



National Transportation Safety Board

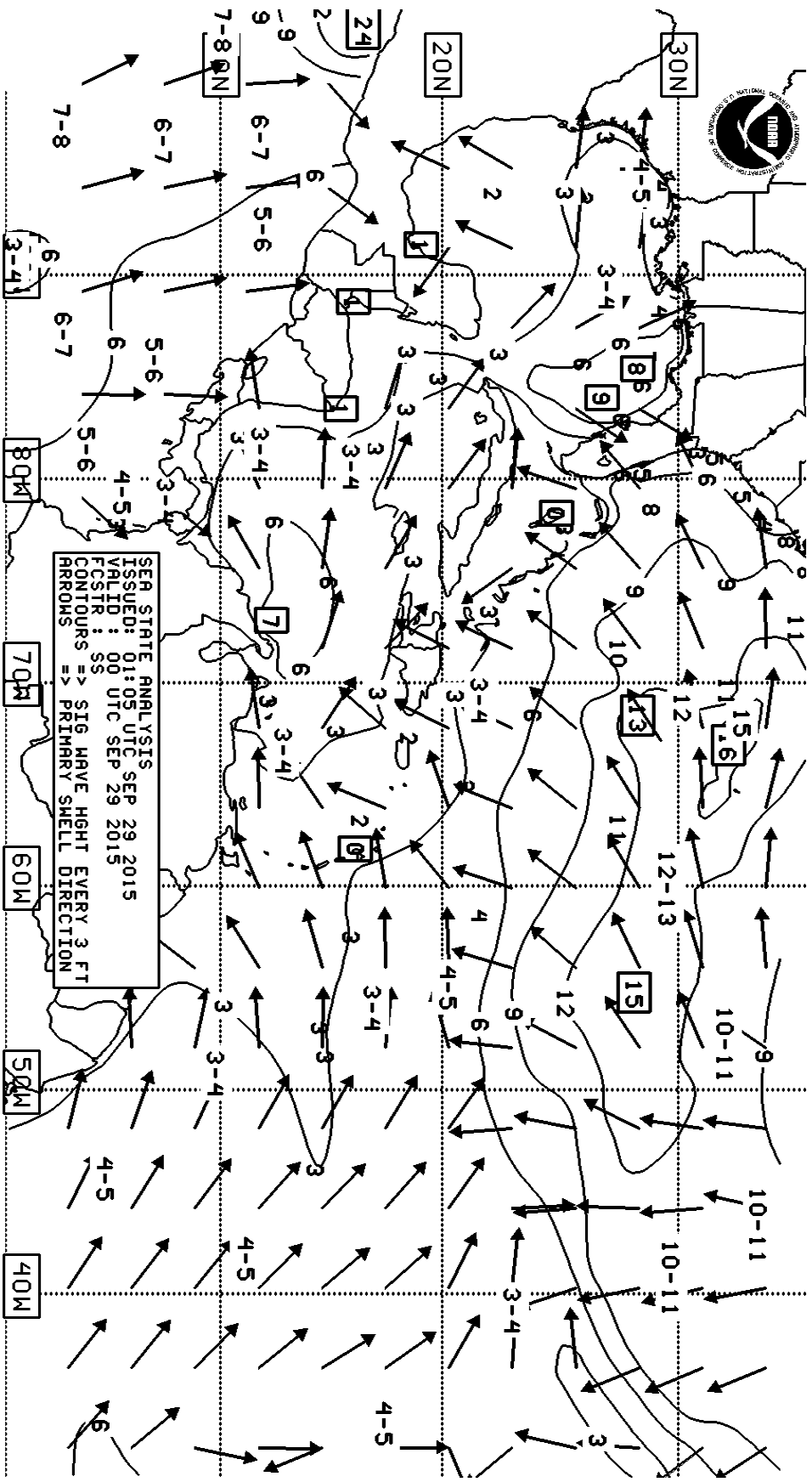
Office of Marine Safety
Washington, D.C. 20594-2000

December 13, 2016

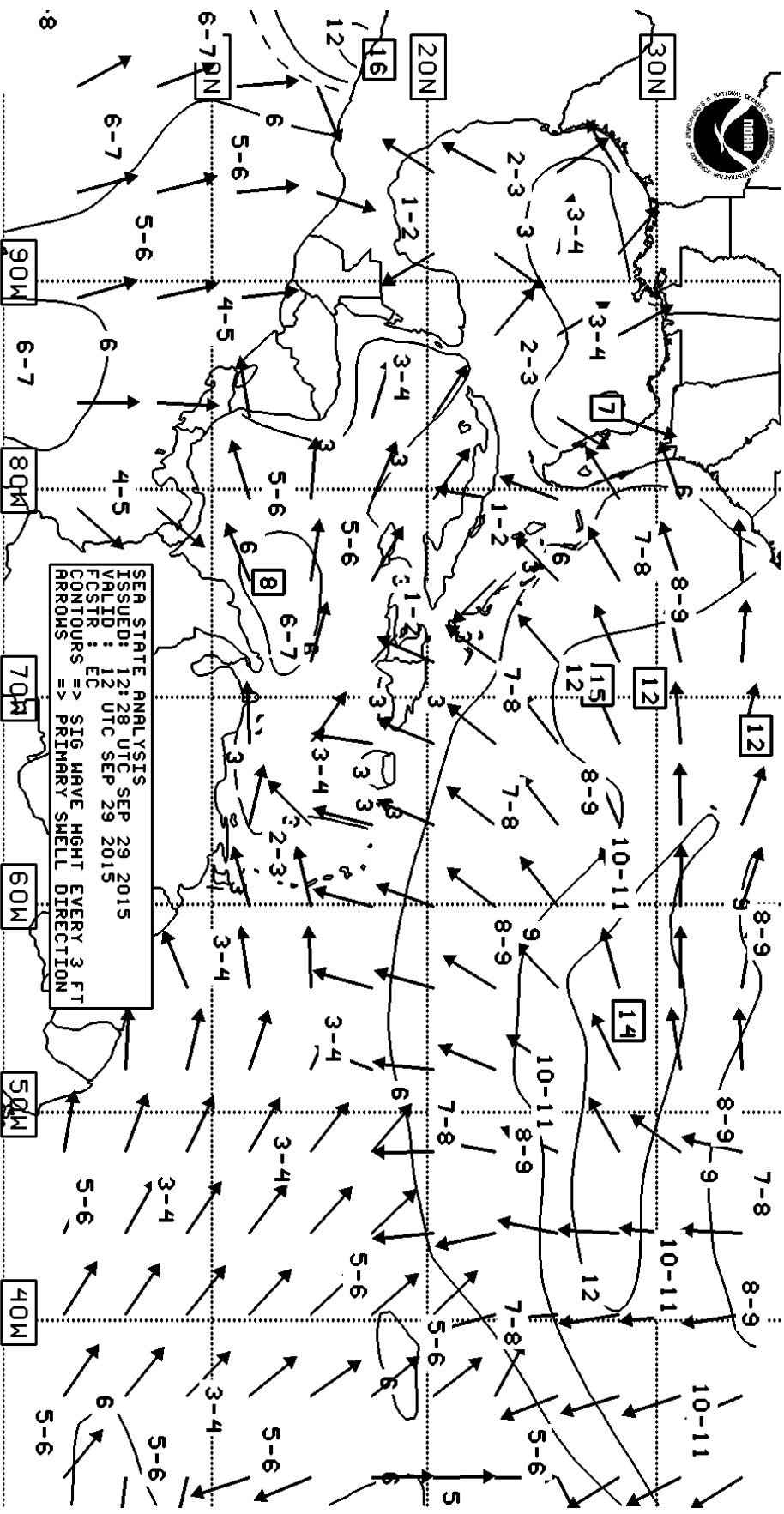
**ATTACHMENT 8 to the METEOROLOGY GROUP FACTUAL REPORT
DCA16MM001**

The National Hurricane Center's Significant Wave Height Analyses, the Ocean Prediction Center's Northwest Atlantic Sea State Analyses, the Ocean Prediction Center's North Atlantic Sea State Analyses, and the Ocean Prediction Center's Northwest Atlantic Surface Analyses valid between 2000 EDT on September 28, 2015, and 0800 EDT on October 1, 2015.

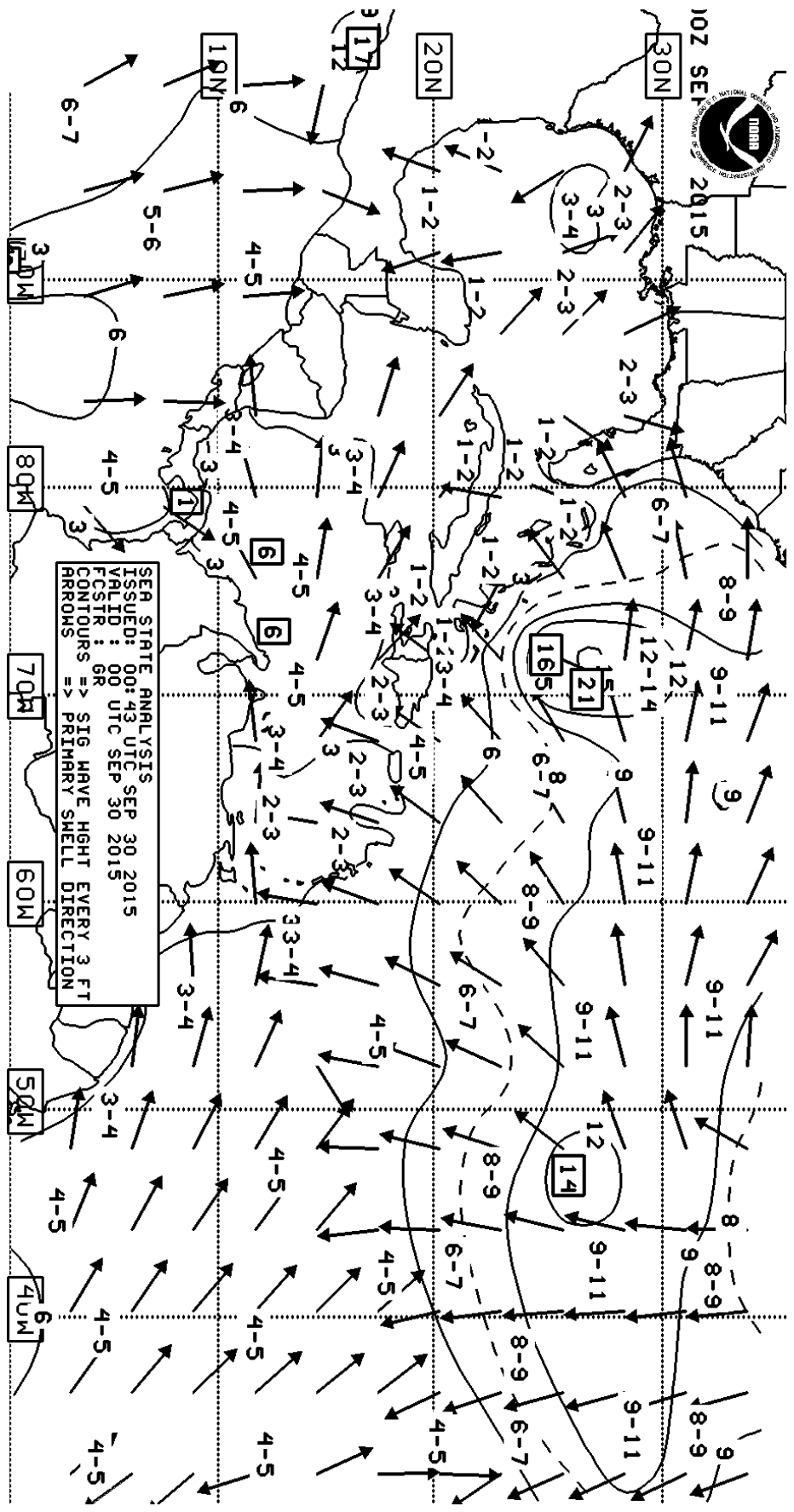
*Submitted by: Mike Richards
NTSB, AS-30*



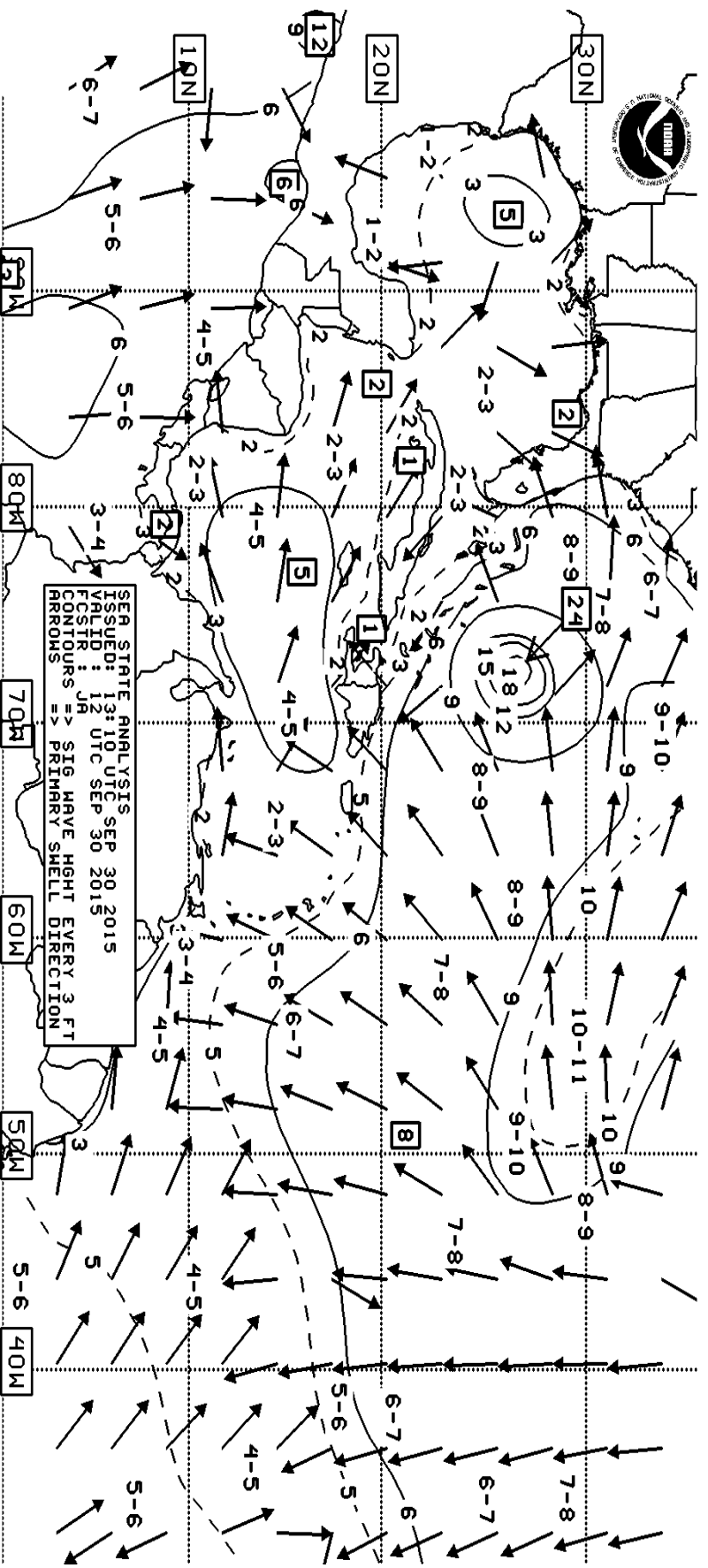
NWS/NHC/TROPICAL ANALYSIS AND FORECAST BRANCH
SIG WAVE HT IS SHOWN (THE AVG HT OF THE HIGHEST 1/3 OF THE WAVES)



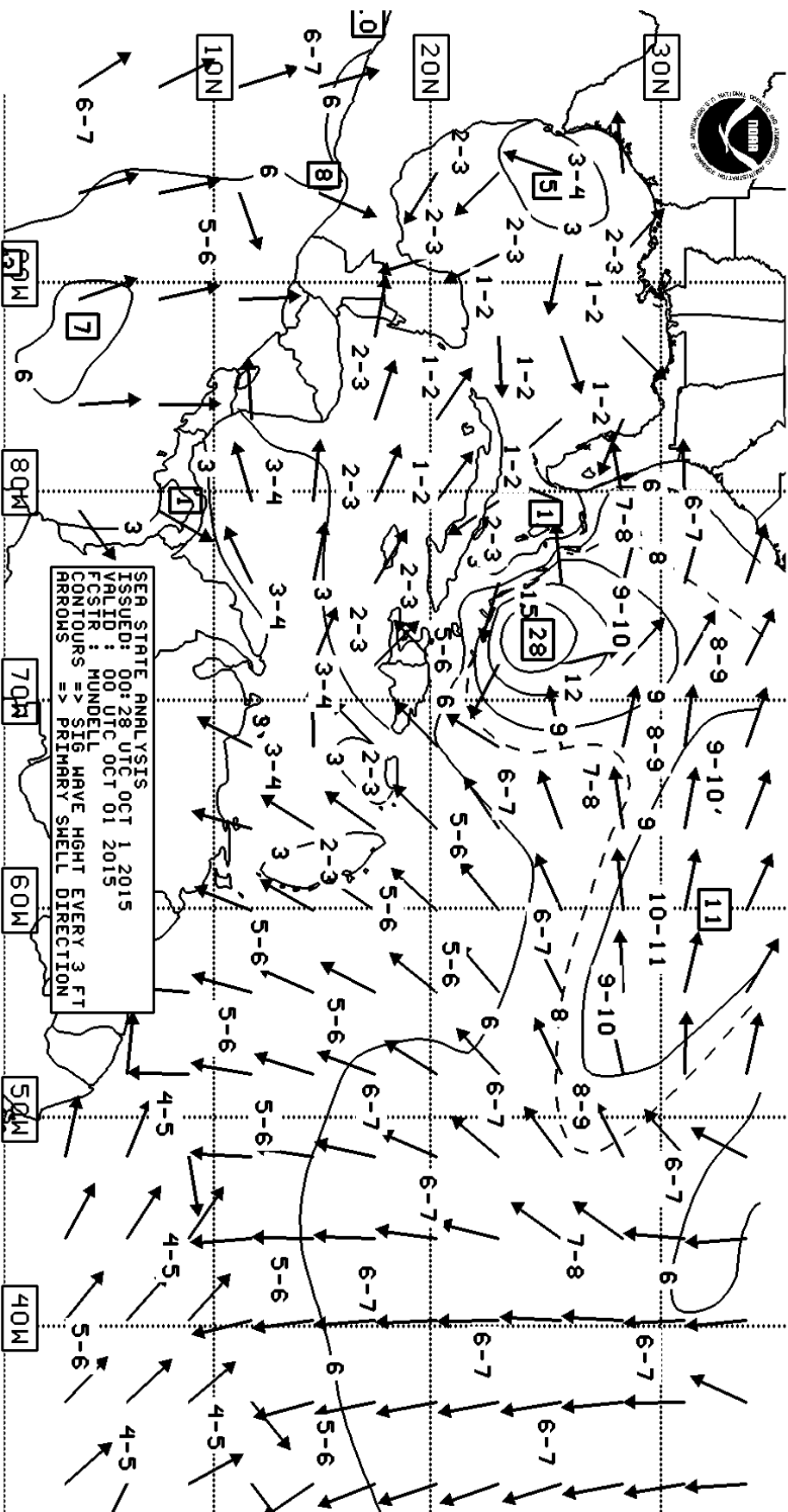
NMS/NHC/TROPICAL ANALYSIS AND FORECAST BRANCH
SIG WAVE HT IS SHOWN (THE AVG HT OF THE HIGHEST 1/3 OF THE WAVES)



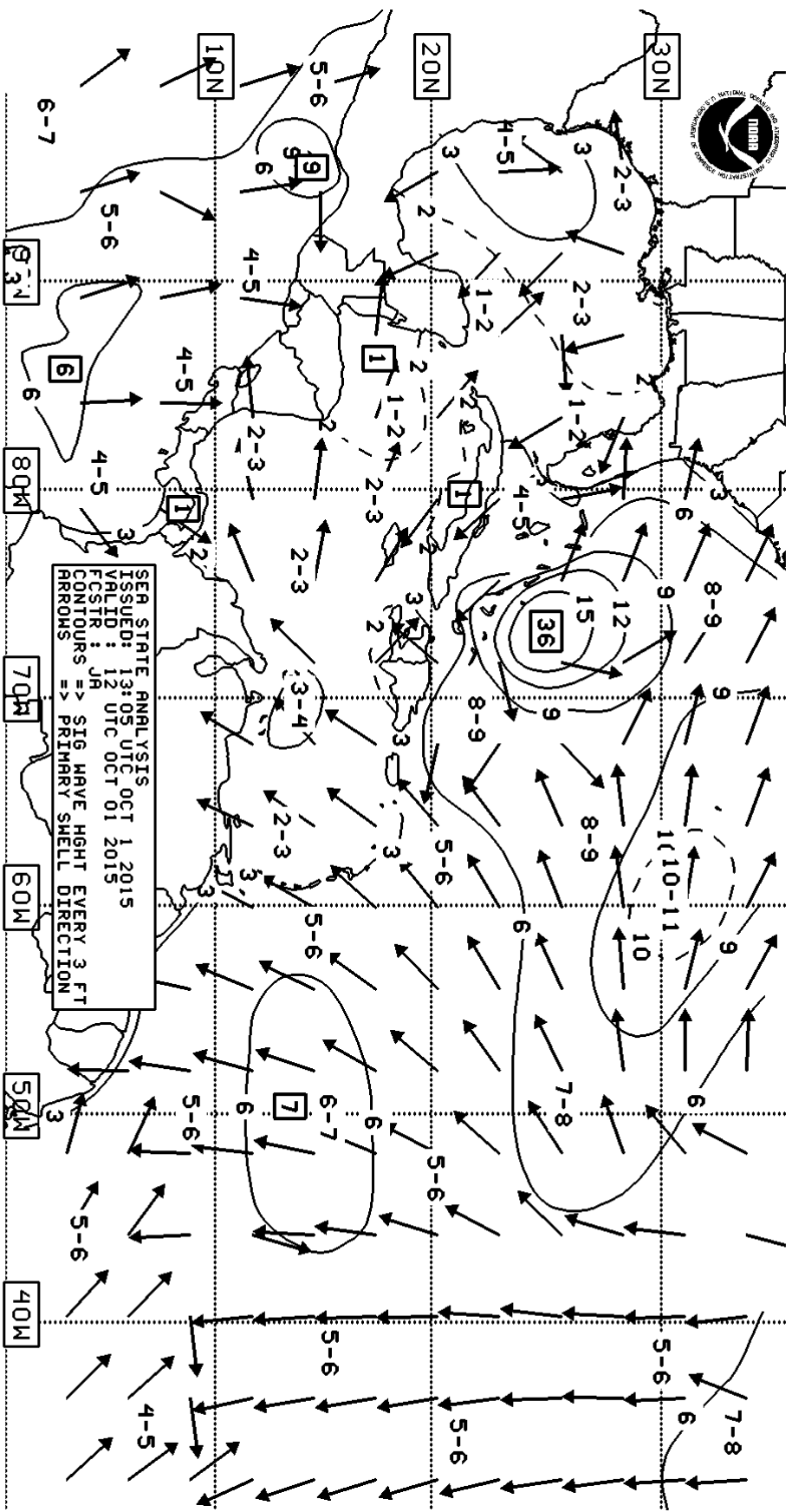
NMS/NHC/TROPICAL ANALYSIS AND FORECAST BRANCH
 SIG WAVE HT IS SHOWN (THE AVG HT OF THE HIGHEST 1/3 OF THE WAVES)



NMS/NHC/TROPICAL ANALYSIS AND FORECAST BRANCH
SIG WAVE HT IS SHOWN (THE AVG HT OF THE HIGHEST 1/3 OF THE WAVES)



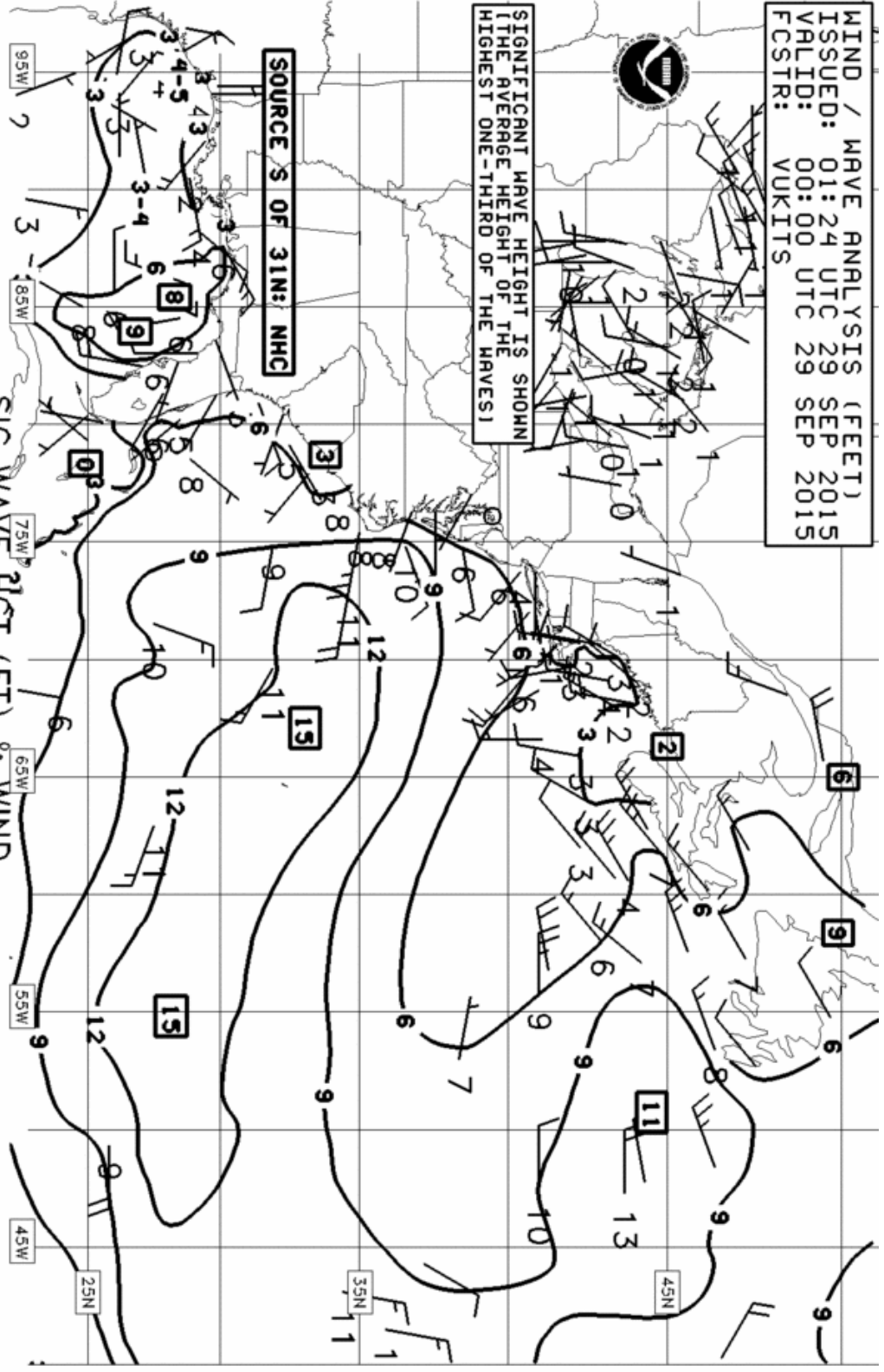
NMS/NHC/TROPICAL ANALYSIS AND FORECAST BRANCH
SIG WAVE HT IS SHOWN (THE AVG HT OF THE HIGHEST 1/3 OF THE WAVES)



NMS/NHC/TROPICAL ANALYSIS AND FORECAST BRANCH
SIG WAVE HT IS SHOWN (THE AVG HT OF THE HIGHEST 1/3 OF THE WAVES)

WIND / WAVE ANALYSIS (FEET)
 ISSUED: 01:24 UTC 29 SEP 2015
 VALID: 00:00 UTC 29 SEP 2015
 FCSTR: VUKITS

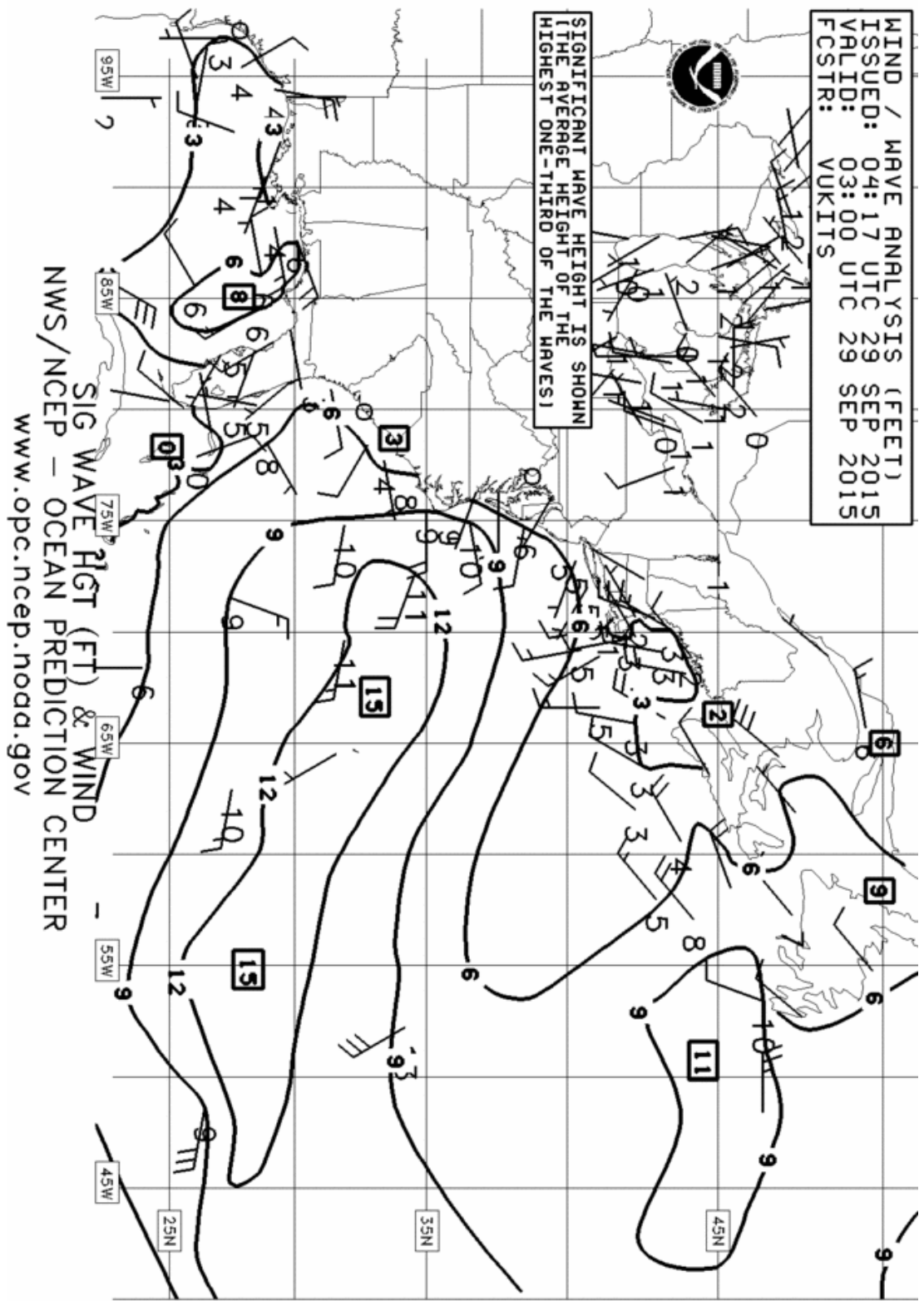
SIGNIFICANT WAVE HEIGHT IS SHOWN
 (THE AVERAGE HEIGHT OF THE WAVES)
 HIGHEST ONE-THIRD OF THE WAVES)



SIG WAVE HGT (FT) & WIND
 NWS/NCEP - OCEAN PREDICTION CENTER
www.opc.ncep.noaa.gov

WIND / WAVE ANALYSIS (FEET)
ISSUED: 04:17 UTC 29 SEP 2015
VALID: 03:00 UTC 29 SEP 2015
FCSTR: VUKITS

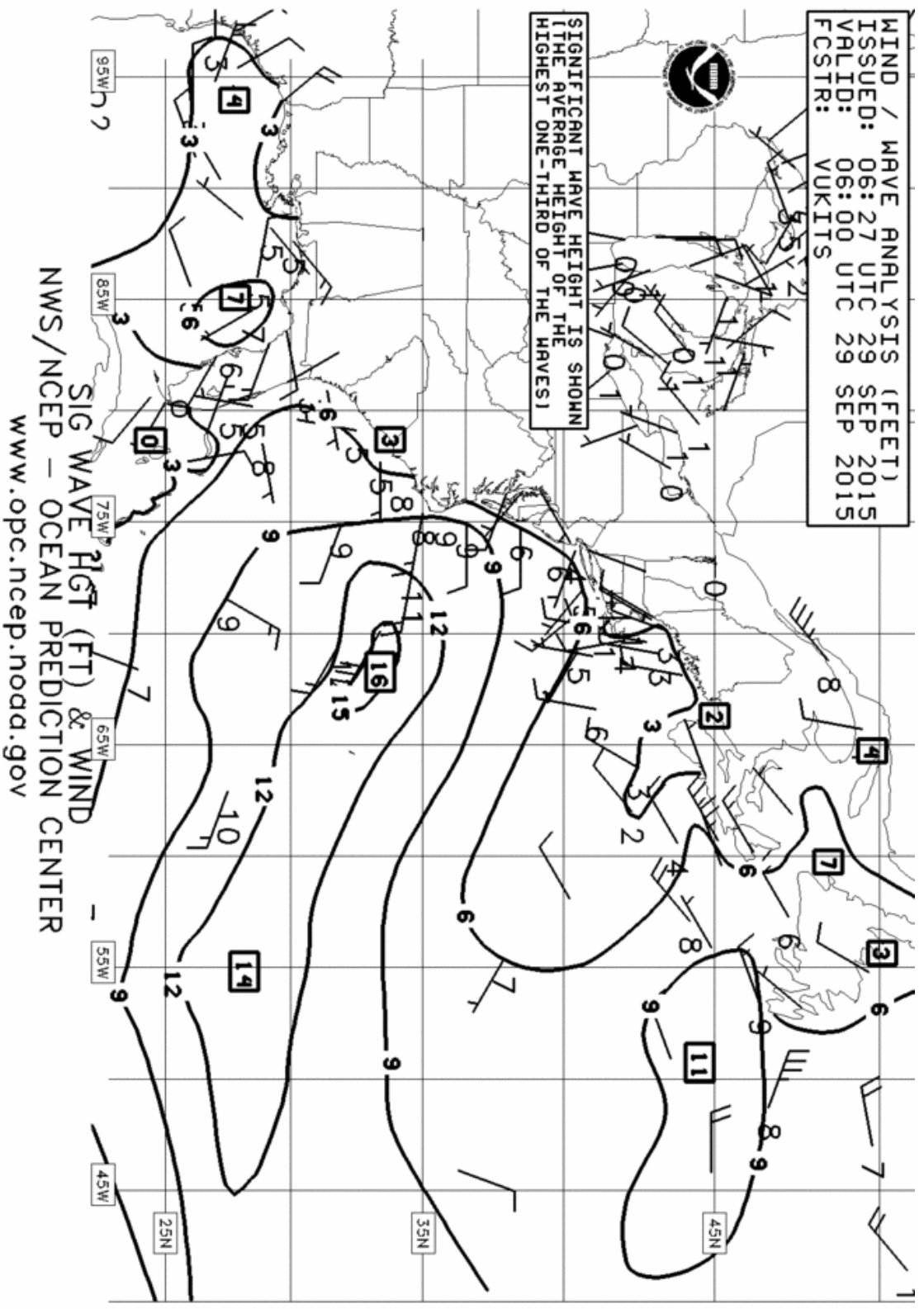
SIGNIFICANT WAVE HEIGHT IS SHOWN
(THE AVERAGE HEIGHT OF THE
HIGHEST ONE-THIRD OF THE WAVES)



SIG WAVE HGT (FT) & WIND
NWS/NCEP - OCEAN PREDICTION CENTER
www.opc.ncep.noaa.gov

WIND / WAVE ANALYSIS (FEET)
 ISSUED: 06:27 UTC 29 SEP 2015
 VALID: 06:00 UTC 29 SEP 2015
 FCSTR: VUKITS

SIGNIFICANT WAVE HEIGHT IS SHOWN
 (THE AVERAGE HEIGHT OF THE WAVES)
 (THE HIGHEST ONE-THIRD OF THE WAVES)

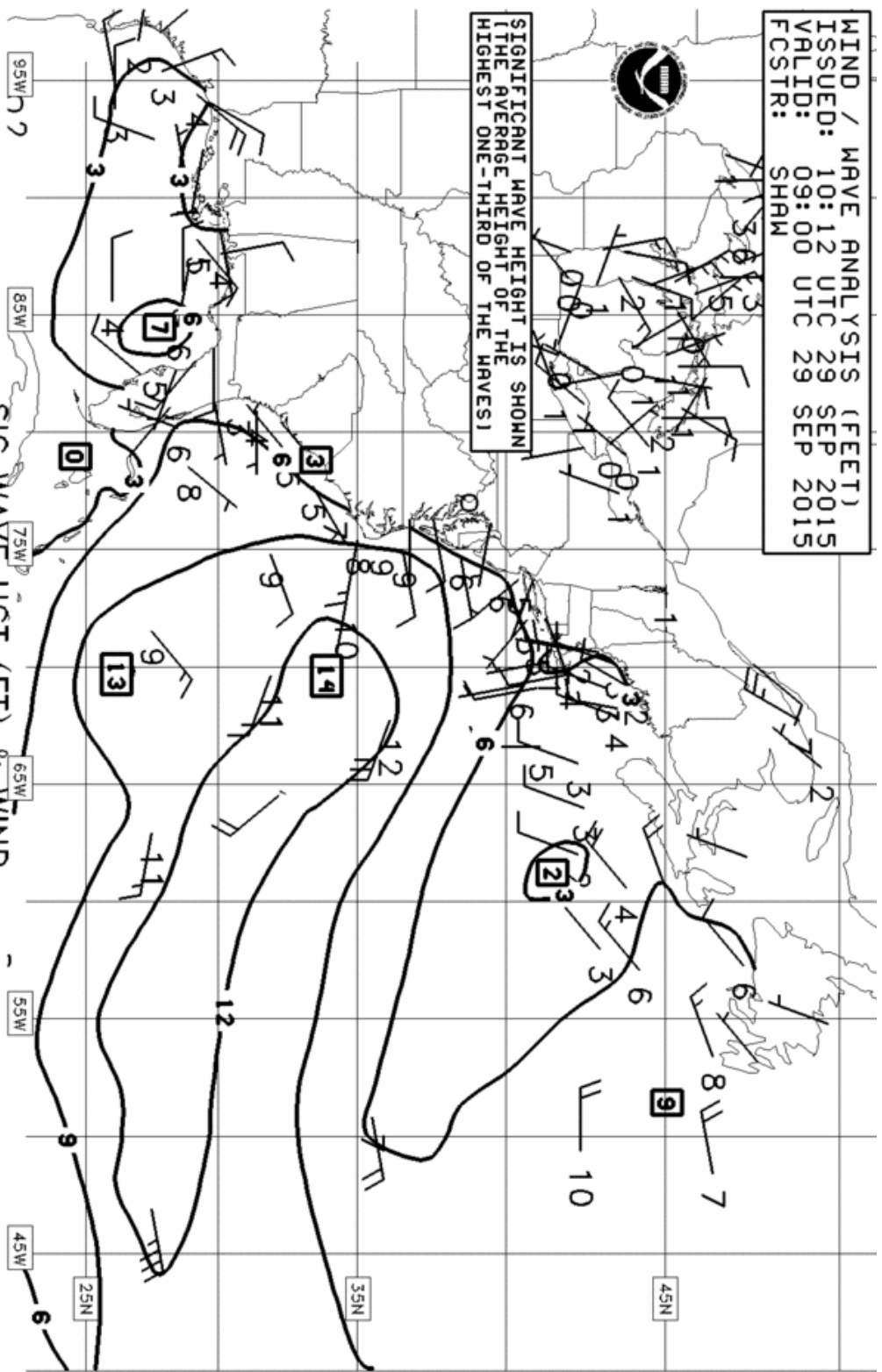


SIG WAVE HGT (FT) & WIND
 NWS/NCEP - OCEAN PREDICTION CENTER
www.opc.ncep.nodda.gov

WIND / WAVE ANALYSIS (FEET)
ISSUED: 10:12 UTC 29 SEP 2015
VALID: 09:00 UTC 29 SEP 2015
FCSTR: SHAM



SIGNIFICANT WAVE HEIGHT IS SHOWN
(THE AVERAGE HEIGHT OF THE
HIGHEST ONE-THIRD OF THE WAVES)



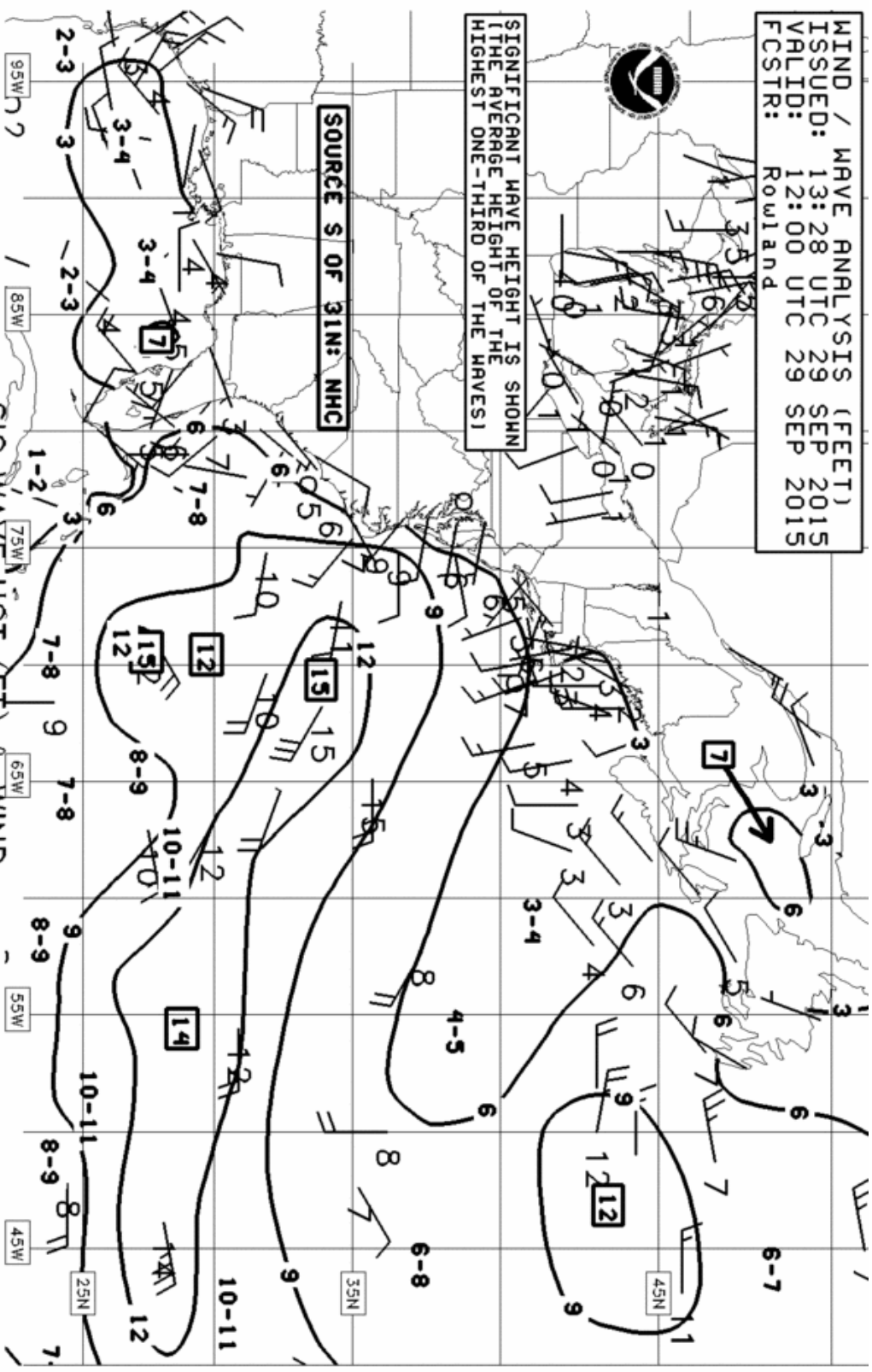
SIG WAVE HGT (FT) & WIND
NWS/NCEP - OCEAN PREDICTION CENTER
www.opc.ncep.nodda.gov

WIND / WAVE ANALYSIS (FEET)
 ISSUED: 13:28 UTC 29 SEP 2015
 VALID: 12:00 UTC 29 SEP 2015
 FCSTR: Rowland



SIGNIFICANT WAVE HEIGHT IS SHOWN
 (THE AVERAGE HEIGHT OF THE WAVES)
 HIGHEST ONE-THIRD OF THE WAVES)

SOURCE S OF 31N: NHC

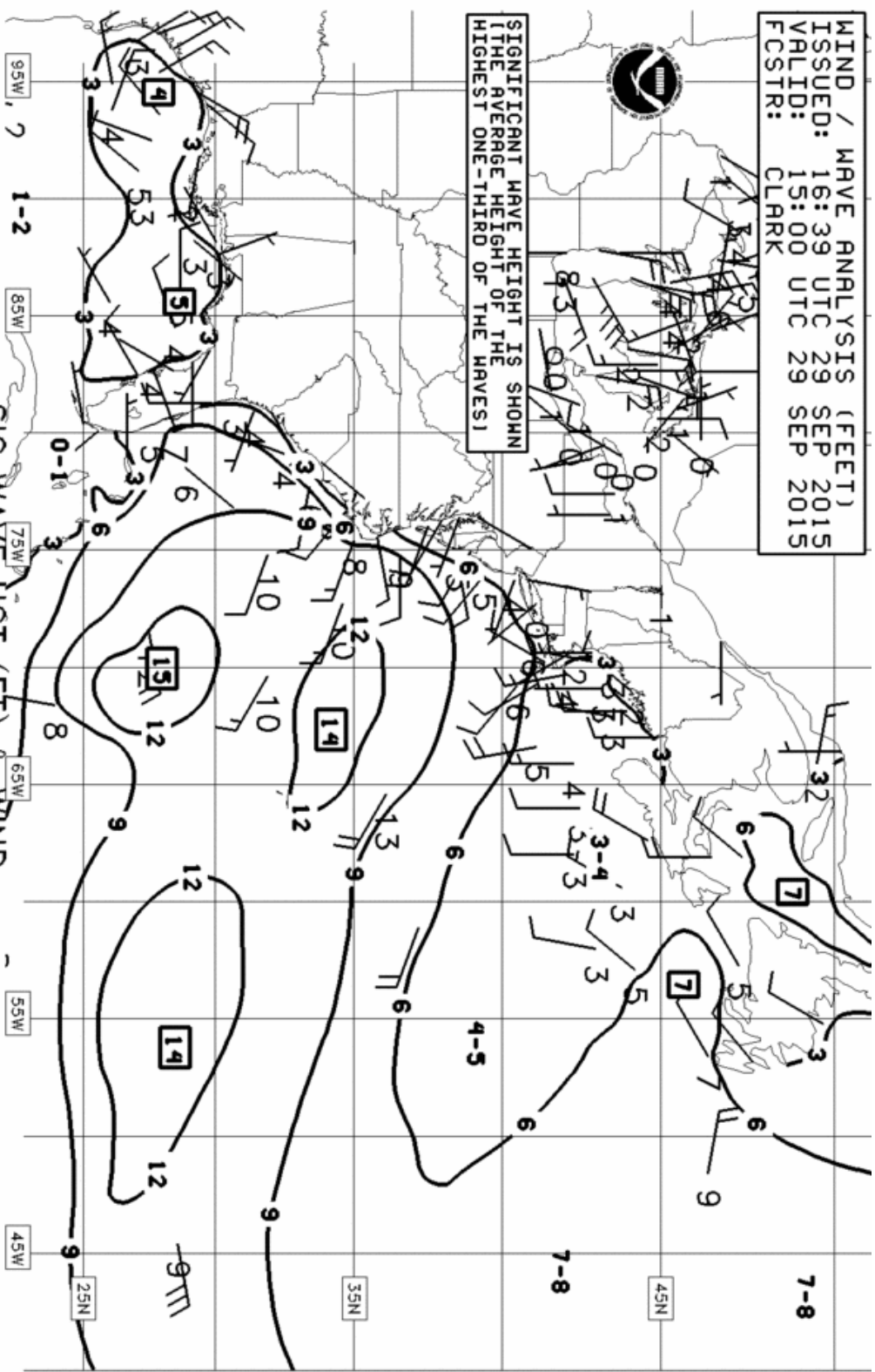


SIG WAVE HGT (FT) & WIND
 NWS/NCEP - OCEAN PREDICTION CENTER
 www.opc.ncep.nodda.gov

WIND / WAVE ANALYSIS (FEET)
 ISSUED: 16: 39 UTC 29 SEP 2015
 VALID: 15: 00 UTC 29 SEP 2015
 FCSTR: CLARK



SIGNIFICANT WAVE HEIGHT IS SHOWN
 (THE AVERAGE HEIGHT OF THE WAVES)
 (THE HIGHEST ONE-THIRD OF THE WAVES)

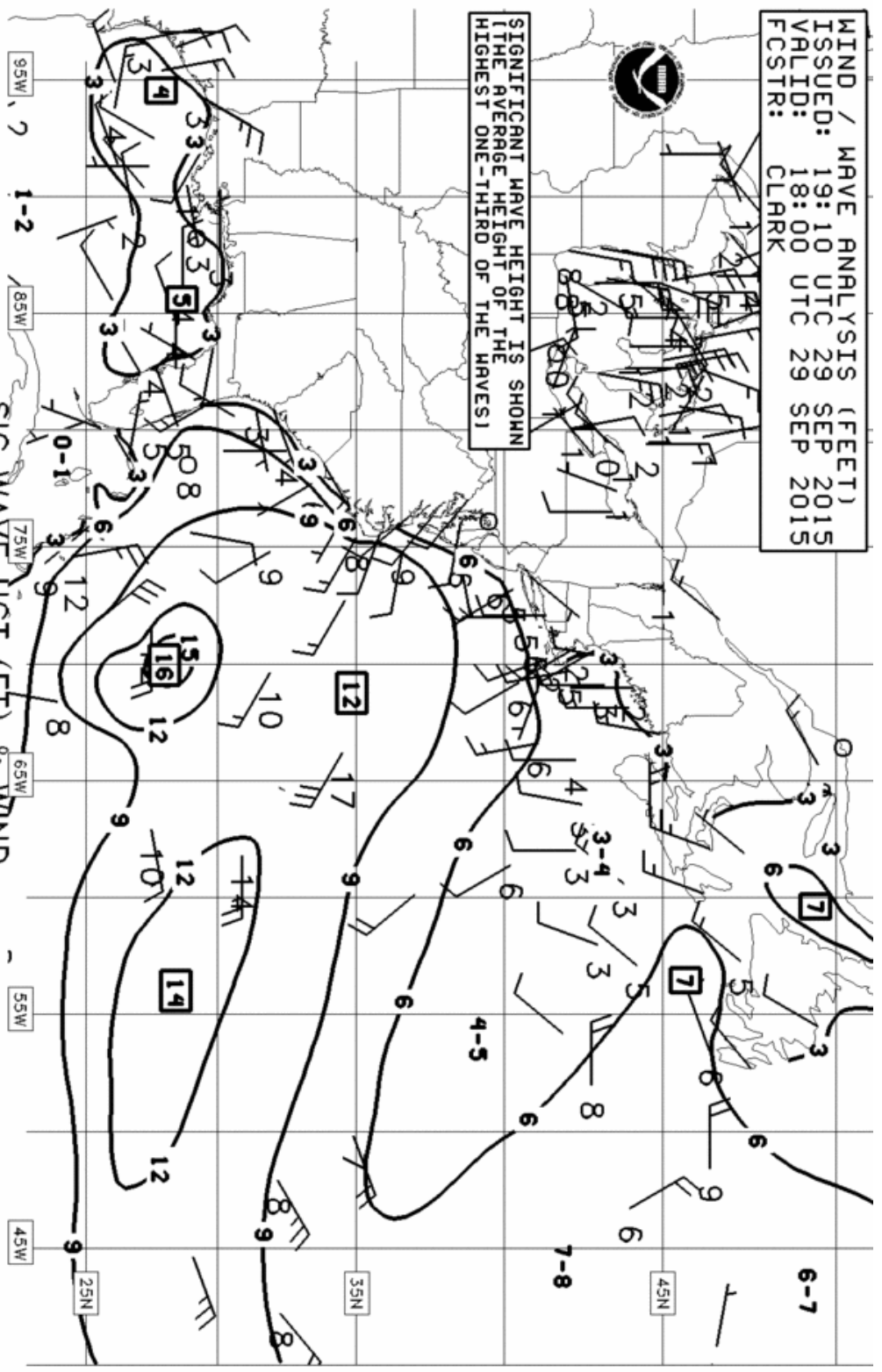


SIG WAVE HGT (FT) & WIND
 NWS/NCEP - OCEAN PREDICTION CENTER
www.opc.ncep.noaa.gov

WIND / WAVE ANALYSIS (FEET)
 ISSUED: 19:10 UTC 29 SEP 2015
 VALID: 18:00 UTC 29 SEP 2015
 FCCSTR: CLARK



SIGNIFICANT WAVE HEIGHT IS SHOWN
 (THE AVERAGE HEIGHT OF THE
 HIGHEST ONE-THIRD OF THE WAVES)

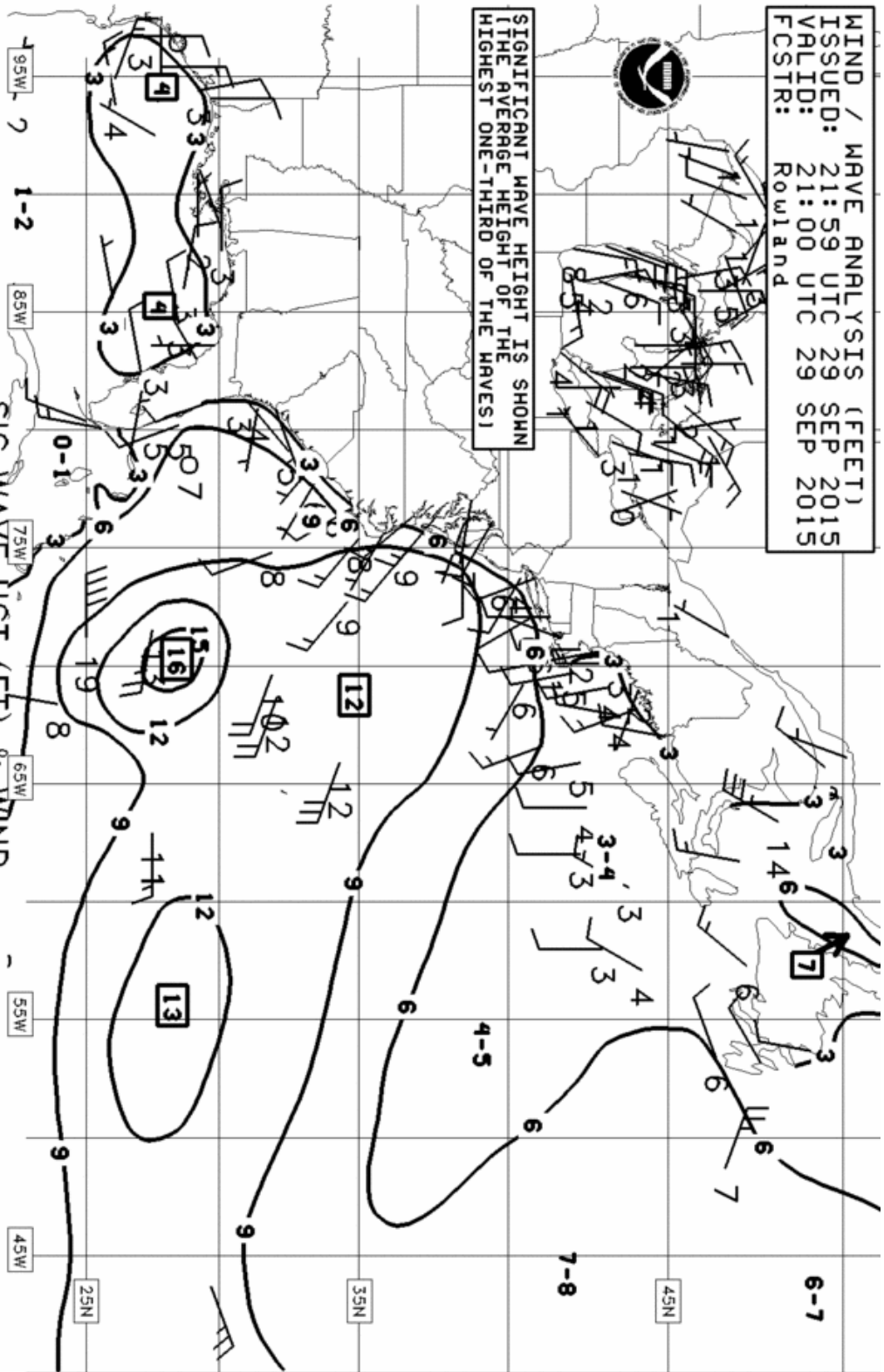


SIG WAVE HGT (FT) & WIND
 NWS/NCEP - OCEAN PREDICTION CENTER
www.opc.ncep.nodda.gov

WIND / WAVE ANALYSIS (FEET)
 ISSUED: 21: 59 UTC 29 SEP 2015
 VALID: 21: 00 UTC 29 SEP 2015
 FCSTR: Rowland



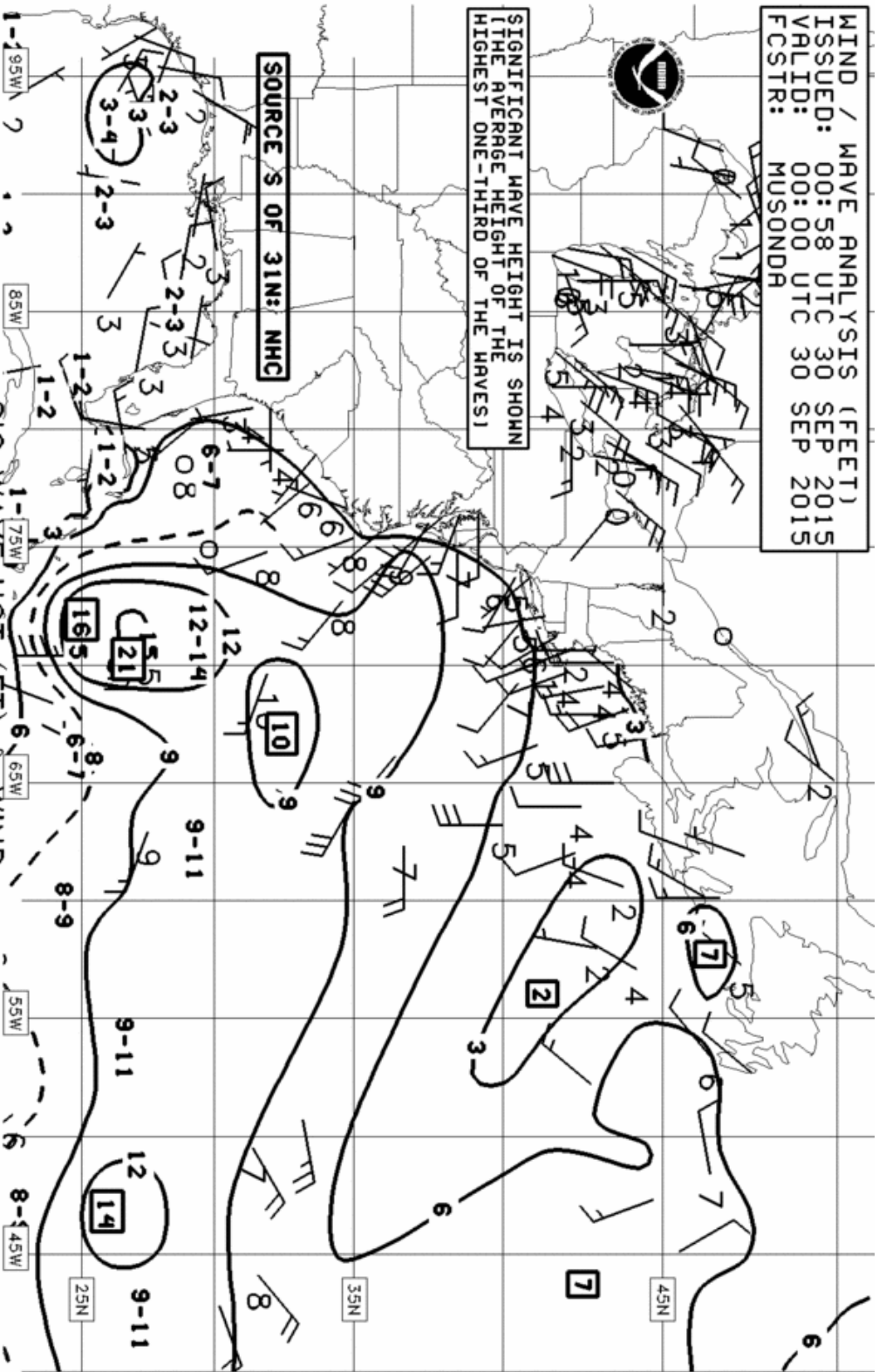
SIGNIFICANT WAVE HEIGHT IS SHOWN
 (THE AVERAGE HEIGHT OF THE WAVES)
 HIGHEST ONE-THIRD OF THE WAVES!



SIG WAVE HGT (FT) & WIND
 NWS/NCEP - OCEAN PREDICTION CENTER
 www.opc.ncep.noaa.gov

WIND / WAVE ANALYSIS (FEET)
 ISSUED: 00: 58 UTC 30 SEP 2015
 VALID: 00: 00 UTC 30 SEP 2015
 FCSTR: MUSONDA

SIGNIFICANT WAVE HEIGHT IS SHOWN
 (THE AVERAGE HEIGHT OF THE WAVES)
 HIGHEST ONE-THIRD OF THE WAVES!

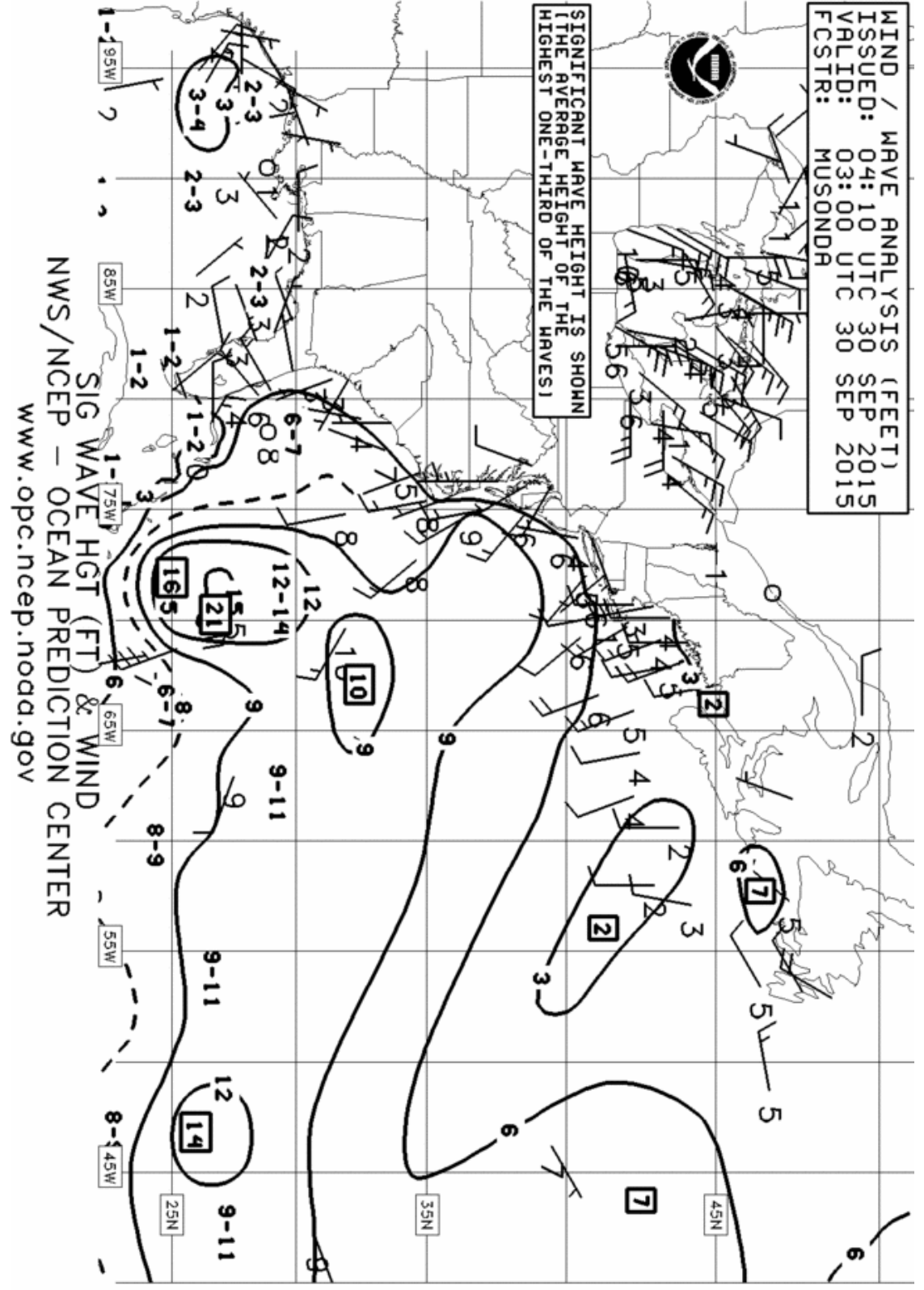


SOURCE S OF 3IN: NHC

SIG WAVE HGT (FT) & WIND
 NWS/NCEP - OCEAN PREDICTION CENTER
www.opc.ncep.nodda.gov

WIND / WAVE ANALYSIS (FEET)
 ISSUED: 04:10 UTC 30 SEP 2015
 VALID: 03:00 UTC 30 SEP 2015
 FCSTR: MUSONDR

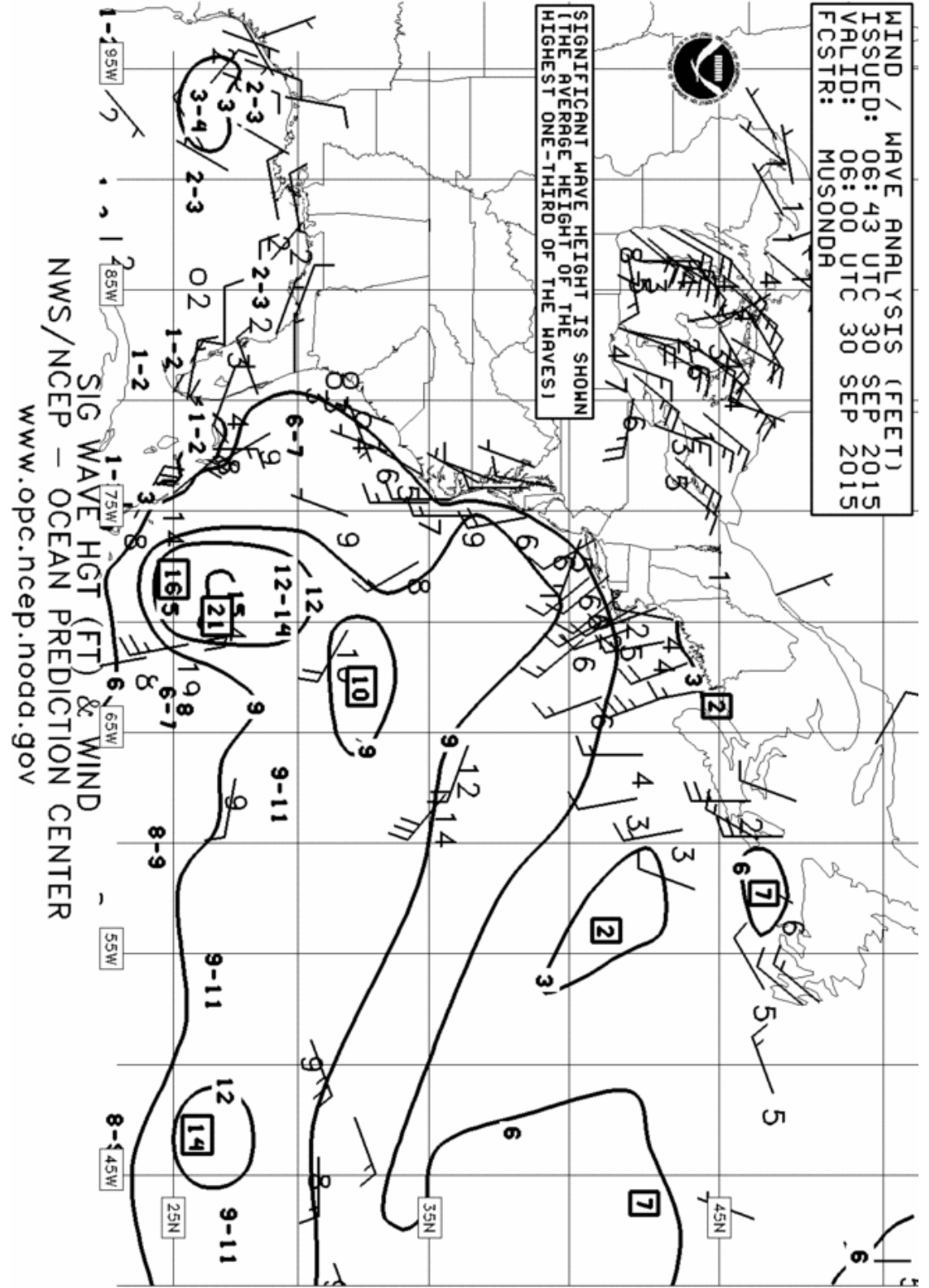
SIGNIFICANT WAVE HEIGHT IS SHOWN
 (THE AVERAGE HEIGHT OF THE WAVES)
 (THE HIGHEST ONE-THIRD OF THE WAVES)



SIG WAVE HGT (FT) & WIND
 NWS/NCEP - OCEAN PREDICTION CENTER
 www.opc.ncep.nodda.gov

WIND / WAVE ANALYSIS (FEET)
 ISSUED: 06: 43 UTC 30 SEP 2015
 VALID: 06: 00 UTC 30 SEP 2015
 FCSTR: MUSONDA

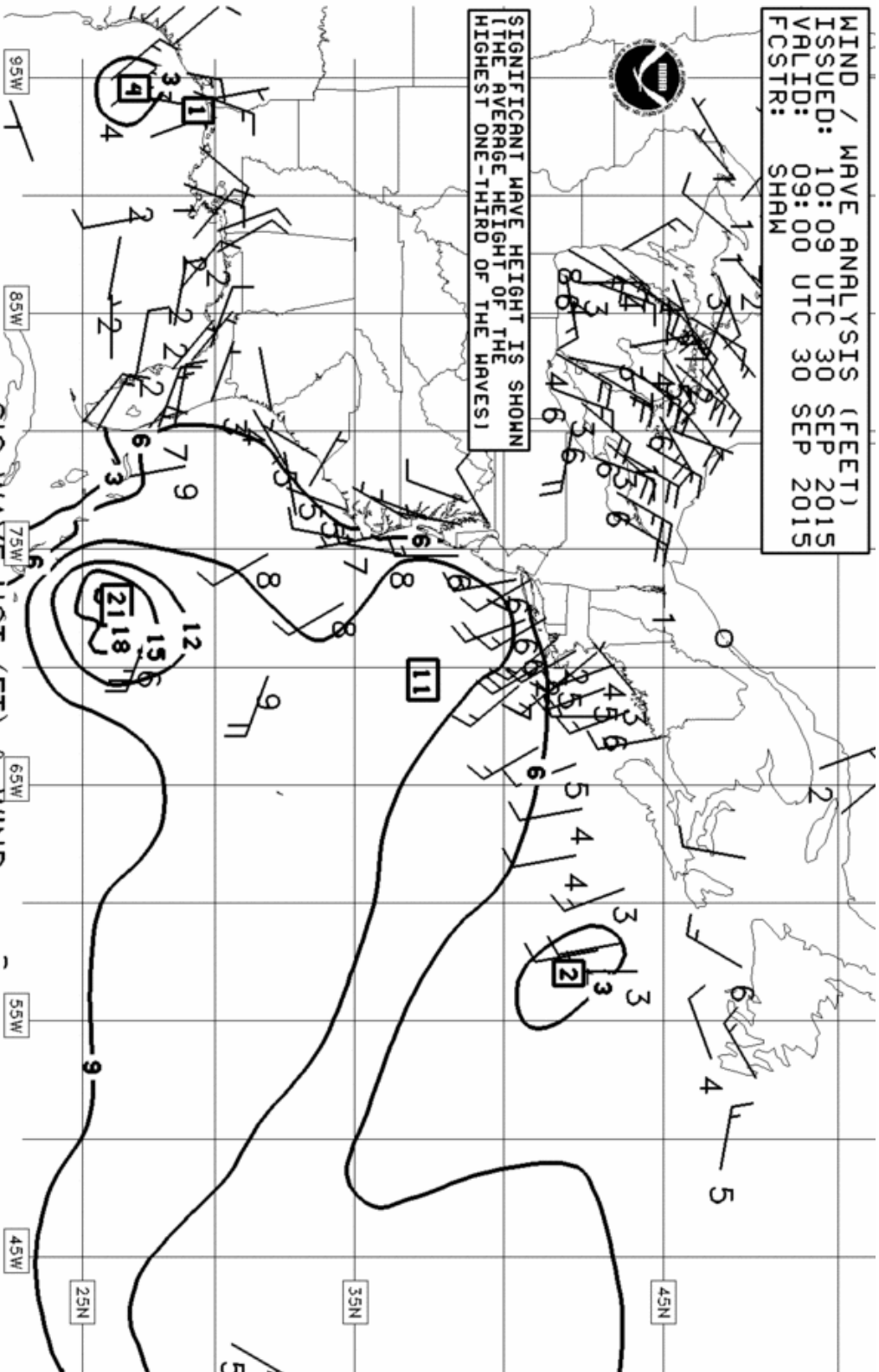
SIGNIFICANT WAVE HEIGHT IS SHOWN
 (THE AVERAGE HEIGHT OF THE WAVES)
 HIGHEST ONE-THIRD OF THE WAVES!



SIG WAVE HGT (FT) & WIND
 NWS/NCEP - OCEAN PREDICTION CENTER
www.opc.ncep.noda.gov

WIND / WAVE ANALYSIS (FEET)
 ISSUED: 10:09 UTC 30 SEP 2015
 VALID: 09:00 UTC 30 SEP 2015
 FCSTR: SHRM

SIGNIFICANT WAVE HEIGHT IS SHOWN
 (THE AVERAGE HEIGHT OF THE
 HIGHEST ONE-THIRD OF THE WAVES)

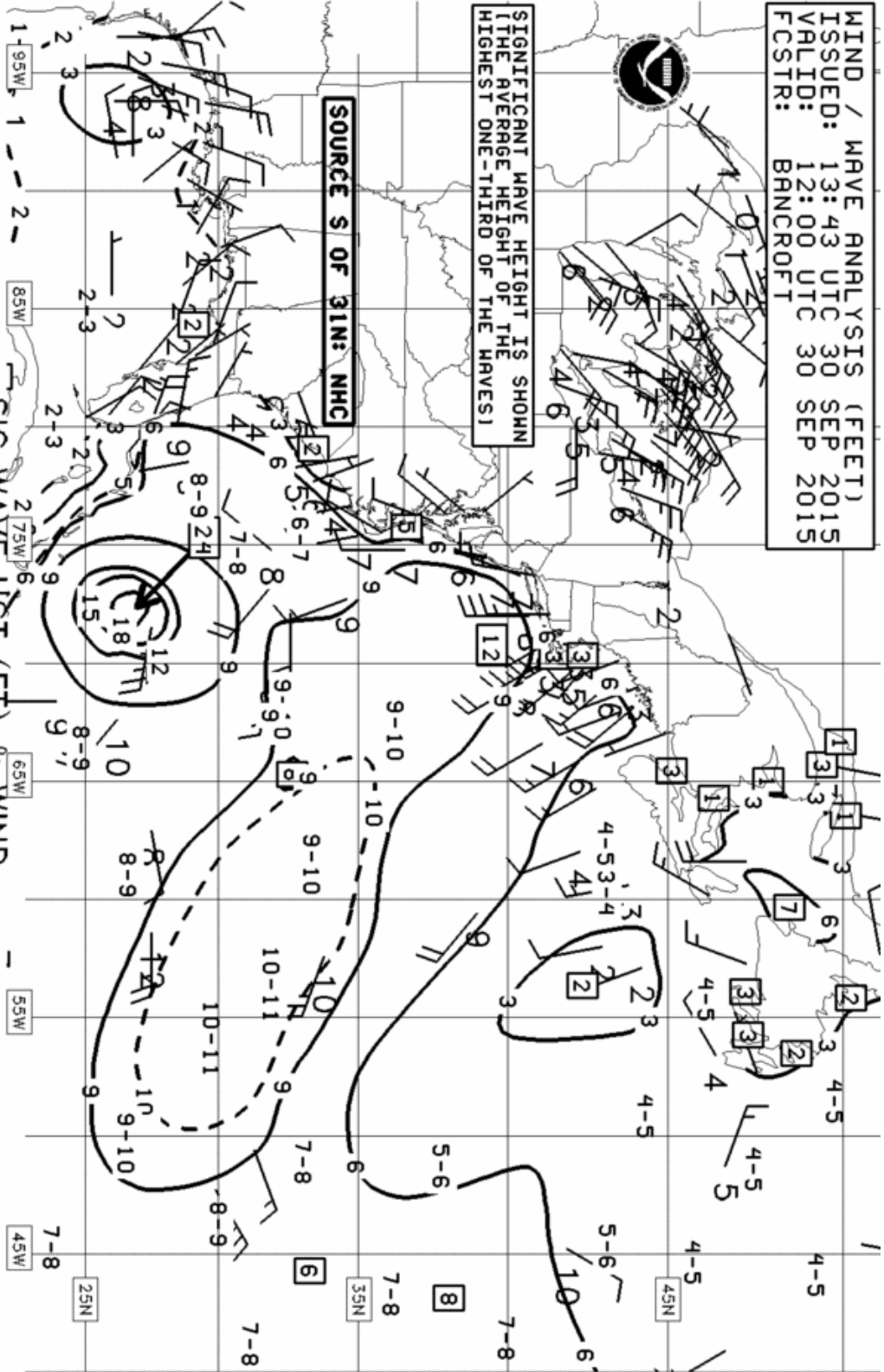


SIG WAVE HGT (FT) & WIND
 NWS/NCEP - OCEAN PREDICTION CENTER
www.opc.ncep.noaa.gov

WIND / WAVE ANALYSIS (FEET)
 ISSUED: 13:43 UTC 30 SEP 2015
 VALID: 12:00 UTC 30 SEP 2015
 FCSTR: BRNCROFT

SIGNIFICANT WAVE HEIGHT IS SHOWN
 (THE AVERAGE HEIGHT OF THE WAVES)
 HIGHEST ONE-THIRD OF THE WAVES)

SOURCE S OF 31N: NHC

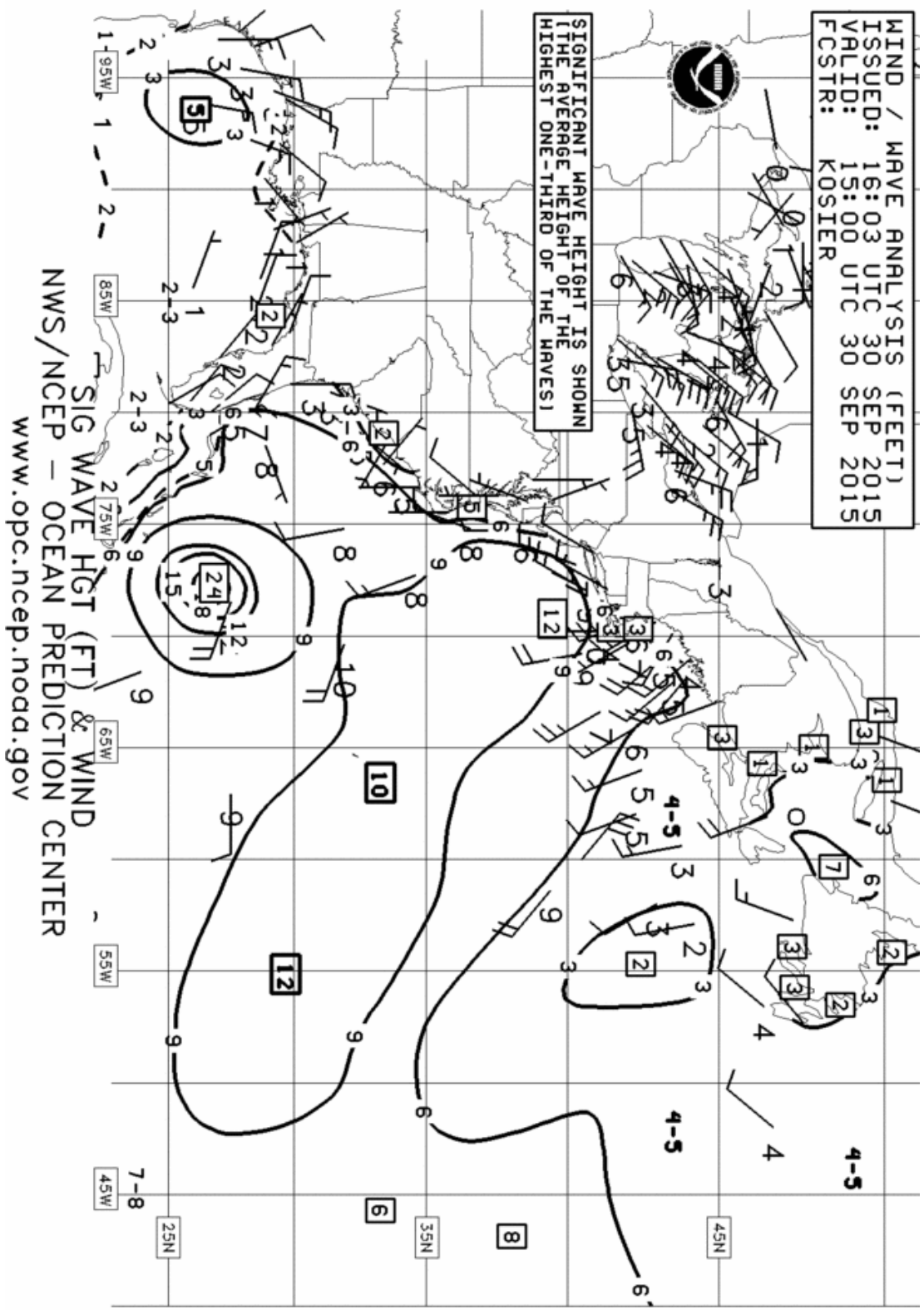


SIG WAVE HGT (FT) & WIND
 NWS/NCEP - OCEAN PREDICTION CENTER
 www.opc.ncep.nodda.gov

WIND / WAVE ANALYSIS (FEET)
 ISSUED: 16:03 UTC 30 SEP 2015
 VALID: 15:00 UTC 30 SEP 2015
 FCSTR: KOSIER



SIGNIFICANT WAVE HEIGHT IS SHOWN
 (THE AVERAGE HEIGHT OF THE WAVES)
 (THE HIGHEST ONE-THIRD OF THE WAVES)

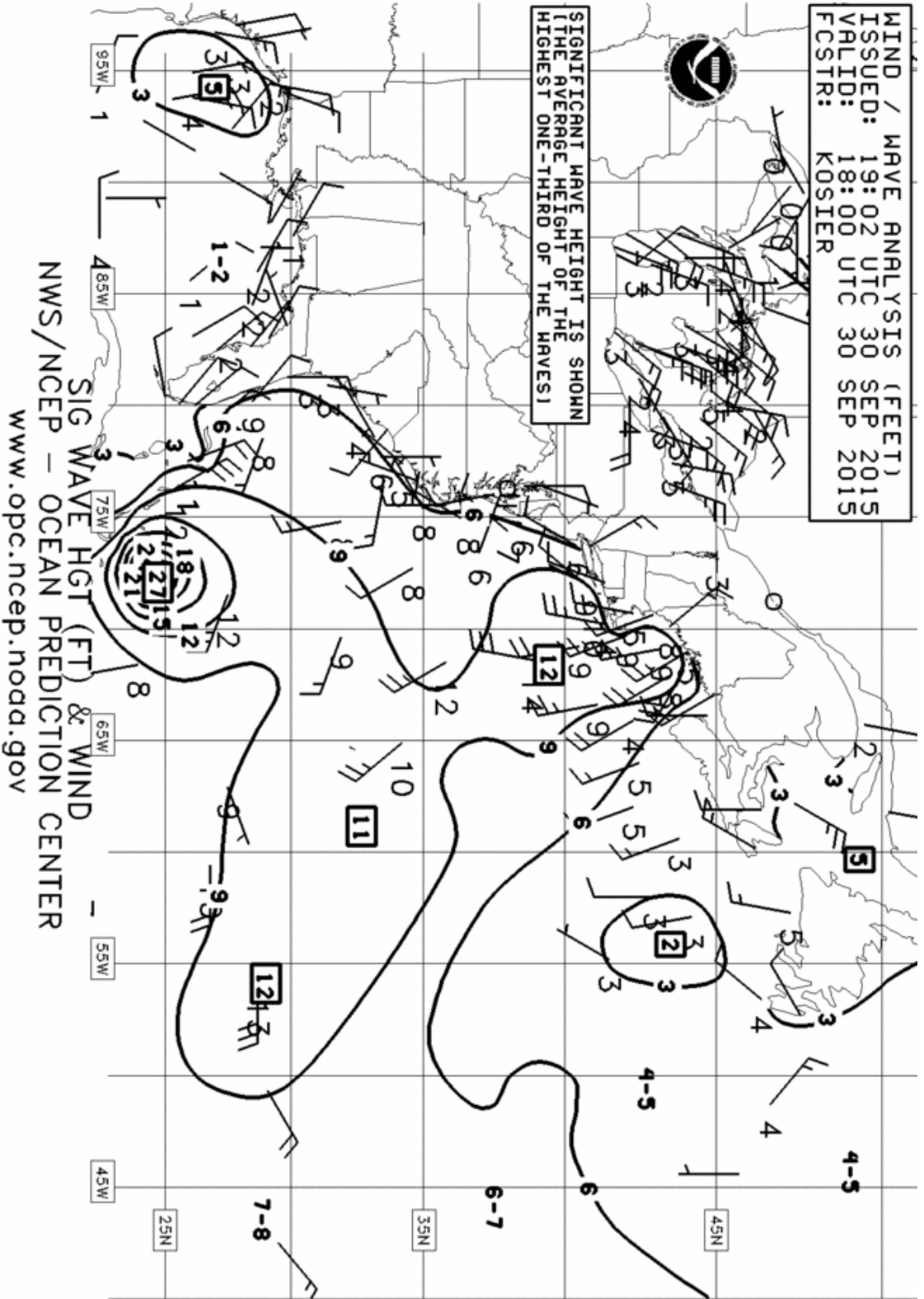


SIG WAVE HGT (FT) & WIND
 NWS/NCEP - OCEAN PREDICTION CENTER
www.opc.ncep.nodd.gov

WIND / WAVE ANALYSIS (FEET)
 ISSUED: 19:02 UTC 30 SEP 2015
 VALID: 18:00 UTC 30 SEP 2015
 FCSTR: KOSIER



SIGNIFICANT WAVE HEIGHT IS SHOWN
 (THE AVERAGE HEIGHT OF THE WAVES)
 (THE HIGHEST ONE-THIRD OF THE WAVES)

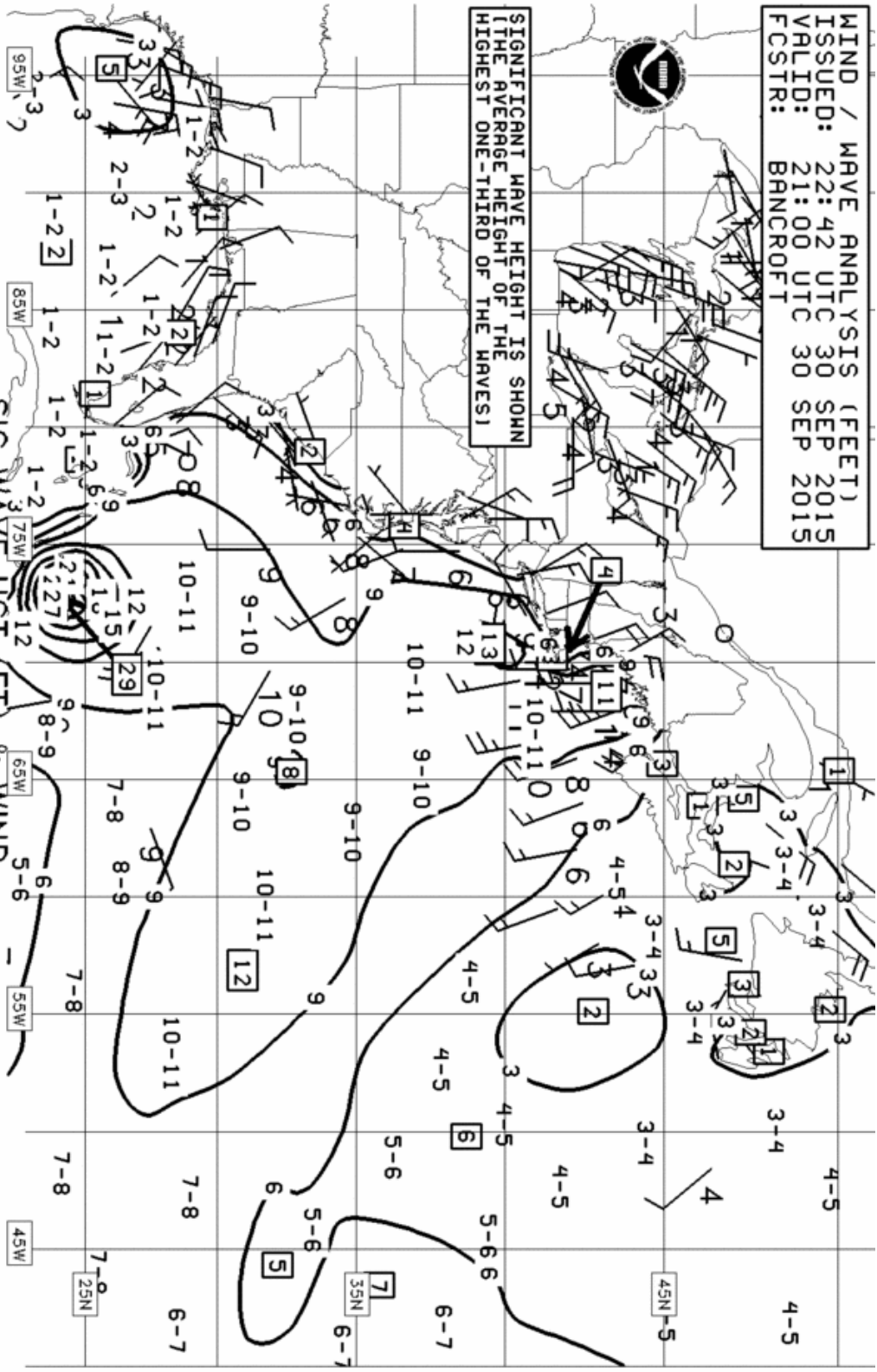


SIG WAVE HGT (FT) & WIND
 NWS/NCEP - OCEAN PREDICTION CENTER
www.opc.ncep.noaa.gov

WIND / WAVE ANALYSIS (FEET)
 ISSUED: 22:42 UTC 30 SEP 2015
 VALID: 21:00 UTC 30 SEP 2015
 FCSTR: BRANCROFT



SIGNIFICANT WAVE HEIGHT IS SHOWN
 (THE AVERAGE HEIGHT OF THE WAVES)
 HIGHEST ONE-THIRD OF THE WAVES!

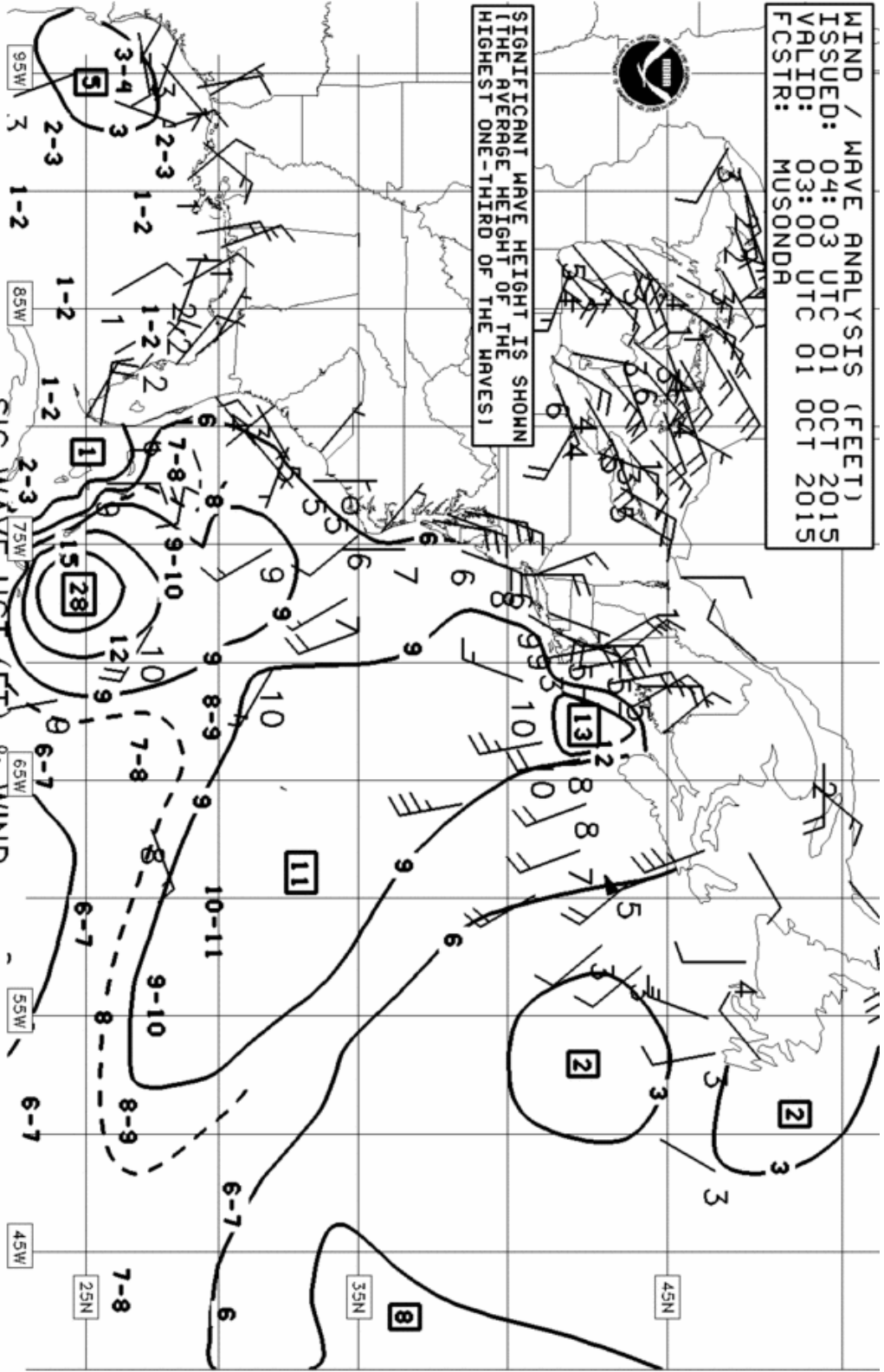


SIG WAVE HGT (FT) & WIND
 NWS/NCEP - OCEAN PREDICTION CENTER
www.opc.ncep.noaa.gov

WIND / WAVE ANALYSIS (FEET)
 ISSUED: 04:03 UTC 01 OCT 2015
 VALID: 03:00 UTC 01 OCT 2015
 FCSTR: MUSONDR



SIGNIFICANT WAVE HEIGHT IS SHOWN
 (THE AVERAGE HEIGHT OF THE WAVES)
 HIGHEST ONE-THIRD OF THE WAVES!

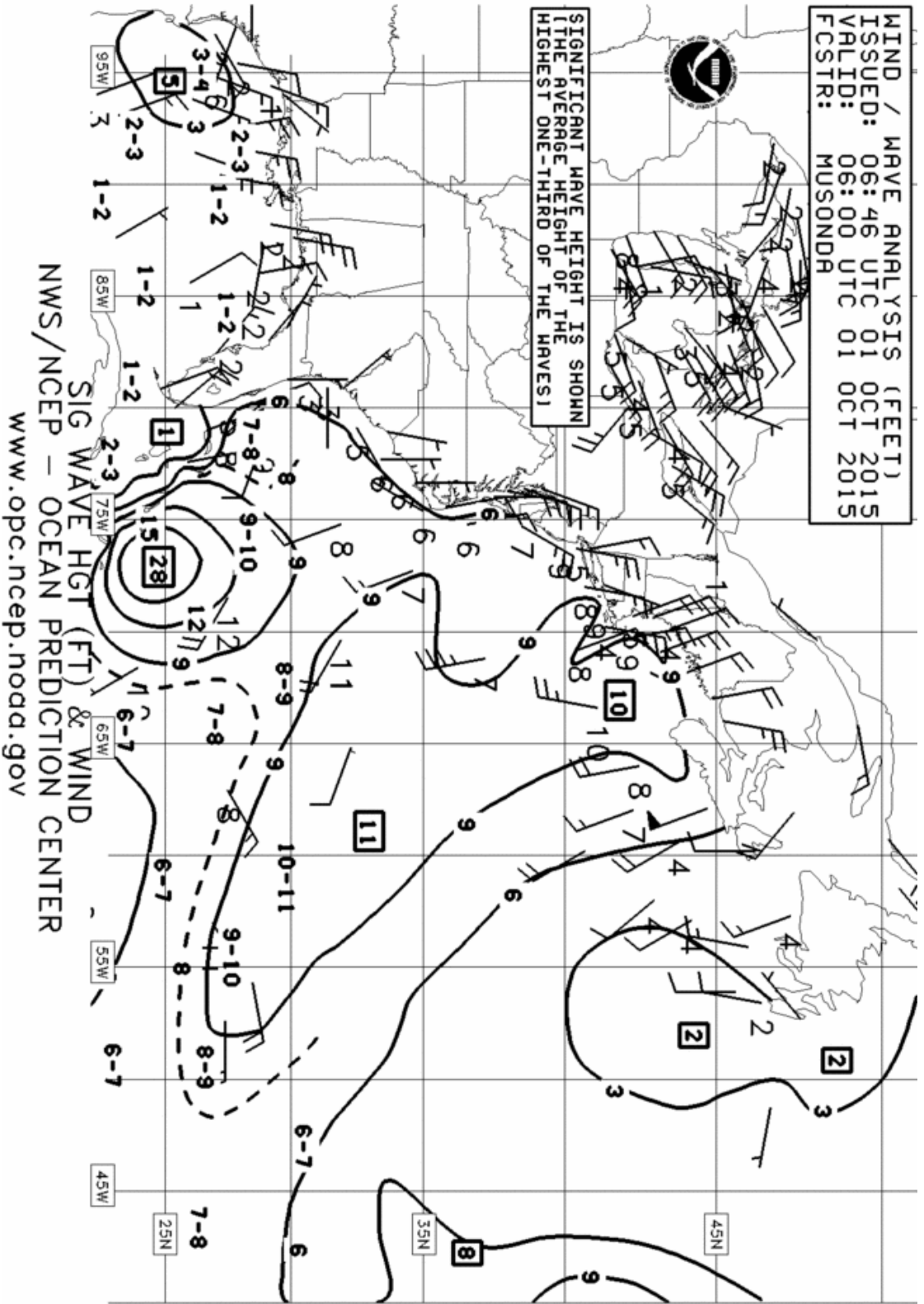


SIG WAVE HGT (FT) & WIND
 NWS/NCEP - OCEAN PREDICTION CENTER
www.opc.ncep.noda.gov

WIND / WAVE ANALYSIS (FEET)
 ISSUED: 06:46 UTC 01 OCT 2015
 VALID: 06:00 UTC 01 OCT 2015
 FCSTR: MUSONDA



SIGNIFICANT WAVE HEIGHT IS SHOWN
 (THE AVERAGE HEIGHT OF THE WAVES)
 (HIGHEST ONE-THIRD OF THE WAVES)

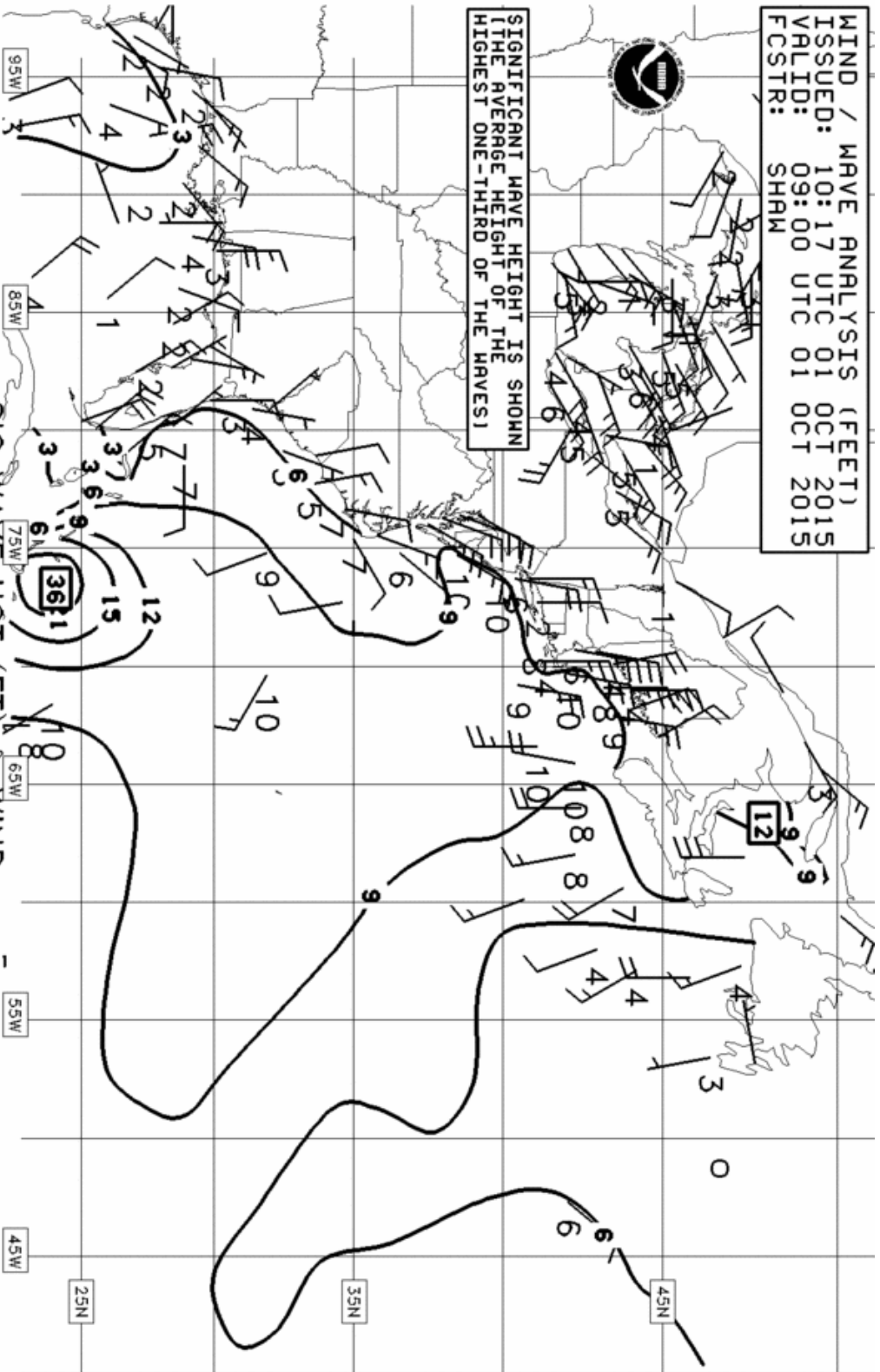


SIG WAVE HGT (FT) & WIND
 NWS/NCEP - OCEAN PREDICTION CENTER
www.opc.ncep.noaa.gov

WIND / WAVE ANALYSIS (FEET)
 ISSUED: 10:17 UTC 01 OCT 2015
 VALID: 09:00 UTC 01 OCT 2015
 FCSTR: SHRM



SIGNIFICANT WAVE HEIGHT IS SHOWN
 (THE AVERAGE HEIGHT OF THE WAVES)
 (THE HIGHEST ONE-THIRD OF THE WAVES)

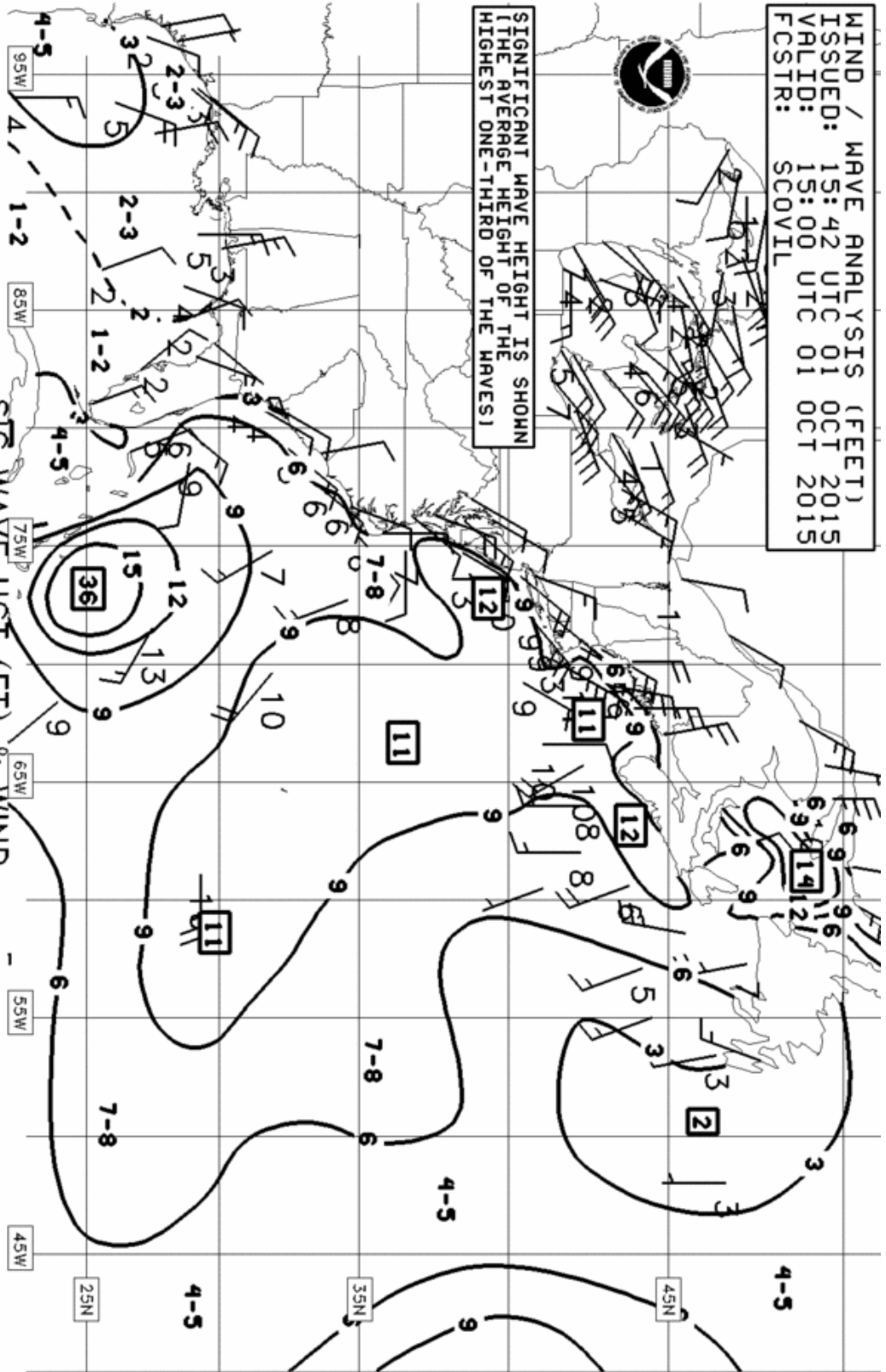


SIG WAVE HGT (FT) & WIND
 NWS/NCEP - OCEAN PREDICTION CENTER
www.opc.ncep.noaa.gov

WIND / WAVE ANALYSIS (FEET)
 ISSUED: 15:42 UTC 01 OCT 2015
 VALID: 15:00 UTC 01 OCT 2015
 FCSTR: SCOVIIL



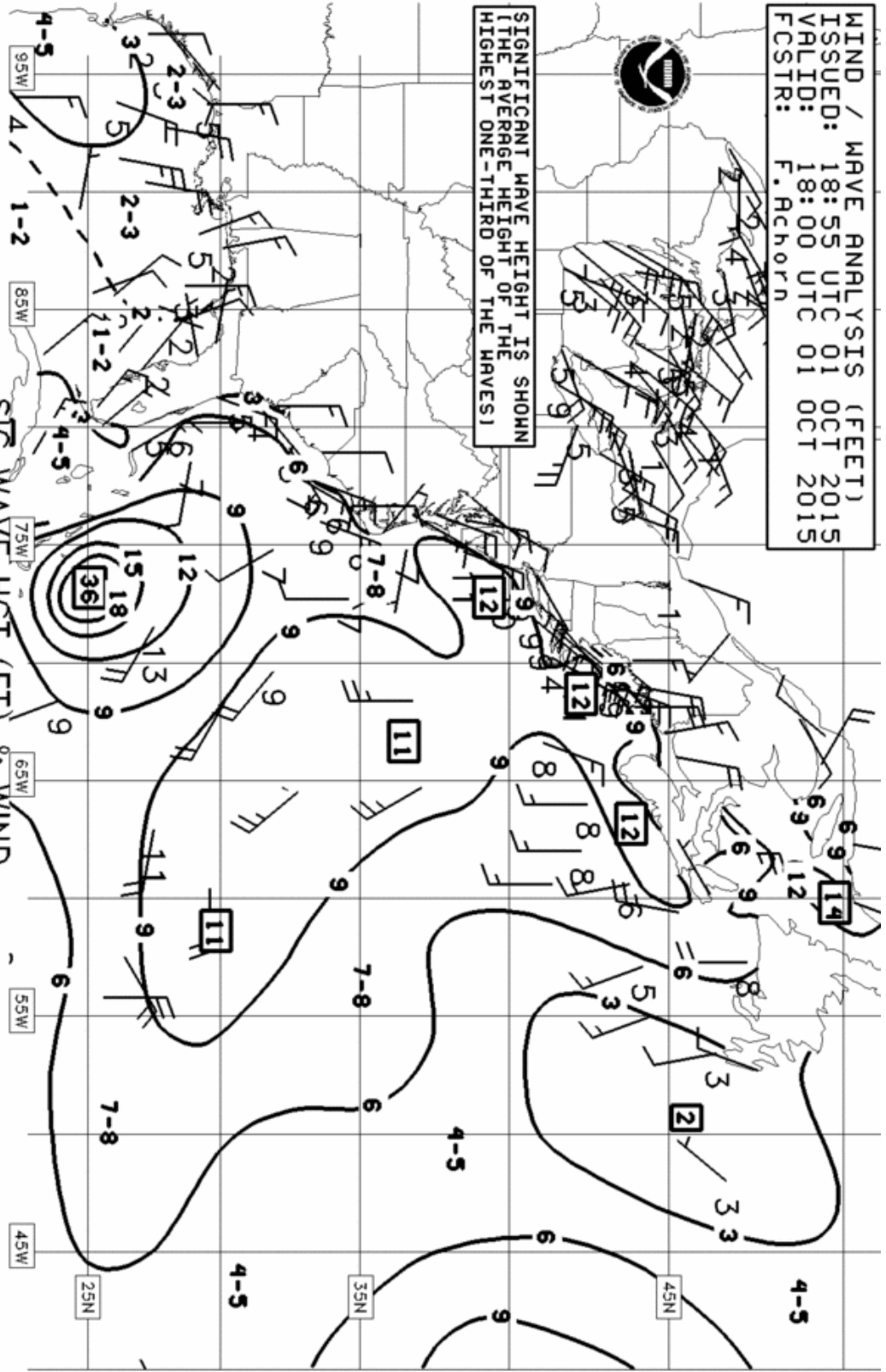
SIGNIFICANT WAVE HEIGHT IS SHOWN
 (THE AVERAGE HEIGHT OF THE
 HIGHEST ONE-THIRD OF THE WAVES)



STG WAVE HGT (FT) & WIND
NWS/NCEP - OCEAN PREDICTION CENTER
www.opc.ncep.noaa.gov

WIND / WAVE ANALYSIS (FEET)
 ISSUED: 18:55 UTC 01 OCT 2015
 VLLID: 18:00 UTC 01 OCT 2015
 FCSTR: F. Achorn

SIGNIFICANT WAVE HEIGHT IS SHOWN
 (THE AVERAGE HEIGHT OF THE
 HIGHEST ONE-THIRD OF THE WAVES)

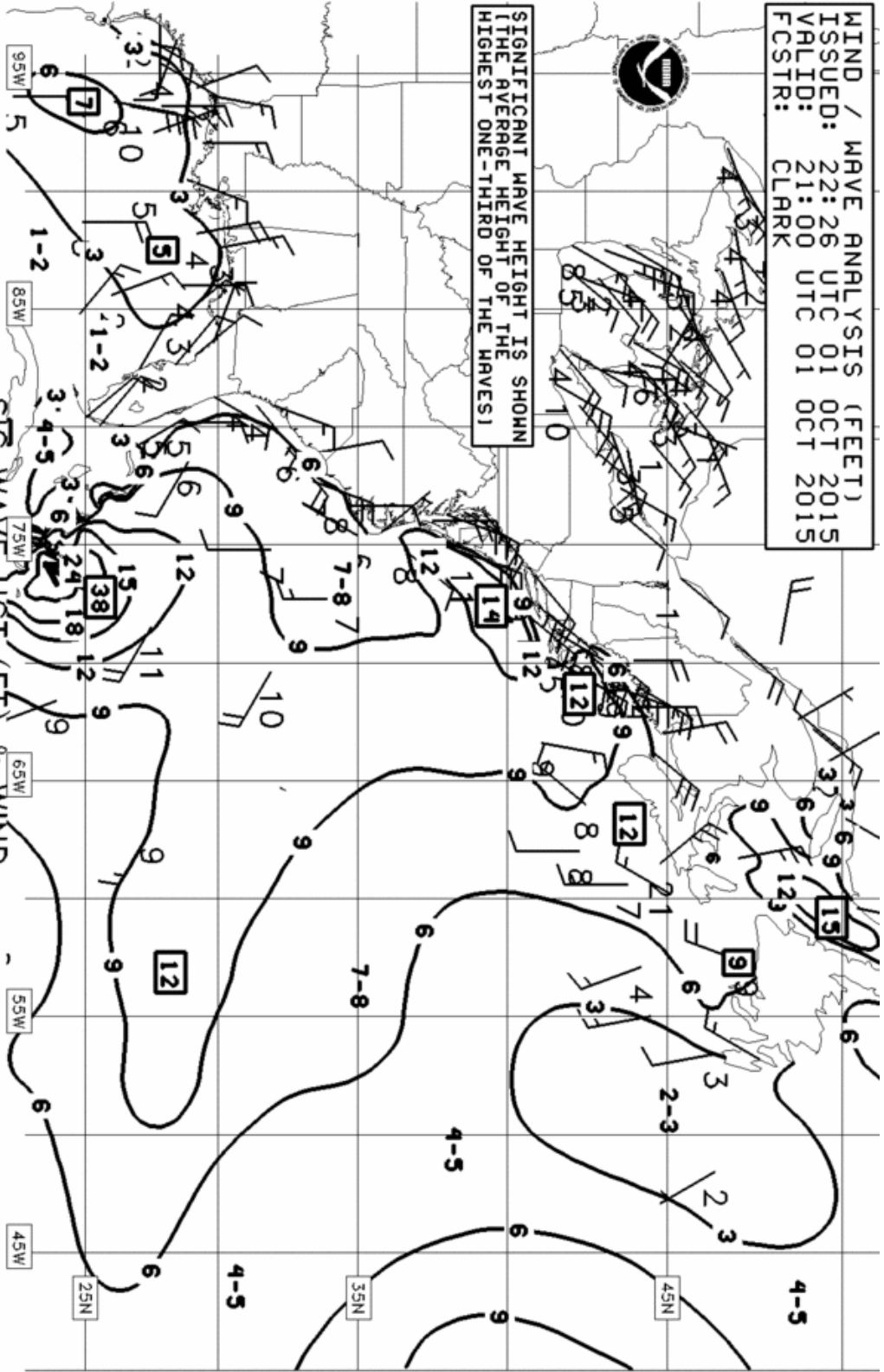


STG WAVE HGT (FT) & WIND
 NWS/NCEP - OCEAN PREDICTION CENTER
www.opc.ncep.nod.noaa.gov

WIND / WAVE ANALYSIS (FEET)
 ISSUED: 22:26 UTC 01 OCT 2015
 VALID: 21:00 UTC 01 OCT 2015
 FCSTR: CLARK



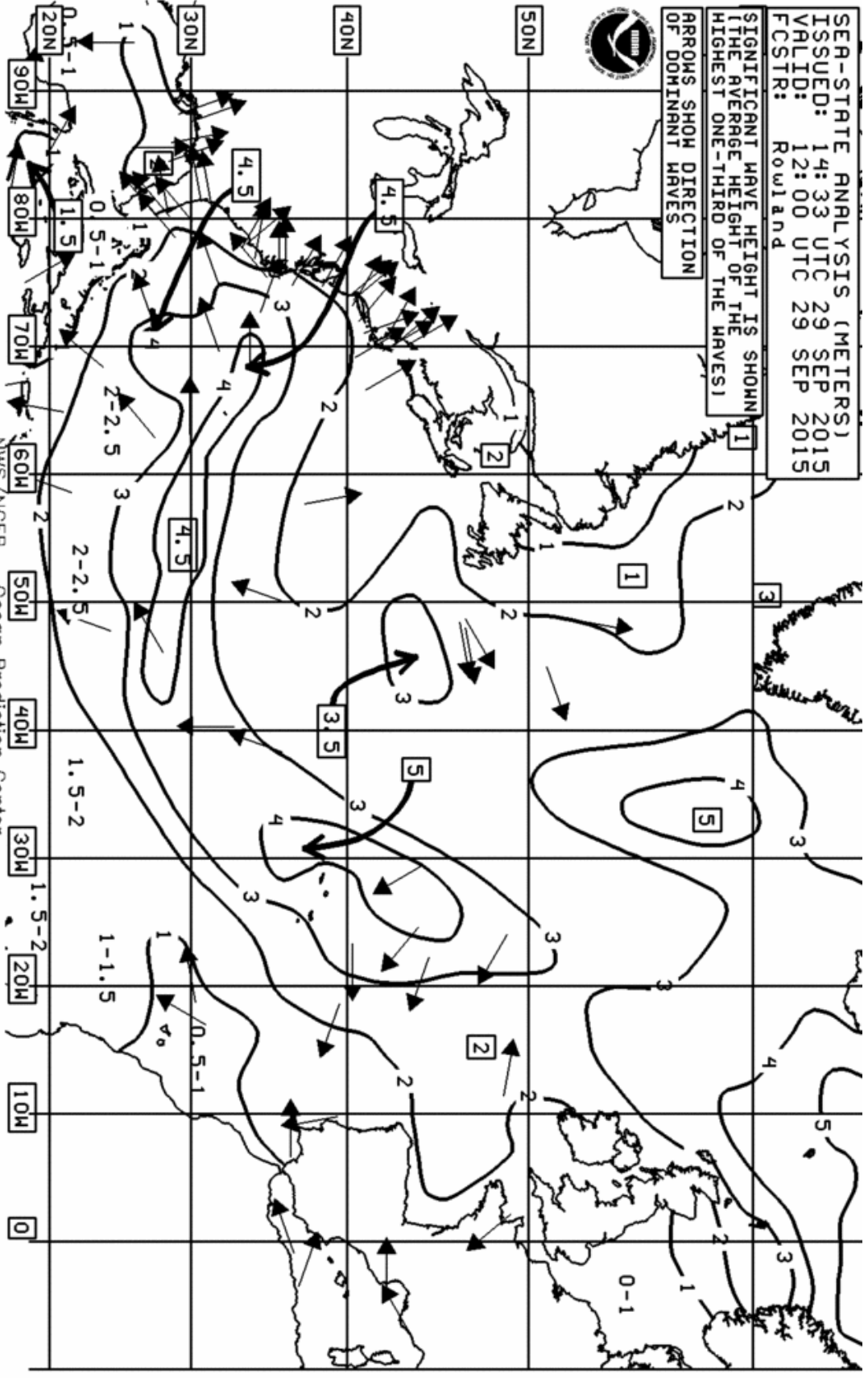
SIGNIFICANT WAVE HEIGHT IS SHOWN
 (THE AVERAGE HEIGHT OF THE
 HIGHEST ONE-THIRD OF THE WAVES)



STG WAVE HGT (FT) & WIND
 NWS/NCEP - OCEAN PREDICTION CENTER
www.opc.ncep.nodda.gov

SEA-STATE ANALYSIS (METERS)
ISSUED: 14:33 UTC 29 SEP 2015
VALID: 12:00 UTC 29 SEP 2015
FCSIR: Rowland

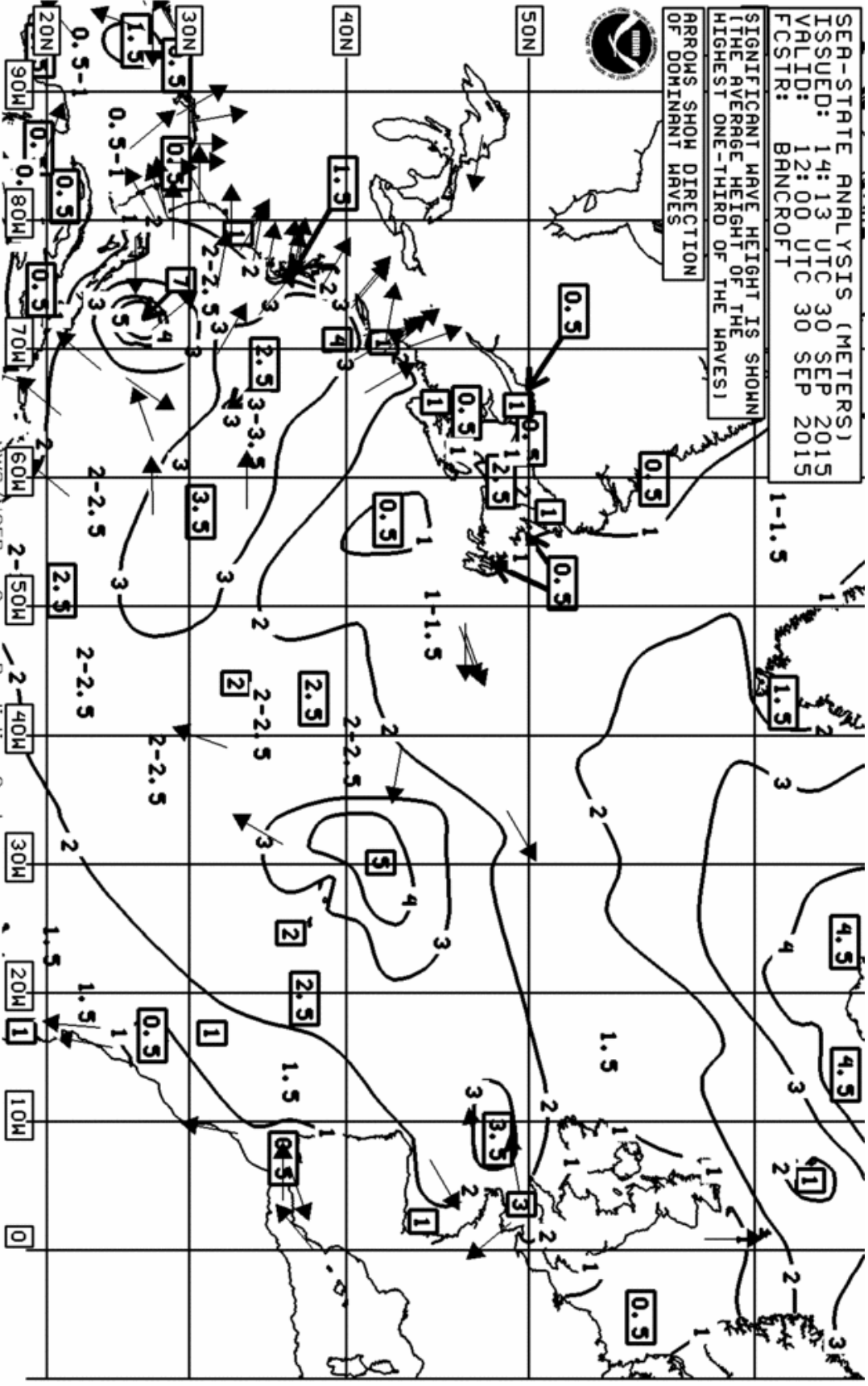
SIGNIFICANT WAVE HEIGHT IS SHOWN
(THE AVERAGE HEIGHT OF THE
HIGHEST ONE-THIRD OF THE WAVES)
ARROWS SHOW DIRECTION
OF DOMINANT WAVES



NWS/NCEP - Ocean Prediction Center
www.opc.ncep.noaa.gov

SEA-STATE ANALYSIS (METERS)
 ISSUED: 14:13 UTC 30 SEP 2015
 VALID: 12:00 UTC 30 SEP 2015
 FCSTR: BANCROFT

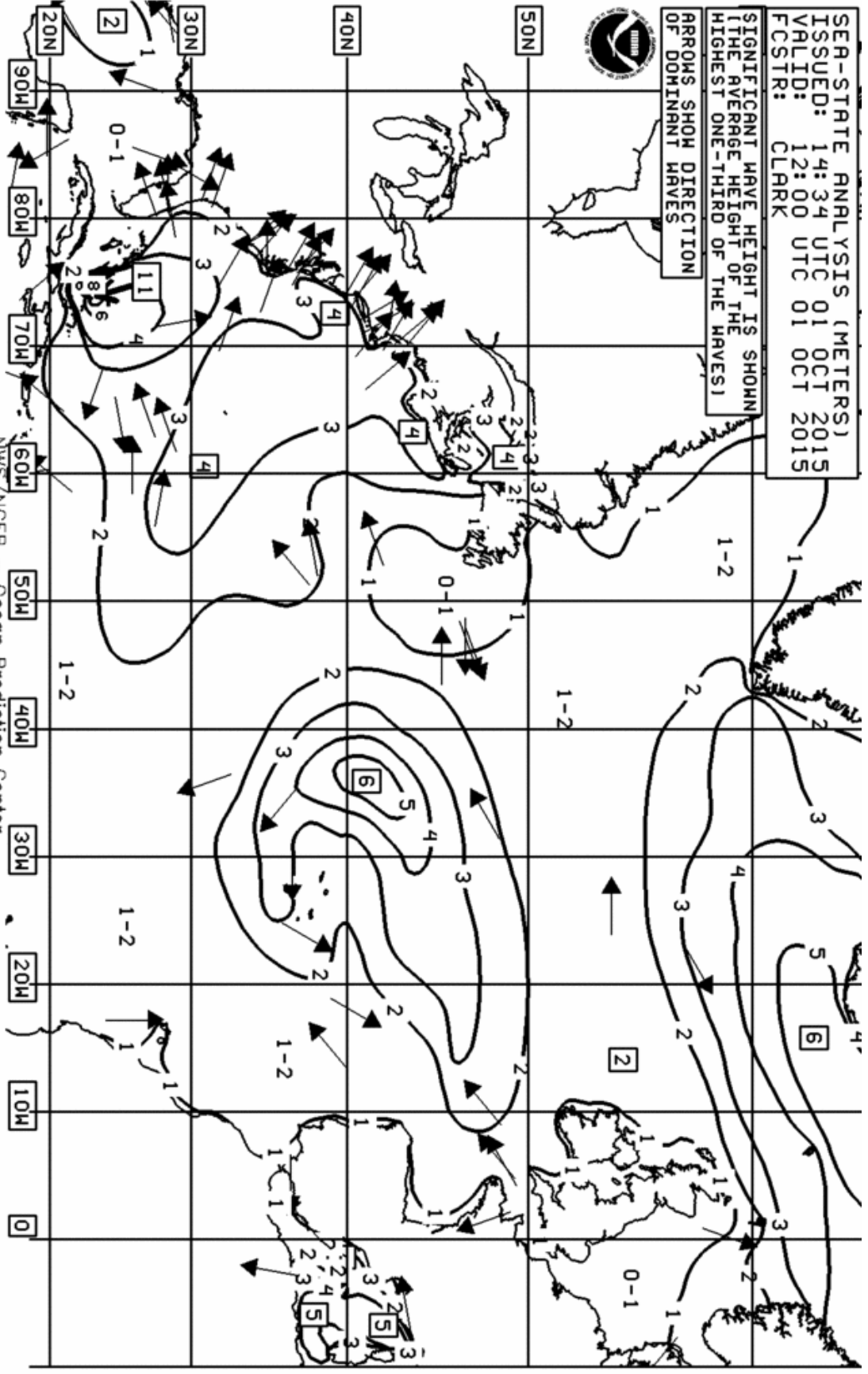
SIGNIFICANT WAVE HEIGHT IS SHOWN
 (THE AVERAGE HEIGHT OF THE
 HIGHEST ONE-THIRD OF THE WAVES)
 ARROWS SHOW DIRECTION
 OF DOMINANT WAVES



NWS/NCEP - Ocean Prediction Center
 www.opc.ncep.noaa.gov

SEA-STATE ANALYSIS (METERS)
 ISSUED: 14:34 UTC 01 OCT 2015
 VALID: 12:00 UTC 01 OCT 2015
 FCSTR: CLARK

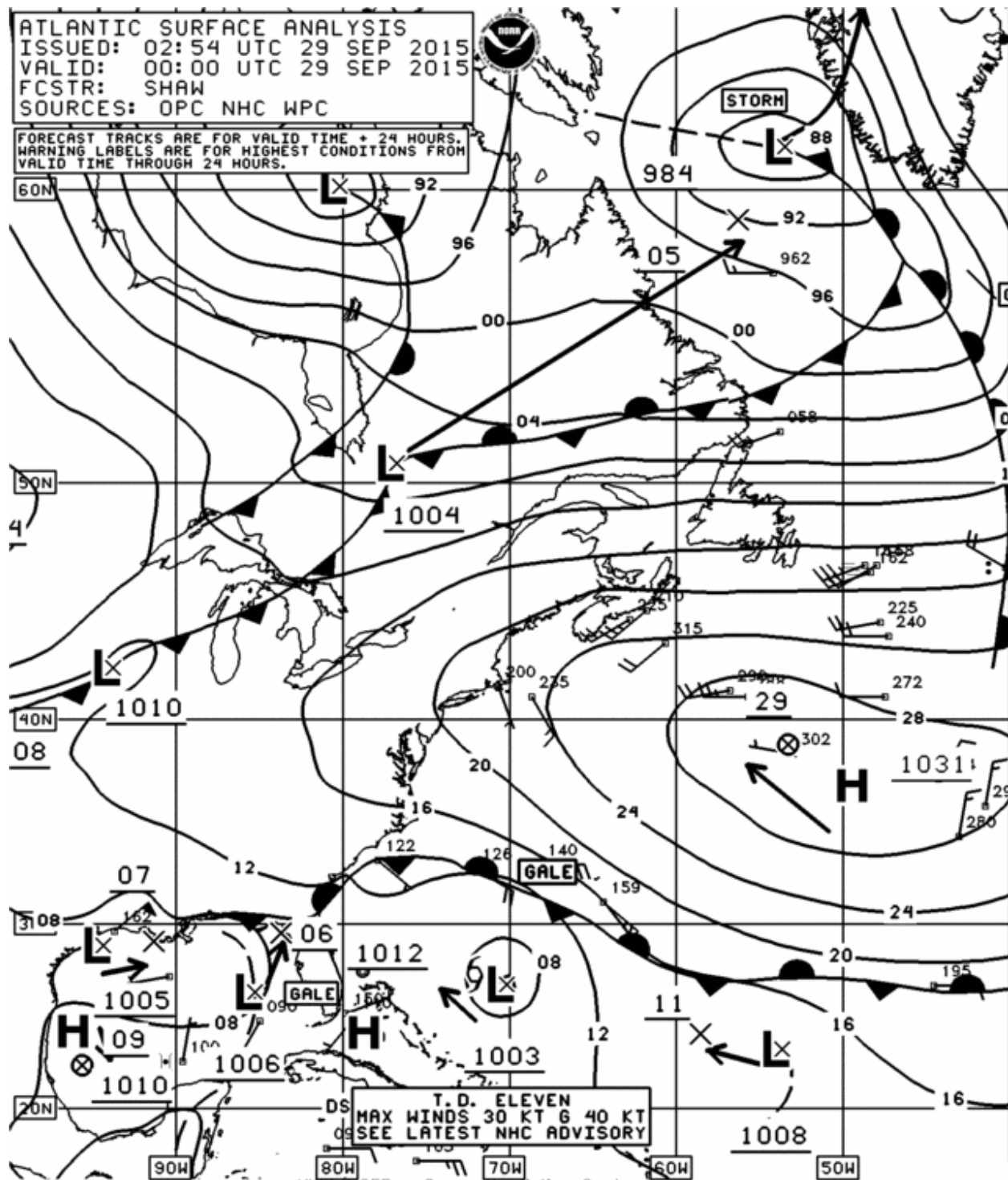
SIGNIFICANT WAVE HEIGHT IS SHOWN
 (THE AVERAGE HEIGHT OF THE
 HIGHEST ONE-THIRD OF THE WAVES)
 ARROWS SHOW DIRECTION
 OF DOMINANT WAVES



NWS/NCEP - Ocean Prediction Center
www.opc.ncep.noaa.gov

ATLANTIC SURFACE ANALYSIS
 ISSUED: 02:54 UTC 29 SEP 2015
 VALID: 00:00 UTC 29 SEP 2015
 FCSTR: SHAW
 SOURCES: OPC NHC WPC

FORECAST TRACKS ARE FOR VALID TIME + 24 HOURS.
 WARNING LABELS ARE FOR HIGHEST CONDITIONS FROM
 VALID TIME THROUGH 24 HOURS.

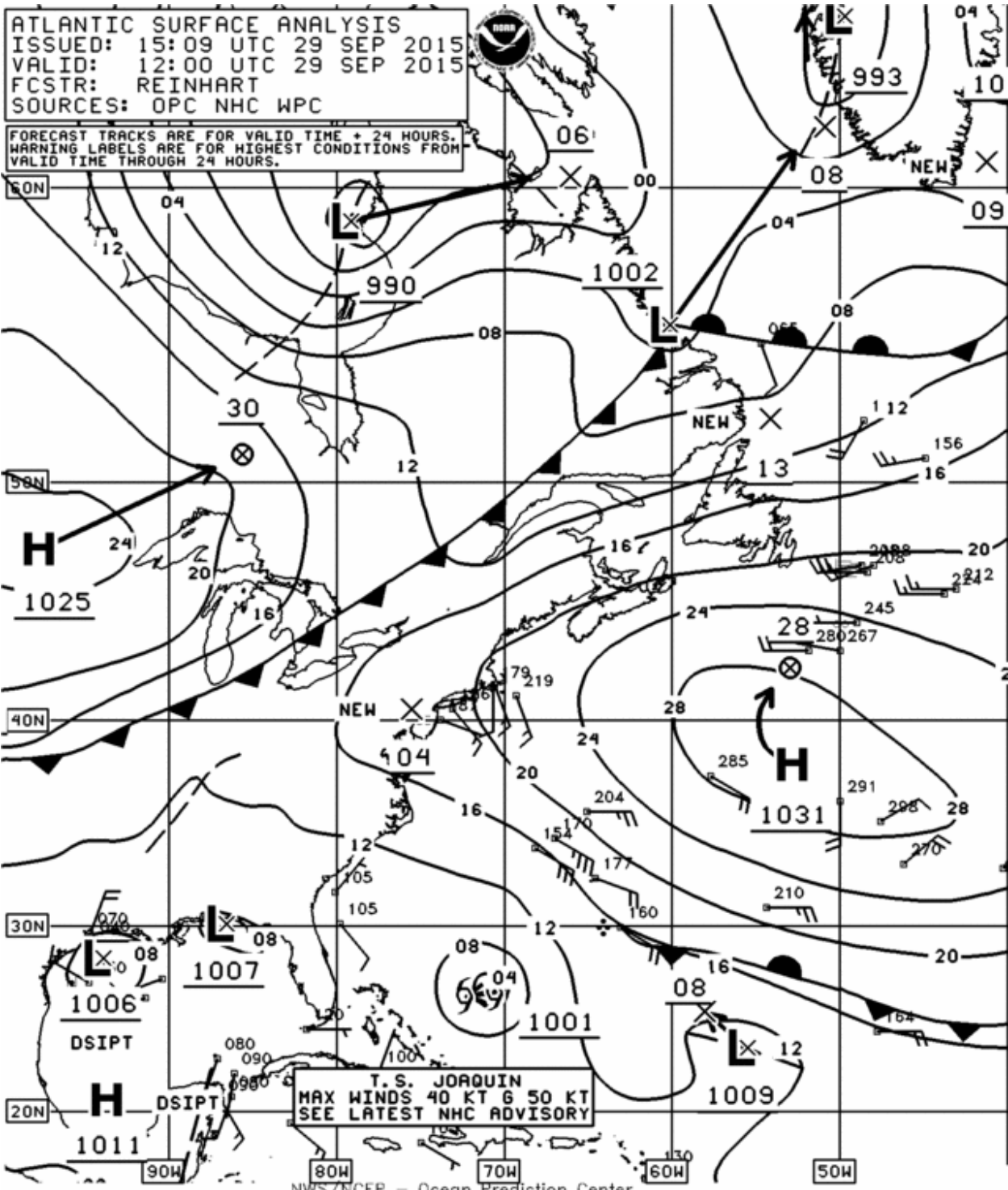


T. D. ELEVEN
 MAX WINDS 30 KT G 40 KT
 SEE LATEST NHC ADVISORY

NWS/NCEP - Ocean Prediction Center
www.opc.ncep.noaa.gov

ATLANTIC SURFACE ANALYSIS
 ISSUED: 15:09 UTC 29 SEP 2015
 VALID: 12:00 UTC 29 SEP 2015
 FCSTR: REINHART
 SOURCES: OPC NHC WPC

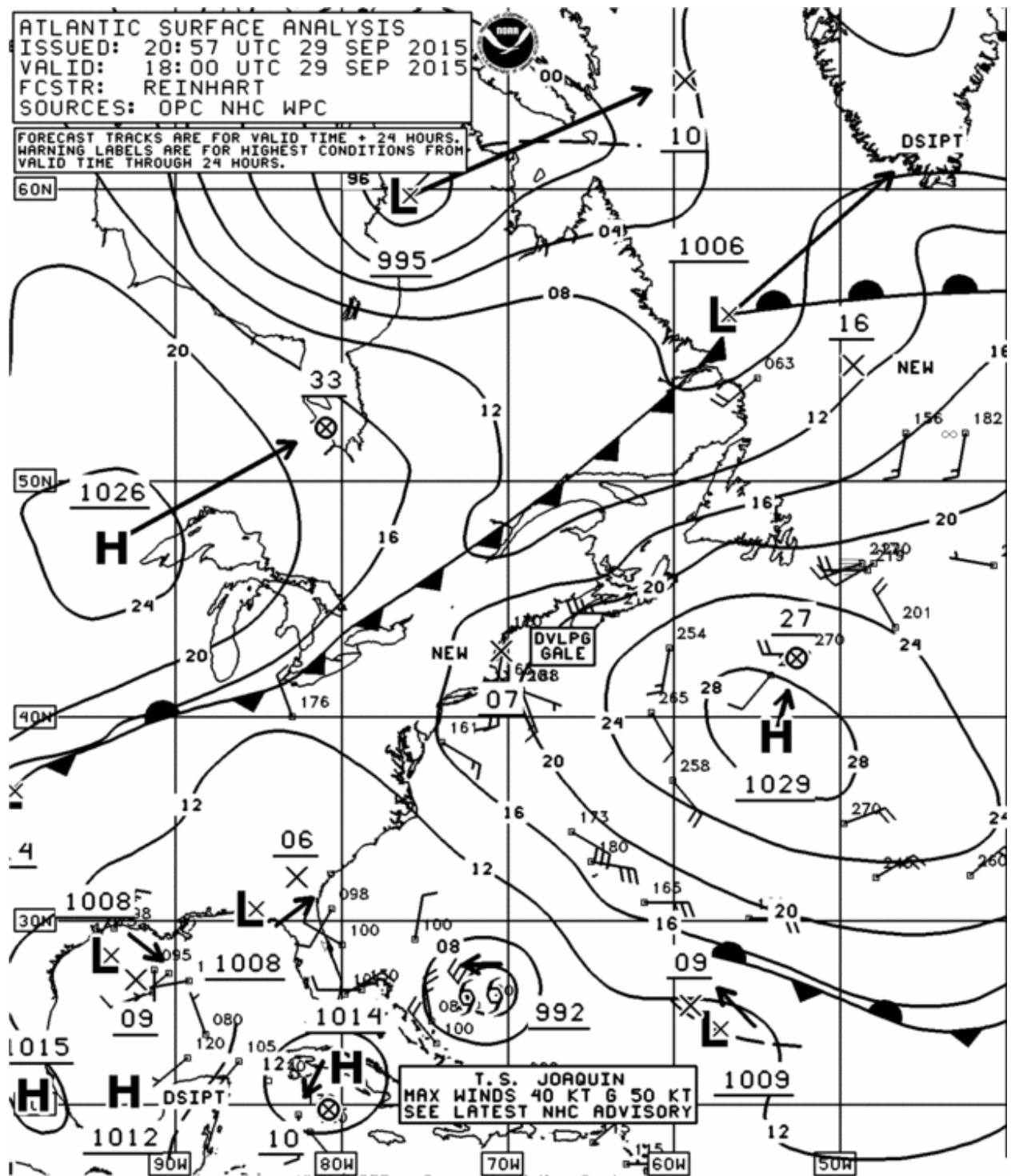
FORECAST TRACKS ARE FOR VALID TIME + 24 HOURS.
 WARNING LABELS ARE FOR HIGHEST CONDITIONS FROM
 VALID TIME THROUGH 24 HOURS.



T.S. JOAQUIN
 MAX WINDS 40 KT & 50 KT
 SEE LATEST NHC ADVISORY

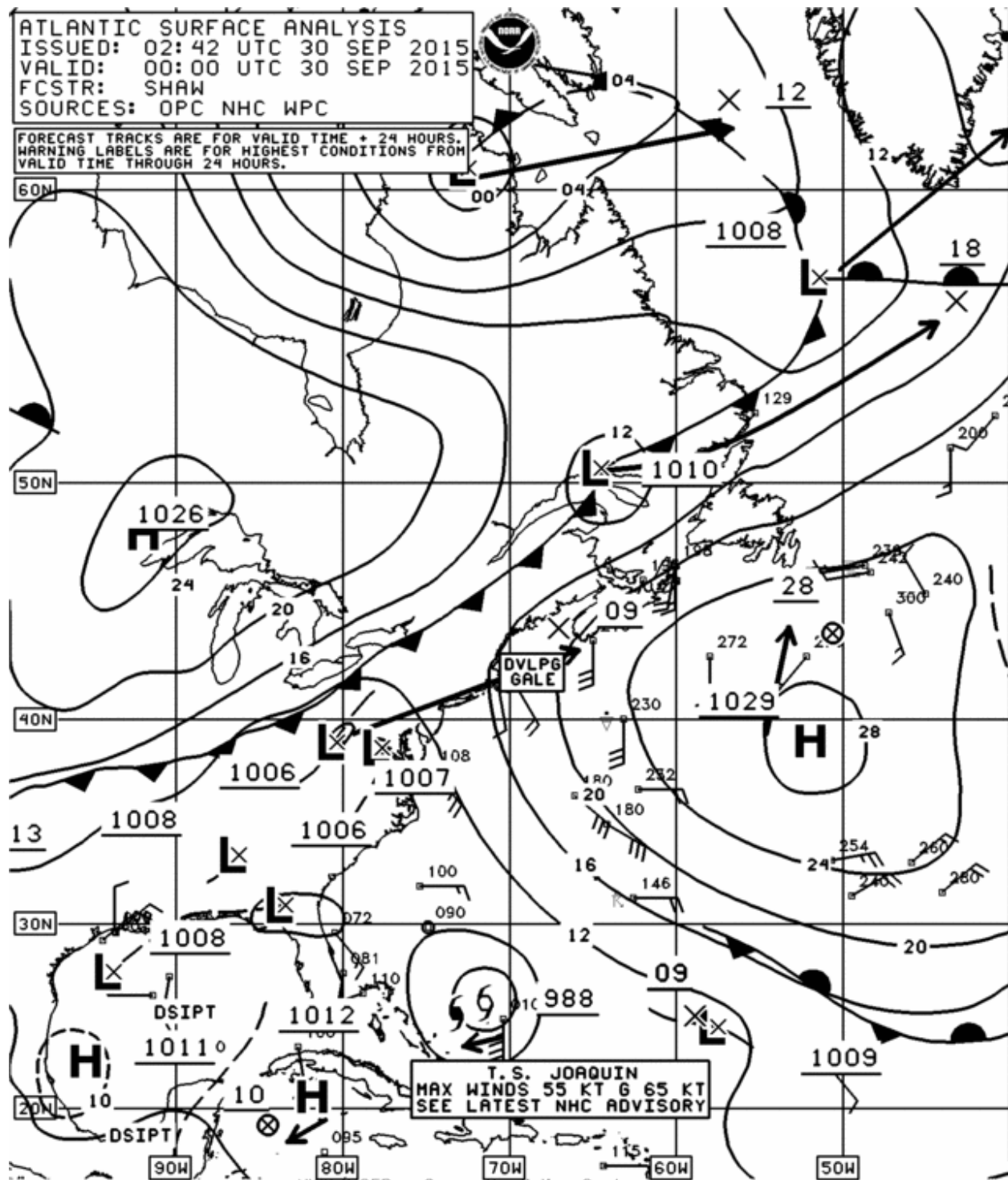
ATLANTIC SURFACE ANALYSIS
 ISSUED: 20:57 UTC 29 SEP 2015
 VALID: 18:00 UTC 29 SEP 2015
 FCSTR: REINHART
 SOURCES: OPC NHC WPC

FORECAST TRACKS ARE FOR VALID TIME + 24 HOURS.
 WARNING LABELS ARE FOR HIGHEST CONDITIONS FROM
 VALID TIME THROUGH 24 HOURS.



ATLANTIC SURFACE ANALYSIS
 ISSUED: 02:42 UTC 30 SEP 2015
 VALID: 00:00 UTC 30 SEP 2015
 FCSTR: SHAW
 SOURCES: OPC NHC WPC

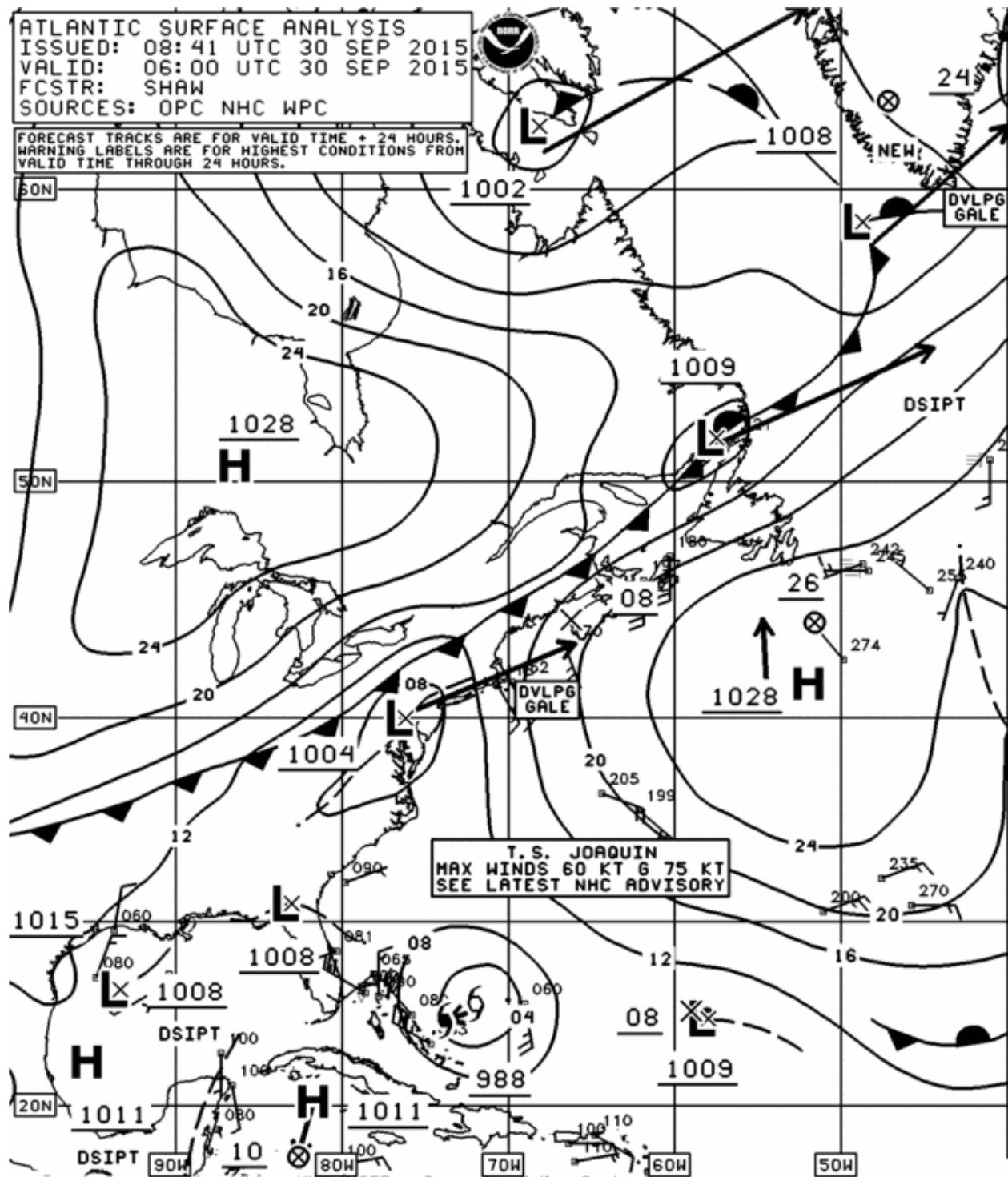
FORECAST TRACKS ARE FOR VALID TIME + 24 HOURS.
 WARNING LABELS ARE FOR HIGHEST CONDITIONS FROM
 VALID TIME THROUGH 24 HOURS.



T. S. JOAQUIN
 MAX WINDS 55 KT G 65 KT
 SEE LATEST NHC ADVISORY

ATLANTIC SURFACE ANALYSIS
 ISSUED: 08:41 UTC 30 SEP 2015
 VALID: 06:00 UTC 30 SEP 2015
 FCSTR: SHAW
 SOURCES: OPC NHC WPC

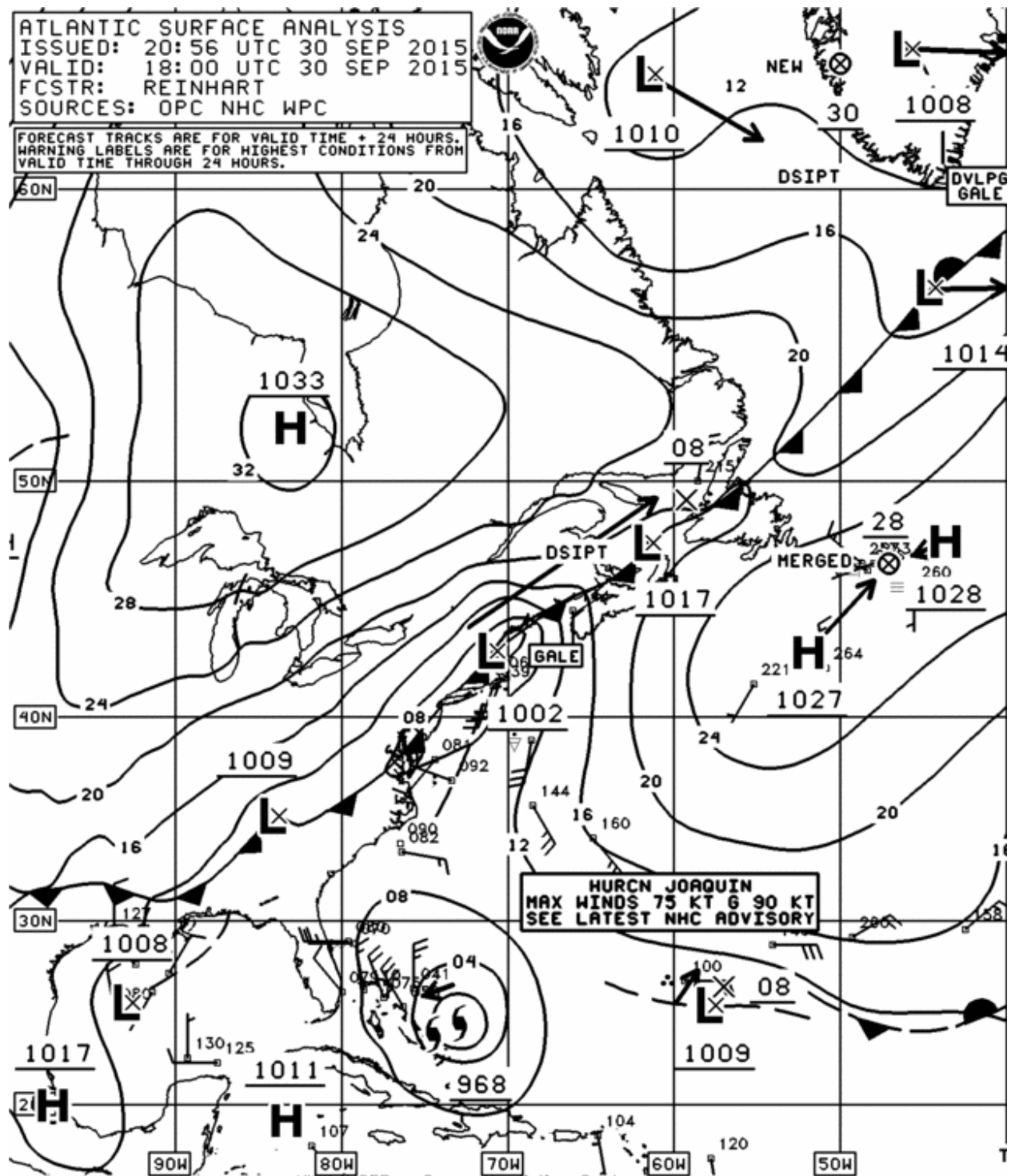
FORECAST TRACKS ARE FOR VALID TIME + 24 HOURS.
 WARNING LABELS ARE FOR HIGHEST CONDITIONS FROM
 VALID TIME THROUGH 24 HOURS.



T.S. JOAQUIN
 MAX WINDS 60 KT G 75 KT
 SEE LATEST NHC ADVISORY

ATLANTIC SURFACE ANALYSIS
 ISSUED: 20:56 UTC 30 SEP 2015
 VALID: 18:00 UTC 30 SEP 2015
 FCSTR: REINHART
 SOURCES: OPC NHC WPC

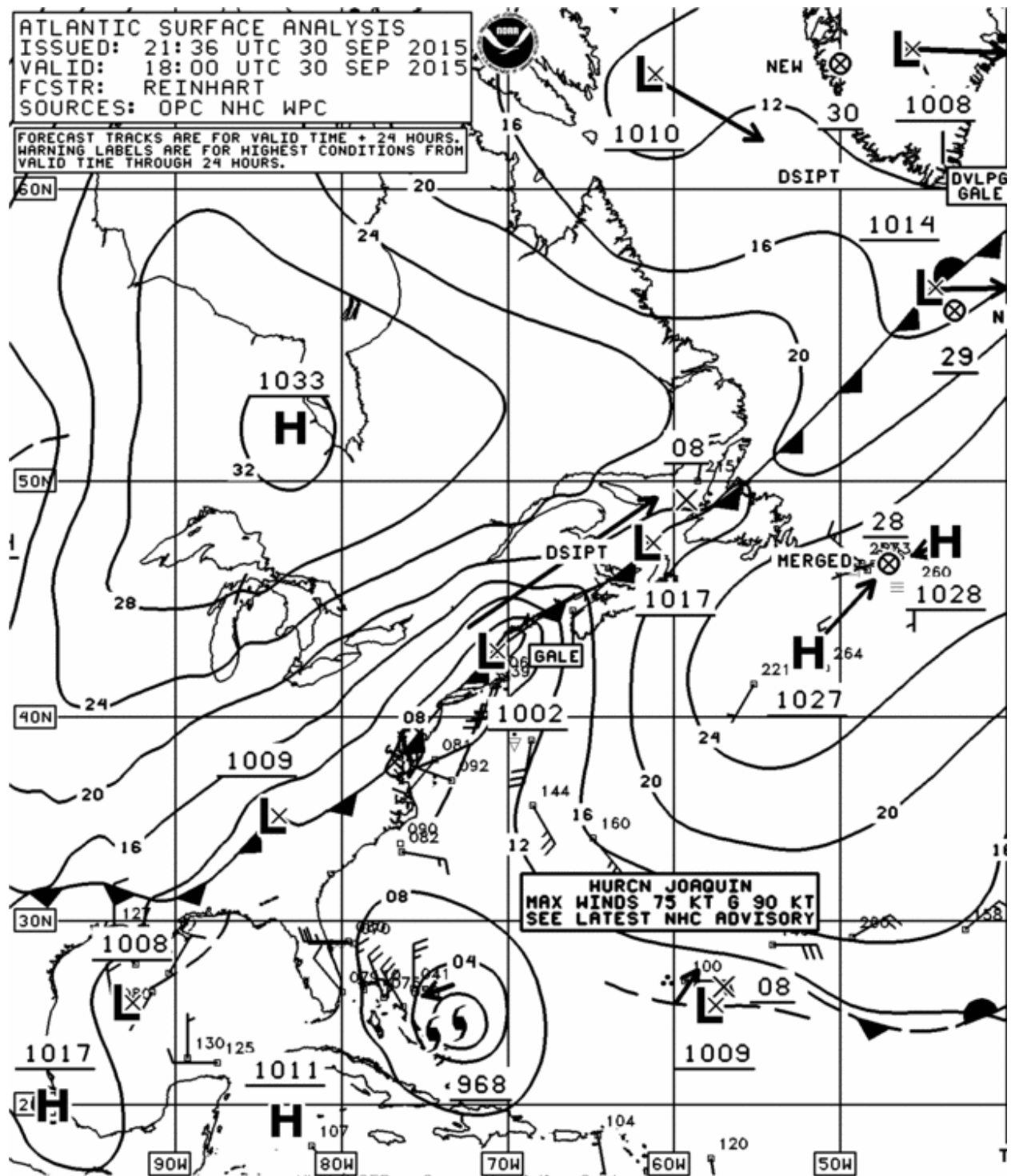
FORECAST TRACKS ARE FOR VALID TIME + 24 HOURS.
 WARNING LABELS ARE FOR HIGHEST CONDITIONS FROM
 VALID TIME THROUGH 24 HOURS.



HURCN JOAQUIN
 MAX WINDS 75 KT 6 90 KT
 SEE LATEST NHC ADVISORY

ATLANTIC SURFACE ANALYSIS
 ISSUED: 21:36 UTC 30 SEP 2015
 VALID: 18:00 UTC 30 SEP 2015
 FCSTR: REINHART
 SOURCES: OPC NHC WPC

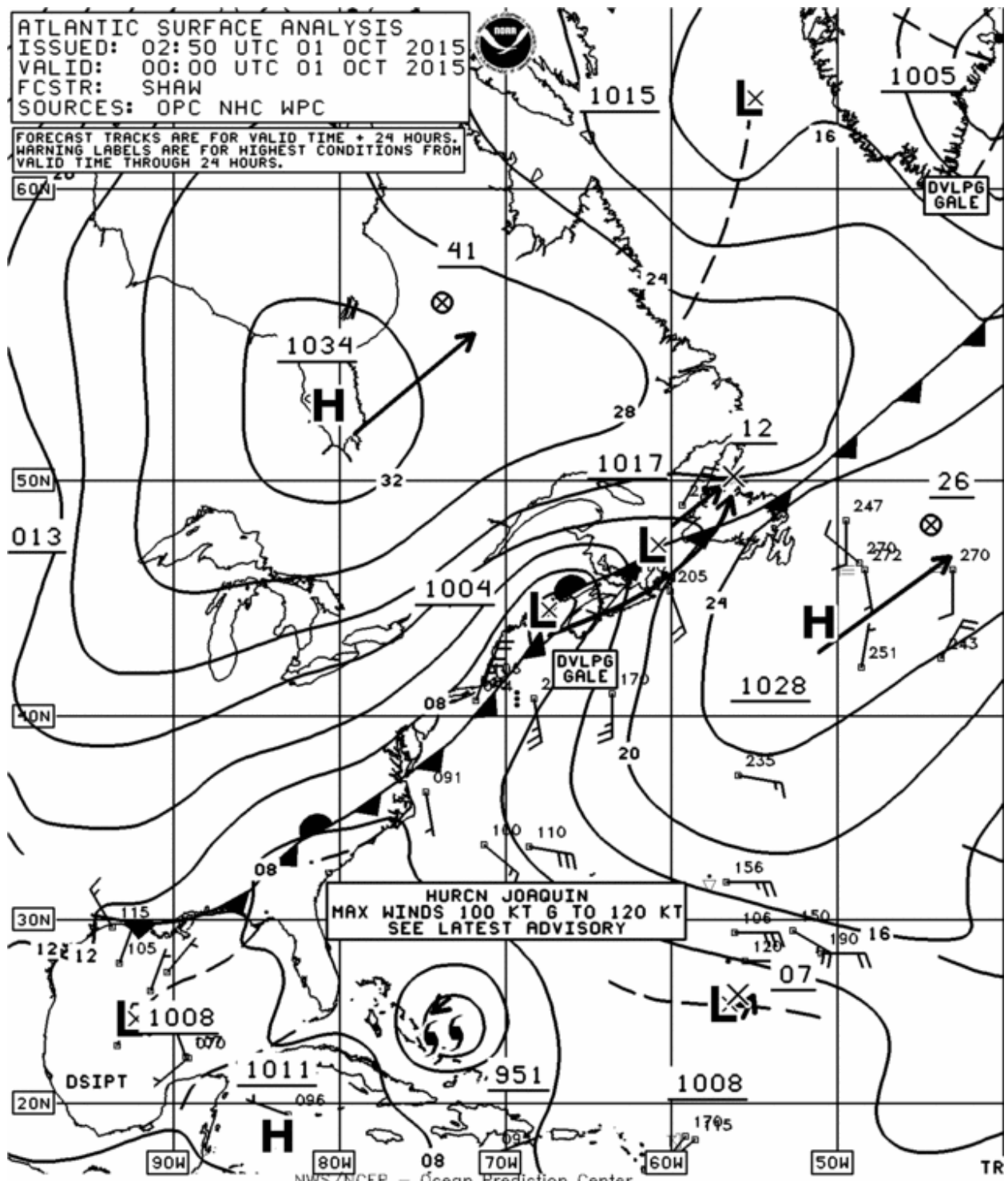
FORECAST TRACKS ARE FOR VALID TIME + 24 HOURS.
 WARNING LABELS ARE FOR HIGHEST CONDITIONS FROM
 VALID TIME THROUGH 24 HOURS.



HURCN JOAQUIN
 MAX WINDS 75 KT 6 90 KT
 SEE LATEST NHC ADVISORY

ATLANTIC SURFACE ANALYSIS
 ISSUED: 02:50 UTC 01 OCT 2015
 VALID: 00:00 UTC 01 OCT 2015
 FCSTR: SHAW
 SOURCES: OPC NHC WPC

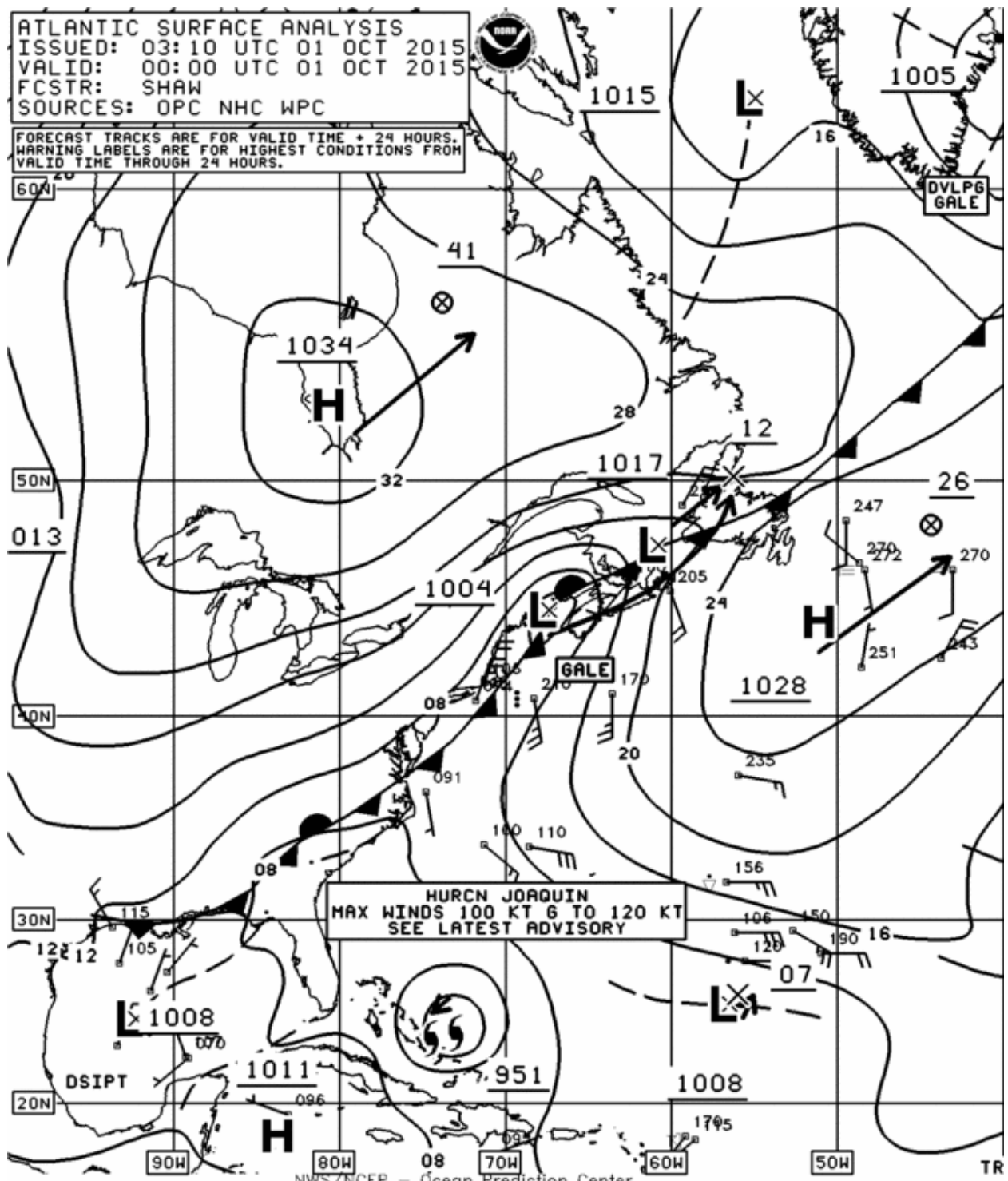
FORECAST TRACKS ARE FOR VALID TIME + 24 HOURS.
 WARNING LABELS ARE FOR HIGHEST CONDITIONS FROM
 VALID TIME THROUGH 24 HOURS.



HURCN JOAQUIN
 MAX WINDS 100 KT 6 TO 120 KT
 SEE LATEST ADVISORY

ATLANTIC SURFACE ANALYSIS
 ISSUED: 03:10 UTC 01 OCT 2015
 VALID: 00:00 UTC 01 OCT 2015
 FCSTR: SHAW
 SOURCES: OPC NHC WPC

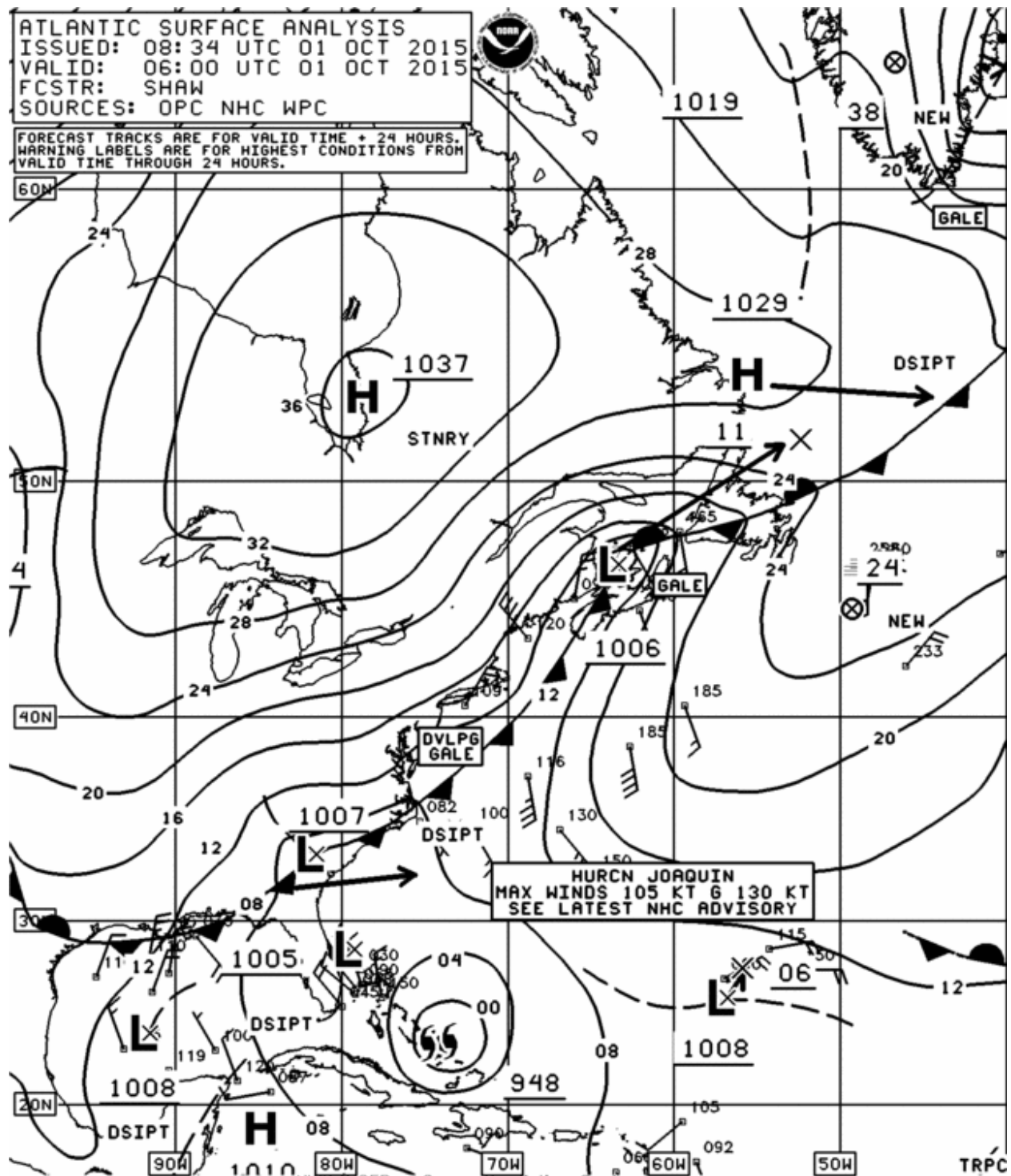
FORECAST TRACKS ARE FOR VALID TIME + 24 HOURS.
 WARNING LABELS ARE FOR HIGHEST CONDITIONS FROM
 VALID TIME THROUGH 24 HOURS.



HURCN JOAQUIN
 MAX WINDS 100 KT 6 TO 120 KT
 SEE LATEST ADVISORY

ATLANTIC SURFACE ANALYSIS
 ISSUED: 08:34 UTC 01 OCT 2015
 VALID: 06:00 UTC 01 OCT 2015
 FCSTR: SHAW
 SOURCES: OPC NHC WPC

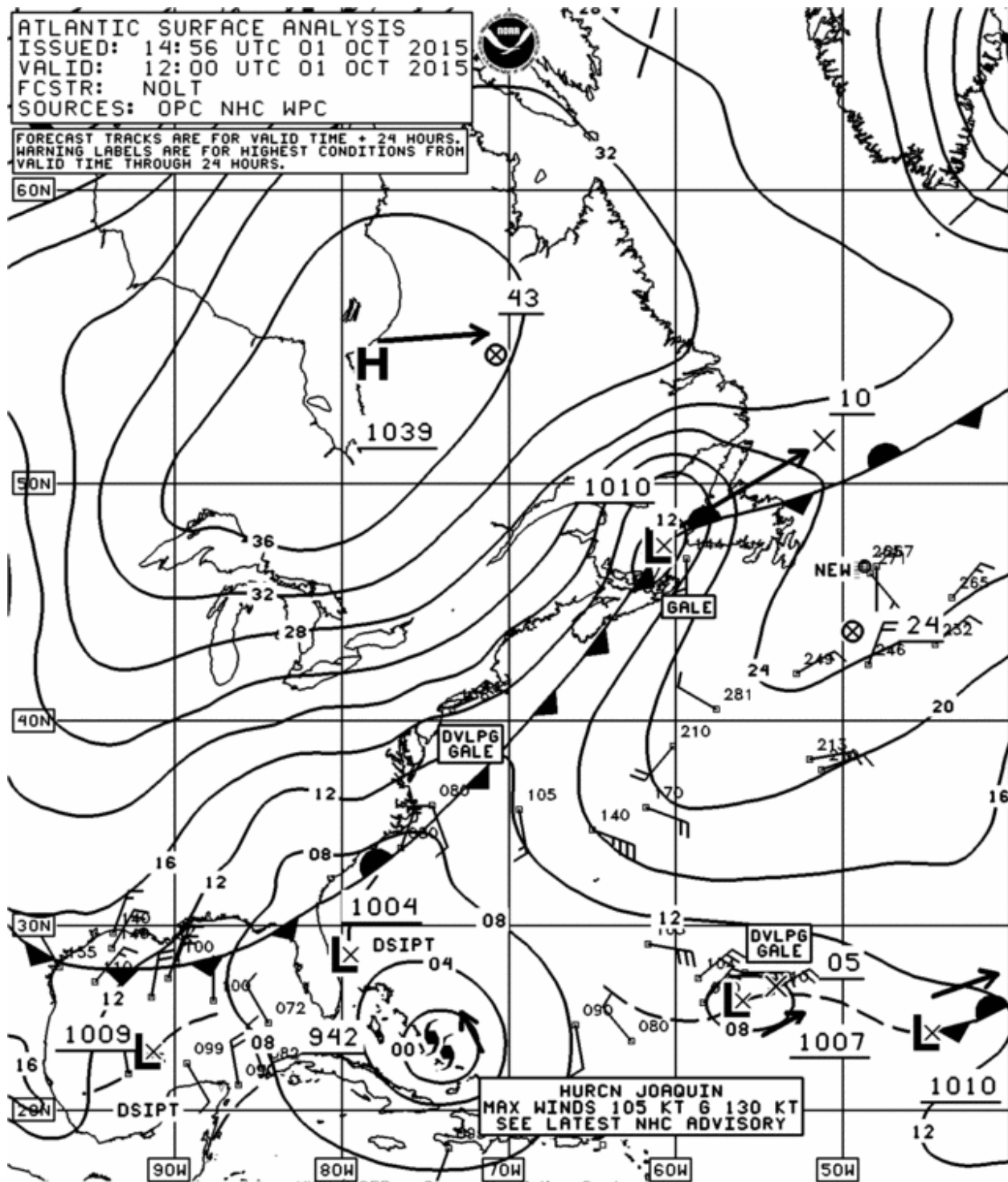
FORECAST TRACKS ARE FOR VALID TIME + 24 HOURS.
 WARNING LABELS ARE FOR HIGHEST CONDITIONS FROM
 VALID TIME THROUGH 24 HOURS.



HURCN JOAQUIN
 MAX WINDS 105 KT G 130 KT
 SEE LATEST NHC ADVISORY

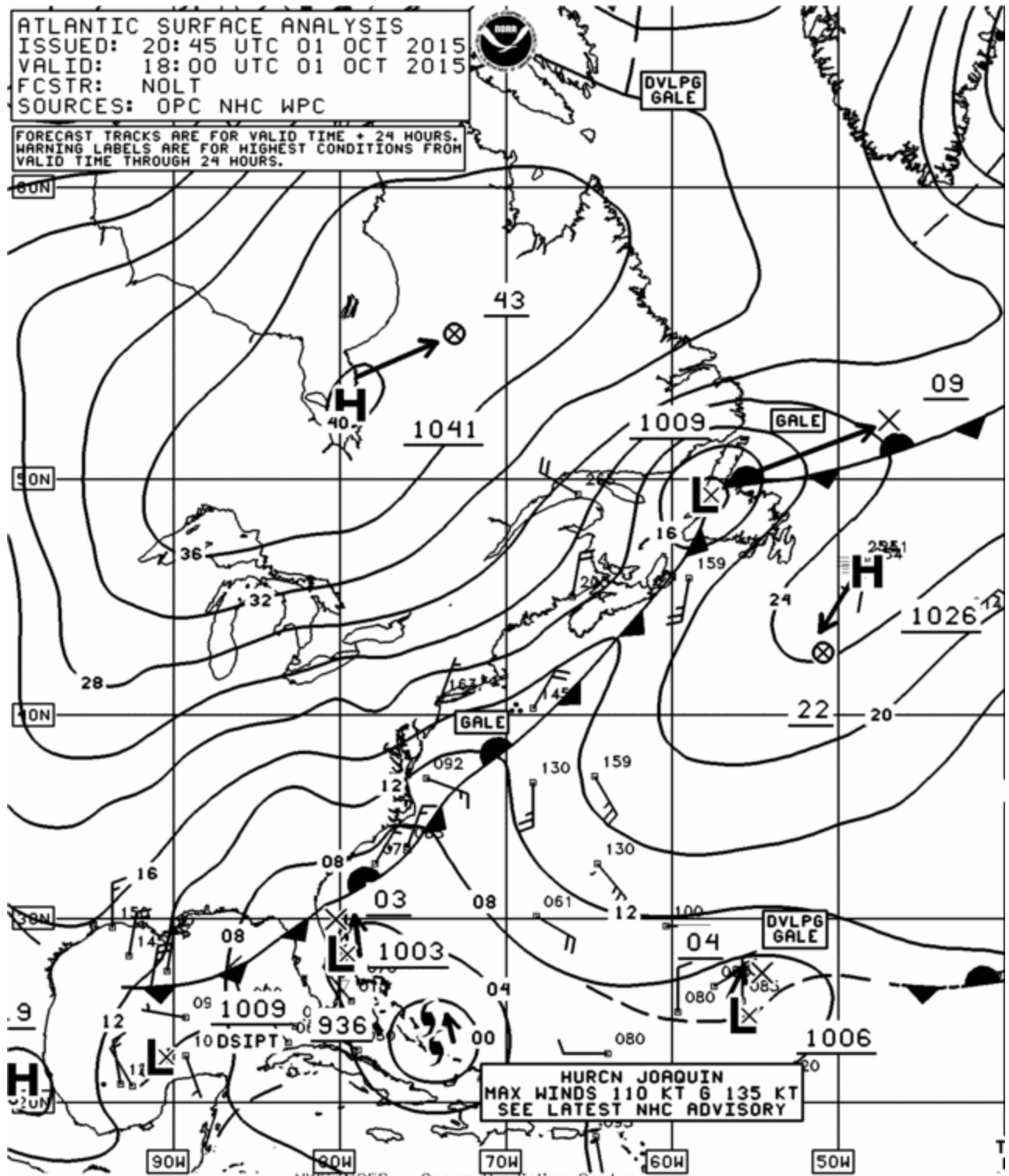
ATLANTIC SURFACE ANALYSIS
 ISSUED: 14:56 UTC 01 OCT 2015
 VALID: 12:00 UTC 01 OCT 2015
 FCSTR: NOLT
 SOURCES: OPC NHC WPC

FORECAST TRACKS ARE FOR VALID TIME + 24 HOURS.
 WARNING LABELS ARE FOR HIGHEST CONDITIONS FROM
 VALID TIME THROUGH 24 HOURS.



ATLANTIC SURFACE ANALYSIS
 ISSUED: 20:45 UTC 01 OCT 2015
 VALID: 18:00 UTC 01 OCT 2015
 FCSTR: NOLT
 SOURCES: OPC NHC WPC

FORECAST TRACKS ARE FOR VALID TIME + 24 HOURS.
 WARNING LABELS ARE FOR HIGHEST CONDITIONS FROM
 VALID TIME THROUGH 24 HOURS.



HURCN JOAQUIN
 MAX WINDS 110 KT G 135 KT
 SEE LATEST NHC ADVISORY