

Adaptive and Resilient Ports



Nicole R. LeBoeuf

Assistant Administrator, NOAA's National Ocean Service

Chair, Committee on the Maritime Transportation System Coordinating Board

Hydrographic Services Review Panel

March 6, 2024





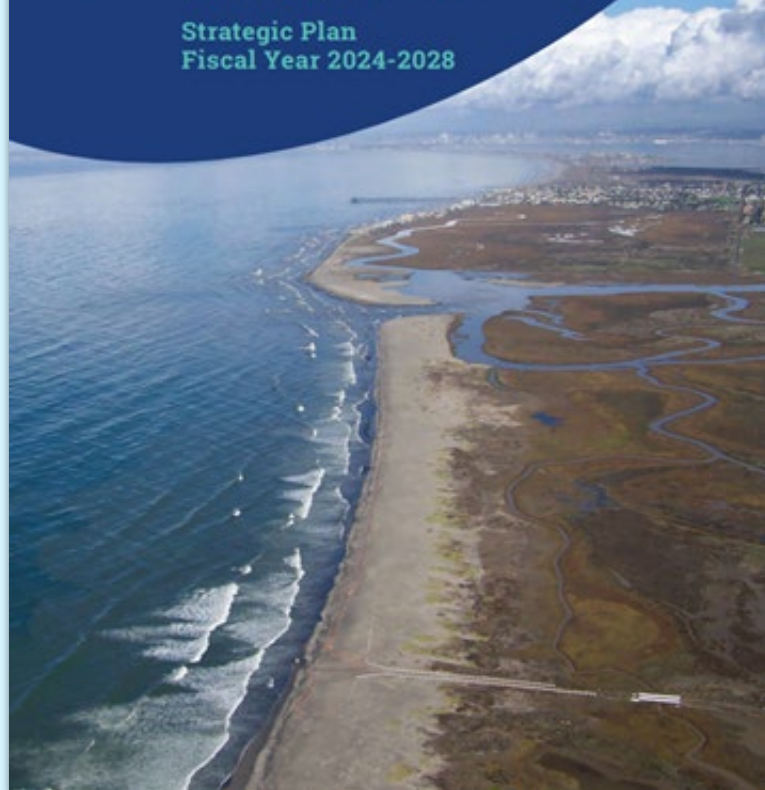
NOAA's National Ocean Service



NOS

National Ocean Service

Strategic Plan
Fiscal Year 2024-2028





The U.S. Committee on the Marine Transportation System Coordinating Board



Dept Of Transportation

Dept Of Agriculture

Dept Of Commerce



Dept Of Justice

Dept Of Defense

Dept Of Labor

Dept Of Homeland Security

Dept Of Energy

Dept of the Treasury

Joint Chiefs Of Staff

The State Department

Environmental Protection Agency

Dept of the Interior

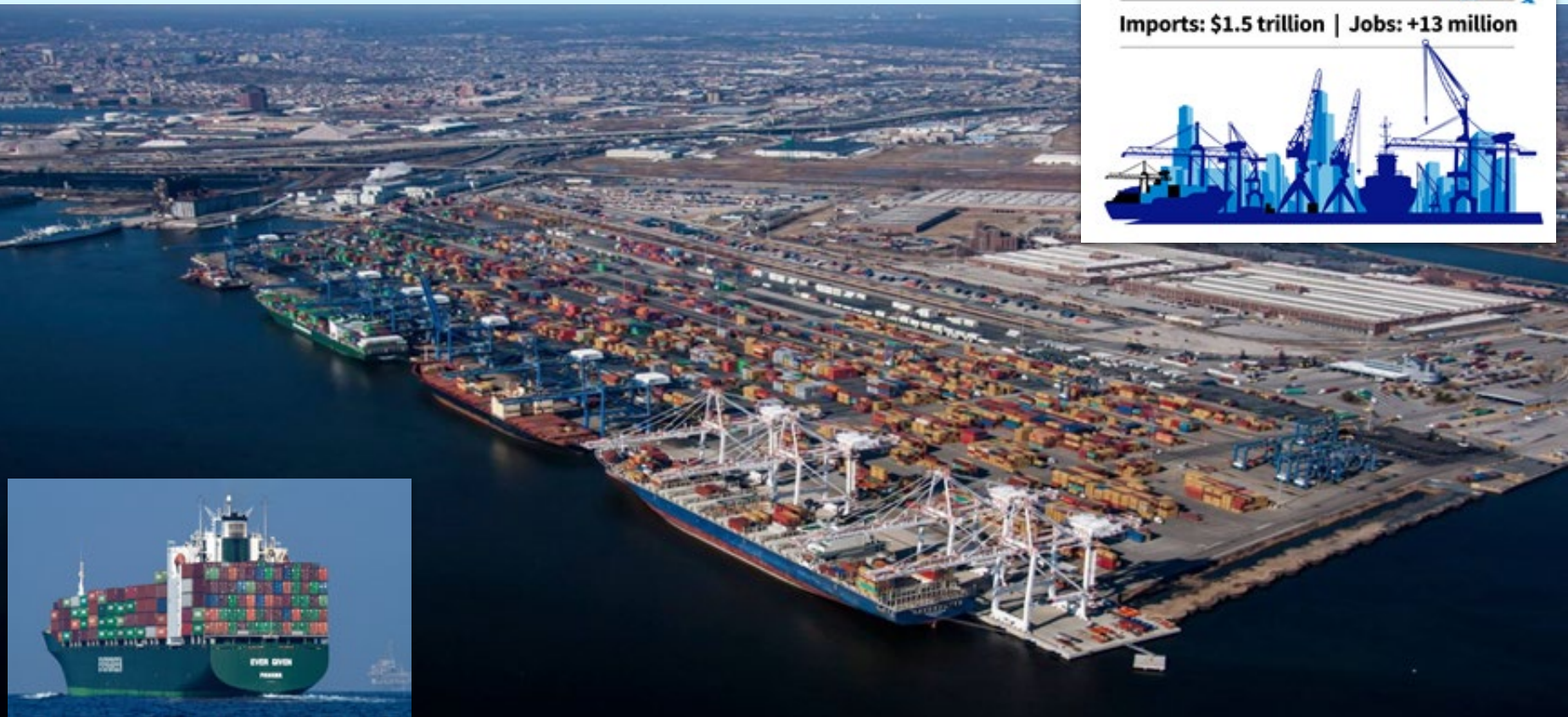
Federal Maritime Commission

CMTS serves as a ***Federal interagency coordinating committee*** for the purpose of ***assessing the adequacy*** of the marine transportation system, ***promoting the integration*** of the marine transportation system with other modes of transportation and other uses of the marine environment, and ***coordinating, improving the coordination of, and making recommendations*** with regard to Federal policies that impact the marine transportation system.





The Importance of Ports



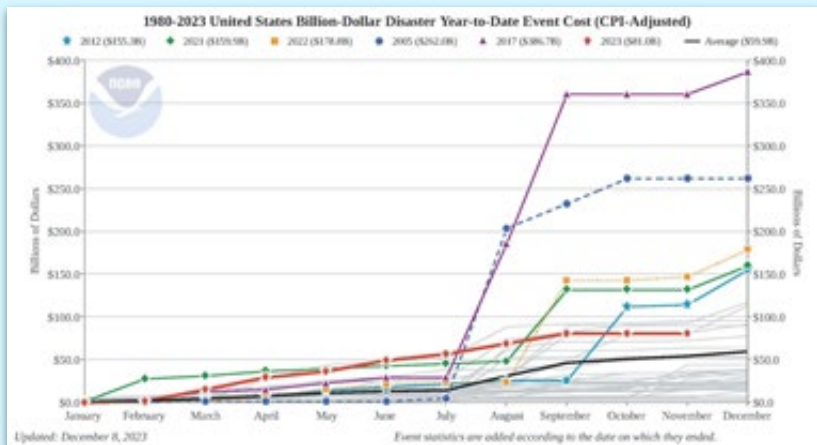
PORTS

Imports: \$1.5 trillion | Jobs: +13 million





Coastal Change is Not New, However....





Extreme Weather and Climate Change Exist and...



nature climate change

Systemic risks from climate-related disruptions at ports

Sepp Verschuor¹, Eos E. Koks², Shan Li³ & Jim W. Hall⁴

Climate-related risks from multiple natural disasters can have systemic impacts on global shipping, trade and logistic flows. By combining an extended climate impact assessment at 140 ports with a global model of transport flows, we quantify systemic climate-related risks to transport, global trade and logistic flows. We estimate a total of 1.5 billion USD of trade and logistic flows annually. We estimate a total of 1.5 billion USD of trade and logistic flows annually.



17NOV 10:23 PM

Seaports Could Lose \$67 Billion Yearly from Natural Disasters

Small islands and low-income nations face the largest relative monetary losses to their ports and maritime trade.

By Kimberly W. S. Carter
7 February 2020



The Port of Houston faces potential losses of \$200 million from natural hazards each year, the highest in the world. Above, a freighter approaches the port as a storming Gulf Coast heat, 02/04/20



communications earth & environment

ARTICLE

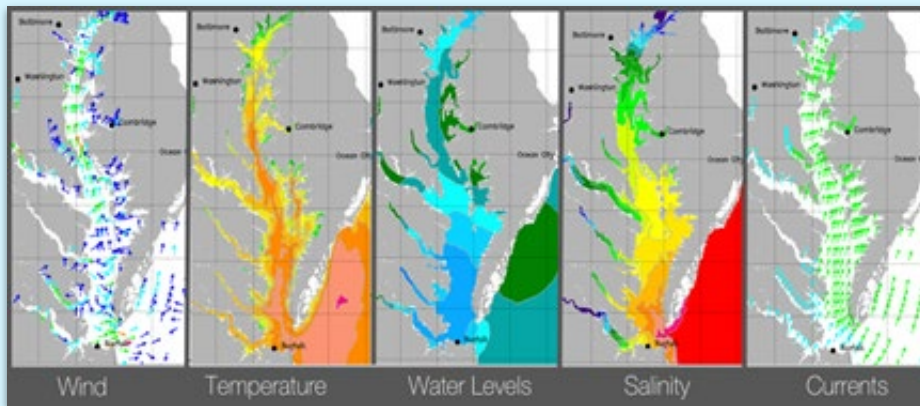
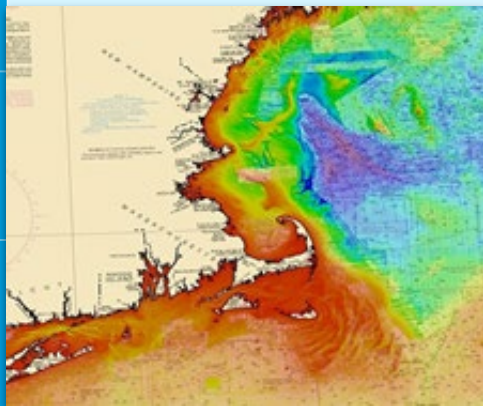
Multi-hazard risk to global port infrastructure and logistics losses

Sepp Verschuor¹, Eos E. Koks², Shan Li³ & Jim W. Hall⁴

Despite their economic importance, the risk that ports face from multiple natural hazards has not yet been examined on a global scale. Here, we perform an asset-level risk analysis of global port infrastructure from multiple hazards, quantifying the risk to physical asset damage and logistics services (i.e. port-specific risk) and maritime trade flows at risk (i.e. trade risk). We find that 80% majority of ports are exposed to more than three hazards. Globally, port-specific risk totals 7.5 USD per year, with 32% of the risk attributed to tropical cyclone impacts. In addition, 463.1 USD per year of trade is at risk every year, with trade risk as a fraction of total trade being particularly high in Small Island Developing States. Our results underline that port resilience is determined by various critical factors, such as engineering standards, operational thresholds, recovery duration, that vary widely across ports, requiring tailored solutions to improve port resilience.

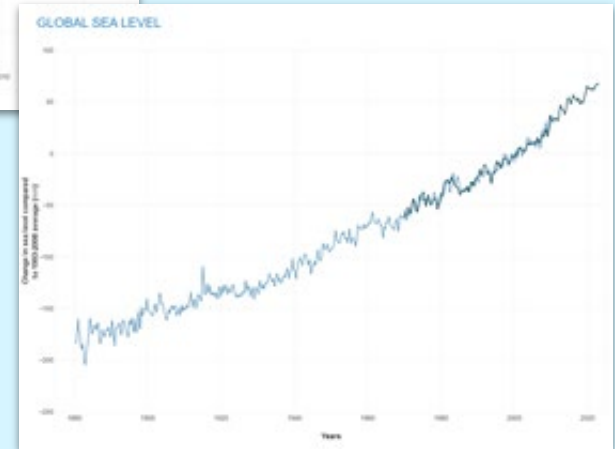
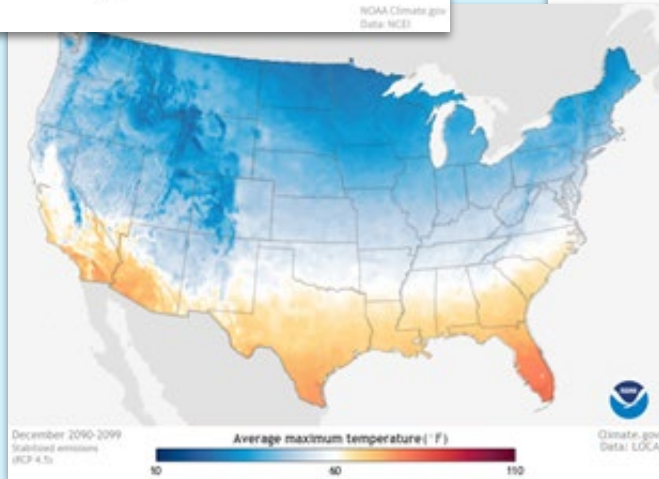
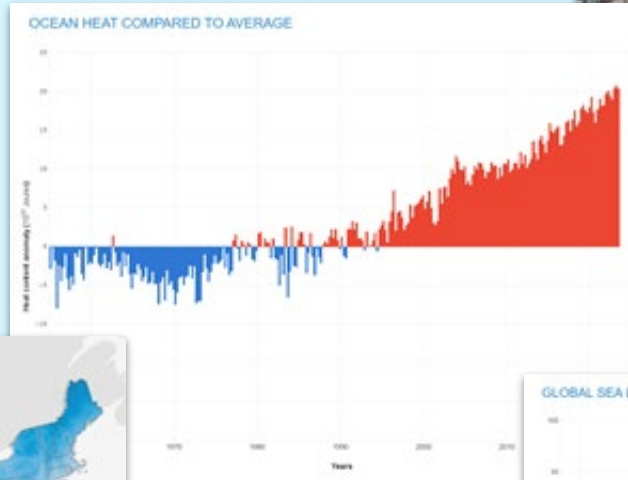
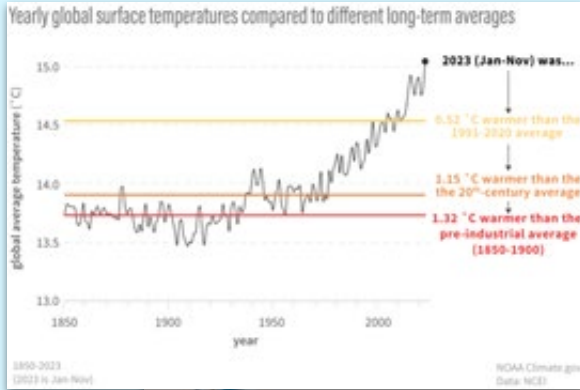


Authoritative Operational Data Exist

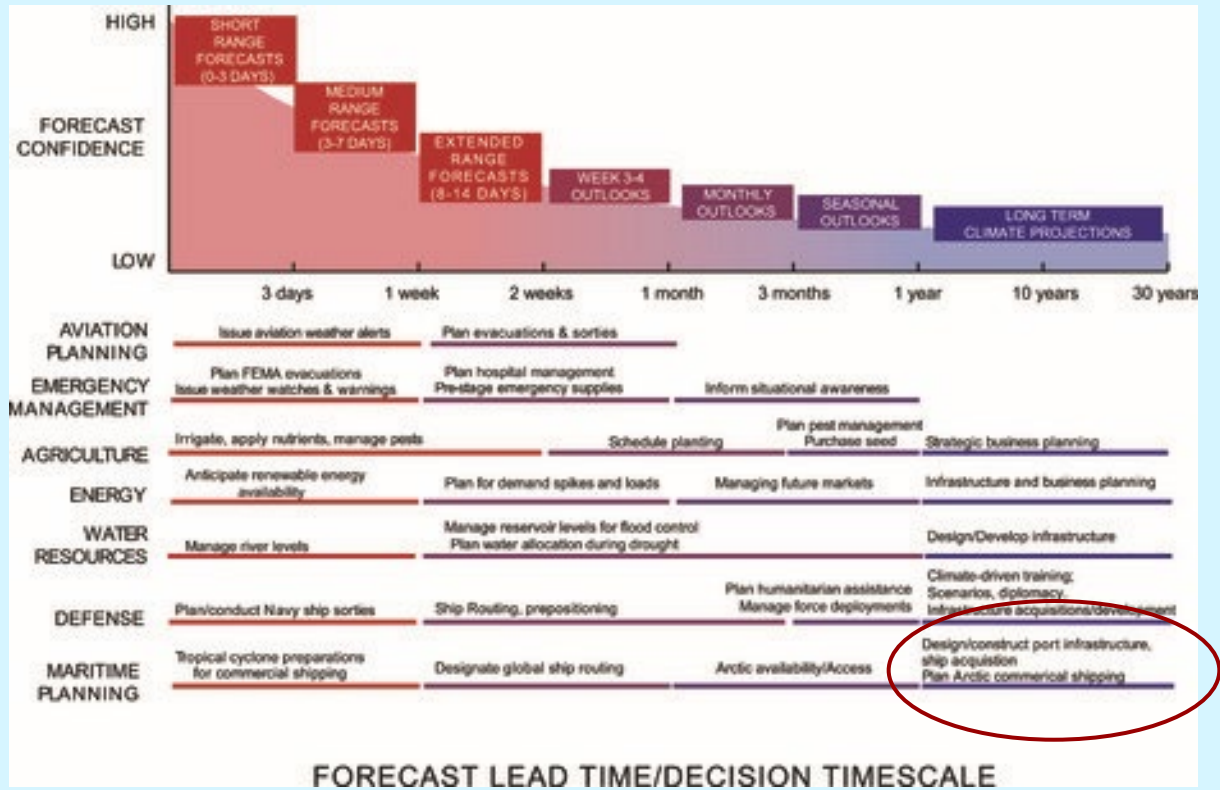




Authoritative Climate Data Exist



Climate Data for Infrastructure Planning



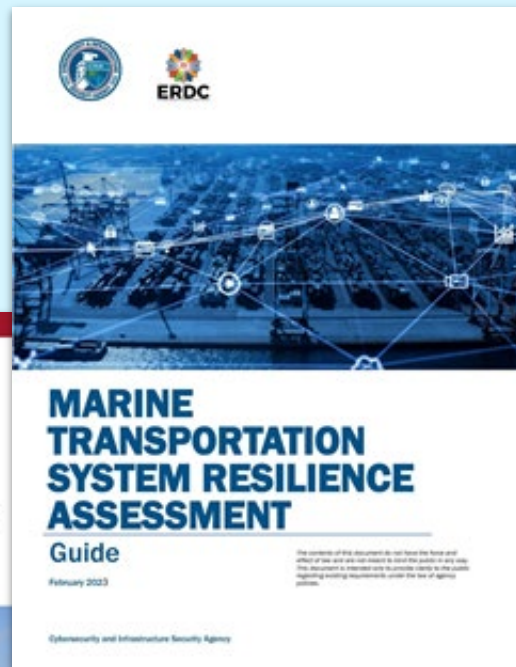


Resilience Guidance and Frameworks Exist



Infrastructure Resilience Planning Framework (IRPF)

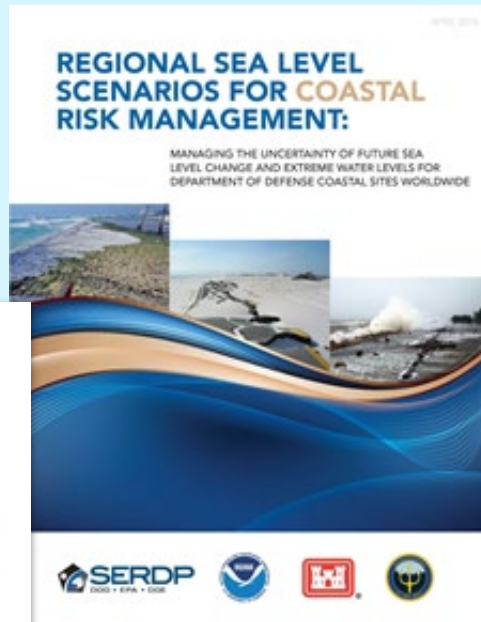
MAY 2023 | VERSION 1.1





Expertise and Federal Funding Exists

Wow! That's out of date.





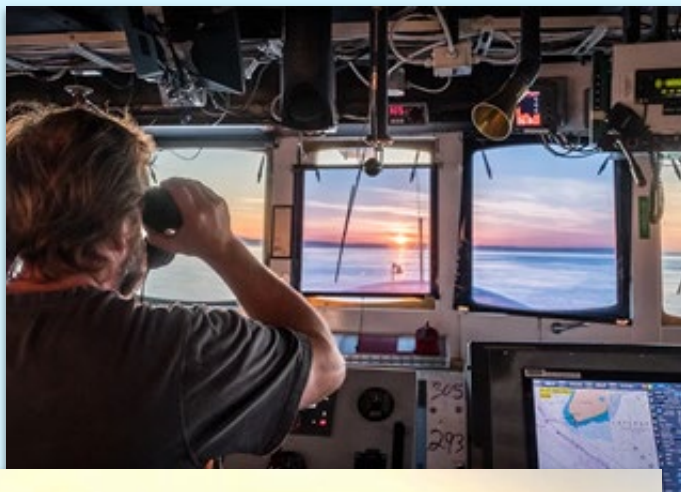
What's Happening in the Real World



Developing Resilient Ports

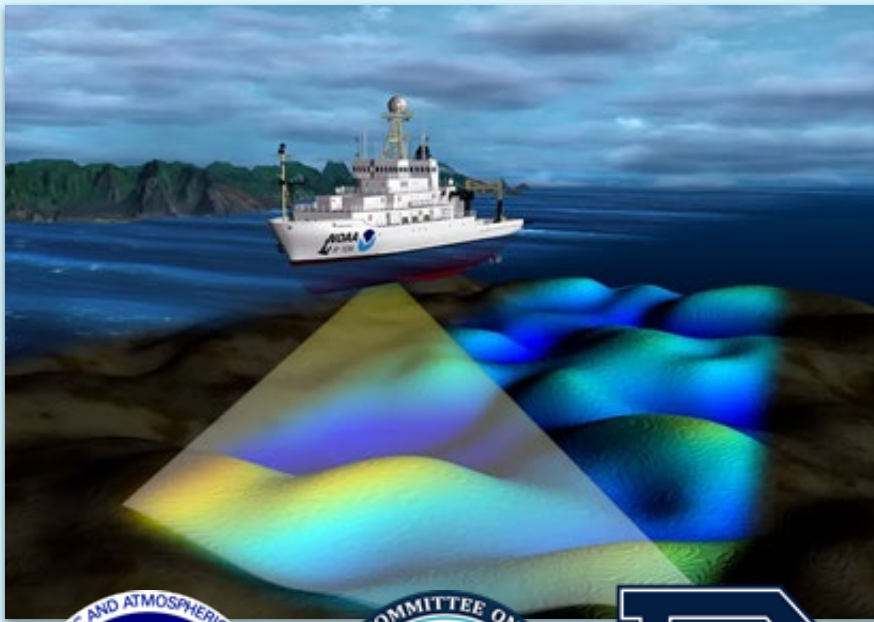


<https://www.aapaseaports.com/index.php/2022/04/01/developing-resilient-ports/>





Partnership, Collaboration, and Co-Development Focused



Next Steps: Information Gathering

- How vulnerable is your port to climate change over time?
- Have you used any federal guidance documents or resources to support long-term resilience planning?
- Where and how do you obtain environmental data for decision support?
- What does your port resilience planning process look like?
- What external considerations impact port resilience planning?
- Do you have an awareness of federal or state funding opportunities to support resilience planning?
- What else do you need (beyond funding and existing guidance and data) to plan for long-term climate resilience?



The screenshot shows the Federal Register website interface. At the top, it displays the date "Tuesday, February 27th" and the site's title "FEDERAL REGISTER - The Daily Journal of the United States Government". Below this, there are several summary boxes:

- Current Issue:** 148 documents from 51 agencies (192 Pages), 138 Notices, 6 Proposed Rules, 13 Rules.
- Public Inspection:** 3 documents from 3 agencies, 3 Rules.
- Special Filing:** 1 document from 1 agency, February 27, 2024.
- Regular Filing:** 152 documents from 47 agencies, 88 Notices, 1 Presidential Document, 7 Proposed Rules, 6 Rules.

A search bar is present with the text "Search Federal Register Documents" and a search button. Below the search bar, it indicates "839,744 documents" and a note: "Note: Documents older than 1994 are not searchable but can be found by FR citation." At the bottom, there are sections for "POPULAR DOCUMENTS" and "PRESIDENTIAL DOCUMENTS" with various links to recent documents.



Science, Service, Stewardship

