

NATIONAL WEATHER SERVICE INSTRUCTION 10-503
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Operations and Services

Public Weather Services, NWSPD 10-5

WFO PUBLIC WEATHER FORECAST PRODUCTS SPECIFICATIONS

NOTICE: This publication is available at: <http://www.nws.noaa.gov/directives/>.

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SUMMARY OF REVISIONS: This directive supersedes NWSI 10-503, *WFO Public Weather Forecast Products Specifications*, dated July 23, 2014. Changes made to reflect NWS Headquarters reorganization effective April 1, 2015. This directive includes the following changes:

1. Section 2.3.3 Changed MND Product Type Line for the Area Forecast Discussion to mixed case.
2. Section 2.3.4 Content. Added all applicable wording in the Area Forecast Discussion in mixed case.
3. Section 2.3.5.2 Watch/Warning/Advisory Block heading in mixed case.
4. Appendix A - Area Forecast Discussion Example displayed in mixed case.
5. Section 5.3.4 Added all wording in the Recreation Report in mixed case.
6. Appendix A- Recreational Report Example displayed in mixed case.

Signed

8/14/2017

Andrew D. Stern

Date

Director

Analyze, Forecast and Support Office

WFO Public Weather Forecast Products Specifications

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1 Introduction

This procedural directive provides product specifications for the Area Forecast Discussion (AFD) public product issued by the National Weather Service (NWS) Weather Forecast Offices (WFOs). Specifications include the guidelines associated with this product, detailed content, and format for the product type. Duplicated product specifications and format definitions from NWS Instruction 10-503 to include the Area Forecast Matrices (AFM), Point Forecast Matrices (PFM), Recreation Report (REC), State Forecast Product (SFP), Tabular State Forecast Product (SFT) and the Zone Forecast Product (ZFP) are currently contained in [NWSI 10-204](#), *Derived Forecast Text Products Specifications*. Links are provided to these products from within this instruction.

The NWS is transitioning from providing weather forecast and warning information primarily via scheduled text products, to providing more detailed information derived from a digital forecast database. Digital forecast products dictated by events may be in the form of text, tabular, or graphics. While most products described or referenced in this instruction are prepared by automated formatters extracting information from a digital forecast database, others are created using a mixture of manual preparation and product formatters.

2 Area Forecast Discussion (product category AFD)

2.1 Mission Connection

The AFD is a semi-technical product primarily used as a means to explain the scientific rationale behind a forecast and to summarize watches, warnings and/or advisories in effect. This highly visible product is used to convey forecast and watch/warning/advisory information primarily to federal agencies, weather sensitive officials, and the media. The AFD is also useful for coordination among WFOs and River Forecast Centers (RFCs), National Centers, and Center Weather Service Unit (CWSUs). The forecast insight provided in the AFD is beyond that which can be found in other NWS products.

2.2 Issuance Guidelines

2.2.1 Creation Software

The AFD should be composed using the Advanced Weather Interactive Processing System (AWIPS) Interactive Forecast Preparation System (IFPS) preformatted AFD shell, or other text editor if IFPS is unavailable.

2.2.2 Issuance Criteria

The AFD is issued at least twice a day by all WFOs in accordance with the mandatory Zone Forecast Product (ZFP) issuances. If applicable, additional AFDs should be issued to provide reasoning for forecast updates or to provide an explanation of rapidly-evolving mesoscale trends.

2.2.3 Issuance Time

WFOs should issue AFDs within the 2-hour period preceding or 1-hour period following the release of the ZFP. AFDs should be issued within 1-hour prior to, or after updated forecast packages.

2.2.4 Valid Time

AFDs are valid from time of release until the next complete update.

2.2.5 Product Expiration Time

AFDs do not contain a product expiration time.

2.3 Technical Description

AFDs should follow the format and content described in the following section.

2.3.1 Universal Geographic Code (UGC) Type

There is no UGC coding associated with the AFD product.

2.3.2 Mass News Dissemination (MND) Broadcast Instruction Line

There is no MND Broadcast Instruction Line associated with this product.

2.3.3 MND Product Type Line

All WFOs will use the AFD MND header, “Area Forecast Discussion.”

2.3.4 Content

The AFD consists of two primary sections: a narrative description of forecast information and reasoning, and a summary of public, marine and fire weather outlook/watch/warning/advisory issuances. The discussions should focus on the most significant weather issues affecting a WFO’s geographic area of responsibility during the seven day forecast period. Emphasis should be placed on those forecast periods where outlooks/watches/warnings/advisories are in effect, proposed, or are being considered. The narrative content of this product should be professional and remain focused on the meteorology. Editorial comments are inappropriate.

All wording of the AFD product is now in mixed case. The Service Change Notice 16-12, dated April 11, 2016 and linked here: https://www.weather.gov/media/notification/pdfs/scn16-12mixed_casecaa.pdf provides details.

- a. Narrative Discussion. The narrative discussion is a concise explanation of forecast reasoning and should express the deliberations made by the WFO forecast team, as well as consensus decisions with adjacent offices, RFCs, and National Centers. Use of data sources, such as the Weather Surveillance Radar 88 Doppler (WSR-88D), Automated Surface Observing Systems, Profiler, satellite, local and national models, and local and national analysis are encouraged. The discussion should emphasize significant aspects of the forecast such as:
 - (1) Identification of the most significant hydrometeorological weather affecting the geographical area of responsibility during the 7 Day forecast period;
 - (2) Identification of the forecast problem(s)-of-the-day and explanation of their solution(s);
 - (3) An indication of forecast team confidence and probabilistic guidance on weather possibilities not found in other products;
 - (4) Reasoning behind watch/warning/advisory issuance;
 - (5) Differences in model guidance and an indication as to which model appears the most correct and why;
 - (6) Reasoning for varying significantly from automated model output guidance products;
 - (7) Reasons for significant changes from the previous forecast;
 - (8) Expected timing of events such as beginning or ending of precipitation and degree of uncertainty;
 - (9) A brief review of the synoptic situation; and

(10) If any section is updated, the overall product should be reviewed for internal consistency and that the mandatory elements, at a minimum, are refreshed.

b. Watch/Warning/Advisory Block. The Watch/Warning/Advisory Block (see Appendix A, section 1 for an example) is used to summarize public, fire weather and marine long duration hazardous weather contained in the associated forecast package. Include the watch/warning/advisory block in all AFDs in a separate section after the narrative discussion.

- (1) Hurricanes and Tropical Storms. WFOs will also include watches and warnings for hurricanes and tropical storms affecting their geographic area of responsibility.
- (2) Exclusions. WFOs should not list short duration warnings (of a few hours or less) for convective and flood events; including severe thunderstorm, tornado watches and warnings, and flash flood and flood warnings.

No formal coding schemes for the watch/warning/advisory block are required, but formal coding may be used in this section as produced by the IFPS process which extracts hazard information from the digital database. The areas affected may be described geographically and/or by forecast zones. Well known contractions are permitted in this section. If zones are not referenced, the geographical description should be detailed enough to allow for an accurate interpretation of the referenced area. For example, instead of just "Nrn," add a fraction or delineate with reference to station identifiers and/or prominent topographic features (such as "Nrn Qtr" or "Nrn Mo N of Mo RVR"). If topographic features are used without zone references, their approximate location within the state should be given. An example without zones would be "Mt Shasta Siskiyou Area of Xtrm Nrn CA."

When no public and marine watch/warning/advisory information is needed, use the word "None."

c. Preliminary Point Temperatures and Probability Of Precipitation (PoPs). At regional discretion, the forecaster may include preliminary point forecasts of temperatures and/or POPs for key locations following the narrative (see section 2.3.5 for specific format).

d. Use of Contractions. AFDs should be composed in plain language using complete words. Limited use of contractions is permitted (e.g., to avoid repetition of lengthy terms, or to allow forecasters to save time by expressing their thoughts more concisely) under the following two circumstances:

- (1) All contractions will come from the United States Aeronautical Contractions Handbook 7340.1[x], where “x” is the most recent version. NWS contractions should be used as a first choice. If an NWS contraction cannot be found for a particular term, a contraction from other sources within the handbook is permitted (see Appendix C).

Contractions should be well-known by the user community (e.g., PAC NW for Pacific Northwest, TSTMS for thunderstorms, etc.).

2.3.5 Format.

The AFD is a single segment narrative product. At a minimum, a mandatory discussion identifier is used to organize the narrative discussion. Various other topic dividers may be used to organize, clarify, and allow for automatic retrieval of information from the product. When these optional section identifiers are used, they should be entered exactly as shown below using the same spelling, beginning with a period (.), and followed by three periods (...). The information that follows may either be on the same line or on subsequent lines (See Figure 1).

2.3.5.1 Narrative and Use of Topic Dividers

The narrative is primarily a free form text section. However, topic dividers are used to highlight the text which follows, and allow for automatic retrieval of program specific information. If used, there will be no deviation from exact spelling and format. Each topic will be followed by a double ampersand “&&” and a line feed to indicate the end of the section.

To begin the AFD narrative section, either use introductory topic divider format (a), or divider format (b) below (also See Figure 1).

- a. .DISCUSSION...
- or**
- b. .SHORT TERM [Time Period]... **and** .LONG TERM [Time Period]...
(used in conjunction with one another)

All other topic dividers are optional, and should be included as appropriate. The following is a comprehensive list of the topic dividers:

- .UPDATE...*[Insert brief reason for forecast update. Provide additional details within .SHORT TERM/.LONG TERM or .DISCUSSION sections]*
- .PREV DISCUSSION [HHMM]...*[Append previous AFDs (or significant portions thereof. Do not include delimiters or the Watch/Warning/Advisory Blocks from the previous AFDs)]*
- .SYNOPSIS...*[Insert brief weather depiction & movement of systems]*
- .MARINE...*[Insert marine weather /sea state information]*
- .AVIATION...*[Insert aviation weather/ceiling and visibility information]*

- .FIRE WEATHER...[Insert fire weather information/low relative humidity, strong wind, dry lightning.]
- .HYDROLOGY...[Insert hydrologic information/QPF, rivers]
- .CLIMATE...[Insert climatological information/records, long range outlook]
- .Preliminary Point Temps/PoPS...[Insert temp/PoP data - use plain language site names for easy identification]

Topic dividers should be logically ordered *beneath* the mandatory introductory dividers based on the significance of the information. However, there are *two exceptions* as follows:

- (1) If “.SYNOPSIS...” is used, it should be ordered *above* the mandatory introductory divider as a broad overview to the discussion that follows.
- (2) If “.UPDATE...” is used, it should be ordered *above* the mandatory introductory divider to ensure it is not overlooked by the reader. If the update also refers to the synopsis portion, the “.UPDATE...” may be placed above the “.SYNOPSIS...” section as appropriate.

When a WFO generates preliminary point temps/pops, the “.Preliminary Point Temps/PoPS...” should be the *final* topic divider.

2.3.5.2 Watch/Warning/Advisory Block

The Watch/Warning/Advisory Block is a list of the active hazards and the areas affected. This section will be formatted as follows:

“.XXX WATCHES/WARNINGS/ADVISORIES . . .” beginning at the left margin and one blank line below the last line of the text, where XXX is the modernized three letter identifier of the issuing office. If a WFO’s County Warning and Forecast Area (CWFA) falls entirely within one state, the use of state identifications are not necessary. If a WFO’s CWFA covers multiple states, begin a new line with the two-letter state identification followed by three dots (...) and the list of watches, warnings and advisories applicable to that state. (See Figure 1 for format example).

FXaaii cccc ddhmm AFDxxx	<i>WMO heading AWIPS ID</i>
<u>Product Format</u>	<u>Description of Entry</u>
Area Forecast Discussion (see section 5.3.3 for exceptions)	<i>(MND/NWS Product Name)</i>
National Weather Service city state	<i>(Issuing Office or Agency)</i>
time am/pm time_zone day mon dd yyyy	<i>(Issuing Time/Date)</i>
...[headline to highlight any topical forecast information]...	<i>(Topical Headline - Optional)</i>
.UPDATE... &&	<i>(Optional, but if used it should appear above the introductory divider and may appear above .SYNOPSIS as appropriate)</i>
.SYNOPSIS... &&	<i>(Optional, but if used it should appear above the introductory divider)</i>
.DISCUSSION... .SHORT TERM [time period]... .LONG TERM [time period]...	
[insert narrative text]	
&&	
.MARINE... &&	<i>(Optional)</i>
.AVIATION... &&	<i>(Optional)</i>
.FIRE WEATHER... &&	<i>(Optional)</i>
.HYDROLOGY... &&	<i>(Optional)</i>
.CLIMATE... &&	<i>(Optional)</i>
.Prev Discussion... &&	<i>(Optional)</i>
.Preliminary Point Temps/PoPS... site name ttt ttt ttt / ppp ppp ppp ppp site name ttt ttt ttt / ppp ppp ppp ppp etc... &&	<i>(Optional)</i>
.[XXX] WATCHES/WARNINGS/ADVISORIES... <i>(where XXX=issuing office 3-letter identifier)</i> [watch, warning, advisory information and associated locations or enter the word "NONE" followed by a period]	
Or... <i>For Multiple States Use The Following Format:</i>	
[ST]...[watch, warning, advisory information and associated locations or NONE]. <i>(where ST = two letter state ID)</i>	
[ST]...[watch, warning, advisory information and associated locations or NONE].	
\$\$ Name/Initials/Forecaster ID(s)	<i>(Optional)</i>

Figure 1. Area Forecast Discussion Product Format.

2.4 Updates and Corrections

AFDs should be updated between regular issuances to explain major changes to the forecast, to provide a technical explanation of mesoscale trends, or supply information which may be of particular interest to users. A previous AFD (or significant portions of a previous AFD) may be appended to the update to provide background information and a more thorough discussion of the entire forecast. For clarity, the issuance time of the previous AFD should also be included. WFOs will correct AFDs for format and grammatical errors as required. Users may more easily recognize AFD section changes when using the Internet (red color) highlight option. Offices may also utilize the glossary option for web presentation of the AFD to improve its readability. An example of this option is contained within the example AFD in Appendix A.

3 Area Forecast Matrices (product category AFM)

Instructions for the Area Forecast Matrices (AFM) can be found in NWSI 10-204: Derived (*Forecast Text Products Specifications*).

https://www.weather.gov/media/notification/dir/AFM_Specifications.pdf

4 Point Forecast Matrices (product category PFM)

Instructions for the Point Forecast Matrices (PFM) can be found in NWSI 10-204: Derived (*Forecast Text Products Specifications*).

https://www.weather.gov/media/notification/dir/PFM_Specifications.pdf

5 Recreation Report (product category REC)

5.1 Mission Connection

The Recreation Report (REC) relays reports on conditions for resorts and recreational areas. This report, which may also contain forecast information, is for the general public.

5.2 Issuance Guidelines

5.2.1 Creation Software

The REC may be composed using the AWIPS text editor or any other text editor.

5.2.2 Issuance Criteria

The REC does not have mandatory issuance criteria. Issuance criteria should be determined based upon user needs.

5.2.3 Issuance Time

The REC is a non-scheduled product issued on an as needed basis. Release times should be determined locally based upon user needs.

5.2.4 Valid Time

RECs are valid from the time of release until the next issuance.

5.2.5 Product Expiration Time

The REC product expiration time is determined locally.

5.2.6 Event Expiration Time

Not applicable.

5.3 Technical Description

5.3.1 UGC Type

The REC may use Zone coding or descriptive geographic terminology, as appropriate.

5.3.2 MND Broadcast Instruction Line

The REC does not contain an MND Broadcast Instruction Line.

5.3.3 MND Product Type Line

The REC does not have a mandatory MND. The MND should be descriptive in nature and determined based upon user needs.

5.3.4 Content

The REC may contain the entire range of meteorological variables, e.g., sky cover, weather, wind, temperature, snow depth, tides, water temperature, etc. Specific content should be determined based upon user needs. All wording of the REC product is now in mixed case. The Service Change Notice 16-12, dated April 11, 2016 and linked here:

https://www.weather.gov/media/notification/pdfs/scn16-12mixed_casecaa.pdf provides details.

5.3.5 Format

The REC is a free-form text product.

SXaaii cccc ddhhmm	<i>(WMO Heading)</i>
RECxxx	<i>(AWIPS ID)</i>
stZ.....	<i>(UGC:Zone, if applicable)</i>
Recreational Forecast (or similar)	<i>(MND)</i>
National Weather Service city st	<i>(Issuing Office)</i>
time am/pm time_zone day mmm dd yyyy	<i>(Issuing time and date)</i>
[TEXT]	
\$\$	<i>(UGC Delimiter)</i>
Name/Initials/Fcstr ID	<i>(Optional)</i>

Figure 2. Recreational Forecast Generic Format.

5.4 Updates and Corrections

Corrections are issued as required. Updates are issued based upon user needs.

6 State Forecast Product (product category SFP)

Instructions for the State Forecast Product (SFP) can be found in NWSI 10-204: *Derived Forecast Text Products Specifications*.

https://www.weather.gov/media/notification/dir/SFP_Specifications.pdf

7 Tabular State Forecast Product (product category SFT).

Instructions for the Tabular State Forecast Product (SFT) can be found in NWSI 10-204: *Derived Forecast Text Products Specifications*.

https://www.weather.gov/media/notification/dir/SFT_Specifications.pdf

8 Zone Forecast Product (product category ZFP).

Instructions for the Zone Forecast Product (ZFP) can be found in NWSI Directive 10-204: *Derived Forecast Text Products Specifications*.

https://www.weather.gov/media/notification/dir/ZFP_Specifications.pdf

APPENDIX A - Product Guidelines and Examples

Contents

- [1 Area Forecast Discussion \(AFD\) Example](#)
- [2 Recreational Report \(REC\) Example.](#)

1 Area Forecast Discussion Example

Area Forecast Discussion
National Weather Service Taunton MA
1011 PM EDT Tue Apr 4 2017

.SYNOPSIS...

Scattered showers, along with areas of drizzle and fog, will persist this evening. Weak high pressure will cross the region Wednesday. Another potent low pressure will move up the eastern seaboard, bringing another soaking rain to our region. Scattered showers will linger Friday into early Saturday. High pressure will bring drier conditions Saturday night through Monday.

&&

.NEAR TERM /UNTIL 6 AM WEDNESDAY MORNING/...

1010 pm update...

Potent shortwave/cold pool aloft was sweeping across the region with a brief cluster of showers moving across the region, some of which contained brief locally heavy rainfall. There also was a cluster of elevated thunderstorms moving along the RI coast in an area of elevated instability. SPC meso- analysis indicating about 500 j/kg of MUCape which is being aided by the cold pool aloft despite shallow low level inversion. Not expecting severe weather, but will have to see if some embedded t-storms are able to survive onto the south coast of Massachusetts.

Otherwise, the bulk of this activity should move off the coast over the next few hours as shortwave/cold pool departs. Still may see few hit or miss showers, but should see risk for precipitation diminish toward daybreak. Areas of fog and low clouds will persist with temps remaining in the upper 30s to the lower 40s.

&&

.SHORT TERM /6 AM WEDNESDAY MORNING THROUGH WEDNESDAY NIGHT/...

Low pressure from today continues to move away from our region to the south of Nova Scotia. Closer to home, a weak high

pressure ridge arrives during Wednesday afternoon and evening. Expecting light north winds to result, with a few gusts up to 25 mph possible during the morning.

Clouds will linger through most of the day, especially near and north of the Mass Pike. More clouds return Wednesday night as the next low pressure begins to approach our region. Winds will also shift to east to northeast by Wednesday night. Should start to see leading edge of light rain approach after midnight.

Daytime highs should be below normal Wednesday, with near normal low temperatures Wednesday night.

&&

.LONG TERM /THURSDAY THROUGH TUESDAY/...

*/ Highlights...

- Moderate to heavy rain around Thursday afternoon - evening
- FLOOD WATCH from 8 AM Thursday to 2 PM Friday
- Cool, clammy Friday into Saturday, gradual improvement
- Warming trend from Sunday onward beneath mainly high pressure

*/ Overview...

Pattern seemingly buckles into next week. Broader troughing over the N Pacific persists from which individual impulses through the stout Pacific jet crash into the W CONUS, weaken over the mountains, only to undergo lee cyclogenesis into the Plains. However, indications of a weakening onshore Pacific flow as the pattern buckles over the N Atlantic with a series of cut-off lows yields preferential ridging over the E CONUS. So a shift from the recent active weather pattern to one that is warmer and drier. The 6-10 and 8-14 day outlooks from the folks at the Climate Prediction Center advertising above-average temperatures and potentially drier conditions are no surprise. But nothing is yet certain as we've seen this late Winter into early Spring, nothing has been ordinary.

*/ Discussion...

Thursday...

Soaking, potentially flooding rain, for the afternoon into evening timeframe. In brevity, roughly around +2 standard deviations above normal, strong southerly low level inflow of precipitable waters of 1.0 to 1.5 inches ahead of a mature to dying phase cyclone evolving across the Ohio River Valley with the surface low undergoing rapid pressure falls as high as 3 mb per hour. Convergent, frontogenetic focus along attendant frontal boundaries to the low beneath the main mid level impulse and diffluence aloft, subsequently yielding robust deep layer forcing.

While the robust nature of individual forecast models differ, there is a consistent signal of a sub-tropical connection of high theta-e air converging into S/E New England undergoing ascent and forcing. Good agreement on the timing of outcomes for the afternoon into the evening timeframe. Some indication of weak instability within the conditionally unstable profile aloft above shallow cooler air per cold air damming ahead of the low. Can not rule out a rumble of thunder. Overall, a progressive, quick thump of rain falling mainly within a 6-hour period.

However nailing down with greater specificity the area of heaviest rainfall coincident with lift/forcing mechanisms is challenging. SREF / GEFS punching out an average of 1 inch storm-total rainfall amounts over much of S New England. CIPS analogs per the 04.0z GFS suggesting via both mean and median around 1.75 inches for S/E areas of New England inclusive of MA, RI, and CT. Ensemble members waver from the interior/W to the S/E, as well as the areal extent. Overall believe some areas of focus will be associated with the E upslope along with additional convergent focus on E slopes of high terrain.

Given discussion above on a highly anomalous event coupled with the recent soaking rains, going with the issuance of a Flood Watch from 8 AM Thursday through 2 PM Friday to account for delayed river rises. That's the driving message. While amounts are difficult to nail down with high confidence at this time, the bigger message here is simply given antecedent rains the past few days resulting in swollen basins and forecasting an add on of an inch or more for spots, there are certainly going to be some impacts with respect to flooding.

There are other points to consider:

- 1.) MODERATE TO HEAVY RAIN DURING THE THURSDAY PM COMMUTE. Reduced visibility with tire spray plus rain along with ponding of water on roadways. It is going to be simply a mess for those having to travel.
- 2.) EASTERLY WINDS, potentially strong to damaging. With a shallow, cool boundary-layer airmass resulting in an inversion at the surface with 60 to 70 mph E flow just above, mixing of faster winds to the surface are limited. However, given impressive cyclone deepening, we could reach wind advisory criteria simply via sustained wind of 30 mph or greater. Yet, cannot rule out that with moderate to heavy rain that we see some mechanical mixing / precipitation drag of faster winds to the surface. A percentage of the 60 to 70 mph flow mixing down, there is the potential for damaging winds. A close eye for the high terrain and along the coast, adding to hazards being considered for the Thursday PM commute.
- 3.) COASTAL FLOODING. A 1.0 to 1.5 foot surge is forecast around high tide for E coastal MA around 9 pm Thursday. With tides running low, and given the short duration event, not expecting

much in the way of coastal impacts.

Thursday night through Saturday...

Cool, remaining damp. Dry slot wraps into the occlusion during the evening hours, low clouds persist as wet weather concludes. The low spins across the area with moisture trailing cyclonically rearward. Comma-head precipitation along with weak cold air advection, though with occlusion warmer air wrapping in as the low becomes stacked and chokes off, should see some showers even wet snowflakes persist over N/W areas of MA and CT with wet snowflakes possible for high terrain albeit not thinking any accumulation. A westerly wind, downsloping, the remaining region should for the most part remain dry under low clouds. Thinking cooler conditions prevail for the period. Over time, the low occluding with drier air wrapping in, expect less wet weather impacts along with an increasing potential of clearing and seeing some sunshine.

Sunday onward...

Warming trend. An ensemble approach, the buckled pattern across the N Atlantic along with broad troughing into the W CONUS yields stout ridging over the E CONUS. SW flow prevailing along the nose of which we may have to watch for some wet weather outcomes per convergent forcing of available moisture along the mid-level warm front, otherwise some nice days coupled with diffusing frontal boundaries and showery weather becoming washed out within prevailing ridging and drier air over the region. Going to keep the PoPs low. Moderating temperatures over time.

&&

.AVIATION /02Z WEDNESDAY THROUGH SUNDAY/...

Forecaster Confidence Levels...

Low - less than 30 percent.

Moderate - 30 to 60 percent.

High - greater than 60 percent.

Short Term /through Wednesday Night/...

0z update...

Tonight...Moderate confidence.

Confident of IFR-LIFR with dense fog / lower ceilings. However lower confidence with respect to 1/4SM FG. Focus on E/SE MA and RI terminals overnight as winds become light out of the N. SCT SHRA / DZ for the 0-6z period initially. Seemingly only the CT River Valley is spared IFR visibility. All other terminals at least 1-2SM BR.

Wednesday...Moderate confidence.

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MVFR-IFR cigs / vsby eroding E during the morning. Improving VFR gradually as N winds gusts up to 20 to 25 kts along E coastal areas briefly before diminishing.

Wednesday night...Moderate confidence.

MVFR-VFR cigs during the evening, trending to MVFR-IFR cigs after midnight. Areas of -RA after midnight with MVFR vsbys.

KBOS Terminal...Closely watching for dense fog development. Will prevail 1/2SM FG with lingering impacts into the AM push. Lower confidence with respect to 1/4SM FG, however should that confidence increase, will issue an AWW accordingly.

KBDL Terminal...Prevailing with IFR-LIFR cigs but visibility should remain above 3SM BR. Low confidence concerning IFR visibility but will be closely watching. Could be some impacts during the AM push especially with respect to low IFR-LIFR cigs.

Outlook /Thursday through Sunday/...Moderate confidence.

Thursday into Thursday night...

IFR-LIFR with -RA/RA with pockets of +RA. Subsequent IFR visibility impacts. Low risk TSRA. However some overnight improvement to VFR across the S/E is possible. Strong E winds, potentially gusting to 40 kts, sustained to 30 kts. Height of winds around 0z Friday. Winds turn southerly, gradually diminish into Friday morning.

Friday into Saturday...

MVFR-IFR mix. Improving with time. Lower conditions holding out the longest for the high terrain. Southerly winds turning westerly. -RA lingering with MVFR-IFR. Risk of -SN for high terrain.

Sunday...

VFR. Diminishing W winds becoming light. Perhaps a sea-breeze along the coast.

&&

.MARINE...

Forecaster Confidence Levels...

Low - less than 30 percent.

Moderate - 30 to 60 percent.

High - greater than 60 percent.

Short Term /through Wednesday Night/...High confidence.

7 pm update...

Winds continue to diminish. Last of the GALE WARNINGS have been converted to SMALL CRAFT ADVISORIES. Areas of fog, showers and

a risk for a few embedded thunderstorms will reduce vsbys at times tonight, especially across the southern coastal waters.

N-NE winds gusting to 20-25 kt on the eastern waters early Wednesday, then diminishing but remain N-NE, with light N-NW winds on the southern waters. Winds shift to E on all waters during Wednesday night, with gusts increasing to around 25 kt after midnight on the southern outer waters. With persistent onshore flow, seas will remain at or above 5 ft on the open waters.

Outlook /Thursday through Sunday/...

Thursday into Friday...

Deep low pressure across the interior will usher strong easterly winds to gale force over the waters Thursday into Thursday night. Waves of 8 to 12 feet forecast with gusts up to 40 kts, perhaps higher. Moderate to heavy rain with a low risk of thunderstorms.

Saturday into Sunday...

Conditions improve as high pressure builds into the waters allowing both winds and seas to subside. Should see the conclusion of any headlines.

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.HYDROLOGY...

The Taunton River at Bridgewater and Pawcatuck River at Westerly are expected to remain in flood for much of this work week given today`s rainfall, and the expected additional rainfall on Thursday. Therefore, Flood Warnings remain in effect for these two forecast locations.

Also keeping a close eye on the Pawtuxet River at Cranston. The river has slowed its rate of rise over the past few hours, however there is still a chance that this location could climb to or just over flood stage tonight. There are a few additional gaged rivers that will be above Action Stage tonight, but are expected to remain below Flood Stage through Wed.

The following web site has more details:

<https://water.weather.gov/ahps2/index.php?wfo=box>

Second weather system affects the area during Thu. Models show plume of moisture originating from the Gulf of Mexico and Atlantic pushing northward towards and into southern New England. Deeper moisture looks to be over our area between 15Z Thu and 00Z Fri. Models show precipitable water over southern New England maxing out at 1 to 1.25 inches, with high low level theta-e airmass on an easterly becoming south wind. This points another round of moderate to locally heavy rainfall. During the daytime on Thu, anticipating a widespread 1

to 1.5 inches of rain with the potential for higher amounts up to 2 inches.

If it had been dry, this amount of rainfall would be limited to producing poor drainage issues. However, this rainfall will be occurring on the heels of two very recent soaking rain events, the one from today, and the earlier rain/snow event on 3/31 into 4/1. Rivers are running at elevated levels. This puts our area at a greater risk for multiple rivers and streams going into minor flood. In addition, this rainfall may produce substantial poor drainage flooding.

With this in mind, going with a Flood Watch for Thursday thru midday Friday. The heaviest rainfall is expected to be wrapping up Thursday evening which will allow the threat for poor-drainage flooding to diminish. However, some area waterways will take additional time, potentially into Friday, to go into flood.

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.BOX WATCHES/WARNINGS/ADVISORIES...

CT...Flood Watch from Thursday morning through Friday afternoon for CTZ002>004.

MA...Flood Watch from Thursday morning through Friday afternoon for MAZ002>024-026.

RI...Flood Watch from Thursday morning through Friday afternoon for RIZ001>008.

MARINE...Small Craft Advisory until 6 PM EDT Wednesday for ANZ235-237.

Small Craft Advisory until 6 AM EDT Thursday for ANZ250-251-254-255.

Small Craft Advisory until midnight EDT Wednesday night for ANZ256.

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2 Recreational Report (REC) Example

Recreational Forecast
National Weather Service Jackson MS
100 PM CDT Mon May 15 2017

MSZ043-049-160900-
Ross Barnett Reservoir-
100 PM CDT Mon May 15 2017

...THE FORECAST FOR THE ROSS BARNETT RESERVOIR...

.TONIGHT...East winds 5 to 10 mph shifting to the southeast after midnight. Waters a light chop.

.TUESDAY...South winds 10 to 15 mph. Gusts up to 25 mph in the

afternoon. Waters a moderate chop, with choppiest waters in the upper reservoir.

.TUESDAY NIGHT...South winds 10 to 15 mph. Waters a moderate chop, with choppiest waters in the upper reservoir.

.WEDNESDAY...South winds 10 to 15 mph. Waters a moderate chop, with choppiest waters in the upper reservoir.

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MSZ030-031-160900-
Columbus Lake-
100 PM CDT Mon May 15 2017

...THE FORECAST FOR COLUMBUS LAKE...

.TONIGHT...East winds 5 to 10 mph shifting to the southeast after midnight. Waters a light chop.

.TUESDAY...South winds 10 to 15 mph. Waters a moderate chop, with choppiest waters in the north.

.TUESDAY NIGHT...South winds 10 to 15 mph. Waters a moderate chop, with choppiest waters in the north.

.WEDNESDAY...South winds 10 to 15 mph. Waters a moderate chop, with choppiest waters in the north.

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MSZ052-160900-
Okatibbee Lake-
100 PM CDT Mon May 15 2017

...THE FORECAST FOR OKATIBBEE LAKE...

.TONIGHT...Light winds. Waters smooth.

.TUESDAY...South winds 10 to 15 mph. Waters a moderate chop, with choppiest waters in the north.

.TUESDAY NIGHT...South winds 5 to 10 mph. Waters a light chop.

.WEDNESDAY...South winds 10 to 15 mph. Waters a moderate chop, with choppiest waters in the north.

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MSZ026-160900-
Grenada Lake-
100 PM CDT Mon May 15 2017

...THE FORECAST FOR GRENADA LAKE...

.TONIGHT...Southeast winds 5 to 10 mph. Waters a light chop.

.TUESDAY...South winds 10 to 15 mph. Gusts up to 25 mph in the afternoon. Waters a moderate chop, with choppiest waters in the north.

.TUESDAY NIGHT...South winds 10 to 15 mph. Waters a moderate chop, with choppiest waters in the north.

.WEDNESDAY...South winds 10 to 15 mph. Waters a moderate chop,

with choppiest waters in the north.

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ARZ075-LAZ009-016-MSZ018-034-040-047-160900-
Mississippi River and nearby lakes north of Interstate 20-
100 PM CDT Mon May 15 2017

...THE FORECAST FOR THE MISSISSIPPI RIVER AND NEARBY LAKES NORTH
OF INTERSTATE 20...

...CAUTION IS ADVISED TUESDAY AND WEDNESDAY...

.TONIGHT...Southeast winds 5 to 10 mph. Waters a light chop.
.TUESDAY...South winds 15 to 20 mph. Gusts up to 30 mph in the
afternoon. Waters choppy, with choppiest waters in the north.
.TUESDAY NIGHT...South winds 10 to 15 mph. Waters a moderate
chop, with choppiest waters in the north.
.WEDNESDAY...South winds 10 to 20 mph. Waters choppy, with
choppiest waters in the north.

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LAZ016-025-026-MSZ047-053-059-060-160900-
Mississippi River and nearby lakes south of Interstate 20-
100 PM CDT Mon May 15 2017

...THE FORECAST FOR THE MISSISSIPPI RIVER AND NEARBY LAKES SOUTH
OF INTERSTATE 20...

...CAUTION IS ADVISED TUESDAY...

.TONIGHT...South winds 5 to 10 mph. Waters a light chop.
.TUESDAY...South winds 10 to 20 mph. Waters choppy, with
choppiest waters in the north.
.TUESDAY NIGHT...South winds 10 to 15 mph. Waters a moderate
chop, with choppiest waters in the north.
.WEDNESDAY...South winds 10 to 15 mph. Waters a moderate chop,
with choppiest waters in the north.

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APPENDIX B - Federal Meteorological Handbook No. 1

The following web link will access the latest edition of Federal Meteorological Handbook No. 1(FMH-1), "Surface Weather Observations and Reports" which embodies the United States conversion to the World Meteorological Organization's (WMO) Aviation Routine Weather Report/Aviation Selected Special Weather (METAR/SPECI) code formats. It was compiled under the auspices of the Office of the Federal Coordinator for Meteorological Services and Supporting Research (OFCM) and embodies the work of meteorological code experts from the United States Departments of Commerce, Transportation, Defense, and Energy. The FMH-1 incorporates all of the United States' exceptions to the international METAR/SPECI format standard that is prescribed in the WMO Publication No. 306 on Meteorological Codes.

FMH-1, Surface Weather Observations and Reports and Related Pen and Ink Changes:
<https://www.ofcm.gov/publications/fmh/FMH1/FMH1.pdf>

APPENDIX C - US Department of Transportation FAA 7340.1[x] Contractions

The following web link will access the list of official USA-Aeronautical Contractions. These approved word and phrase contractions are used by personnel of the Federal Aviation Administration (FAA). This list is also used by other agencies (including the NWS) that provide air traffic control, communications, weather, charting, and associated services.

FAA Contractions: <http://www.faa.gov/documentLibrary/media/Order/CNT.pdf>