

# WMO Expert Team on Maritime Safety Advancements in S-41X Development

16th HSSC Meeting  
May 2024



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# S-41X Weather Overlays

- **S-411 Edition 1.1.0, June 2014** under updating process and proposed renamed as Dynamic Ice Information (ECCC, Scott Weese);
- **S-412** under development and proposed renamed as Marine Weather Warnings (NOAA/OPC, Joseph Sienkiewicz);
- **S-413** Marine Weather and Wave Conditions and **S-414** Marine Weather and Wave Observations development will follow S-412 development;
- Scope descriptions revised and awaiting WMO approval prior to delivery to TSSO.

# S-411 Dynamic Ice Information

- **Dynamic Ice Information** refers to the supplementary dynamic information to complement the static information contained in S-101;
- **Consideration on whether MSI and non-MSI sea-ice information** will be portrayed in S-411;
- **Visual portrayals and messages** to notify about local ice analyses and forecasts;
- **Information include** ranges of ice concentration, the extent of sea and lake ice, and the locations/concentrations of icebergs;
- **Critical update** underway to take account of S-100 5.2.0.

# S-412 Marine Weather Warnings

- **Marine Weather Warnings are in the form of polygons** depicting areas where wind, wave, and ice accretion are ongoing or predicted to meet WMO Pub. No. 558/471, IMO Resolutions and SOLAS Convention established criteria within a defined period of time;
- **Polygon warning portrayals** will provide ample warnings of adverse weather along a vessel's route. For coastal and offshore waters, warning polygons may also be provided for near gale force winds, thunderstorms/squall events, and reduced visibility, also based on WMO Pub. 558.

# S-413 Marine Weather and Wave Conditions

- **Includes synoptic meteorological and oceanographic analysis and forecasts** in graphical and gridded forms;
- **Graphical portrayals** will illustrate the locations of various weather systems over the oceans, including frontal systems, cyclonic low pressure systems, and regions of high barometric pressures;
- **Gridded data** of winds, waves, visibility, etc. in Hierarchical Data Format 5 (HDF5) provides polygons and gridded information beyond the warning period as defined in S-412.

# S-414 Marine Weather and Wave Observations

- **Weather and Wave Observations will include measured conditions** from a variety of in situ and remote observational sources.

# Approval and submission process

- Owner/Responsible Organization: WMO;
- Responsible Domain: WMO Weather;
- Responsible Body: WMO Services Commission (SERCOM);
- P/SERCOM delegated approval to SC-MMO Chair;
- **Approval and Submission to IHO:** ET-MS Coordinates for SC-MMO approval;
- **Points of Contact:**
  - WMO/ET-MS: CAPT Daniel Carvalho (ET-MS);
  - S-411: Scott Weese (ECCC) / Nick Hughes (Norwegian Ice Service), both are also ET-MS Member;
  - S-412/413/414: LTJG Thomas Cervone-Richards (NOAA/OPC).

# S-41X PS Developments and Timeline

2024

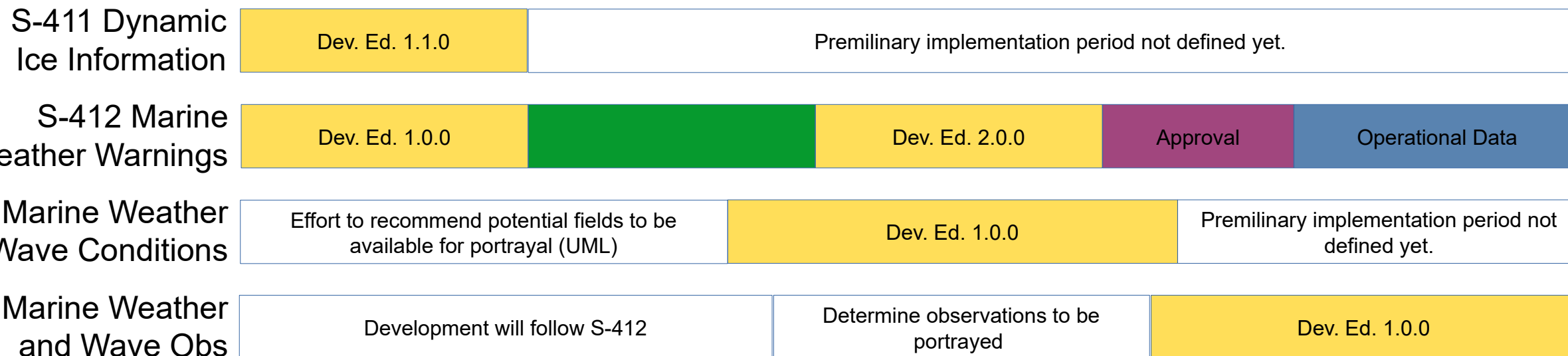
2025

2026

2027

2028

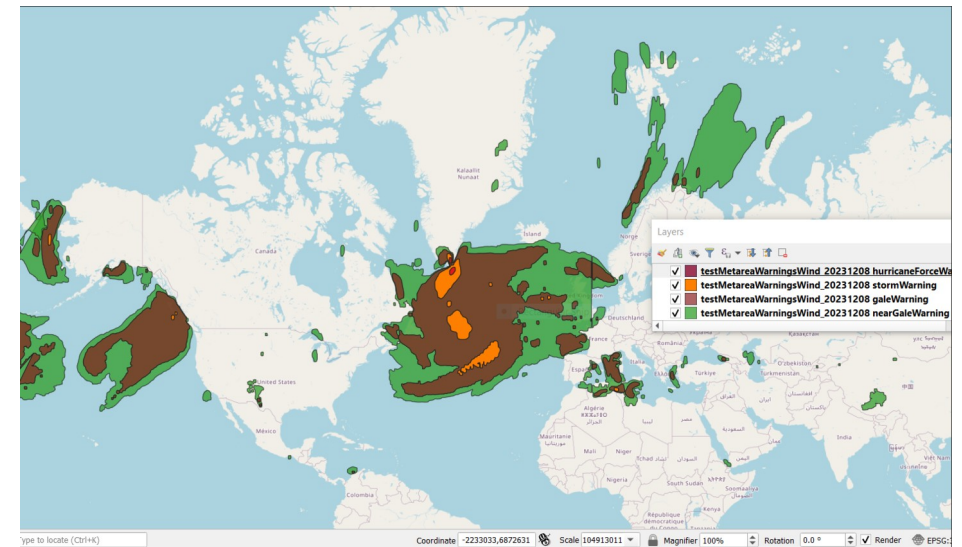
2029





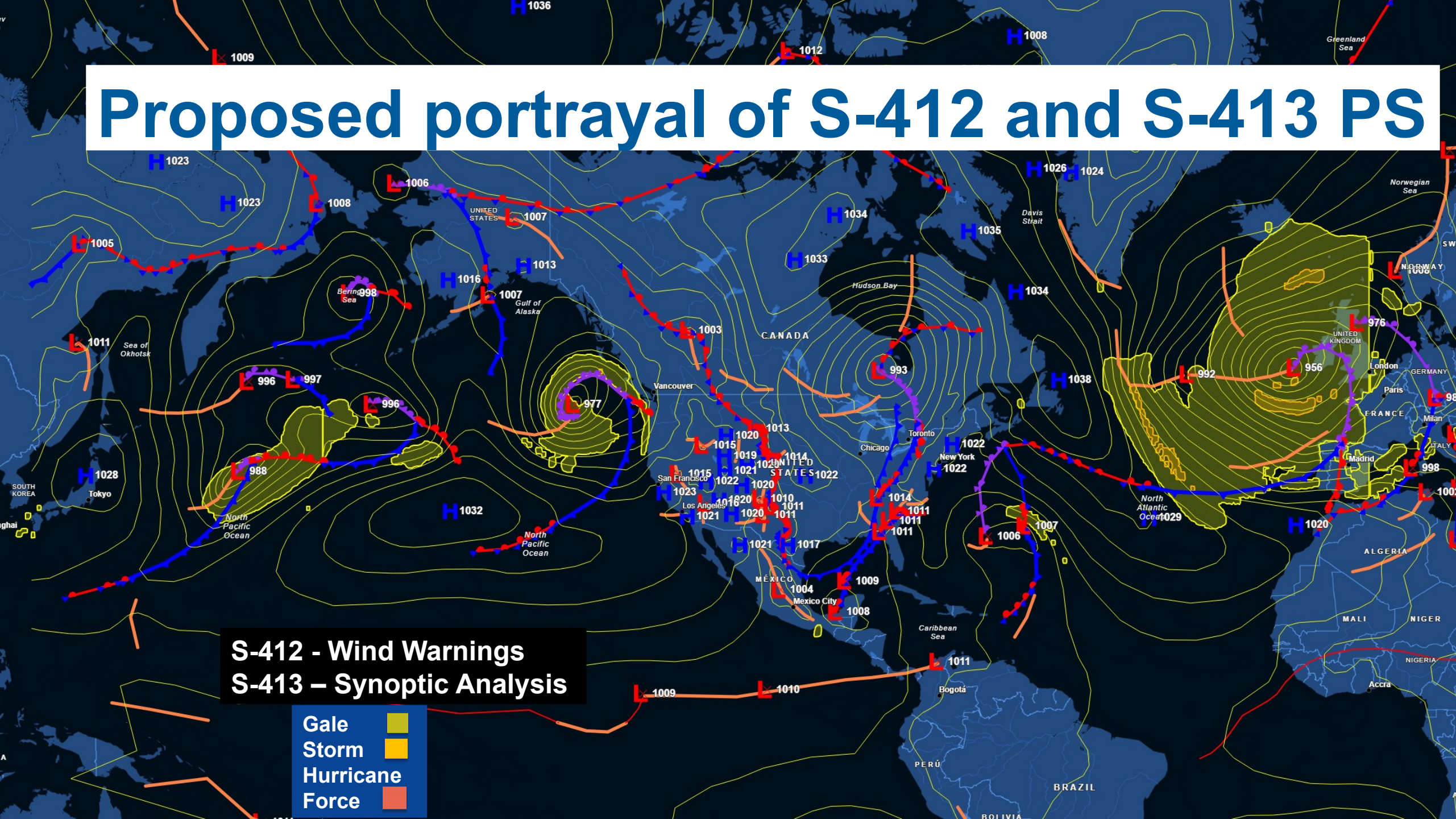
# Progress Update for S-412

- **Draft Concept definitions (Pending Final Review)**
  - Once reviewed, submit to the IHO GI Registry,
  - Feature Catalog and Portrayal Catalog in progress
  - Iterating with US Navy NIWC – ECDIS Testbed
- **Test output data in KML and GML format for wind and wave height warning polygons**
  - Viewable in Seavision and QGIS
- **Verify/Finalize Validation Checks**
- **Broaden engagement via WWMIWS**
- **S-413 – Draft UML Diagram**
  - Updated feature and information types
  - Concept definitions / portrayals



GML Example/QGIS

# Proposed portrayal of S-412 and S-413 PS



# Thank you.



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