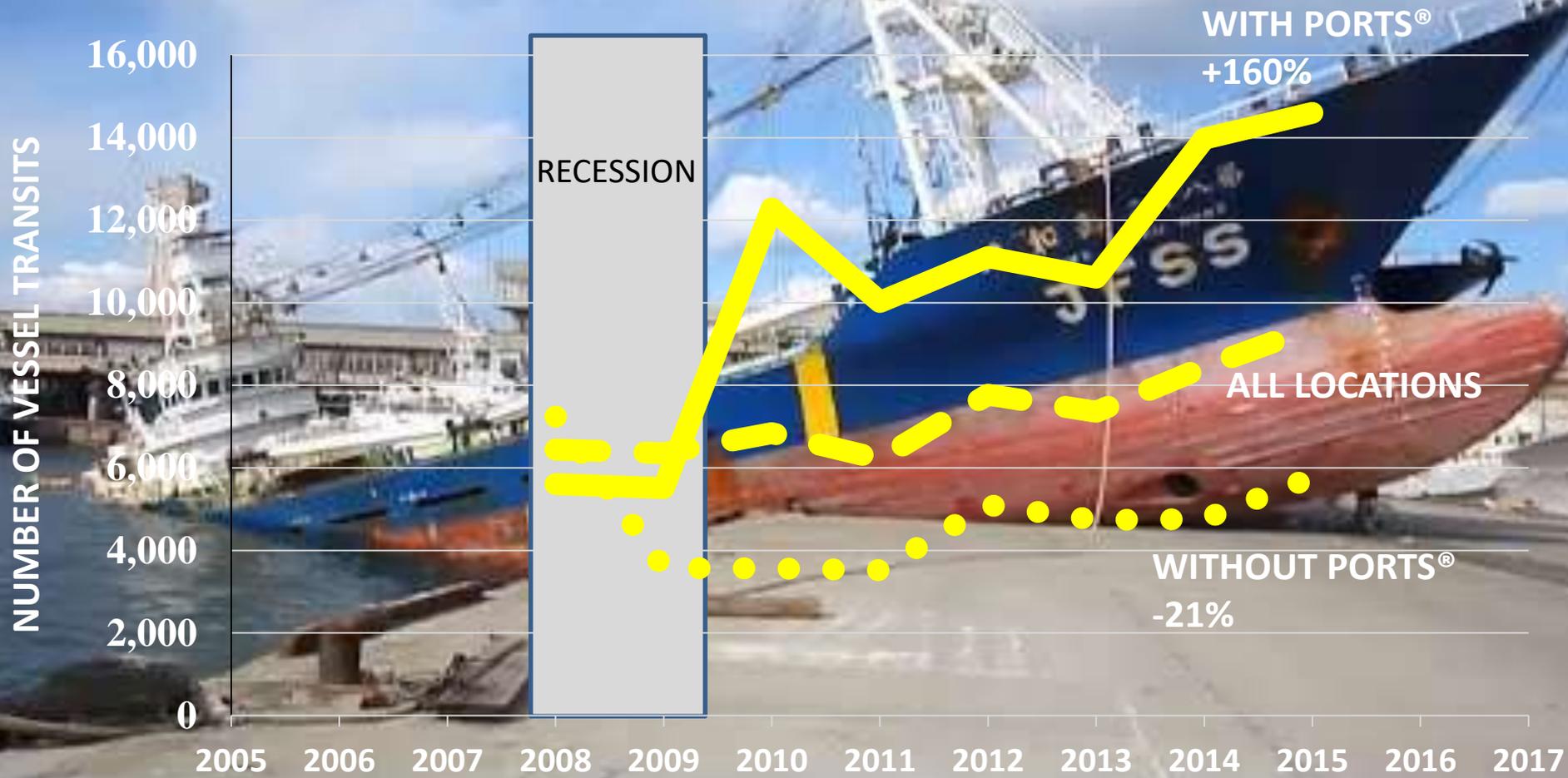
Vessel Allision, Collision, and Grounding Incidents: Estimated Impact of PORTS® (2017)

- Builds on the 2012 study, focused on impact of PORTS® on allisions, collisions and groundings (ACGs)
 - Looked at 2005–2016 data: 77 seaports which had PORTS® and 163 without PORTS®
 - Used 2008-2010 period where 17 seaports had PORTS established.
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Data Sources

- USACE Channel Portfolio Tool
- USCG Marine Information for Safety and Law Enforcement
- DOC USA Trade On-Line
- And others

VESSEL TRANSITS PER ALLISION



Source: United States Army Corps of Engineers, CPT Database; United States Coast Guard, MISLE Database

VESSEL TRANSITS PER COLLISION



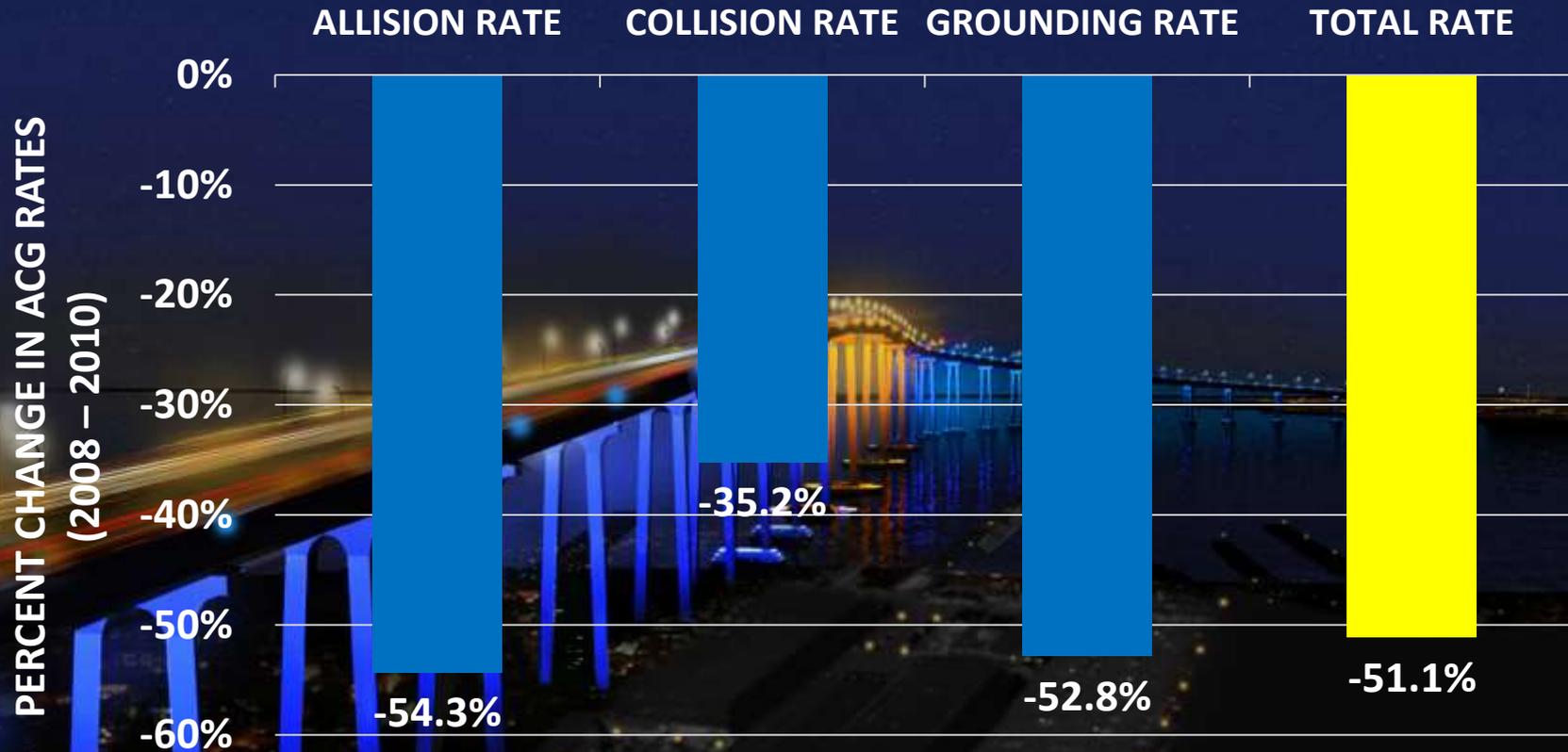
Source: United States Army Corps of Engineers, CPT Database; United States Coast Guard, MISLE Database

VESSEL TRANSITS PER GROUNDING



Source: United States Army Corps of Engineers, CPT Database; United States Coast Guard, MISLE Database

IMPACT OF PORTS[®]



Source: United States Army Corps of Engineers, CPT Database; United States Coast Guard, MISLE Database

Questions?



DOMINANT ACG OCCURRENCE LOCATIONS WITHOUT PORTS®

(2005-2016)

PORT	NUMBER OF ACGS	PORT	NUMBER OF ACGS
St. Louis, MO	142	Perth Amboy, NJ	56
Freeport, TX	89	Honolulu, HI	53
Boston, MA	77	Chicago, IL	51
Louisville, KY	77	Panama City, FL	49
Miami, FL	73	Beaufort, NC	48
Wilmington, NC	69	Port Everglades, FL	45
Greenville, MS	66	Vicksburg, MS	43
Peoria, IL	65	Brownsville, TX	40
Seattle, WA	64	Matagorda, TX	40
Corpus Christi, TX	63	Charlotte Amalie, VI	37
Memphis, TN	63	Detroit, MI	35
San Diego, CA	58	Kodiak, AK	32

ACCIDENT DEFINITION

- **Allision** – Striking of a moving vessel with a stationary object
- **Collision** – Striking of two moving vessels
- **Grounding** – Vessel striking of seabed or channel side

ACGs are influenced by:

(1) Regulations; (2) Technology; (3) Industry Best Practices; and, (4) Force Majeure

DATA SOURCES

- **UNITED STATES ARMY CORPS OF ENGINEERS**

- Channel Portfolio Tool (CPT)

Restricted Access

- **UNITED STATES COAST GUARD**

- Marine Information for Safety and Law Enforcement (MISLE)

- **DEPARTMENT OF COMMERCE**

- USA Trade On-Line (Census Bureau)
 - Gross Domestic Product (Bureau of Economic Analysis)
 - PORTS® Location and Coverage (NOAA/NOS/CO-OPS)



- **OFFICE OF MANAGEMENT & BUDGET**

- Discount Rate (Circular No, A-94)
 - Gross Domestic Product Deflator (Circular No, A-4)