



IOOS Advisory Committee Meeting

IOOS Seniors Panel

U.S. Coast Guard

Outline

Past
Present
Future

Jonathan M. Berkson, PhD

August 29, 2012

PAST/PRESENT EXAMPLES

- Ocean Observations for navigation and safety 1790-present
- Ad Hoc Measurements (Hosted scientists, e.g. John Muir, 1881)
- Sustained ocean observation systems
 - USCG International Ice Patrol, 1913-present (SOLAS)
 - USCG Ocean Weather Ship Program, 1940-1977
 - USCG National Data Buoy Development Project, 1967-70
 - NOAA National Data Buoy Center Participation, 1970-present
 - National Ice Center (added to Navy/NOAA Joint Ice center), 1995-present
 - USCG Marine Safety Laboratory (MSL) Oil Source Collecting (spilled, suspected, natural), 1970s-present

Extracts from Alexander Hamilton's Letter of Instruction to the
Commanding Officers of the Revenue Cutters
June 4, 1791

Sir:

As you are speedily to enter upon the duties of your station it becomes proper briefly to point them out to you. Accordingly I send you a copy of the Act under which you have been appointed, and which are contained your powers and the objects to which you are to attend, and I shall add such observations as appears to me requisite to guide you in fulfilling the intent of that act....

....

It will be expected that a regular journal be kept in each cutter, in the same manner, as far as circumstances are applicable, as is practiced in sea voyages, and that all occurrences, relative to the execution of the laws, and to the conduct of all vessels which come under their notice, be summarily noticed therein, and that a copy of this journal to the end of each month be regularly forwarded to the Treasury.

It has also occurred that the cutters may be rendered an instrument of useful information, concerning the coast, inlets, bays and rivers of the United States, and it will be particularly acceptable if the officers improve the opportunities they have (as far as shall be consistent with the duties they are to perform) in making such observations and experiments in respect to the objects, as may be useful in the interests of navigation, reporting the result, from time to time to the Treasury.

....

The 5th section of the Act, requires that all officers appointed pursuant to this Act, should take a certain oath therein specified. The Act of the 1st of June, 1789, requires that you should also take the oath to support the Constitution of the United States. These oaths, each of your officers must take before some Judge of the United States, if access can conveniently be had to one. If not, before some other magistrate, duly empowered to administer oaths, and a certificate from him, of the taking of it, must be transmitted to the Comptroller of the Treasury.

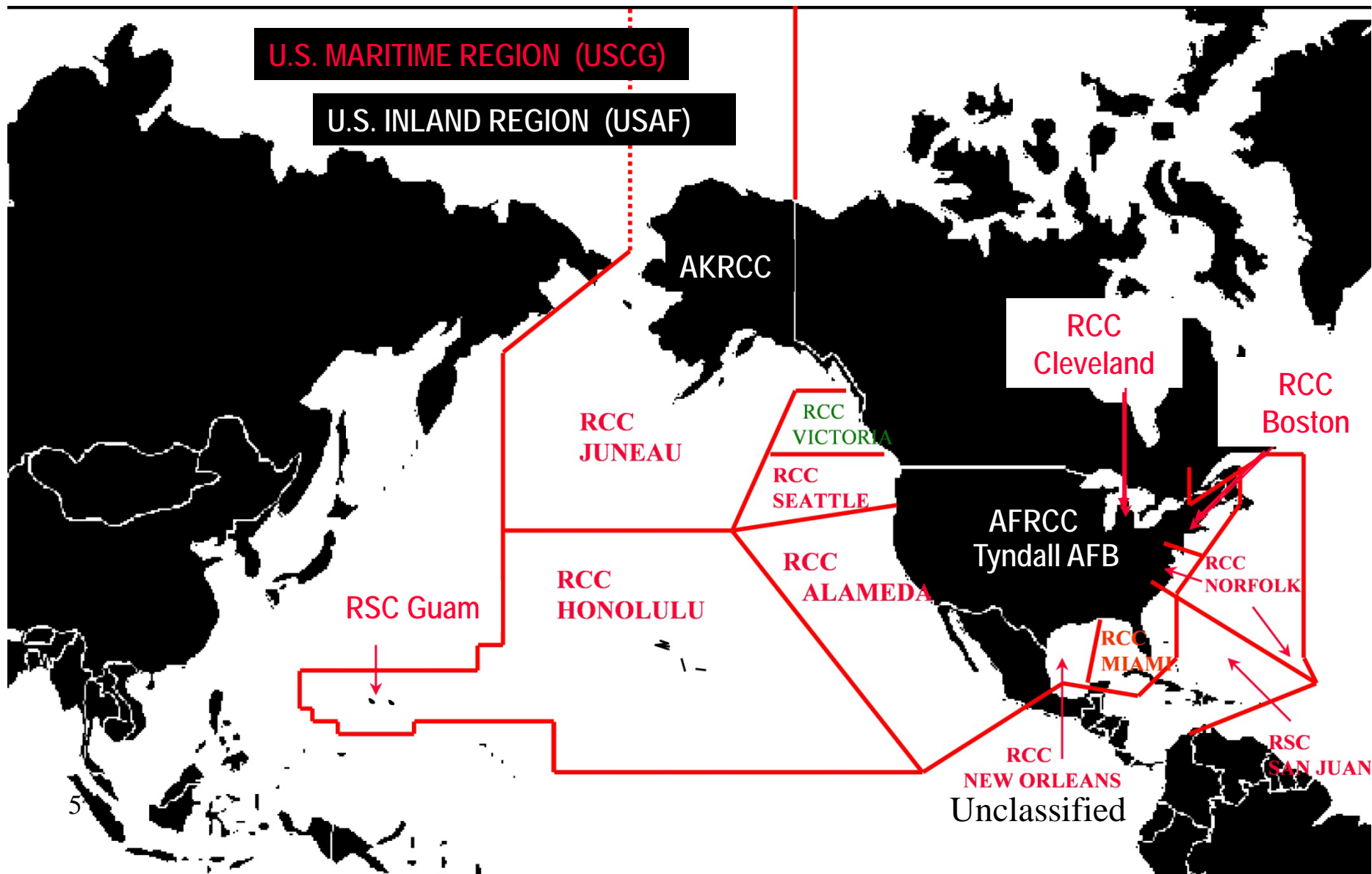
**I am sir, your obedient servant,
ALEXANDER HAMILTON, Secretary of the Treasury**

USCG Authorities & Responsibilities

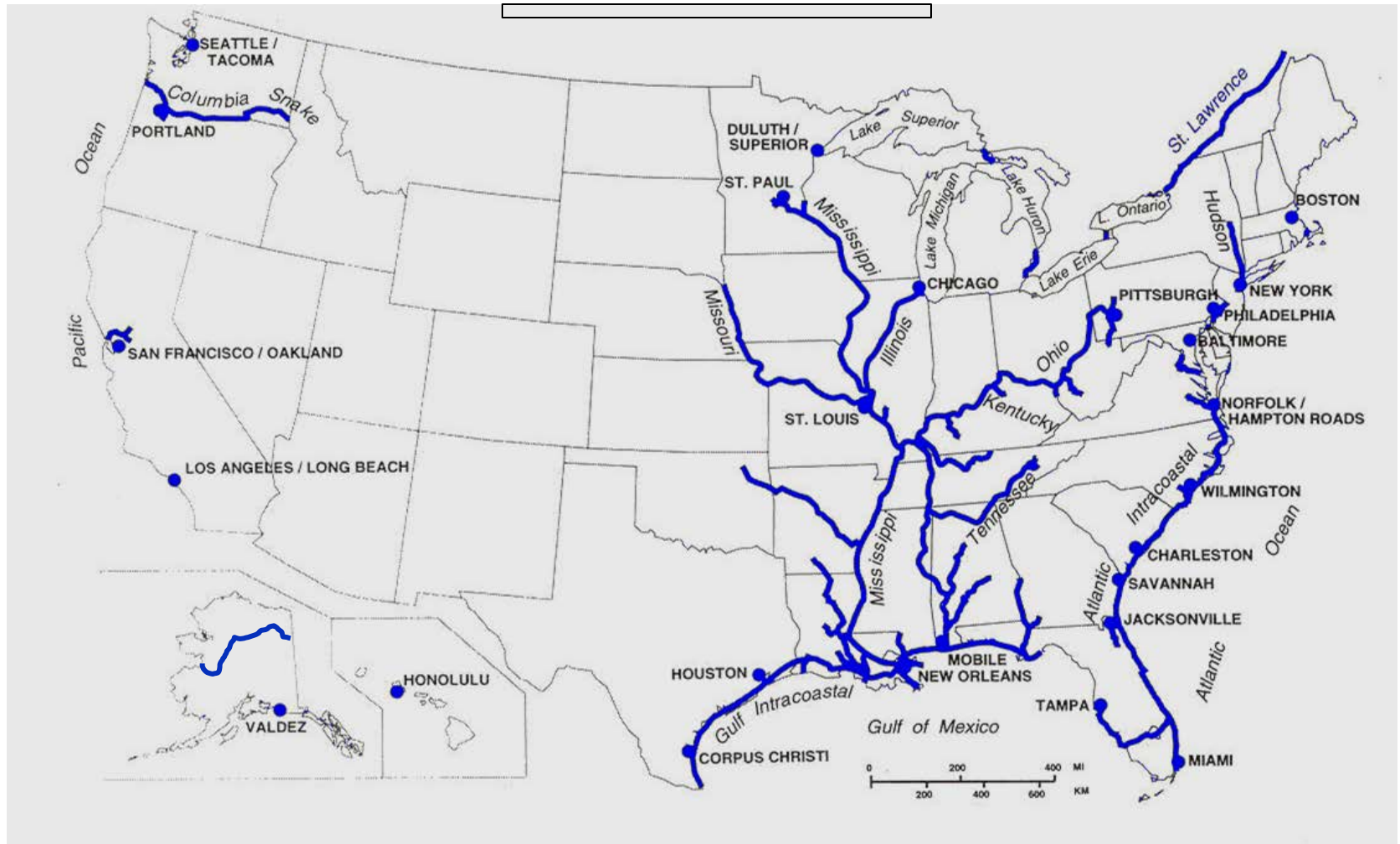
Statutory Missions

Safety <i>Saving lives & protecting property</i>	Security <i>Establishing & maintaining a secure maritime system while facilitating its use for the national good</i>	Stewardship <i>Managing the sustainable & effective use of its inland, coastal and ocean waters, & resources for the future</i>
<p>Search and Rescue</p> <p>Marine Safety</p> <p>Aids to Navigation</p>	<p>Illegal Drug Interdiction</p> <p>Undocumented Migrant Interdiction</p> <p>Ports, Waterways & Coastal Security</p> <p>Defense Readiness</p>	<p>Marine Environmental Protection</p> <p>Living Marine Resources</p> <p>Ice Operations</p> <p>Other Law Enforcement</p>

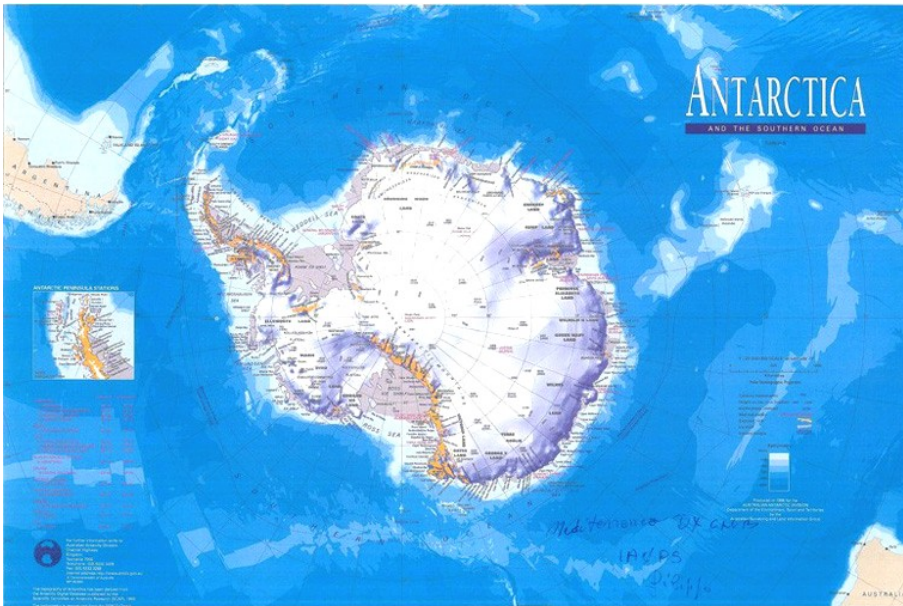
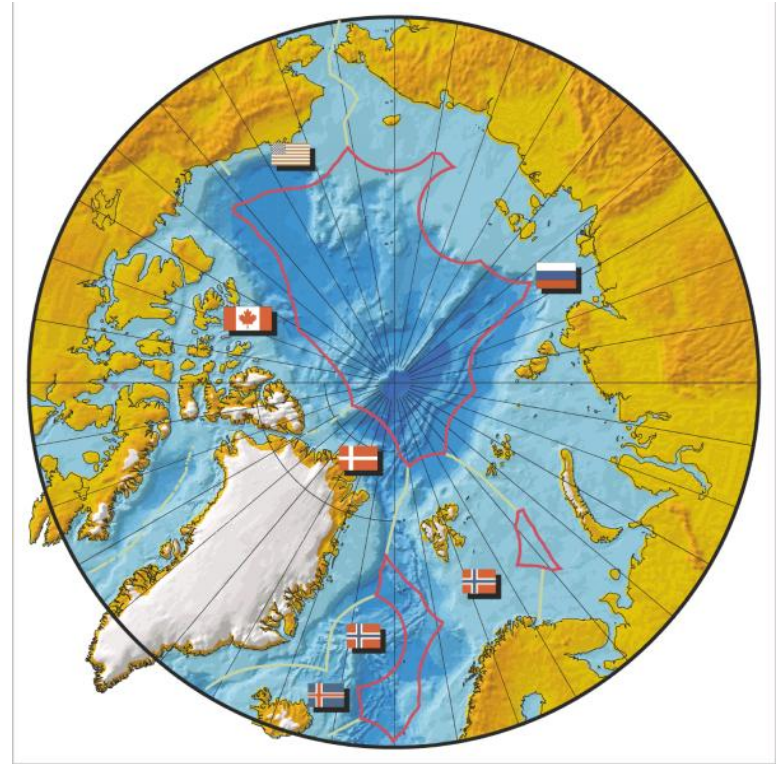
Search & Rescue



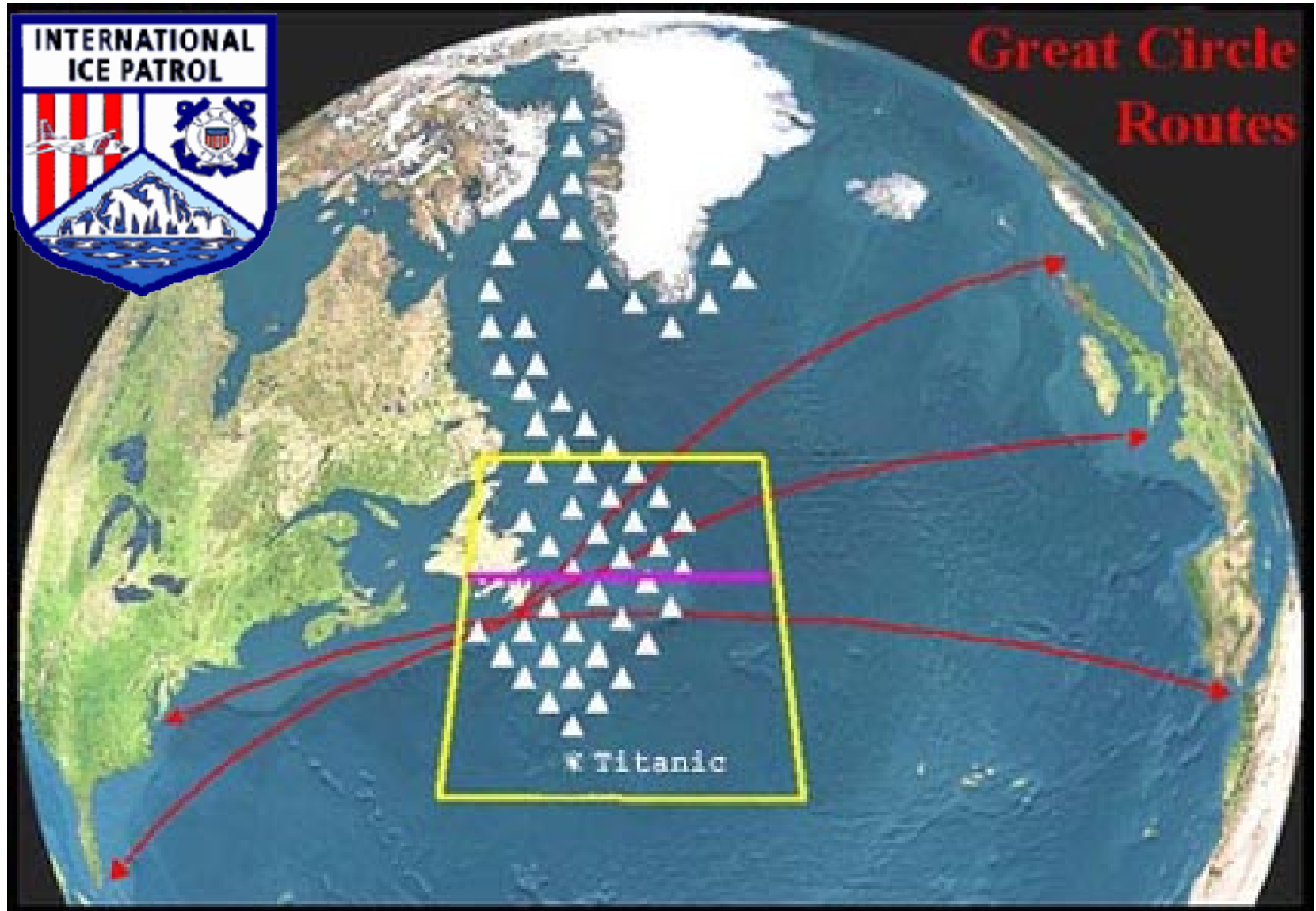
Ports and Navigable Waterways of the United States



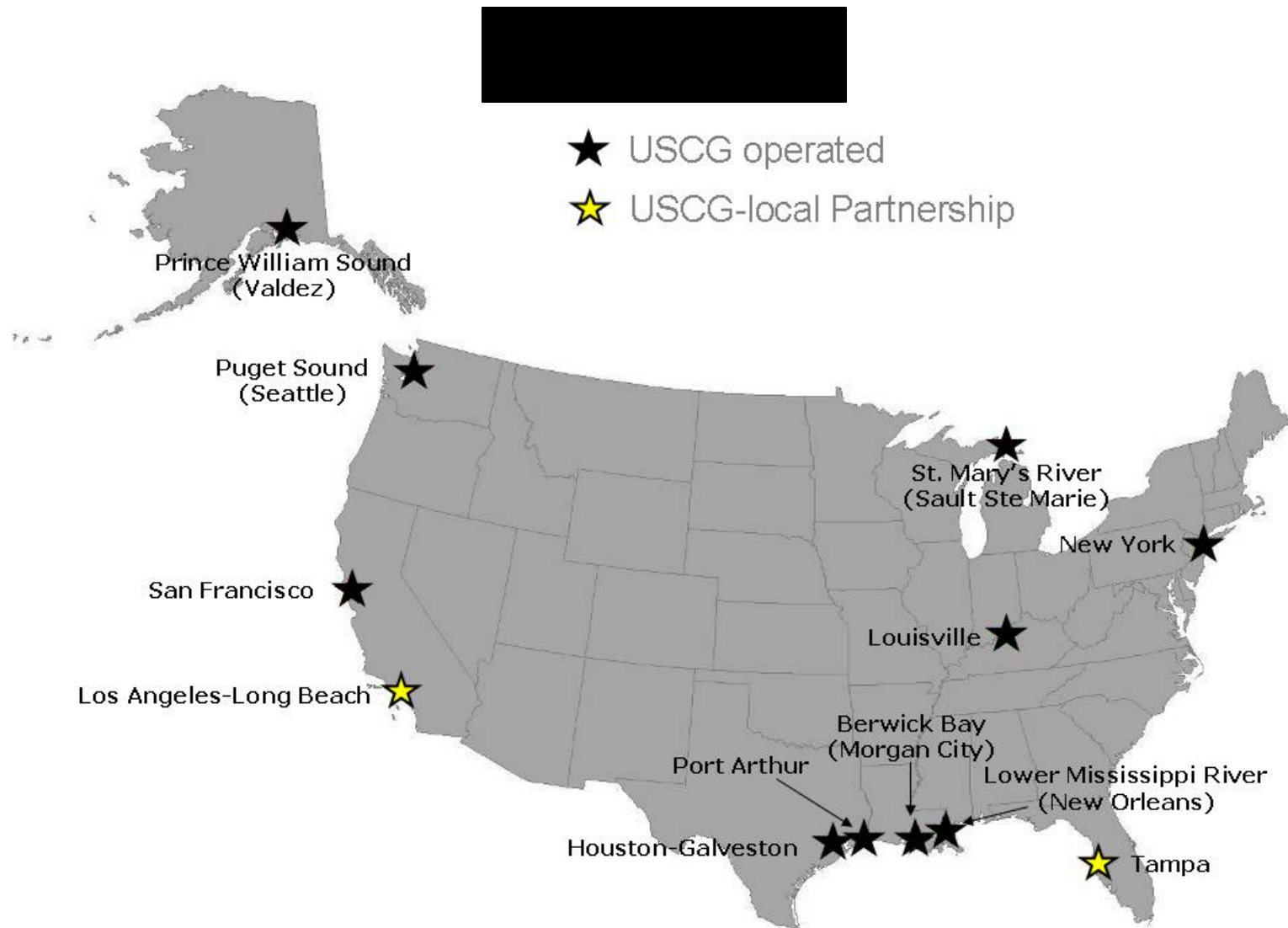
Polar Operations



International Ice Patrol



Vessel Traffic Service (VTS) Locations



U.S. Coast Guard Contributions to IOOS

Some Examples

- USCG Station Observations
 - From hosted sensors (NWS, GPS Water Vapor, HF Radar, Weatherflow, etc.)
- USCG Icebreaker Observations
 - Domestic Icebreakers: ice observations to NIC , vessel support (ad hoc)
 - Polar Icebreakers: science mission data, underway (bathymetry, Met, ice obs to NIC)
- National Ice Center data and products (Navy, NOAA, and USCG)
- USCG/NOAA Program to disseminate NOAA/PORTS via USCG/AIS
- International Ice Patrol – Iceberg distribution data and products
- SLDMB current data (SAR ops, special request)
- DHS/S&T Support (HSARPA, University Programs, etc.)
- Platform Support (vessel, A/C, boat data buoy deploy, retrieve, etc)
 - NOAA National Data Buoy Center (NDBC)
 - USACE Scripps Wave CDIP
 - D17 Arctic Domain Awareness Program (C-130, Cutters, Boats)
 - Ad Hoc, e.g. Surface-water sampling in Lake Erie during winter

Coastal Weather Program: USCG Cooperation with NWS*

- Only sources of weather observations in certain U.S. coastal areas are USCG stations and cutters
- Collecting and providing raw meteorological and oceanographic data to NWS
- Disseminating NWS weather forecasts and warnings via radio broadcasts
 - Voice
 - Text
 - Graphical Products
- USCG communications/radio stations accepting weather observation messages for NWS

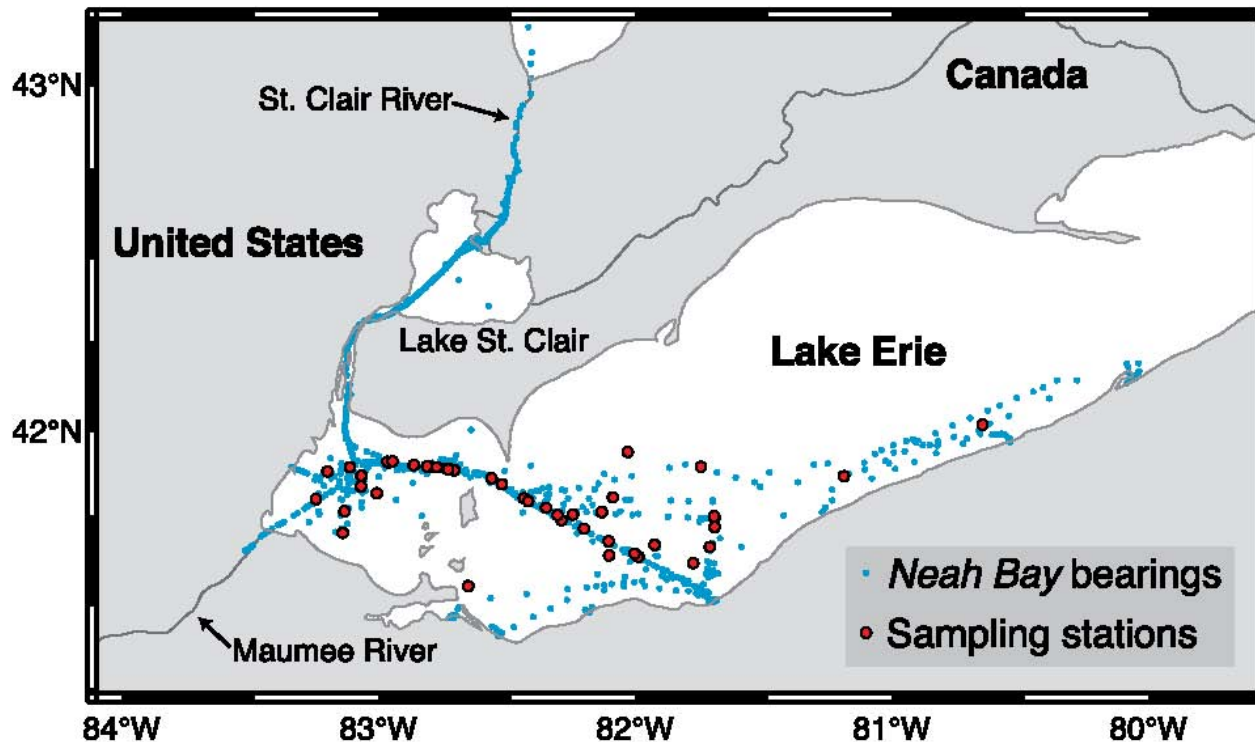
*Coordination with UNCLOG (USCG/NWS Coordination Liaison Group)

U.S. Coast Guard Use of IOOS

Some Examples

- Search and Rescue Program: Input to Environmental Data Server of SAROPS
- USCG Station Observations
 - USCG-Hosted Sensors (NWS, GPS Water Vapor, HF Radar, Weatherflow, etc.)
- USCG Icebreaker Observations
 - Polar Icebreakers: science missions, underway measurements (bathymetry, Met)
 - Domestic Icebreakers – ad hoc
- National Ice Center Contributions (Navy, NOAA, and USCG)
- Living Marine Resources: Fisheries Enforcement
- International Ice Patrol
- Oil-Spill Response operations via NOAA per OPA 90
- Vessel traffic Services – uses NOAA PORTS
- DHS/S&T Support (HSARPA, University Programs)
- Platform Support (vessel, A/C, boat data buoy deploy, retrieve, etc)
 - NOAA National Data Buoy Center (NDBC)+
 - USACE Scripps Wave CDIP
 - D17 Arctic Domain Awareness Program (C-130, Cutters, Boats)
 - Ad Hoc

Location of Water Samples collected in Lake Erie, Winter 2010-2011 by Icebreaking Tug USCGC NEAH BAY



From Oysterman, Woityra, Bullerjahn, Beall, and MacKay,
EOS 93: 10, 6 Mar 2012

U of Alaska/Hokkaido U Mooring - part of the Arctic Observing Network Project - is deployed by Buoy Tender USCG Sycamore off Barrow, Alaska, Aug 2012



Current profiler, salinity-temperature sensors, and ice-profiling sonar provide important information about ice and ocean conditions. Principal Investigators H. Eicken and K. Ohshima. Analysis of Arctic Observing Network data were used by the National Security Cutter USCGC BERTHOLF, which was preparing to deploy to the Arctic Ocean. US Coast Guard Photo by ENS K. Dacimo

Challenges

- Financial

- Budget “The de-commissioning of high endurance cutters and patrol boats and the tightening of staffs in 2013 budget will reduce our personnel strength by over 1,000 people . . . but this is necessary to make room to bring on new assets.”*
- Potential impediments to making/continuing contribution to IOOS
 - Recent restrictions on contracting
 - Budget-driven management

- Radio Spectrum

- HF Band (HF Radar)
- C Band (Satellite-Based Synthetic Aperture Radar)

- Expansion to Arctic

- “The promise of shorter shipping routes, petroleum discoveries and tourism are propelling an increase in human activity. ...Imperative for expanded Coast Guard capability in Arctic”*
- Nome Fuel Supply escort by HEALY was a new mission
- “Healy is our only operational polar icebreaker....We are working to replace Polar Star to operations in 2013”*
- Agreement on Cooperation in Aeronautical and Maritime Search and Rescue in the Arctic – May 2011
 - Agreement among eight Arctic Council Nations includes zones of responsibility
 - First legally binding instrument negotiated under the auspices of the Arctic Council
 - US zone includes Alaskan waters to North Pole, part of Bering Sea, and areas around Aleutians

- Resilience

- Minimally Manned Ships

* From Admiral Papp’s Address on State of the U.S. Coast Guard, 23 Feb 2012

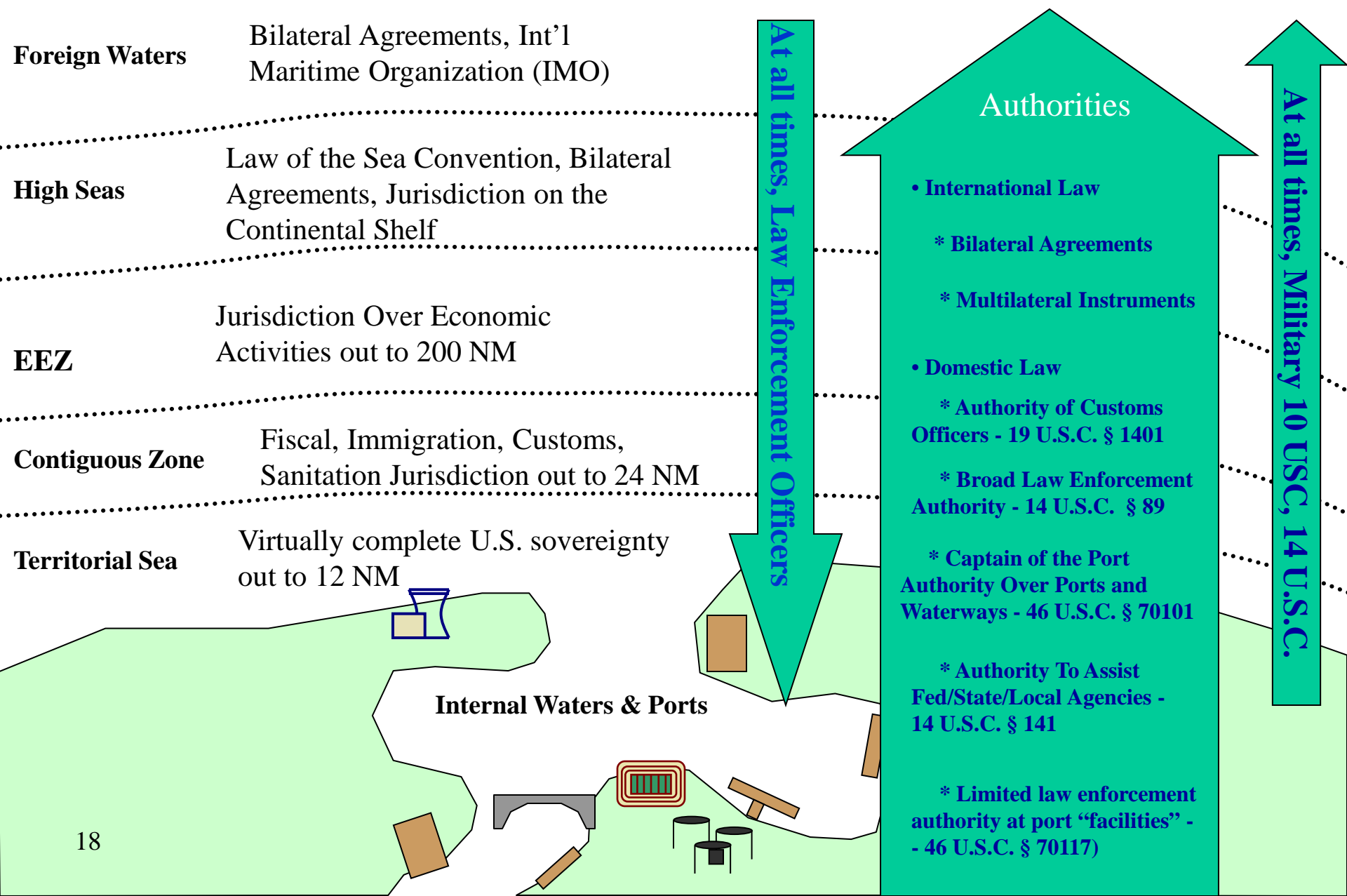
QUESTIONS?



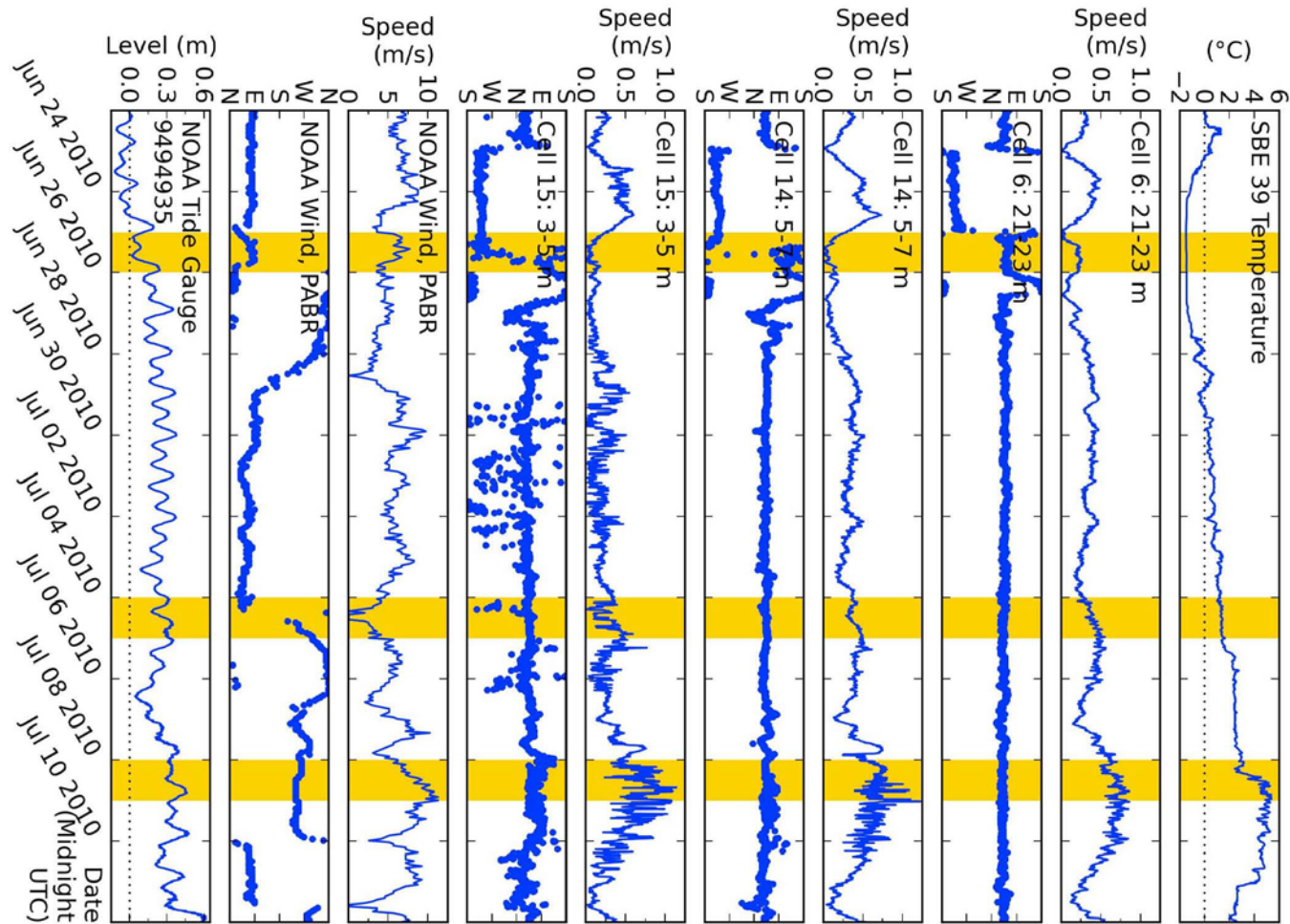
EXTRA SLIDES



USCG Legal Authorities



Data from University of Alaska/Hokkaido University Mooring
 Example from Petrich et al., 2012



The current profiler, salinity-temperature sensors, and ice-profiling sonar provide important information about ice and ocean conditions.

U.S. Coast Guard – Areas, Districts, and Sectors

