



S-412: Marine Weather Warnings

NOAA Ocean Prediction Center
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IHO S-100WG8
Nov 13-17, 2023
Singapore



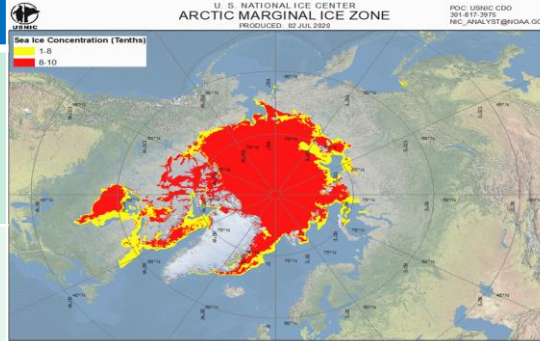


S-41X Wave & Weather Overlays



S - 411

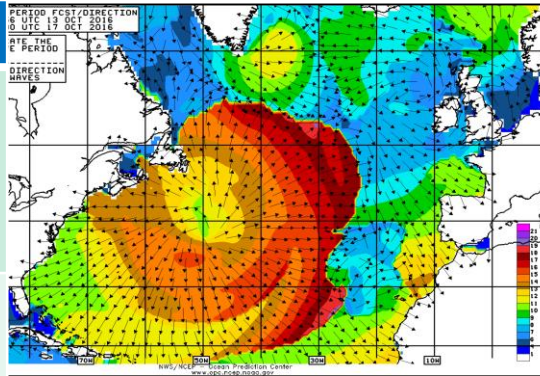
Ice Services Information



Portrayal Pending

S - 413

Weather and Wave Conditions



Graphics & Gridded Data

S - 412

Marine Weather Warnings

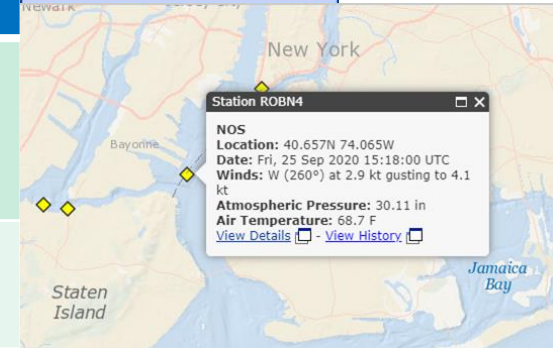
Polygons



S - 414

Weather and Wave Observations

Point Based Data



*HSSC15 endorsed Phase 2 to include S-411 and 412





S-412 Polygon-Based Warnings

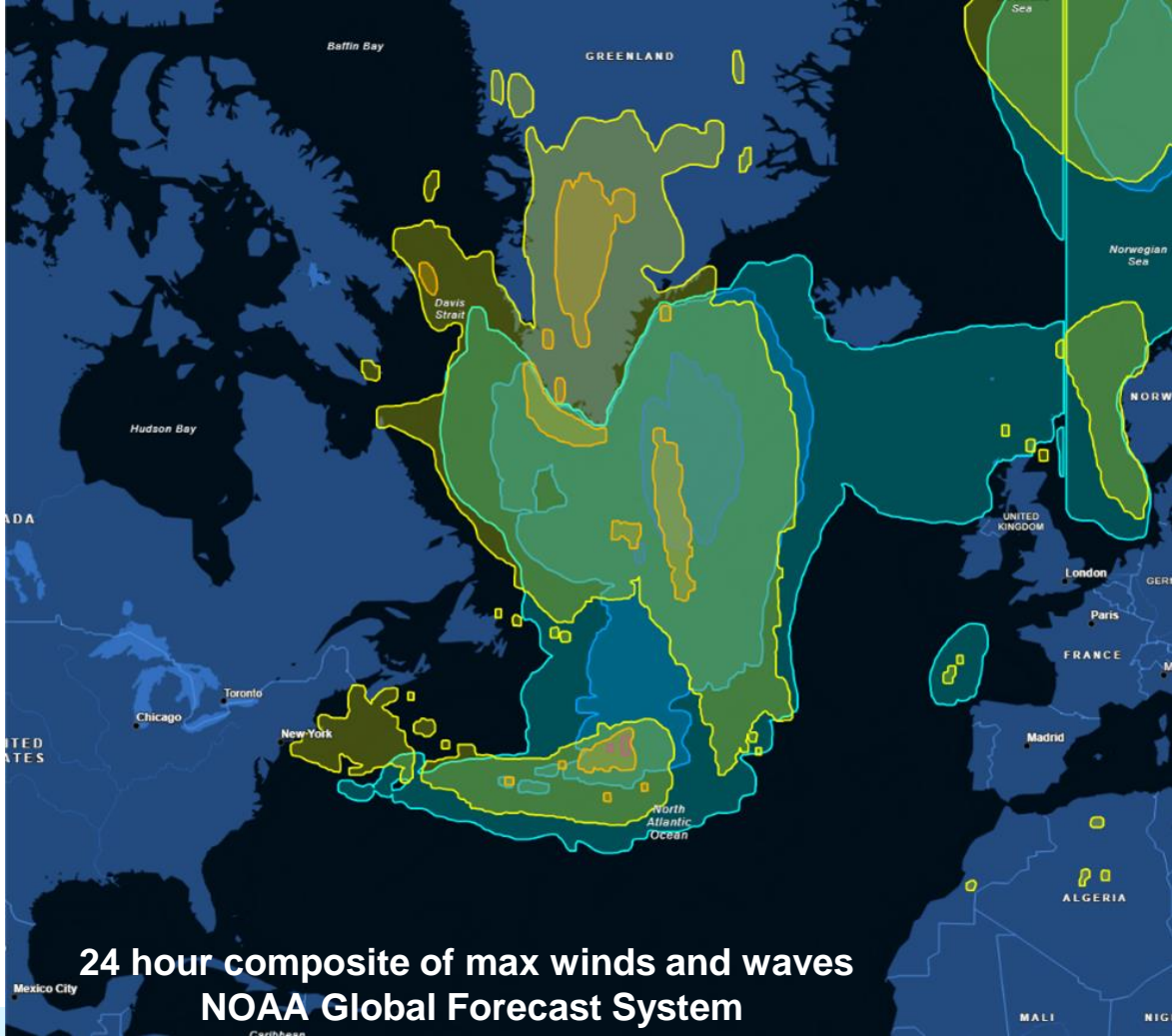
○ Warnings

- Hurricane Force Warning: 64+ knots (Beaufort Force 12)
- Storm Warning: 48-63 knots (Beaufort Force 10-11)
- Gale Warning: 34 to 47 knots (Beaufort Force 8-9)
- Freezing Spray Warning

○ Proposed

- Significant Wave Height Warnings – tiered criteria
(Dangerous Seas) - Possibility of using other criteria
- Thunderstorm Warnings
- Near Gale Warning
- Reduced Visibility
- Reference - WMO Pub. 558 High Seas, Offshore, Coastal and Local Services





**24 hour composite of max winds and waves
NOAA Global Forecast System**

Wind Warnings:

Gale Force 

Storm Force 

Hurricane Force 

Significant Wave Heights:

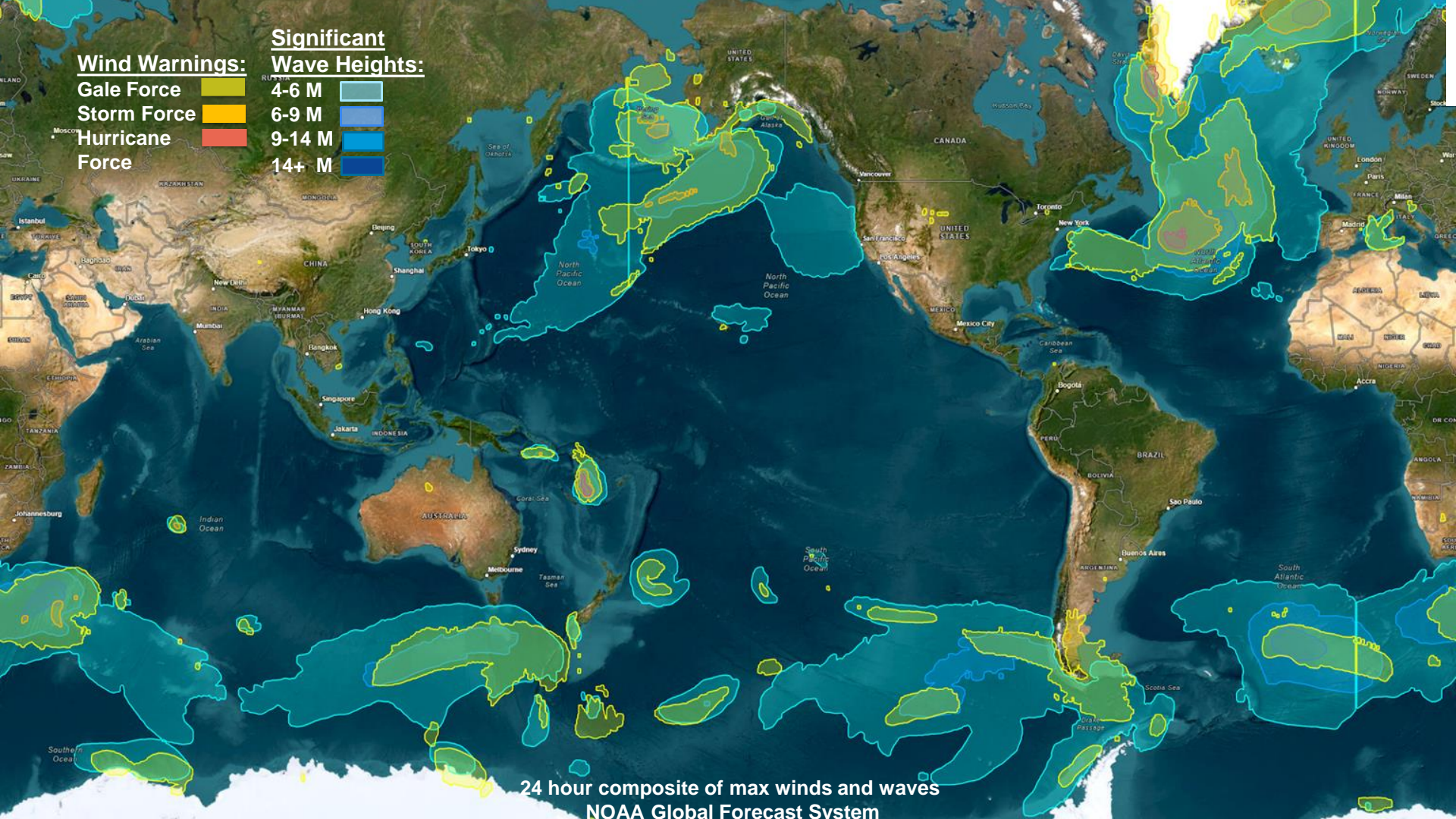
4-6 M 

6-9 M 

9-14 M 

14+ M 





Wind Warnings:
Gale Force
Storm Force
Hurricane Force



Significant Wave Heights:
4-6 M
6-9 M
9-14 M
14+ M



24 hour composite of max winds and waves
NOAA Global Forecast System



GMDSS Text and S-412 Warning Polygons



High Seas Forecasts (Metarea Bulletins)

- Sections:
 - Warnings Summary (all ongoing warnings)
 - Synopsis (describes major weather features)
 - Forecasts
 - Near-gale force winds (28-33 knots)
 - Significant wave height (2.5 to 4 meters)
 - Visibility (if 5 nm or less)
- Individual warning area bulletins, summation bulletin
- 00-24 hour and 24-48 hour swaths
- Warning criteria based, not weather feature based, nor defined zone based.



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WHNT01 KWBC 060430
HSWATL

Metarea IV Warning
Issued by U.S. National Weather Service
0430 UTC Mon Feb 06 2023

1. Hurricane Force Wind Warning IV-00084(5)
AREA: 35.1N 291.1W, 36.3N 291.1W, 37.2N 292.1W, 38.4N 292.9W,
38.4N 294.0W, 39.8N 294.0W, 40.8N 295.7W, 40.8N 296.2W, 38.7N
295.6W, 37.9N 295.3W, 37.2N 294.6W, 36.6N 294.1W, 36.2N
293.6W, 35.7N 292.8W, 35.4N 292.3W, 35.1N 291.1W
CONDITIONS: Wind 64 to 80 kts
TIMING: 16Z Feb 06 to 06Z Feb 07

2. Storm Wind Warning IV-00080(7)
AREA: 33.1N 287.4W, 35.6N 289.9W, 41.3N 294.7W, 42.1N 295.4W,
42.4N 296.2W, 42.4N 296.5W, 41.4N 303.4W, 40.2N 303.4W, 39.0N
302.9W, 35.6N 300.6W, 34.4N 297.8W, 32.4N 292.3W, 31.4N
287.5W, 31.4N 287.2W, 32.0N 287.2W, 33.1N 287.4W
CONDITIONS: Wind 48.0 to 81.9 kts
TIMING: 09Z Feb 06 to 05Z Feb 07

3. Gale Wind Warning IV-00075(8)
AREA: 43.1N 290.4W, 44.6N 293.5W, 45.4N 299.8W, 42.3N 305.8W,
41.8N 306.6W, 41.5N 306.8W, 38.5N 306.8W, 37.5N 306.6W, 36.4N
306.1W, 33.2N 301.3W, 30.1N 295.0W, 29.4N 293.3W, 28.6N
289.9W, 28.6N 284.4W, 31.0N 284.4W, 33.4N 285.2W, 36.0N
286.6W, 43.1N 290.4W
CONDITIONS: Wind 34.0 to 81.9 kts
TIMING: 06Z Feb 06 to 05Z Feb 07

4. Significant Wave Height IV-00083(5)
AREA: 35.3N 291.4W, 40.5N 293.9W, 41.1N 294.4W, 41.4N 295.0W,
41.6N 296.0W, 41.6N 296.5W, 40.6N 299.0W, 41.2N 303.0W, 40.3N
303.4W, 39.2N 303.4W, 37.9N 302.6W, 37.4N 302.1W, 35.4N
298.0W, 35.9N 297.4W, 34.6N 292.0W, 34.9N 291.4W, 35.3N 291.4W
CONDITIONS: Wave Height 6 to 9 m
TIMING: 15Z Feb 06 to 05Z Feb 07

5. Features
LOW 38N68W 1002 MB MOVING NE 30 KT

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WMO - ETMS and WMMWS

- Participation: Feb 23, June 21, June 28, July 12th
- Discussion Points:
 - Updates to Product Names:
 - S-411 proposed **Ice Services Information**
 - S-412 proposed **Marine Weather Warnings**
 - Authoritative Source (Warnings)
 - Implementation – Metarea by Metarea or starting point provided by a single national meteorological and hydrological center? – TBD
 - Raised Concerns:
 - Security and Encryption
 - Data Producer Code
 - Authorization by national authority
 - Resolution - coastal vs. METAREA:
 - Need differences to be specified
 - Ongoing Review of WMO Pub. 558
 - Possible updates to criteria for S-412
 - Study of graphic products in METAREA forecasts and warnings along with texts



Present efforts

- Updating the product specs to [S-100 ed. 5](#)
 - validation checks to better organize them by S-41x product
- Sample weather warning displayed on the marine precision navigation test site
 - GML files to be updated to ed. 5 standards
 - Completing the Feature Catalogue
 - Registering concepts

