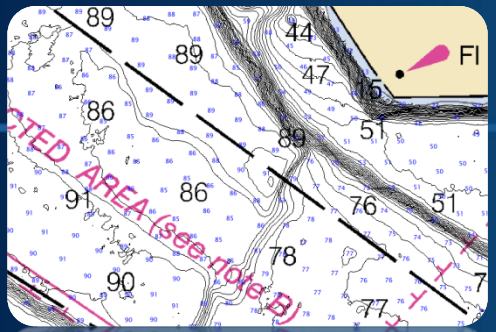
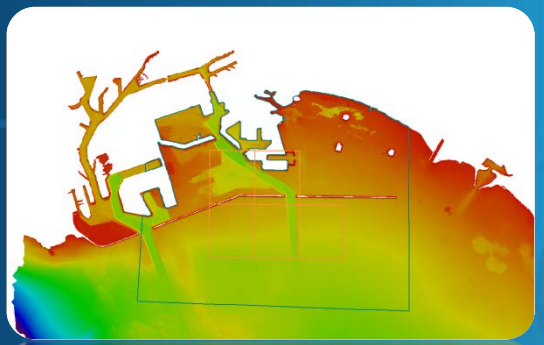




The Next Generation of Precision Navigation: Products and Services to Support Real Time Decision-making for Coastal Marine Transportation

Dr. Neil D. Weston

Office of Coast Survey, NOS, NOAA

Precision Navigation

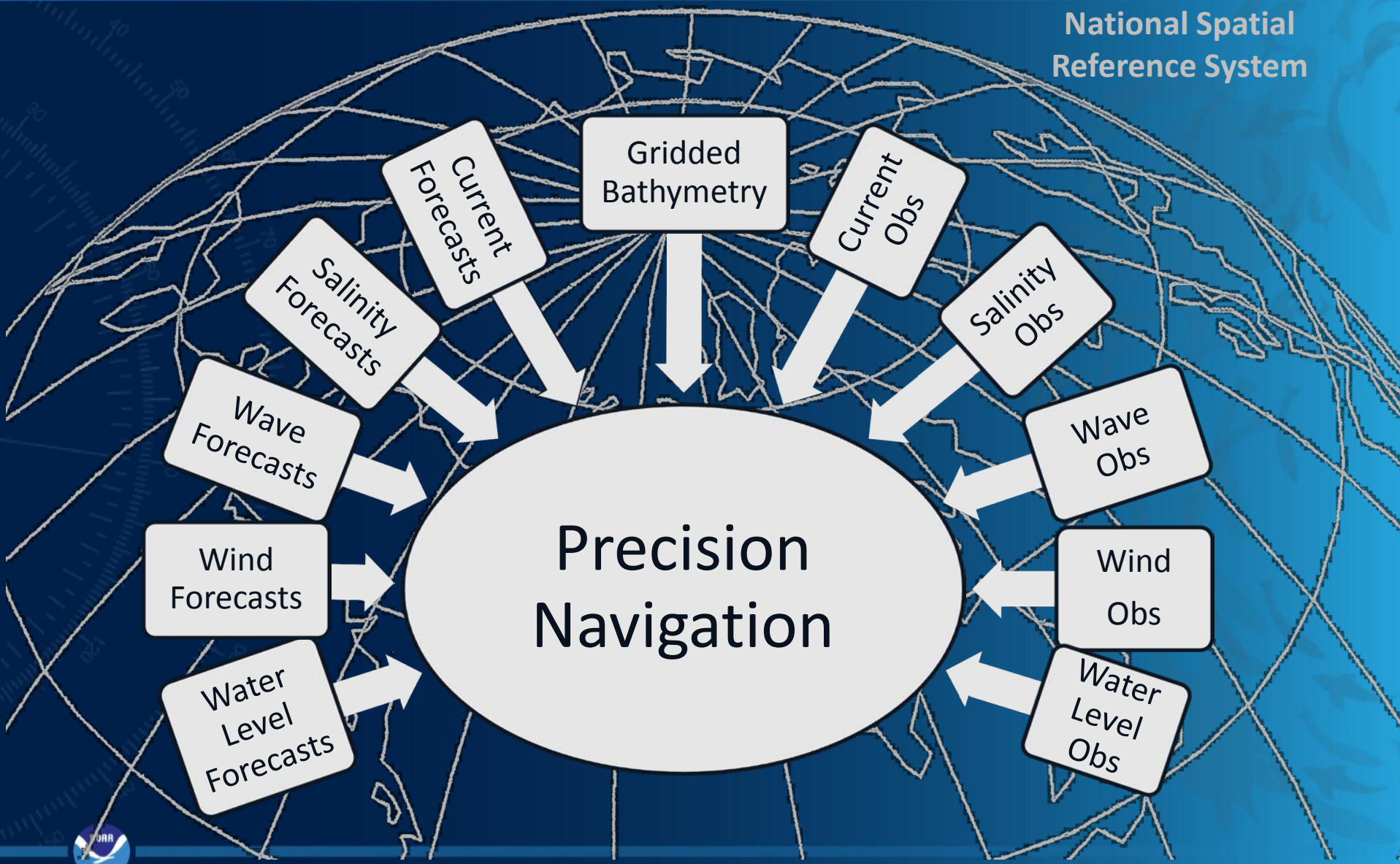
The ability of a vessel to safely and efficiently navigate and operate in close proximity to the seafloor, narrow channels, and other hazards.


SEAMAR VICTORY

Goals of Precision Navigation

- Enable 24x7 Port Operations
- Increase the efficient flow of marine commerce
- Increase the safety of marine transportation
    - Decrease collisions
    - Decrease groundings
    - Decrease allisions (collisions with bridges/other fixed objects)
- Protect the environment from the damaging effects of marine catastrophes.
- Improve community resilience

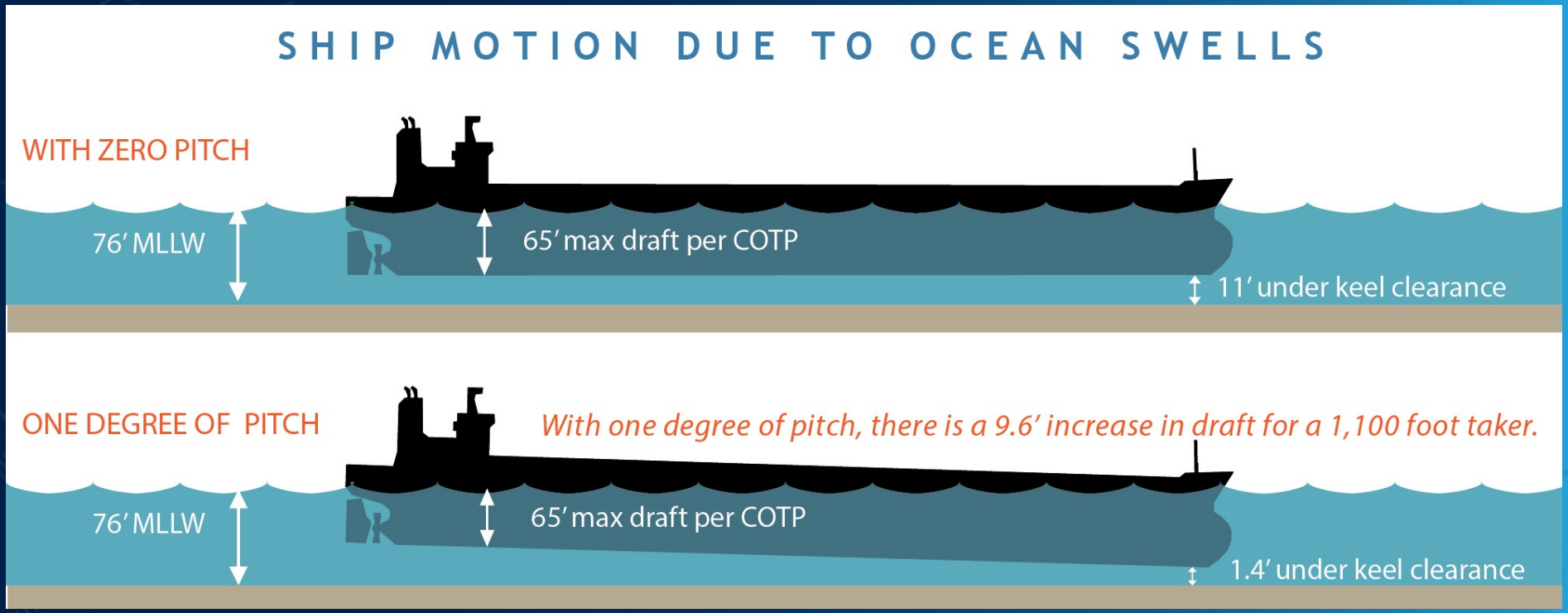
Integrated Data for Better Decisions



Port of LA/Long Beach Project

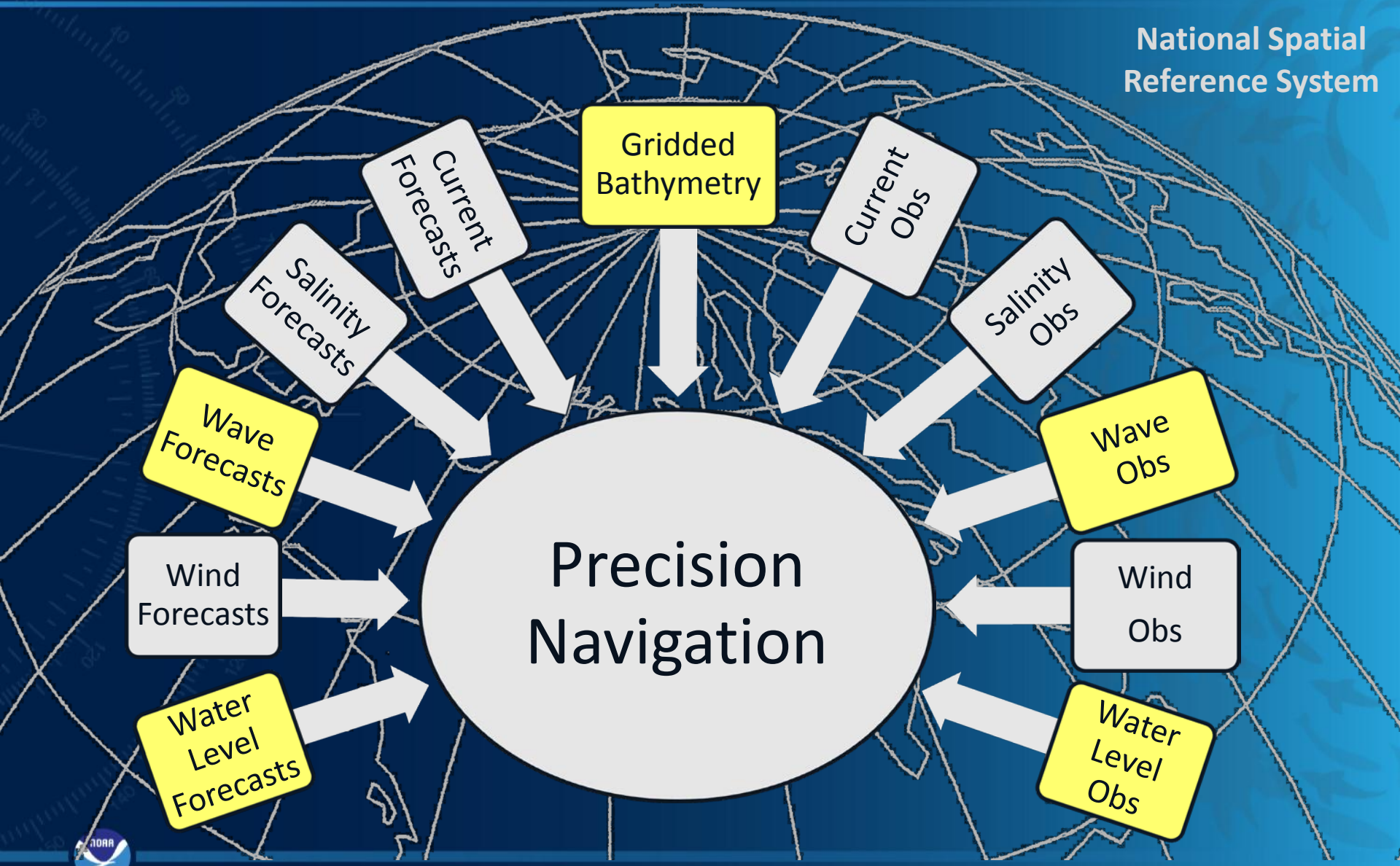
Challenge

- Very large tankers enter the Port of Long Beach
- How we can reduce the risk they touch bottom?

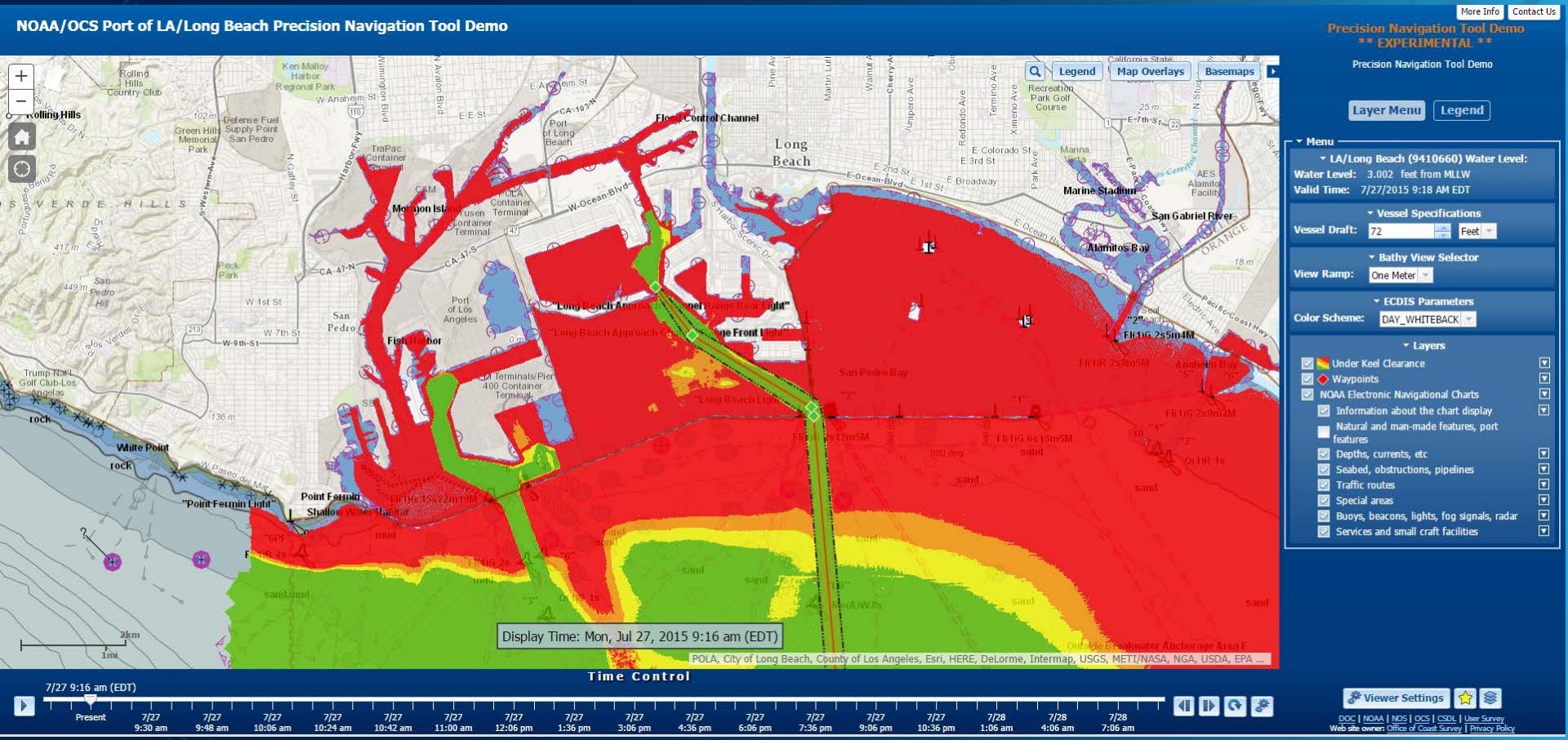


Long Beach Precision Navigation Data

National Spatial Reference System



LA/Long Beach – Precision Navigation Tool

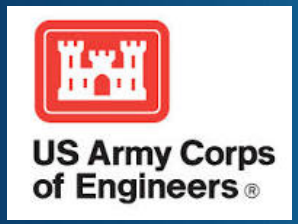


Who is Involved

Stakeholders

& PIER 121 USERS

Partners providing critical observation/geospatial information

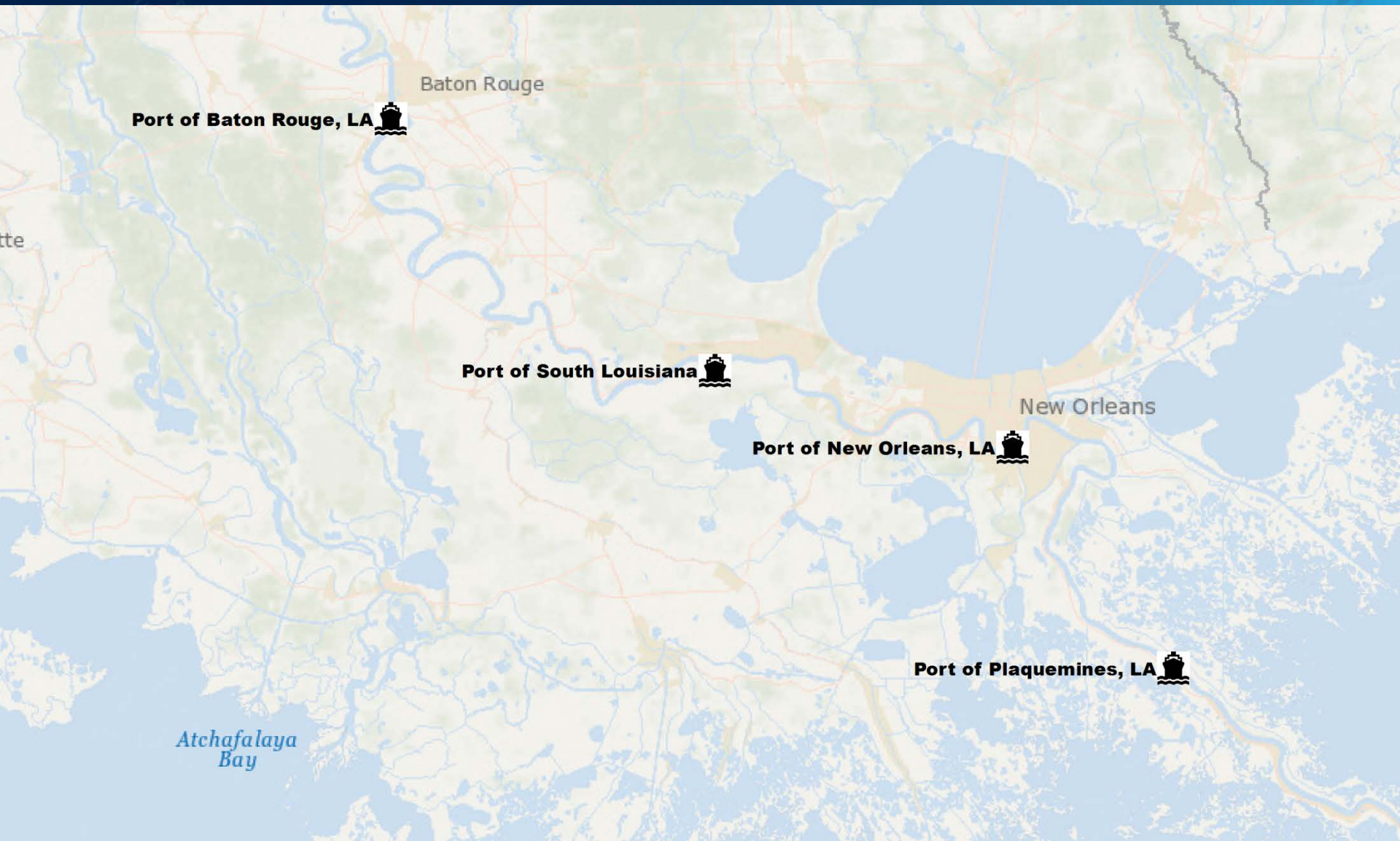


LA/Long Beach – Lessons Learned

- Precision Navigation needs for an area vary
- Similar needs will exist in other areas but will require both national as well as tailored solutions
- Need to identify gaps as well as specialized needs in partnership with RAs and others
- Need to integrate data streams and improve delivery of them
- Need a systematic approach to soliciting precision navigation needs for other areas

Where to next?

Mississippi River Ports and Delta



Who are the Precision Navigation Customers?

Starting in the Gulf of Mexico

- Mariners
- Port operators
- Pilots
- Commercial shipping companies/agents

Issues on the Mississippi River

- Today's charts are not meeting the needs of today's mariners (higher resolution, with real-time overlays)
- There are low under-keel clearances on the river.
- Waves dominate in the approaches during winter storms.
- Currents are problems in bends and entrance to SW Pass.
- Air gaps on bridges are tight and getting tighter.
- Better water level forecasts are needed.
- Water levels are dominated by riverine discharge.
- Fog is a frequent problem.
- Diverse vertical datums need harmonization.
- Anchorages are crowded and fouled by revetments.

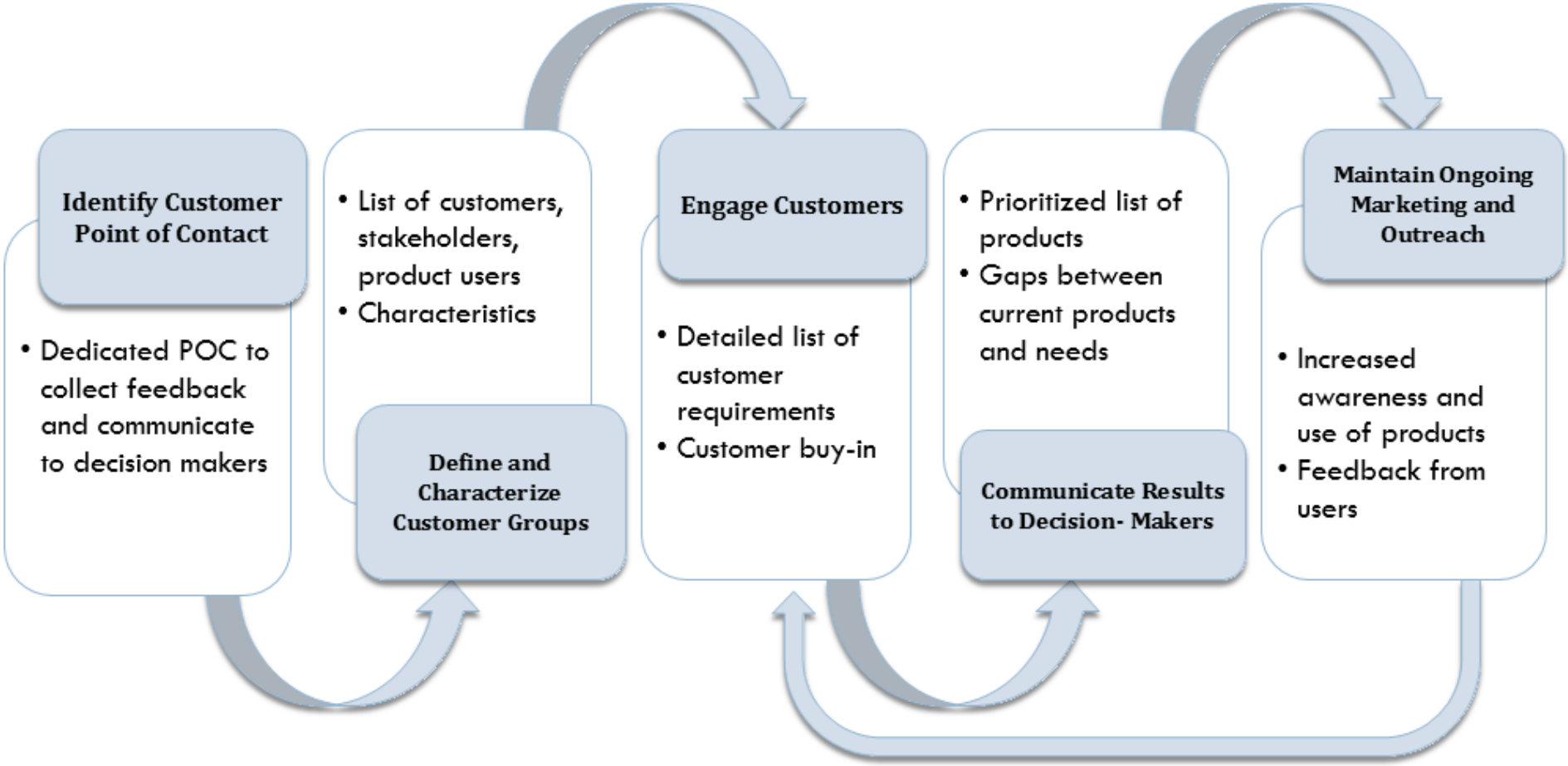
Benefits of addressing these issues

- Maximize loading at the port of departure to take economic advantage of shipping to port of arrival.
- Increase the planning and expanded use of anchorages for safe and efficient logistics.
- Allow ships to plan ahead for bridge clearance for smooth, safe port operations and fuel savings.

Example Responsive Products/Tools/Data

- Enhanced and integrated decision support tools
- Develop/expand risk reduction nowcast/forecast models
- Provide chart information in standard formats
  - Portable Pilot Units, iPads
  - Vessel Traffic Control Systems
- Advance chart of the future
  - ENC 2.0
  - Overlays (high resolution bathy, tides, currents, waves)
- Fill observation gaps to support the above

Customer Engagement Strategy



Next Steps

- Exchange regional contact information for NOAA (Nav Mngrs and others) and IOOS RAs
- Engage RAs in customer engagement strategy, starting with Gulf of Mexico
- Exchange information on precision navigation requirements
- Plan for future customer engagement elsewhere, clarify respective roles and responsibilities
- Other?

Thank You