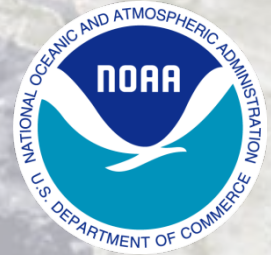




Probabilistic Prediction Ocean Prediction Center

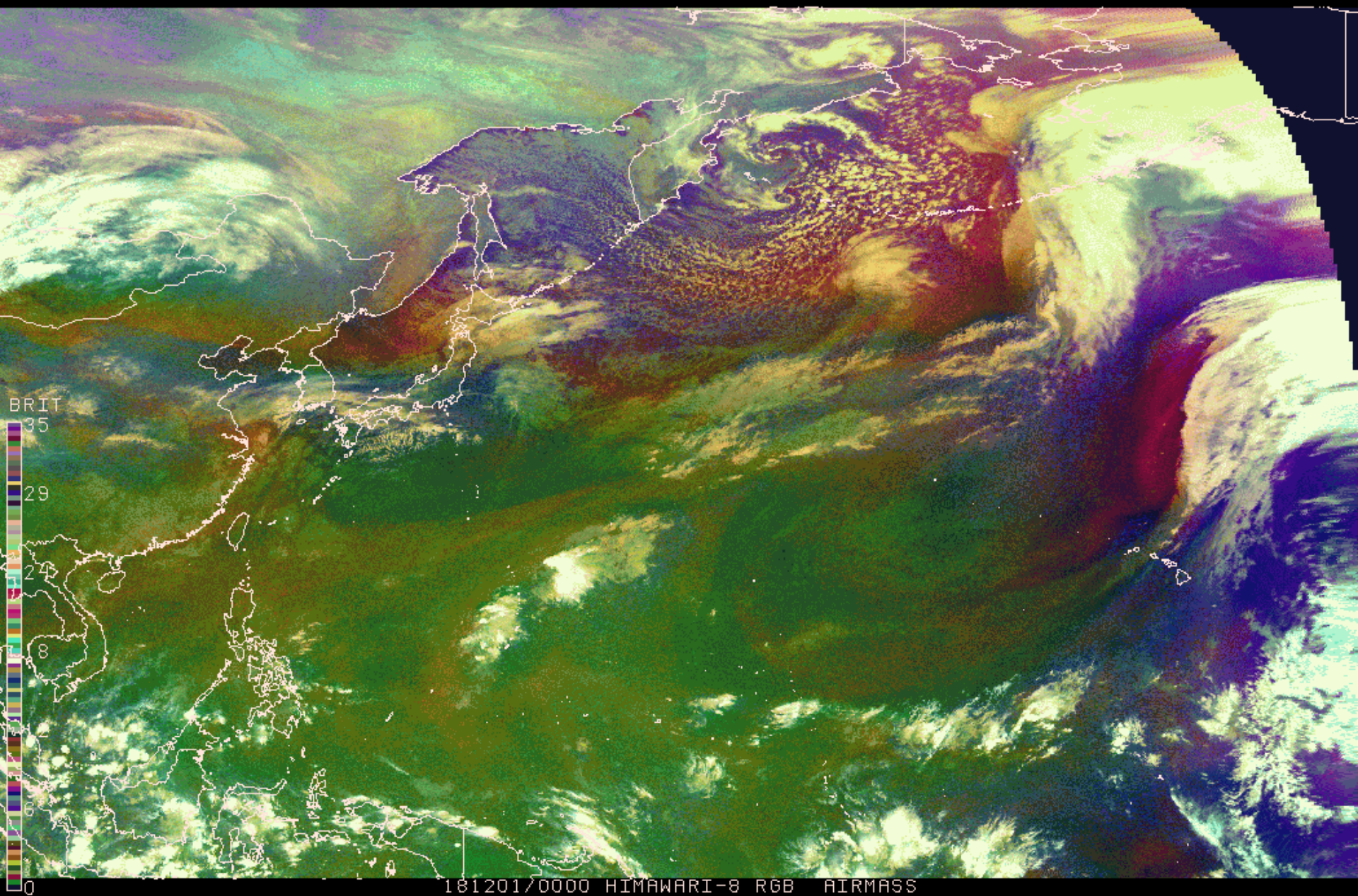


Joe Sienkiewicz

Chief, Ocean Application Branch
NOAA/NWS Ocean Prediction Center

27 Aug 2019

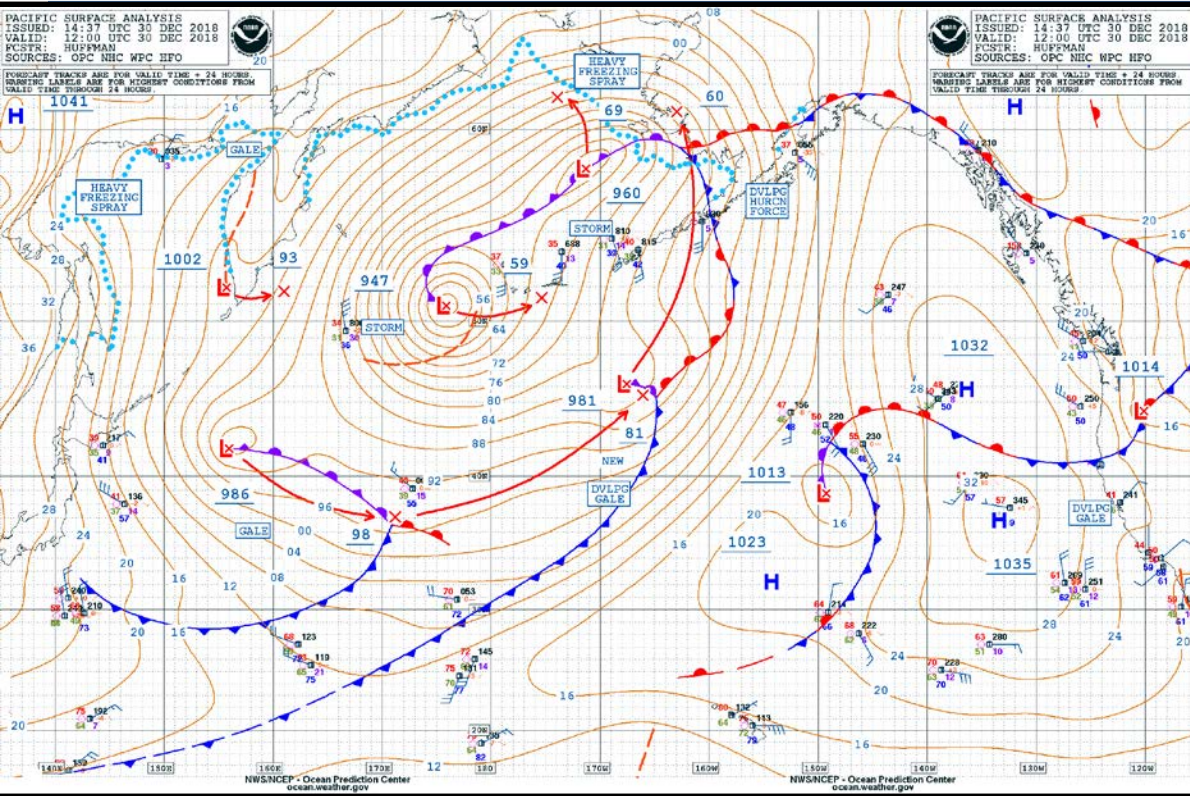
<https://ocean.weather.gov>



0000 UTC 01 Dec – 1800 UTC 31 Dec 2018



Western and Central Pacific Dec 2018



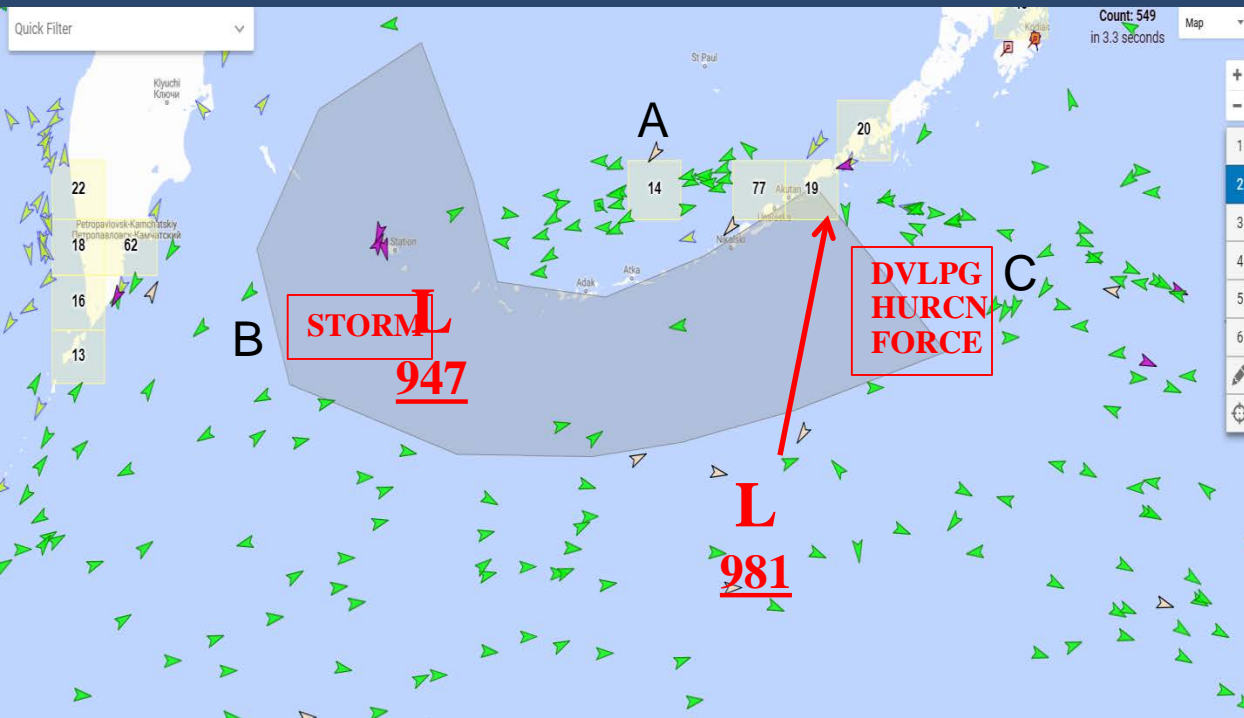
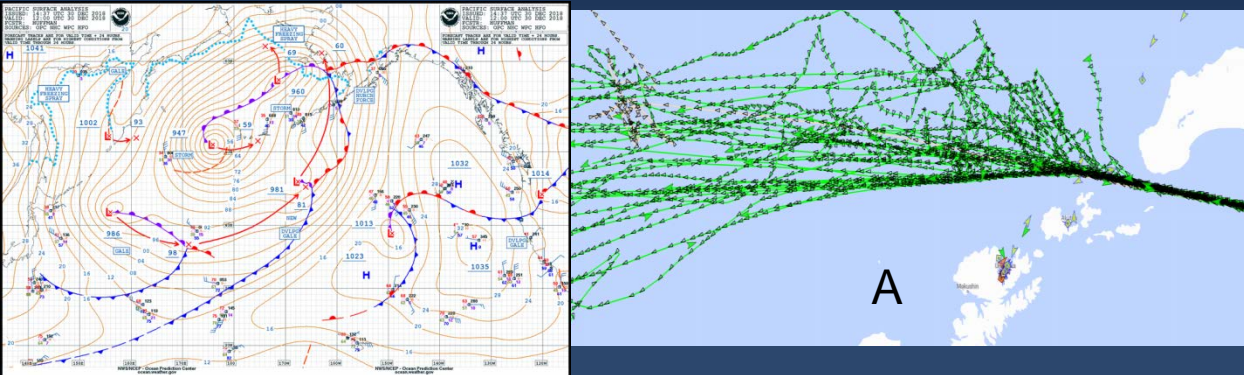
00UTC 01 Dec – 18UTC 31 Dec

- Cyclones – 936 (analyzed)
- Low (sub-gale) - 270 (28.8%)
- Gale - 459 (48.9%)
- Storm - 163 (17.4%)
- Hurcn Force - 36 (3.8%) **9**

Extreme Weather Avoidance - Pacific

1200 UTC 30 Dec

Storm Warning (formerly HF)
Winds to 50 kt
Seas to 36 ft
Hurricane Force Wind Warning
Winds to 65 kt
Seas to 32 ft 24 hours



A) Ships delayed westward passage through Bering Sea (~ 50 ships)

B) Eastward transit through Bering reduced

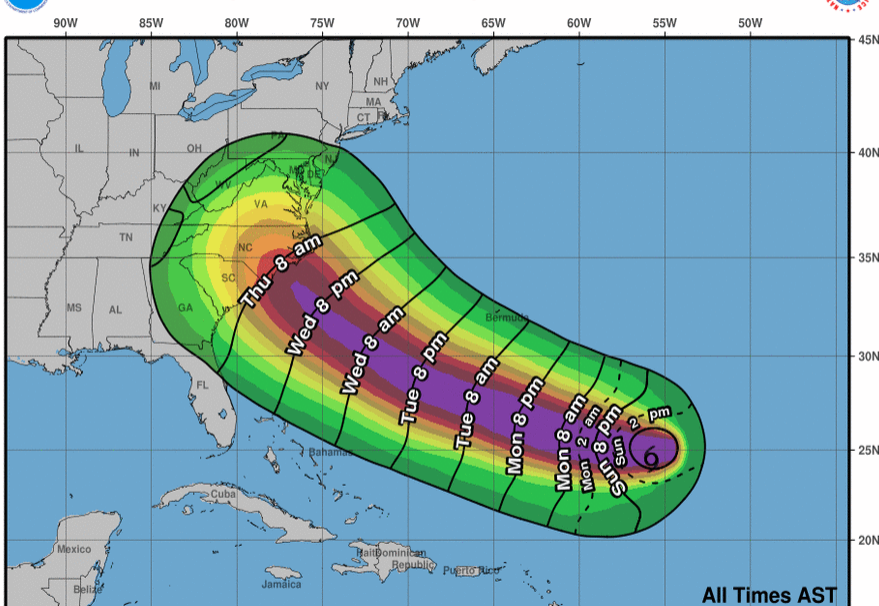
C) Ships heading SW to avoid HF Low

4 ships in avoidance area of
~ 421,000 n mi²
~ areas of TX, CA, MO combined

~ 549 vessels operating in image



Most Likely Arrival Time of Tropical-Storm-Force Winds

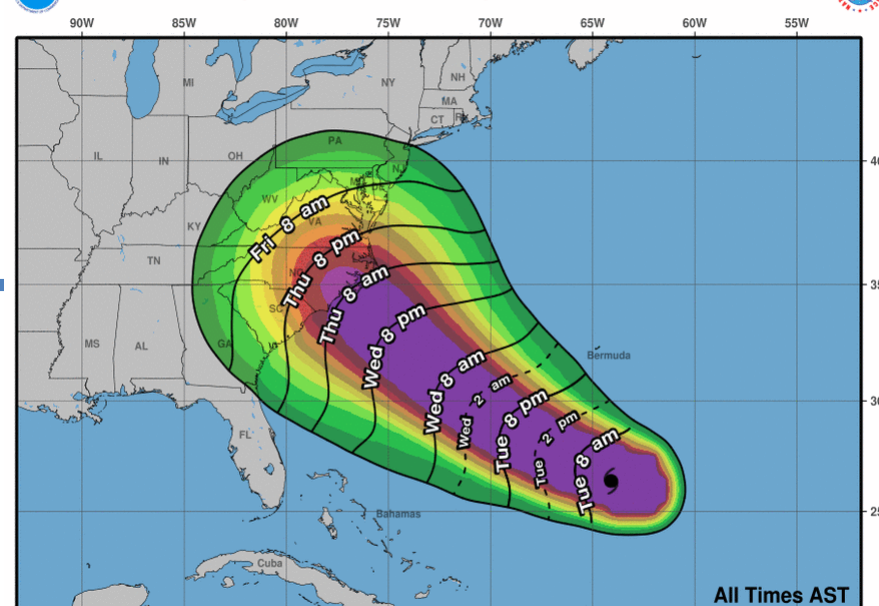


Tropical Storm Florence
Sun. Sep. 9, 2018 5 am AST
Advisory 40

Storm Location & Wind Speed
 ○ < 34 kt (39 mph)
 ○ 34-63 kt (39-73 mph)
 ● ≥ 64 kt (74 mph)

5-day chance of receiving sustained 34+ kt (39+ mph) winds
 5 10 20 30 40 50 60 70 80 90 100 %

Most Likely Arrival Time of Tropical-Storm-Force Winds

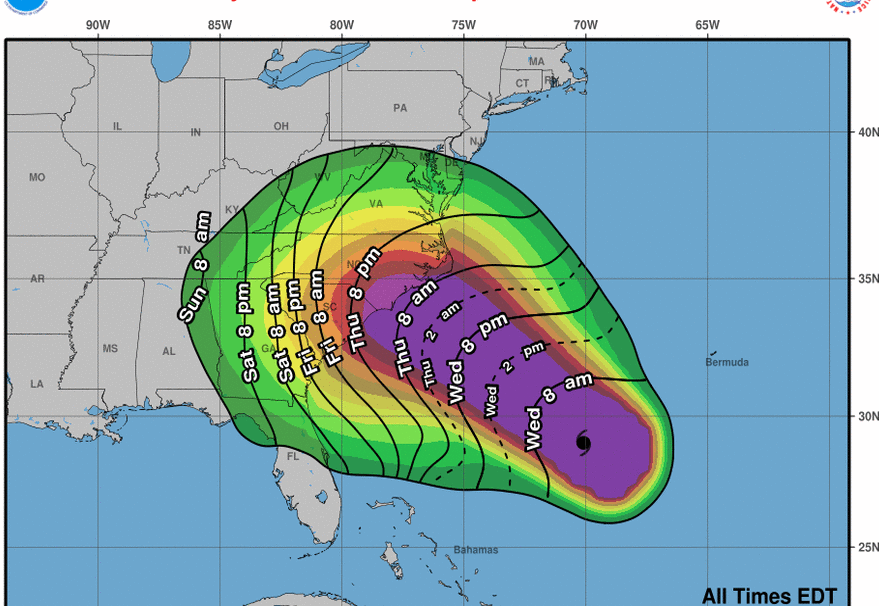


Hurricane Florence
Tue. Sep. 11, 2018 5 am AST
Advisory 48

Storm Location & Wind Speed
 ○ < 34 kt (39 mph)
 ○ 34-63 kt (39-73 mph)
 ● ≥ 64 kt (74 mph)

5-day chance of receiving sustained 34+ kt (39+ mph) winds
 5 10 20 30 40 50 60 70 80 90 100 %

Most Likely Arrival Time of Tropical-Storm-Force Winds

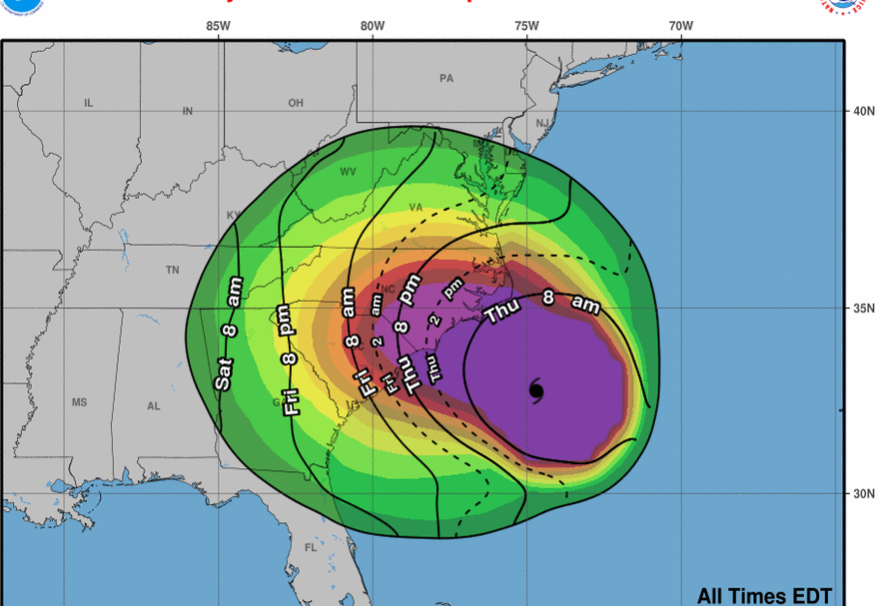


Hurricane Florence
Wed. Sep. 12, 2018 5 am EDT
Advisory 52

Storm Location & Wind Speed
 ○ < 34 kt (39 mph)
 ○ 34-63 kt (39-73 mph)
 ● ≥ 64 kt (74 mph)

5-day chance of receiving sustained 34+ kt (39+ mph) winds
 5 10 20 30 40 50 60 70 80 90 100 %

Most Likely Arrival Time of Tropical-Storm-Force Winds

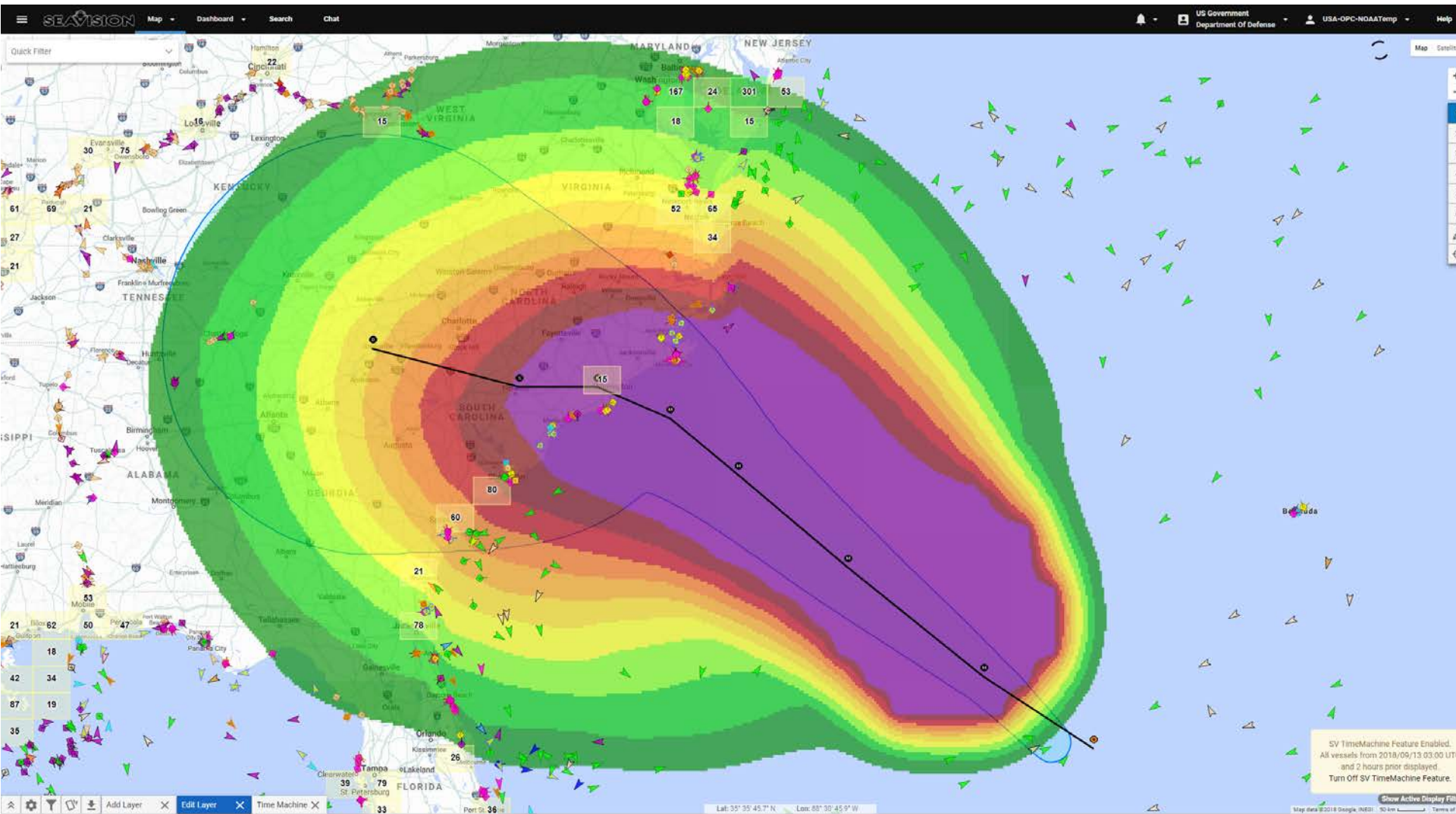


Hurricane Florence
Thu. Sep. 13, 2018 5 am EDT
Advisory 56

Storm Location & Wind Speed
 ○ < 34 kt (39 mph)
 ○ 34-63 kt (39-73 mph)
 ● ≥ 64 kt (74 mph)

5-day chance of receiving sustained 34+ kt (39+ mph) winds
 5 10 20 30 40 50 60 70 80 90 100 %

Hurricane Florence - 0300 UTC 13 Sep 2018 – Vessel Positions



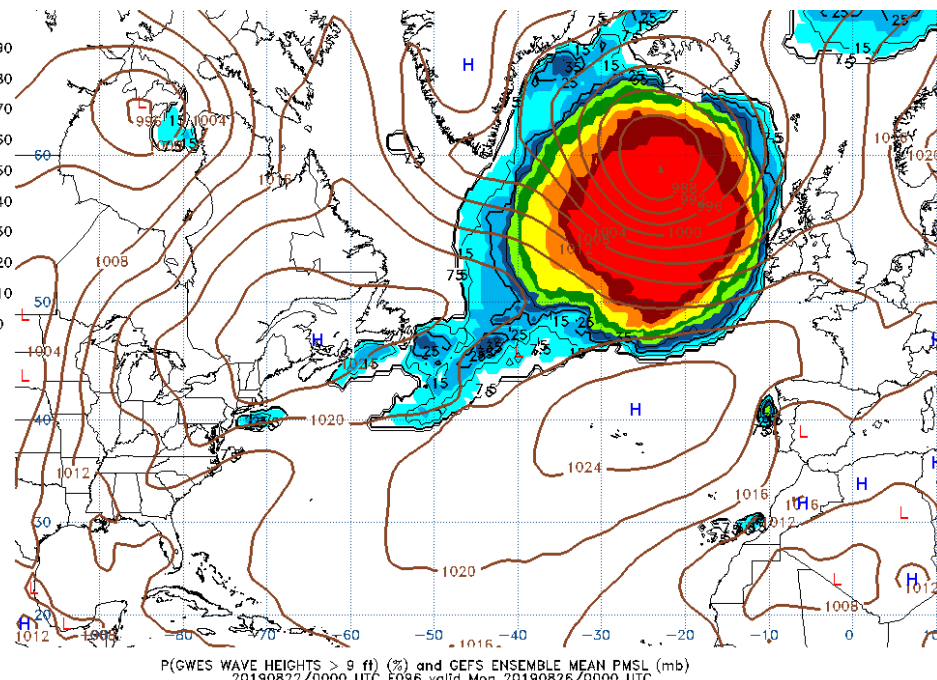
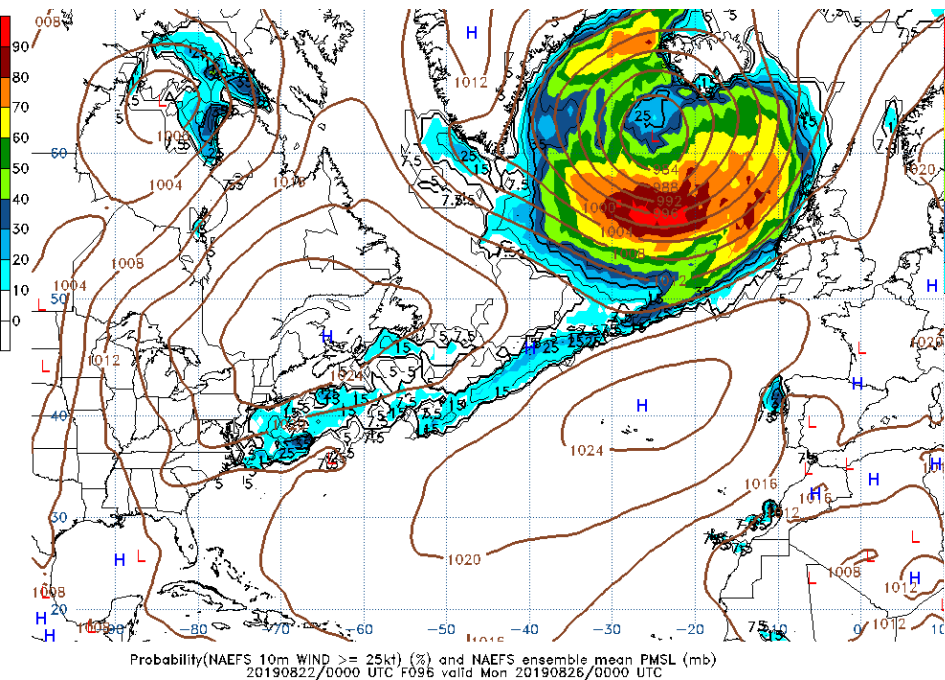
DOT Volpe Research Lab - Seavision 2 - Web Application

Ensemble Use - Ocean Prediction Center

<https://ocean.weather.gov/windprob.php>

Winds - Probability of 25 kt or greater

Waves - Probability of Waves 9 ft or greater



Forecasters

- Aid in warning decisions using NAWIPS tools
- Focus on a “representative” deterministic solution
- Determine extremes (within ensemble envelope)



Ensemble Use – Ocean Prediction Center



For consideration

- CONOPS for Probabilistic Marine Hazards
 - FACETS
- Representative Probabilistic Guidance (NBM 4.0)
 - Wind speed and direction, wave heights, SLP (cyclones)
 - Guidance factoring both ETs and TCs (CaRDS 18-024)
 - Additional parameters (VSBY, T-STORMS, etc)