Report to 2019 Mariners' Workshop

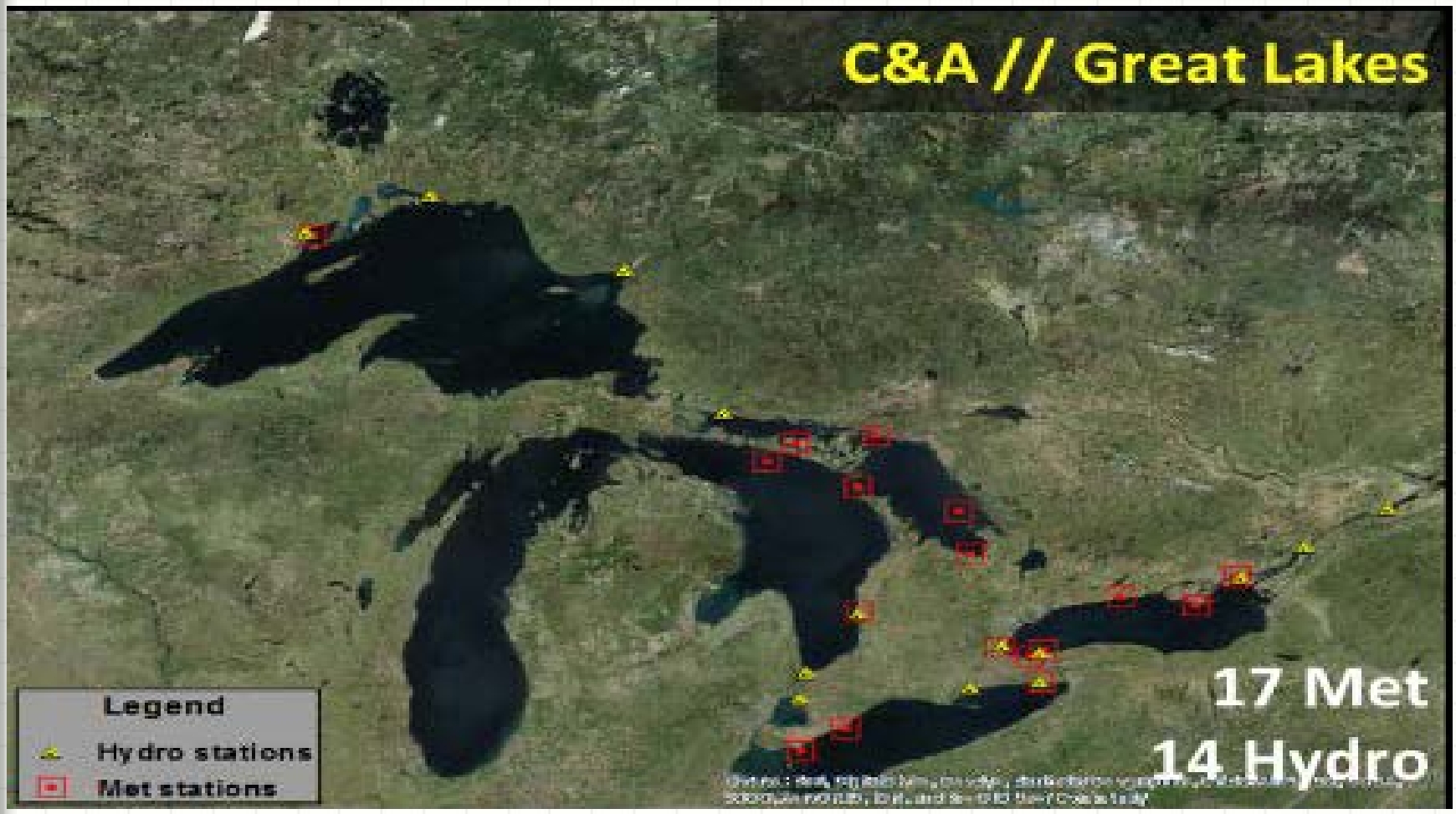
Great Lakes Region

Overview

- AIS messaging for Meteorological and Hydrographic information.
- Seaway technologies.
- Virtual and Synthetic ATONs.
- Great Lakes semi autonomous vessel projects.

AIS Met/Hydro Messaging

- Test bed AIS/Hydro Messaging established at 17 Met stations and 14 Hydro stations on the Great Lakes.



AIS Met/Hydro Messaging

Additional considerations:

- Work with the NOAA and the USCG to establish similar capabilities on the US side of the Great Lakes.
- Consult with mariners on additional locations.
- Validate the usefulness of this service. Continue the feedback process.
- Canadian domestic fleet has VSAT broadband access to the internet onboard and has been obtaining this type of info directly from source website. Less of a need for AIS MET/Hydro messages.

Seaway Technologies

- Nearing completion of the Hands Free Mooring installation on all deep locks.
- Possible adoption by the ocean fleet of DIS.
- Better understanding vessel surging the while entering the lock.
- Determine if there is a requirement to change the traditional order of turn for vessel lockages.

Virtual and Synthetic ATONs.

AIS-ATON Selection Considerations:

- Chart Clutter –ensure we are supporting the mariner's situational awareness, not creating extraneous clutter that overload the system.
- Feedback from mariners is critical.
- Evaluation of Virtual/Synthetic AIS ATON is ongoing. Reliability, visual references, ice conditions, night navigation, double pilotage etc. Need to trial during harsh winter conditions on the Great Lakes.

Semi Autonomous vessel projects

- Various projects underway by domestic companies involving the development and testing of auto locking and auto docking technologies.
- Involving the use of precise DGPS, Lidar and high resolution and thermal cameras.
- Digital twins of test vessels being created and updated by real time data.
- Systems are using AI to create tools for the mariner to enhance safety and efficiency.
- For example - Speed adaptive controls, together with the allocation of the thruster and rudder, ensure that the vessel enters the lock in a consistent manner every time, while minimizing the influence of external forces from wind and current.

Semi Autonomous vessel projects

- Ability to accurately recognize and identify other vessels, objects and structures by an array of sensors.
- Tie in with existing shipboard sensors.
- System being developed that could automatically control the vessel's lateral position and heading, while allowing the operator to focus on controlling the speed of the vessel during entry.
- Remote monitoring capability ashore.
- Large amounts of data being transmitted ashore for shore side analysis.

Semi Autonomous vessel projects

Semi Autonomous vessel projects

- Currently assessing the potential use of this technology:
  - Seaway.
  - Ports.
  - Congested and confined waterways.
  - Other user driven neeeds.

Questions