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Operations and Services

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WFO Non-Precipitation Weather Products Specification, NWSI 10-515

EASTERN REGION NON-PRECIPIATION WEATHER PRODUCTS

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SUMMARY OF REVISIONS: This Supplement is a new issuance and supersedes Eastern Region Supplement 06-2004 "Freeze Warnings and Frost Advisories, filed with NWSI 10-515, dated March 15, 2004. This Supplement also supersedes ER ROML E-8-98, High Wind Outlooks, Watches, Warnings and Wind Advisories, filed with WSOM C-44 and C-40. This Supplement also supersedes ER ROML E-5-94, Heat Index, filed with WSOM C-44.

<Signed by Mickey J. Brown>
for

August 11, 2006

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Date

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1. **Purpose.** This supplement addresses non-precipitation weather (NPW) outlooks, watches, warnings, and advisories, such as high wind or dense fog. Eastern Region (ER) Weather Forecast Offices (WFOs) issue these products when conditions are expected to meet established criteria that pose a threat within their County Warning Area (CWA). Weather events that do not meet hazardous criteria should be addressed in other products such as the Short Term Forecast (AWIPS header NOW) or Special Weather Statement (AWIPS header SPS). See [*NWSI 10-517, Multipurpose Weather Products Specification*](#) for additional details.

While every effort is made to provide clear and concise guidance on NPW products, these written instructions cannot address every operational situation. All WFO personnel must exercise initiative and professional judgment to minimize risk to public safety and property in situations not explicitly covered by this supplement. Personnel must balance safety and the needs of customers against frequency of warnings and possible constraint of travel and commerce. Protection of life and property must take precedence in any decision making process. As such, criteria for advisories and warnings are considered guidance only, not strict thresholds. Forecasters may issue warnings based upon lower criteria if the event in question poses a significant threat to life due to timing or other circumstances.

2. **Products.** Outlooks for potentially hazardous non-precipitation weather will be included in the daily Hazardous Weather Outlook (AWIPS header HWO). Watches, warnings, and advisories for non-precipitation weather hazards are issued under the AWIPS category NPW, and are referenced in the appropriate section of the HWO. The MND header for NPW products will simply be “Urgent - Weather Message” as per NWSI 10-515.

2.1 Product Types and Appropriate Lead Times.

- a. **Outlooks.** Outlooks for potential hazards, beyond 6 hours out to Day 7 are issued using the HWO.
- b. **Watches.** Watches are issued when the risk of a hazardous weather event is significant in the 12 to 48 hour time frame, but occurrence, location, severity, or timing is uncertain. Watches may be issued beyond 48 hours for large synoptic scale storms, but care must be used so that the effectiveness of watches is not reduced by issuing too many false alarms.
- c. **Warnings.** Warnings are issued when an event is expected to meet established criteria is occurring, imminent, or has a significant probability of occurrence within 36 hours. Warnings may be issued beyond 36 hours for large synoptic scale storms, but care must be used so that the effectiveness of warnings is not reduced by issuing too many false alarms.

d. Advisories. Advisories are issued for certain events that have a significant probability of occurrence in the first 36 hours. These events are defined as non life-threatening by themselves, but they could become life-threatening if caution is not exercised.

e. Relationship to other Products

1. Winter Weather Statements (WSW). High wind watches/warnings and wind advisories will not be issued within WSWs. Combining high wind information within a WSW should only occur when the high winds meeting warning or advisory criteria will coincide with snow, sleet or freezing rain meeting warning/advisory criteria. Then, either a blizzard warning/winter storm warning/winter weather advisory will be issued. Otherwise, separate high wind warning/wind advisory statements will be issued under the NPW header. Refer to [*NWSI 10-513, WFO Winter Weather products Specification*](#) for additional details.

2. Special Weather Statement (SPS). An SPS may be issued for high impact weather events to provide higher resolution detail on timing, intensity and location in the first 6 hours of Day 1. When warnings or advisories are in effect, the appropriate headlines should be included in the SPS.

3. Severe Thunderstorm Warning (SVR). There will be times particularly in the spring and autumn when convective cells are embedded in moderately intense synoptic scale wind regimes. While the convective cells may not develop into thunderstorms, their downdrafts can be strong enough to push the gradient wind field into advisory or warning categories. In such cases, sound forecaster judgment will ultimately determine which type of product is used (NPW, SVR or SPS).

The following general guidelines (using a time-filter approach rather than a geographic one to classify events) are offered to assist forecasters in handling wind situations only (i.e., no large hail expected).

If the potential convective wind event is expected to equal or exceed **warning** values for one hour or more, then an NPW (High Wind Warning) is recommended. If less than one hour, an SVR (Severe Thunderstorm Warning) is recommended.

If the potential convective wind event is expected to fall within the **advisory** category for one hour or more, then an NPW (Wind Advisory) is recommended. If less than one hour, a SPS (no headline required) is recommended.

When severe criteria occurs with an NPW already in effect, the forecaster should issue an SVR to address the specific threat.

4. Air Quality Products. ER WFOs that have an event-driven air quality program in cooperation with state and local air quality officials will issue the products under the AWIPS header NPW, when the AWIPS software can properly identify the issuing authority for the air pollution product. Air Quality Products issued under the NPW PIL should address only event-driven meteorological conditions that cause changes in air quality and should not be used to relay routine information.

3. **Procedures.** ER offices are required to issue outlooks, watches, warnings and advisories, as soon as the appropriate event probability is reached: As guidance, the following event probabilities levels are recommended: issue Watches when there is a 50% chance or greater that conditions for a hazardous non-precipitation weather event will meet or exceed local warning criteria; issue Warnings when there is an 80% chance or greater that conditions for a hazardous non-precipitation weather event will meet or exceed local warning criteria.) **Forecasters should make every reasonable effort to collaborate with adjacent offices to reach consensus on event type, timing and magnitude.**

SPS and NPW products are issued using the UGC zone (Z) format. High impact short-term updates for time horizons within six hours are accomplished using the SPS products. Revision of land-based gradient wind watch/warning/advisory areas or timing is accomplished via a new NPW. Updates and cancellations of gradient wind watches/warnings/advisories (land) shall be accomplished using an NPW. The UGC cutoff time of the cancellation message shall be one hour.

4. **Criteria.** The development of event criteria for non-precipitation watches/warnings/advisories will take into account climatology and customer needs, and reflect a balance between public safety and too many false alarms. Customers and partners, including emergency management officials, concerned federal, state and local government agencies, the media, Eastern Region Headquarters Meteorological Services Division must be made aware of WFO's criteria for watches, warnings, and advisories. WFO's must maintain an awareness of criteria with the customers and partners through regular outreach, and those groups with the most at stake should have input into the process of choosing criteria changes as it affects their operations.

4.1 **High Wind.**

- a. Issuance Values. Gradient high wind outlooks, watches, warnings, and wind advisories shall be issued using the following wind speed values:

<u>Product Type</u>	<u>PIL</u>	<u>Sustained Wind (1 Hr)</u>	<u>/ any duration gust</u>
High Wind Outlook	HWO	> or = 40 MPH (35 KTS)	/ > or = 58 MPH (50 KTS)
High Wind Watch	NPW	> or = 40 MPH (35 KTS)	/ > or = 58 MPH (50 KTS)
High Wind Warning	NPW	> or = 40 MPH (35 KTS)	/ > or =58 MPH (50 KTS)
Wind Advisory (land)	NPW	31-39 MPH (27-34 KTS)	/ 46-57 MPH (40-49 KTS)

Lake Wind Advisory (optional based on local policy)	NPW	21-29 MPH (18-25 KTS)	/ 35+ MPH (30+ KTS)
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- b. The upper limit of the sustained wind speed range shall be used to determine whether an advisory or warning category should be issued, rather than the average speed of the forecast interval. For example, a first period wind forecast of 25-35 MPH has an upper limit of 35 MPH. This would require issuance of a wind advisory.
- c. If a single high wind report occurs when no warning is in effect, and it is not expected to continue, the issuance of a High Wind Warning is not required. A Special Weather Statement (SPS) should be issued at the discretion of the forecaster.
- d. Local policy should be used to determine whether High Wind Watches, Warnings or Wind Advisories are needed for climatologically windy locations. For example, Mt. Washington routinely experiences winds within the advisory category and frequently within the warning category. Some coastal channels, valleys and mountain passes have similar conditions. Locally established criteria above regional values are acceptable in those geographic areas.
- e. The following ER WFOs will issue “regular” (non-tropical) NPWs for high wind watches and/or warnings if hurricane/tropical storm winds move into their area of responsibility: ALY, BGM, BTV, BUF, CLE, CTP, ILN, PBZ, and RLX. All other ER WFOs will issue, as/when appropriate, NPWs for inland hurricane/tropical storm watches and warnings. (Note: Due to their relative small size, all of Connecticut/Massachusetts will be included, as/when appropriate, in inland hurricane/tropical storm watches and warnings.)

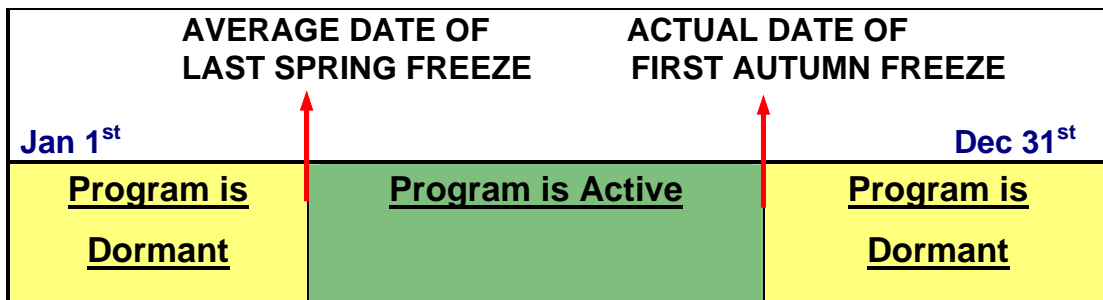
4.2 **Excessive Heat.**

- a. Issuance Values. ER local heat index criteria are based on national guidelines associated with recommendations from the 1995 Chicago Heat Assessment. The local criteria are available on the ER Heat Resource web page at <http://www.werh.noaa.gov/MSD/Resources/Heat/resource.htm>. **Excessive Heat products will be issued when criteria is expected to be met for two hours or more.** National heat warning systems have been established in cities throughout the world that base heat warnings and advisories on air mass type, time of year, number of consecutive days of heat, etc. For areas where this type of research has been done, the heat index criteria will be determined locally and is not subject to the criteria defined on the resource page.
- b. Excessive Heat Watch. An excessive heat watch will be issued from 12 to 48 hours prior to the expected onset of warning criteria. Subsequent updates are issued at least once every 12 hours until a warning or advisory is issued or the watch is cancelled.

- c. Excessive Heat Warning. In most cases, an excessive heat warning will be issued with about 12 hours lead time, but a warning should be issued any time the warning criteria have been exceeded. Subsequent updates are issued at least once every 6 hours until the warning is cancelled. Refer to the local criteria located on the ER Heat Resource Page at <http://www.werh.noaa.gov/MSD/Resources/Heat/resource.htm>. Criteria must be met for two hours or more. Depending on the weather scenario, expected warning criteria may only be briefly exceeded and/or last less than one day. In this case, forecasters have the option of maintaining a Heat Advisory.
- d. Heat Advisory. Heat advisories will be issued beginning up to 12 hours before advisory criteria are met and continued with 6-hourly updates. When the heat index exceeds or is expected to exceed excessive heat warning criteria defined on the Heat Resource Page, the advisory will be upgraded to a warning.
- e. Ending Excessive Heat Episodes. Excessive Heat Warnings should be downgraded to Heat Advisories when the excessive heat conditions have fallen below warning criteria or canceled when the conditions abate. Similarly, Heat Advisories should be canceled when advisory criteria are no longer met.

4.3 **Frost and Freeze Warnings**

- a. Background. Temperatures at or below the freezing point of water can seriously affect outdoor operations (e.g. gardening or construction). The probability of freezing temperatures occurring varies by location and time of year; this variation causes uncertainty as to when a WFOs freeze/frost program should begin and end. This section describes a uniform process for determining the annual starting and ending date to provide a consistent level of service to NWS customers and partners.
- b. Freeze/Frost Season. All ER WFOs will start their freeze/frost program on the average (mean) date of the last spring freeze, using a minimum shelter temperature of 32°F for groups of zones. A zone group is constructed by using the average date of the last spring freeze. Zones where the average date of the last spring freeze falls within days 1-10 of the month, 11-20 of the month, and 21-30, 31 of the month should be grouped together. The mean date of each grouping will be used to activate the entire group. The program will remain active in each individual zone until a minimum shelter temperature of 32°F or less, covering half or more of the zone for 3 or more hours, occurs in the autumn.



- c. Issuance Criteria. When a freeze/frost event is expected 24 to 48 hours in the future during the freeze/frost season, a watch will be issued using a NPW product, highlighting the potential for such an event. Whenever the minimum shelter temperature is forecast to be 32°F or less in the next 12 to 36 hours during the freeze/frost season, a Freeze Warning will be issued. Whenever the minimum shelter temperature is forecast to be 33-36°F in the next 12 to 36 hours during the freeze/frost season, on nights with light wind and good radiational cooling, a Frost Advisory will be issued.

The lower limit of the forecast temperature range will be used to trigger warning or advisory issuances. Freeze Warnings, Frost Advisories, updates and cancellations are issued using the NPW.

General thresholds and terminology are shown in the table below:

Minimum Shelter Temperature (°F)			
	< 28°	28° - 32°	32° - 36°
TERMINOLOGY	Hard Freeze	Freeze	Frost
PRODUCTS	FREEZE WARNING		FROST ADVISORY

- d. Handling Anomalous Seasons. During anomalous climate patterns (e.g. La Niña, El Niño/Southern Oscillation), vegetation may begin growing several weeks ahead of normal in the spring while the first freeze in the autumn may occur very late in the year, or not at all. Under these circumstances, WFOs have the discretion to begin the freeze/frost season early, or terminate it two weeks after the normal first freeze date in the autumn. WFOs will issue an SPS (in lieu of NPW) to announce the end of the growing season. Transient start or end dates will be coordinated with MSD and surrounding WFOs, to assure program consistency.

- 4.4 **Dense Fog, Smoke, Ashfall, Blowing Dust.** NPWs will be issued by ER offices in accordance with criteria outlined in [NWSI 10-515, WFO Non-Precipitation Products Specification](#).
5. **Product Format.** NPWs are segmented products. Format details and requirements are described in [NWSI 10-515, WFO Non-Precipitation Products Specification](#). Some additional notes are provided below.
- a. **Elevation.** ER WFOs may include elevation in the headline as necessary. If used, elevation information will be included at the end of the headline. (e.g., “...HIGH WIND WARNING IN EFFECT UNTIL 6 AM TUESDAY ABOVE 1000 FEET...”)
 - b. **Expiration Statements.** Though not specifically addressed in NWSI 10-515, ER WFOs are encouraged to issue a final statement when a warning or advisory has reached its normal expiration time and has not been previously canceled. A short statement should be issued near the expiration time with the headline “THE WARNING/ADVISORY HAS EXPIRED”, or “THE WARNING/ADVISORY WILL EXPIRE AT...” This provides customers with a final notification that the event is indeed over.
 - c. **Segment Content.** Within each segment the free text description of the event will be concise and restricted to addressing the specifics of the weather that is expected. Where appropriate, include mention of specific highways or other geographic locations where the public would be especially vulnerable. A definition of watch/warning must be included as shown in 10-515 sections 4.3.4.2.b and 5.3.4.2.b if the event has not yet begun. Attribution statements (THE NATIONAL WEATHER SERVICE IN [WFO LOCATION] HAS ISSUED A...) are required for the first issuance of a particular watch/warning/advisory; see [NWSI 10-515, WFO Non-Precipitation Products Specification](#), Sections 4.3.4.2.b.1, 5.3.4.2.b.1 and 6.3.4.2.b.1.
 - d. **Call-to-Action Statements.** Concise call-to-action statements should be included in each segment if the statement(s) relay extremely urgent messages, such as potentially life-saving actions. Other less urgent call-to-action statements may be included in one of three ways: separated from other content within a segment by using the && separator; included as part of the overview; or grouped together after the \$\$ ending the final segment of the product. WFOs should be aware that call-to-action statements not included in the segments will not be received by customers who program their systems to only receive their local segments.