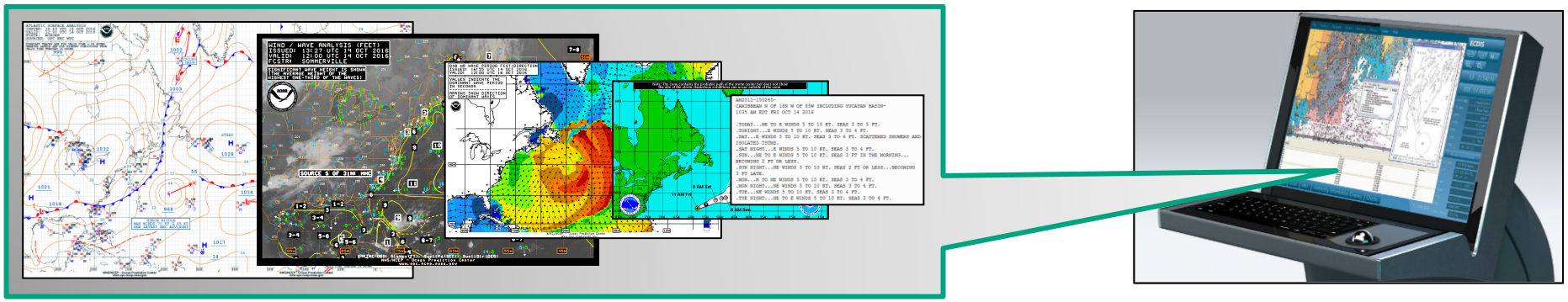
S-412:
Project Update and a Proposal to Divide S-412

LT Joseph Phillips, NOAA Commissioned Corps
Technical Operations Coordination Meteorologist
National Weather Service - Ocean Prediction Center
5830 University Research Court, College Park MD 20740
O: (301) 683-1555



S-412 Weather Overlay: Status

Data Classification and Encoding Guide (DCEG):

- Version 0.0.2 completed
  - Defines 43 features and information types
  - Defines 51 complex attributes, 66 simple attributes, 136 enumerated attribute values
- S-412 Application Schema UML ~90% completed
- GML Schema ~75% completed
- HDF5 0% completed

Feature Catalogue:

- Merging and/or updating content into IHO Registry – in progress
  - Resolving issues presented at S-100 Working Group Meeting 4
  - Once complete, Feature Catalogue 0.0.2 will be built from Registry content

S-412 Weather Overlay: Shifting Focus

Test data sets:

- Create and share multiple test data sets
- Weather message and system features and sub-features only
- Update product specification documentation

Portrayal Catalogue

- Evaluate previously defined symbols and rules against new data model
- Reach consensus and finalize weather message polygons
- Reach consensus and finalize weather system points, lines and polygons.
- Develop day, night, and dusk colour palettes for each symbol
- Develop symbol files for each symbol
- Update product specification documentation

Exchange Catalogue

- Establish data exchange requirements and develop catalogue

Proposal to Separate Product Specification

Current S-412 Work Plan

Phase 1
-Complete version 1 for weather hazards concepts

Phase 2
-Add weather condition features to version 2

Phase 3
-Add weather observation features to version 3

OR

Separate Product Specifications

S-412 Weather and Wave Hazards
-Weather messages and systems

S-4xx Weather and Wave Conditions
-Atmospheric and oceanographic surface conditions

S-4xx Weather and Wave Observations
-Marine and coastal land-based weather observations

Proposal to Separate Product Specification

Governance – Future Services

- Requirements consistent, as much as practical, with:
  - Joint IMO/IHO/WMO Manual on Maritime Safety Information (MSI)
  - WMO 306 Manual on Codes
  - WMO 471 Guide to Marine Meteorological Services
  - WMO 485 Manual on Global Data-Processing and Forecasting System
  - WMO 558 Manual on Marine Meteorological Services
- Implemented in various ways
  - Global Maritime Distress and Safety System (GMDSS)
    - Current text requirements are transferable to GML
    - Improving service transition would likely improve regulatory approval process to evolve services to be more graphic/digital product friendly.
    - Authoritative content currently required via GMDSS and what services exceed this requirement.
- Future management and JCOMM services

Proposal to Separate Product Specification

Administrative – Concept driven development:

- Articulating project goals, updates and content would be simplified if workflows were concept driven.

Technical – Separating GML and HDF5 data products:

- Simplified data modeling – more flexibility in defining how attributes are used by features
- S-4xx Weather and Wave Observations
  - Envisioned with a streaming data type exchange
- Implementing 2 data formats for a single product specification?

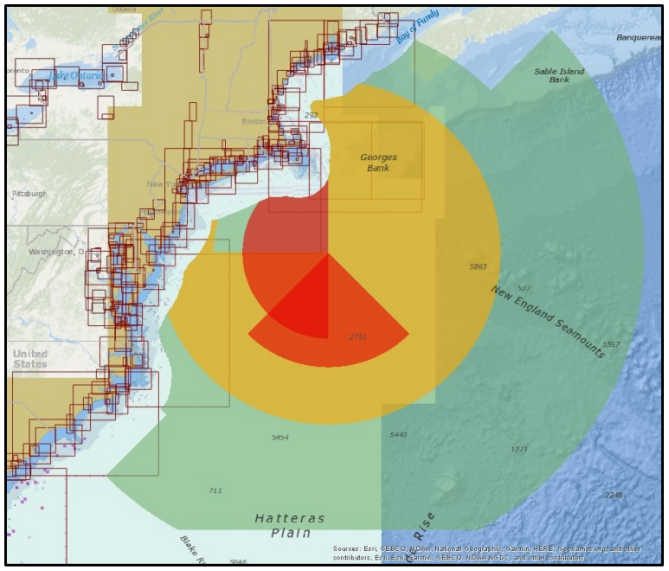
Proposed
S-412 Weather and Wave Hazards

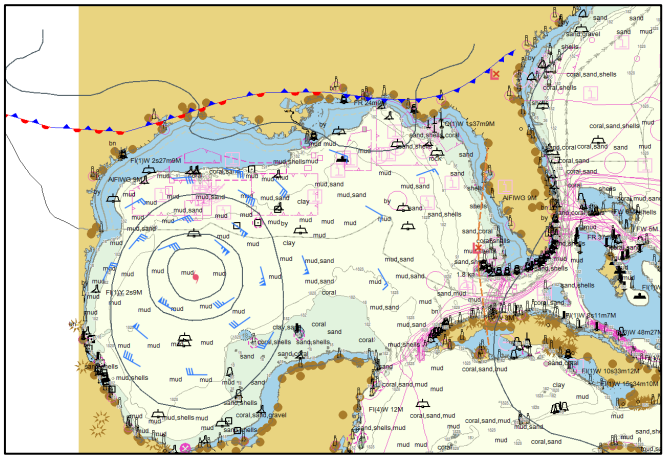
Weather Messages

- Weather message
- Tropical cyclone messages
- Thunderstorm message
- High wind message
- Freezing spray message
- Reduced visibility message
- Large seas message
- Precipitation message
- Temperature message

Weather Systems

- Tropical cyclone
- Low
- Convergent Boundary
- Front
- Ridge
- Squall
- Thunderstorm
- Cyclone Track
- Cone of Uncertainty





Data Format:

- Geographic Markup Language (GML) 3.2.1

Technical Development Requirements:

- GML Schema file
- Test and symbol files
- Catalogue files
- N-AWIPS VGF -> S-100 GML converter

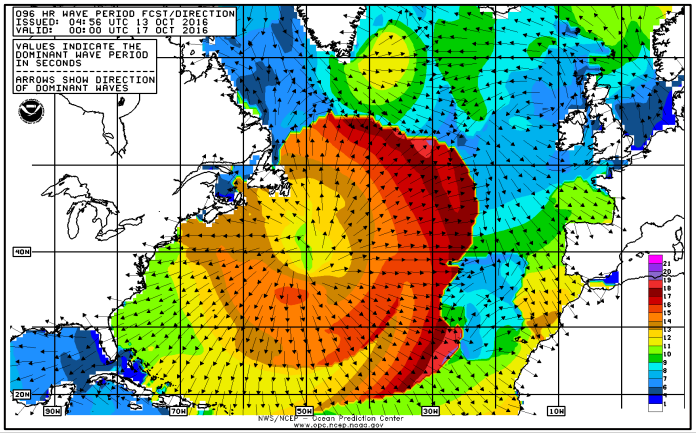
Notes

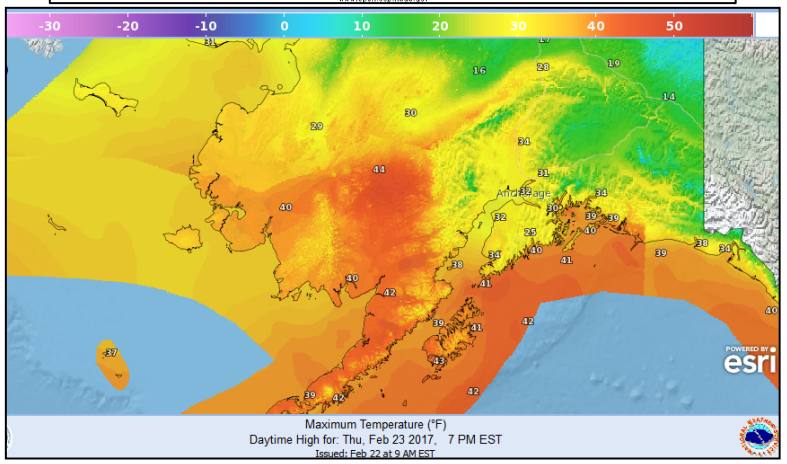
- Message features include authoritative watch, warnings, advisories, statements, outlooks, and synopsis concepts
- On weather and long range time scales

Proposed
S-4xx Weather and Wave Conditions

Weather Conditions

- Precipitation
- Freezing Spray
- Reduced Visibility
- Wind Gust
- Wind
- Temperature
- Minimum/Maximum Temperature
- Wind Waves
- Primary/Secondary Swells
- Significant Waves
- Atmospheric Pressure





Data Format:

- Hierarchical Data Format 5 (HDF5)

Technical Development Requirements:

- Test and symbol files
- Catalogue files
- AWIPS2 GFE WMO GRIB2 -> S-100 HDF5 converter

Notes

- On weather and long range time scales

Proposed
S-4xx Weather and Wave Observations

Weather Observations

- Marine
- Land

Data Format:

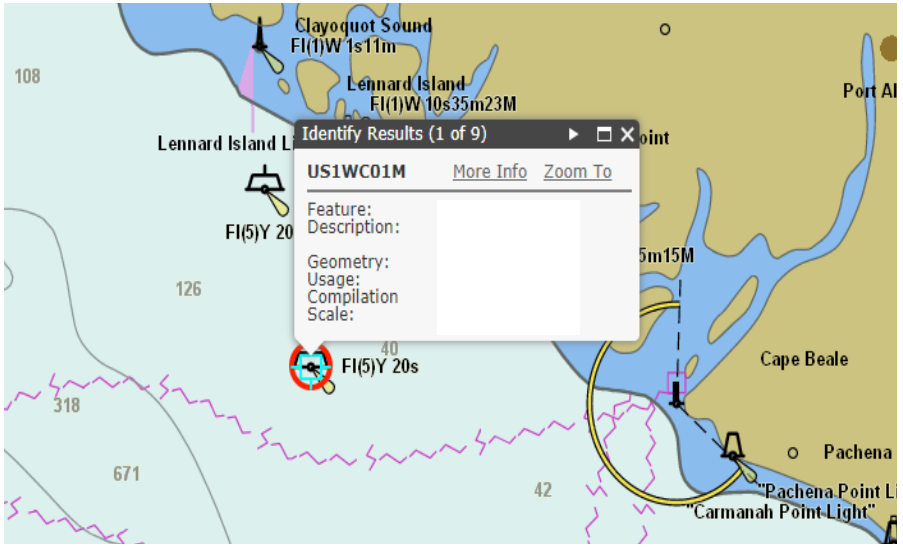
- Geographic Markup Language (GML) 3.2.1

Technical Development Requirements:

- GML Schema file
- Test and symbol files
- Catalogue files
- S-100 GML converter
- Quality control mechanism

Notes

- Interoperability with chart features will be considered.
- Near real-time and/or real-time



Separate Product Specifications Timeline

Separate Product Specifications

S-412 Weather and Wave Hazards
-Weather messages and systems

S-4xx Weather and Wave Conditions
-Atmospheric and oceanographic surface conditions

S-4xx Weather and Wave Observations
-Marine and coastal land-based weather observations

Separate Product Specification Development Timeline:

- S-412 Weather and Wave Hazards version 1 on track to be completed in 1-2 years.
- S-4xx Weather and Wave Conditions version 1 on track to be completed 1.5-2.5 years.
- S-4xx Weather and Wave Observations version 1 on track to be completed 2-3 years.

Dependencies:

- IHO recognizing separate product specifications
- JCOMM WWMIWS consensus on content.
- Testing relies heavily on IHO Test Bed activities.

Discussion and Questions?

LT Joseph Phillips
Joseph.T.Phillips@noaa.gov