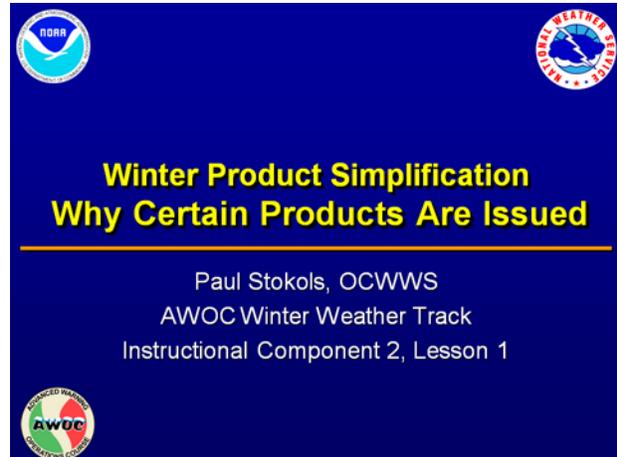

1. Winter Product Simplification Why Certain Products Are Issued

Instructor Notes: Welcome to the AWOC Winter Track Instructional Component 2, Lesson 1. This presentation, Why Certain Products Are Issued, should last approximately 30 minutes. This lesson will provide new information on winter weather product simplification.

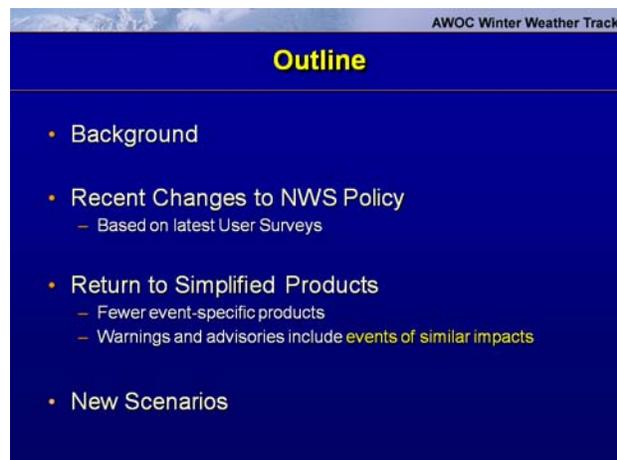
Student Notes:



2. Outline

Instructor Notes:

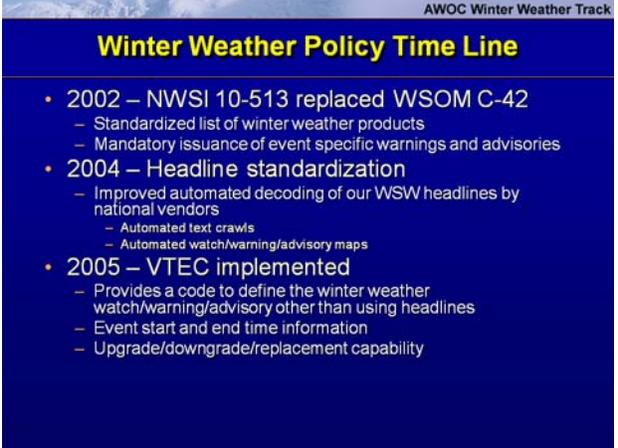
Student Notes:



3. Winter Weather Policy Time Line

Instructor Notes: NWSI 10-513 was updated in 2002 replacing the outdated WSOM C-42. The new policy directive had a standardized list of winter weather products and mandated the issuance of event specific warnings and advisories. As national vendors were able to decode automatically our WSW headlines into on screen text crawls and automated watch/warning/advisory maps, 2004 brought about headline standardization. After several years of development, VTEC arrived in 2005 which allowed specific event coding of Watch, Warnings, and Advisories and created automatic headlines.

Student Notes:



AWOC Winter Weather Track

Winter Weather Policy Time Line

- 2002 – NWSI 10-513 replaced WSOM C-42
 - Standardized list of winter weather products
 - Mandatory issuance of event specific warnings and advisories
- 2004 – Headline standardization
 - Improved automated decoding of our WSW headlines by national vendors
 - Automated text crawls
 - Automated watch/warning/advisory maps
- 2005 – VTEC implemented
 - Provides a code to define the winter weather watch/warning/advisory other than using headlines
 - Event start and end time information
 - Upgrade/downgrade/replacement capability

4. Up ‘til Now...Event Specific Winter Wx Policy

Instructor Notes: Based on a survey conducted by the American Customer Satisfaction Index (ACSI) group. ACSI and NWS developed a broad range of questions that were used to find the strengths and shortfalls in understanding of and need for NWS public forecast and warning products and services. Among the findings across all 3 surveys was that there is a need for more specific winter weather warning products. In Oct. 2004, the NWS internal Corporate Board Operations Committee was presented the results of the survey and they agreed to endorse event-specific winter weather policy. Thus, the original motivation for the current suite was based in flexibility afforded by VTEC and results from Public Services Survey.

Student Notes:

AWOC Winter Weather Track

Up 'til Now...
Event Specific Winter Wx Policy

- External Customers
 - American Customer Satisfaction Index surveys
- Internal Customers – Oct 27, 2004
 - Regional Director Ops Committee decision
 - Endorsed event specific winter policy

5. HOWEVER...

Instructor Notes: As you know, Instruction 10-513 WFO Winter Weather products, was updated in 2005 to put into policy the requirement to issue a myriad event-specific advisories and warnings related to winter weather hazards. This policy was directly related to flexibility afforded by VTEC coding in GHG and resulted from a public survey that indicated the need for more event specific products. However, during the course of 2 winter seasons, the policy oftentimes caused confusing, and often conflicting forecasts on hazards that made little difference to the general public. Both internal and external feedback strongly indicated a need to re-evaluate the policy and return to a more simplified approach. A Public Notification Message was sent out in Feb 2008. Over 100 comments were received. Response among those who expressed an opinion is overwhelmingly positive (85%). Large majority of respondents were broadcasters & EMs.

Student Notes:

AWOC Winter Weather Track

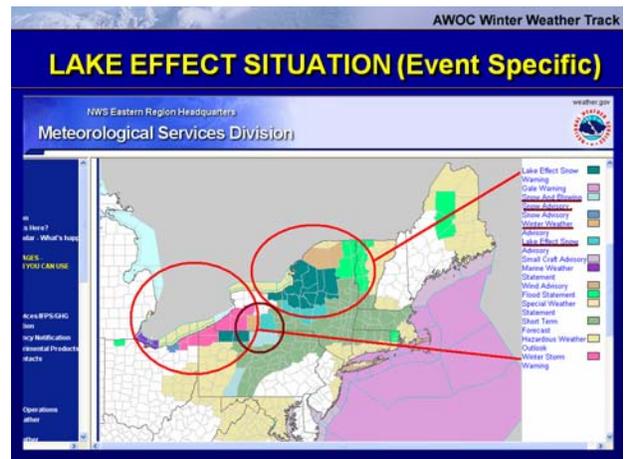
HOWEVER...

- Two Winter Seasons and Forecaster Familiarity shows:
 - Confusion amongst forecasters dealing with multiple p-types in CWA
 - Difficulty coordinating amongst adjacent WFOs
 - Media and Public pushing back
- As a result of these concerns we sent out a PNS asking if a “simplified” approach is better.
 - 100 comments received (mainly Broadcasters and EMs)
 - 85% positive want simplified

6. LAKE EFFECT SITUATION (Event Specific)

Instructor Notes: Here's an example of a confusing Watch Warning Advisory (WWA) map from Feb 2006 during the event specific era. A synoptic scale low passed through the Northeast producing rain on the front side and snow on the back as colder air filtered in with northwest flow. As is typical in these situations lake effect snows kicked in as well in the usual places. Seven types of winter weather advisories and warnings were in effect. The new simplified impact based approach would consolidate into the impact-based Lake Effect Snow Advisory/Warning, and Winter Weather Advisory/Storm Warning groupings and colors.

Student Notes:



7. Confusion in Philadelphia/ New York City Media Markets

Instructor Notes: Here's a confusing case involving adjoining WFOs with large media markets in the east. Trying to stay close to policy some offices attempted to delineate snow vs winter weather advisories and heavy snow vs winter storm warnings based on local criteria which lead to multiple advisories and warnings within a short distance and with a discontinuity across CWAs. Based on impact, it would have made more sense to just have a winter weather advisory in the lower accumulations areas, and a winter storm warning where higher amounts were expected. The new system will do this and allow for specificity of p-type within the body of the text.

Student Notes:



8. Reasons to Change Now

Instructor Notes: There are many more examples that can be shown but suffice it to say, we recognized and can sum up the reasoning to change now as: -It is too difficult to describe and distinguish among the many products associated with complex winter storms. -Too much time is spent on and confusion resulting from canceling and re-issuing products with little difference in impacts. -Oftentimes during large scale significant winter and sometimes concurrent severe weather events the NWS WWA map becomes cluttered and chaotic. -There is a greater chance of inconsistency from WFO to WFO due to the large number of products and despite attempts to coordinate all of them The Regions have sent a strong message that we should base our warnings and advisories on impacts. This change accomplishes this goal.

Student Notes:

AWOC Winter Weather Track

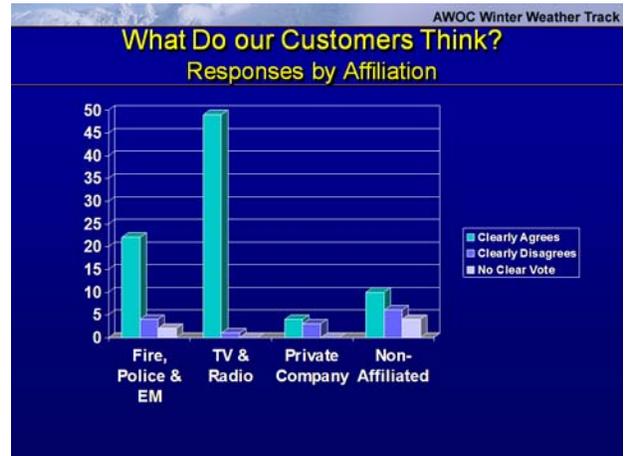
Reasons to Change Now

- Difficult to distinguish among many products
- Reduce time cancelling and re-issuing
- Reduce clutter/inconsistencies across U.S.
- Individual warnings and advisories should include ALL events of similar IMPACT

9. What Do our Customers Think? Responses by Affiliation

Instructor Notes: All responders, but in particular, EMs and Media favored the simplification.

Student Notes:



10. Sample Comments - Supporters

Instructor Notes: verbatim

Student Notes:

AWOC Winter Weather Track

Sample Comments - Supporters

- Too many warnings/advisories for the public to assimilate.
- It's hard enough to educate on the distinction between watches, warnings and advisories.
- The proposed changes are much easier to disseminate.
- Could not come sooner. I've stopped using (the specific codes) myself.
- Anything to make it less confusing for viewers is good.
- Please do this - the maps have become so convoluted.

11. For Those Who Disagreed

Instructor Notes: verbatim

Student Notes:

AWOC Winter Weather Track

For Those Who Disagreed

1) The proposal works against what the VTEC was designed to do.

Response:

- True, some codes will no longer be used...
- But comments strongly support they should not be used.

2) Sleet should keep it's own designation.

Response:

- Sleet is usually a transition type & very difficult to forecast.
- It's very rare for sleet to meet warning criteria.
- Differences in impact between snow and sleet are minimal.

12. From Those Who Disagreed (Cont'd)

Instructor Notes: verbatim

Student Notes:

AWOC Winter Weather Track

From Those Who Disagreed (Cont'd)

3) Would require opening the notice or read further to determine why the warning or advisory was issued.

Response: Event specific information will be prominently found in the first line of the text, which is generally read by broadcasters and announcers.

4) Mobile phone text alerts may rely on what the product is called, without being able to present the text.

Response: Valid concern – NWS will work to remedy via the use of CAP and the Next Gen. Warning Tool

13. What are the Changes?

Instructor Notes: Here is a summary of the changes which will take effect in Sept 2008 in time for the upcoming winter season. As you can see two groupings of winter weather advisory products have been consolidated. Lake Effect Snow and Lake Effect Snow and Blowing Snow will now be issued as a Lake Effect Snow Advisory and Snow, Sleet, Snow and Blowing Snow, and Blowing Snow Advisories will now be issued as a single Winter Weather Advisory. Note how Freezing Rain maintains a separate Advisory since it often has a different impact and public response. Same thing for warnings. Heavy Snow and Sleet Warnings have been combined into the Winter Storm Warning product while more distinct impacts from Blizzard, Ice Storm, and Lake Effect Snow will continue to be issued as separate warnings using appropriate GHG and VTEC codes. Specific information on why a Winter Storm Warning or Lake Effect Snow or Winter Weather Advi-

Warning Decision Training Branch

sory has been issued will be contained within the first sentence following the headline (which is still generated by GHG).

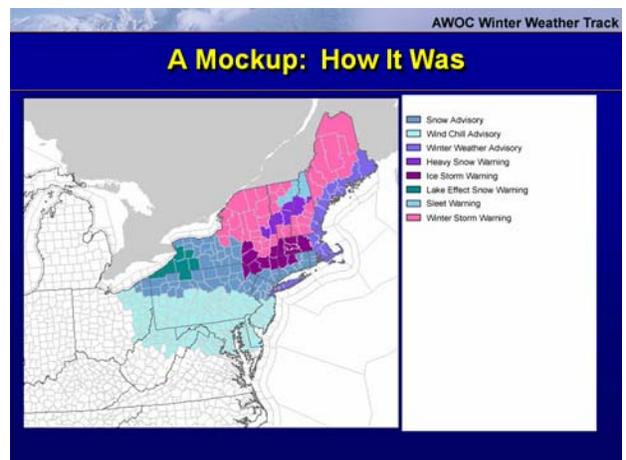
Student Notes:



14. A Mockup: How It Was

Instructor Notes: As an example, let's look at a typical complicated Northeast US coastal storm. Due to an expected mixture of heavy snow and sleet, winter storm warnings were issued across northern New England and Adirondacks Region of New York while an attempt was made to distinguish predominant p-type Heavy Snow or Sleet in a few counties in NY, VT and NH.. Similarly, winter weather advisories were issued for coastal New England and Long Island while Snow Advisories cover southern New England and the northern Mid Atlantic Region. Importantly, a region of Ice is expected along the southern edge of the warned area.

Student Notes:



15. The Same Mockup: How It Will Be!

Instructor Notes: As you can see, the main impacts shown in the simplified system are the winter Storm Warning area, the Ice Storm Warning area, and a large Winter Weather

Warning Decision Training Branch

this change is being made at a time when AWIPS software changes are frozen, the forecaster will have to edit this information. However, this still simplifies the task of issuing fewer types of warnings/advisories than before.

Student Notes:

AWOC Winter Weather Track

Example of New Simplified Product

First issuance of WS.W (After Simplification)

```
CTZ005-006-NY2067-070-090445
/O.NEW.KOKX.WS.W.0001.080908T2200Z-080909T1000Z/
NORTHERN FAIRFIELD-NORTHERN NEW HAVEN-ORANGE-PUTNAM-ROCKLAND-
NORTHERN WESTCHESTER
INCLUDING THE CITIES OF...DANBURY...SHELTON...TRUMBULL...
WATERBURY...MERIDEN...NAUGATUCK...NEWBURGH...MIDDLETOWN...
KIRYAS JOEL...NEW WINDSOR...SCOTCHTOWN...PORT JERVIS...MONROE...
LAKE CARMEL...MAHOPAC...PUTNAM LAKE...BREWSTER HILL...NEW CITY...
SPRING VALLEY...MANHET...PEARL RIVER...MONSEY...STONY POINT...
SUFFERN...OSSINGING...PEEKSKILL...JEFFERSON VALLEY-YORKTOWN...
TARREY TOWN...DOBBS FERRY...MOUNT KISCO...YORKTOWN HEIGHTS
944 PM EDT MON SEP 8 2008
...WINTER STORM WARNING IN EFFECT UNTIL 6 AM EDT TUESDAY...
THE NATIONAL WEATHER SERVICE IN TESTBED HAS ISSUED A WINTER STORM
WARNING FOR HEAVY SNOW...WHICH IS IN EFFECT UNTIL 6 AM
EDT TUESDAY.
LIGHT SNOW WILL BECOME MORE WIDESPREAD AND HEAVY THIS
AFTERNOON...WITH 8 TO 12 INCHES OF TOTAL SNOWFALL ACCUMULATION
BEFORE THE SNOW ENDS LATE TONIGHT. NORTHEAST WINDS AT 15 TO 25 MPH
WILL BECOME NORTH TONIGHT...PRODUCING SOME BLOWING AND DRIFTING OF
SNOW.
A WINTER STORM WARNING MEANS SIGNIFICANT AMOUNTS OF SNOW...
SLEET...AND ICE ARE EXPECTED OR OCCURRING. STRONG WINDS ARE ALSO
POSSIBLE. THIS WILL MAKE TRAVEL VERY HAZARDOUS OR IMPOSSIBLE.
SS
```

18. Example 2: CON With Change in Event Type

Instructor Notes: For the second or later issuance with a change in event type, the attribution line will show the updated event types—in this example heavy Snow and Sleet. Note, the VTEC line still looks the same for a Winter Storm Warning-- WS.W

Student Notes:

AWOC Winter Weather Track

Example 2: CON With Change in Event Type

Case 2 - WS.W Continuation with Change in Event Type (After Simplification)

```
CTZ005-006-NY2067-070-090944
/O.CON.KOKX.WS.W.0001.080909T0200Z-080909T1000Z/
NORTHERN FAIRFIELD-NORTHERN NEW HAVEN-ORANGE-PUTNAM-ROCKLAND-
NORTHERN WESTCHESTER
INCLUDING CITIES OF...DANBURY...SHELTON...TRUMBULL...
WATERBURY...MERIDEN...NAUGATUCK...NEWBURGH...MIDDLETOWN...
KIRYAS JOEL...NEW WINDSOR...SCOTCHTOWN...PORT JERVIS...MONROE...
LAKE CARMEL...MAHOPAC...PUTNAM LAKE...BREWSTER HILL...NEW CITY...
SPRING VALLEY...MANHET...PEARL RIVER...MONSEY...STONY POINT...
SUFFERN...OSSINGING...PEEKSKILL...JEFFERSON VALLEY-YORKTOWN...
TARREY TOWN...DOBBS FERRY...MOUNT KISCO...YORKTOWN HEIGHTS
944 PM EDT MON SEP 8 2008
...WINTER STORM WARNING REMAINS IN EFFECT UNTIL 6 AM EDT TUESDAY...
A WINTER STORM WARNING FOR HEAVY SNOW AND SLEET REMAINS IN EFFECT UNTIL
6 AM EDT TUESDAY.
HEAVY SNOW WILL MIX WITH SLEET THIS EVENING AND CONTINUE OVERNIGHT
...WITH 8 TO 12 INCHES OF TOTAL ACCUMULATION BEFORE THE PRECIPITATION
ENDS LATE TONIGHT. NORTHEAST WINDS AT 15 TO 25 MPH WILL BECOME NORTH
OVERNIGHT...PRODUCING SOME BLOWING AND DRIFTING OF SNOW.
A WINTER STORM WARNING MEANS SIGNIFICANT AMOUNTS OF SNOW AND SLEET ARE
EXPECTED OR OCCURRING. STRONG WINDS ARE ALSO POSSIBLE. THIS WILL
MAKE TRAVEL VERY HAZARDOUS OR IMPOSSIBLE.
SS
```

19. Example 3a: CON With No Change in Event Type - Edited Attribution Line

Instructor Notes: However, we recognize that forecasters have many time constraints and may have to issue numerous segments. If the event type remains the same, forecasters will - at their discretion - do one of the following: (a) edit the attribution line as described previously for Examples 1 and 2. This is the suggested "Best Practice".

Student Notes:

AWOC Winter Weather Track

Example 3a: CON With No Change in Event Type - Edited Attribution Line

Case 3a - WS.W Continuation with No Change in Event Type, Attributed Line Edited (After Simplification)

CTZ005-006-NYZ067-070-090444
 ID.CON.KOKX.WS.W.0001.080909T0200Z.080909T1000Z
 NORTHERN FAIRFIELD-NORTHERN NEW HAVEN-ORANGE-PUTNAM-ROCKLAND-NORTHERN WESTCHESTER
 INCLUDING CITIES OF .DANBURY .SHELTON .TRUMBULL
 WATERBURY .MERIDEN .NAUGATUCK .NEWBURGH .MIDDLETOWN
 KIRYAS JOEL .NEW WINDSOR .SCOTCHTOWN .PORT JERVIS .MONROE
 LAKE CARMEL .MAHOPAC .PUTNAM LAKE .BREWSTER HILL .NEW CITY
 SPRING VALLEY .NANUET .PEARL RIVER .MONSEY .STONY POINT
 SUFFERN .OSSINING .PEEKSKILL .JEFFERSON VALLEY-YORKTOWN
 TARREY TOWN .DOBBS FERRY .MOUNT KISCO .YORKTOWN HEIGHTS
 944 PM EDT MON SEP 8 2008

... WINTER STORM WARNING REMAINS IN EFFECT UNTIL 6 AM EDT TUESDAY...

A WINTER STORM WARNING FOR HEAVY SNOW REMAINS IN EFFECT UNTIL 6 AM EDT TUESDAY.

HEAVY SNOW WILL CONTINUE OVERNIGHT... WITH 8 TO 12 INCHES OF TOTAL ACCUMULATION BEFORE THE SNOW ENDS LATE TONIGHT... NORTHEAST WINDS AT 15 TO 25 MPH WILL BECOME NORTH OVERNIGHT... PRODUCING SOME BLOWING AND DRIFTING OF SNOW.
 A WINTER STORM WARNING MEANS SIGNIFICANT AMOUNTS OF SNOW IS EXPECTED OR OCCURRING... STRONG WINDS ARE ALSO POSSIBLE... THIS WILL MAKE TRAVEL VERY HAZARDOUS OR IMPOSSIBLE.
 \$\$

Manually edit

20. Example 3b: CON With No Change in Event Type - Unedited Attribution Line

Instructor Notes: Or, follow Example 3B – Don't edit the attribution line but use clear writing techniques to either ensure existing language within the body text still conveys the event-specific reasoning, or to update the text if needed. Your Region may provide further guidance as to their preferred option.

Student Notes:

AWOC Winter Weather Track

Example 3b: CON With No Change in Event Type - Unedited Attribution Line

Case 3b - WS.W Continuation with No Change in Event Type, Attribution Line Unedited (After Simplification)

CTZ005-006-NYZ067-070-090444
 ID.CON.KOKX.WS.W.0001.080909T0200Z.080909T1000Z
 NORTHERN FAIRFIELD-NORTHERN NEW HAVEN-ORANGE-PUTNAM-ROCKLAND-NORTHERN WESTCHESTER
 INCLUDING CITIES OF .DANBURY .SHELTON .TRUMBULL
 WATERBURY .MERIDEN .NAUGATUCK .NEWBURGH .MIDDLETOWN
 KIRYAS JOEL .NEW WINDSOR .SCOTCHTOWN .PORT JERVIS .MONROE
 LAKE CARMEL .MAHOPAC .PUTNAM LAKE .BREWSTER HILL .NEW CITY
 SPRING VALLEY .NANUET .PEARL RIVER .MONSEY .STONY POINT
 SUFFERN .OSSINING .PEEKSKILL .JEFFERSON VALLEY-YORKTOWN
 TARREY TOWN .DOBBS FERRY .MOUNT KISCO .YORKTOWN HEIGHTS
 944 PM EDT MON SEP 8 2008

... WINTER STORM WARNING REMAINS IN EFFECT UNTIL 6 AM EDT TUESDAY...

A WINTER STORM WARNING REMAINS IN EFFECT UNTIL 6 AM EDT TUESDAY.

HEAVY SNOW WILL CONTINUE OVERNIGHT... WITH 8 TO 12 INCHES OF TOTAL ACCUMULATION BEFORE THE SNOW ENDS LATE TONIGHT... NORTHEAST WINDS AT 15 TO 25 MPH WILL BECOME NORTH OVERNIGHT... PRODUCING SOME BLOWING AND DRIFTING OF SNOW.
 A WINTER STORM WARNING MEANS SIGNIFICANT AMOUNTS OF SNOW IS EXPECTED OR OCCURRING... STRONG WINDS ARE ALSO POSSIBLE... THIS WILL MAKE TRAVEL VERY HAZARDOUS OR IMPOSSIBLE.
 \$\$

21. When Does New Policy Take Effect?

Instructor Notes: The service change notice was issued May 12 2008 and announced a Sept 9 implementation. Meanwhile AWIPS GHG software is being modified in Build 8.3.1 to eliminate the VTEC codes that will no longer be used. This build will be fielded in the Sept-Nov 2008 time frame.

Student Notes:

AWOC Winter Weather Track

When Does New Policy Take Effect?

- Service Change Notice issued May 12
- September 9 implementation
- Note, GHG will be modified in AWIPS Build 8.3.1 to eliminate unused VTEC codes HS, IP, LB, AND SN (will be fielded Fall 2008)

22. Winter Weather Directives

Instructor Notes: To reflect the results of the surveys and clarify confusing policy, new policy directives were agreed upon by NWS Headquarters and the Regions. Winter weather policy is contained within the broad scope of the Public Weather Services Policy Directive 10-5, which defines the mission critical, high level public weather warning policies. 2 Instructions, 10-513 and 10-514, specify requirements for Winter Weather Products issued by Weather Forecast Offices and NCEP Hydrometeorological Prediction Center, respectively. For the purposes of this training module, we will focus on the 10-513, WFO Winter Weather Products. 2 Instructions, 10-515 and 10-516, specify requirements for Non-Precipitation Products, such as high winds or freeze warnings, issued by WFOs and NCEP, respectively. All current directives and associated instructions are available on the Directives home page.

Student Notes:

AWOC Winter Weather Track

Winter Weather Directives

- Policy Directive 10-5, **Public Weather Services**
 - *Defines the mission critical, high level public weather warning policy*
- NWS Instruction 10-513, **WFO Winter Weather Products Specification**
- NWS Instruction 10-514, **National Winter Weather Products Specification**
- NWS Instruction 10-515, **WFO Non-Precipitation Product Specification**
- NWS Instruction 10-516, **National Non-Precipitation Weather Products Specification**
- Directives Web Page: <http://www.nws.noaa.gov/directives/>

23. Instruction 10-513: Issuance Criteria Defined

Instructor Notes: Instruction 10-513 defines 3 types of issuance criteria for products issued by WFOs based on probability of occurrence and when local warning criteria are likely to be met. A Winter Storm Outlook is issued using a Special Weather Statement (SPS) or Hazardous Weather Outlook (HWO) when there is a 30% or greater chance of a hazardous winter weather event exceeding local warning criteria in the next 3-7 days. This product is intended to provide information to those who need considerable lead time to prepare for the event. A Winter Storm Watch is issued using a WSW when there is a 50% or greater chance of a hazardous winter weather event meeting or exceeding local warning criteria in the next 12 to 48 hours. In some cases forecaster confidence may lead to a watch issuance for beyond 48 hours but this is not specifically addressed in the Instruction. Although a watch indicates the risk of a hazardous winter weather event has increased, the occurrence, location, and/or timing is still uncertain. A Winter Storm Warning or Advisory is issued when there is a 80% or greater likelihood of a hazardous winter weather event meeting or exceeding local warning criteria in the next 36 hours. A warning is used for conditions posing a threat to life or property. An advisory is for less serious conditions that cause significant inconvenience and, if caution is not exercised, could lead to situations that may threaten life and/or property. In some cases forecaster confidence may lead to a warning issuance for beyond 36 hours but this is not specifically addressed in the Instruction.

Student Notes:

AWOC Winter Weather Track

Instruction 10-513: Issuance Criteria Defined

- Winter Storm Outlook (SPS or HWO):
 - ≥ 30% chance of a hazardous winter weather event exceeding local warning criteria in the next 3-to-7 days
- Winter Storm Watch:
 - ≥ 50% chance of a hazardous winter weather event meeting or exceeding local warning criteria in the next 12 to 48 hours
 - Note: We did not address periods beyond 48 hours
- Winter Weather Warning and Advisories:
 - ≥ 80% chance of a hazardous winter weather event meeting or exceeding local warning criteria in the next 36 hours

24. Impact-Based Winter Warnings

Instructor Notes: This table summarizes issuance criteria for impact based winter warning products. Policy clearly states these categories should be used when the precipitation type can be determined with a high level of confidence. When confidence is low for a predominant winter weather precipitation type or more than one type is expected, the WFO forecast team will issue a Winter Storm Warning.

Student Notes:

Impact-Based Winter Warnings	
Winter Weather Product	Issuance Criteria
Blizzard Warning	1) Sustained wind or frequent gusts > 35 mph 2) Falling and/or blowing snow reducing visibility < ¼ mile for at least 3 hours
Ice Storm Warning	Ice accumulation meeting or exceeding locally defined warning criteria (typical value > ¼ inch)
Winter Storm Warning	Winter weather event having one or more hazards: Heavy snow, Sleet; Heavy snow and blowing snow (below blizzard conditions), Snow and ice, Sleet and ice, Snow, sleet and ice

25. Impact-Based Winter Advisories

Instructor Notes: The 4 Winter Weather Advisory categories are shown.

Student Notes:

Impact-Based Winter Advisories	
Winter Weather Product	Issuance Criteria
Freezing Rain Advisory	Light ice accumulation (freezing rain and/or freezing drizzle) meeting or exceeding locally defined advisory criteria, but remaining below warning criteria.
Lake Effect Snow Advisory	Widespread or localized lake effect snowfall accumulation reaching or exceeding locally defined advisory criteria, but remaining below warning criteria, regardless of wind speed.
Wind Chill Advisory	Wind chill temperatures reaching or exceeding locally defined advisory criteria, but remaining below warning criteria.
Winter Weather Advisory	Winter weather event having one or more hazard such as: Snow; Sleet; Snow and ice; Snow and sleet; or Snow, Sleet, and ice) meeting or exceeding locally defined 12 and/or 24 hour advisory criteria for at least one of the precipitation elements, but remaining below warning criteria.

26. winter-products

Instructor Notes:

Student Notes:

27. SCENARIO # 1

Instructor Notes: Based on field input, several scenarios are presented to help you decide what product to issue. A complex winter storm event is expected to produce 8" of snow in the northern part of your CWA, 1-2" of sleet and 4 inches of snow in central part of your CWA, and 1/2" of ice in the southern part of your CWA. Winds are expected to be 10 to 20 m.p.h. across the north with some local blowing snow. What product (s) should be issued? A) Three separate warnings – Heavy Snow Warning north, Winter Storm warning central, and Ice Storm Warning south, B) Two separate warnings – Winter Storm Warning north and central, and Ice Storm Warning south, or C) Single Winter Storm Warning for the entire CWA.

Student Notes:

AWOC Winter Weather Track

SCENARIO # 1

A complex winter storm event is expected to produce 8" of snow in the northern part of your CWA, 1-2" of sleet and 4 inches of snow in central part of your CWA, and 1/2" of ice in the southern part of your CWA. Winds are expected to be 10 to 20 mph across the north with some local blowing snow.

What product (s) should be issued?

- A) Three separate warnings – Heavy Snow Warning north, Winter Storm warning central, and Ice Storm Warning south
- B) Two separate warnings – Winter Storm Warning north and central, and Ice Storm Warning south.
- C) Single Winter Storm Warning for the entire CWA

Advance to next slide to hear the answer

Winter Weather Product Quiz

28. SCENARIO # 1 (answer)

Instructor Notes: The answer is B, Two separate warnings –since there is no longer a Heavy Snow Warning, a Winter Storm Warning will cover the north and central areas (use Heavy Snow in attribution text), and an Ice Storm Warning in the south is needed. Wind speed in this case is irrelevant.

Student Notes:

AWOC Winter Weather Track

SCENARIO # 1

A complex winter storm event is expected to produce 8" of snow in the northern part of your CWA, 1-2" of sleet and 4 inches of snow in central part of your CWA, and ½" of ice in the southern part of your CWA. Winds are expected to be 10 to 20 mph across the north with some local blowing snow.

What product (s) should be issued?

- A) Three separate warnings – Heavy Snow Warning north, Winter Storm Warning central, and Ice Storm Warning south
- B) Two separate warnings – Winter Storm Warning north and central, and Ice Storm Warning south.**
- C) Single Winter Storm Warning for the entire CWA

Winter Weather Product Quiz

29. SCENARIO # 2

Instructor Notes: Question 2 – Cold air advection behind a strong cold front is expected to change the precipitation from rain to snow. Heavy snow is expected for elevated areas. Wind speeds of 15 to 25 m.p.h. with a few gusts to 35 m.p.h. are expected. Some localized blowing snow is also possible. What winter weather product should be issued for elevated zones? A) Winter Storm Warning, B) Blizzard Warning, C) Heavy Snow Warning, or D) Winter Weather Advisory.

Student Notes:

AWOC Winter Weather Track

SCENARIO # 2

Question 2 – Cold air advection behind a strong cold front is expected to change the precipitation from rain to snow. Heavy snow is expected for elevated areas. Wind speeds of 15 to 25 mph with a few gusts to 35 mph are expected. Some localized blowing snow is also possible.

What winter weather product should be issued for elevated zones?

- A) Winter Storm Warning
- B) Blizzard Warning
- C) Heavy Snow Warning
- D) Winter Weather Advisory

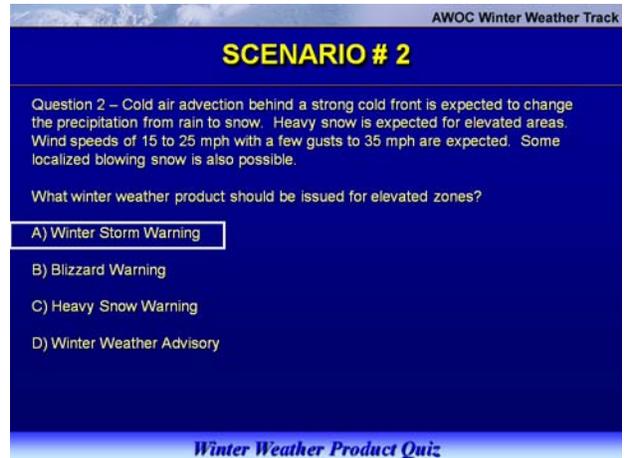
Advance to next slide to hear the answer

Winter Weather Product Quiz

30. SCENARIO # 2 (answer)

Instructor Notes: The answer is A, a Winter Storm Warning. Pay close attention to criteria. Winds are too low to meet Blizzard and there is no longer a Heavy Snow Warning.

Student Notes:



AWOC Winter Weather Track

SCENARIO # 2

Question 2 – Cold air advection behind a strong cold front is expected to change the precipitation from rain to snow. Heavy snow is expected for elevated areas. Wind speeds of 15 to 25 mph with a few gusts to 35 mph are expected. Some localized blowing snow is also possible.

What winter weather product should be issued for elevated zones?

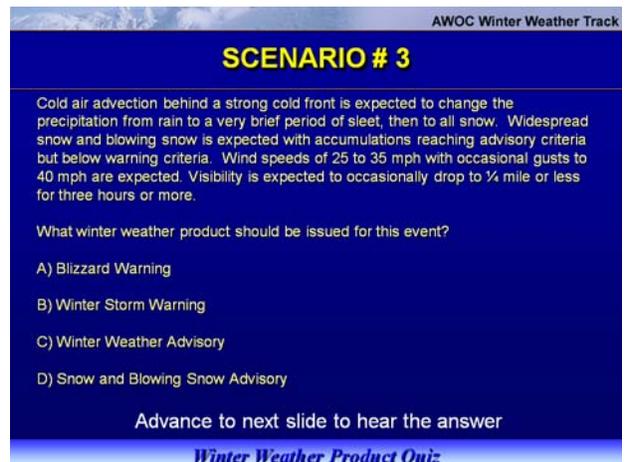
- A) Winter Storm Warning
- B) Blizzard Warning
- C) Heavy Snow Warning
- D) Winter Weather Advisory

Winter Weather Product Quiz

31. SCENARIO # 3

Instructor Notes: Cold air advection behind a strong cold front is expected to change the precipitation from rain, to a very brief period of sleet, then to all snow. Widespread snow and blowing snow is expected with accumulations reaching advisory criteria but below warning criteria. Wind speeds of 25 to 35 m.p.h. with occasional gusts to 40 m.p.h. are expected. Visibility is expected to occasionally drop to 1/4 mile or less for three hours or more. What winter weather product should be issued for this event? A) Blizzard Warning, B) Winter Storm Warning, C) Winter Weather Advisory, or D) Snow and Blowing Snow Advisory. Hint: pay close attention to criteria.

Student Notes:



AWOC Winter Weather Track

SCENARIO # 3

Cold air advection behind a strong cold front is expected to change the precipitation from rain to a very brief period of sleet, then to all snow. Widespread snow and blowing snow is expected with accumulations reaching advisory criteria but below warning criteria. Wind speeds of 25 to 35 mph with occasional gusts to 40 mph are expected. Visibility is expected to occasionally drop to 1/4 mile or less for three hours or more.

What winter weather product should be issued for this event?

- A) Blizzard Warning
- B) Winter Storm Warning
- C) Winter Weather Advisory
- D) Snow and Blowing Snow Advisory

Advance to next slide to hear the answer

Winter Weather Product Quiz

32. SCENARIO # 3 (answer)

Instructor Notes: You have to pay close attention to criteria here. The answer is C, issue a Winter Weather Advisory. The wind speed and visibility criteria are not met for a blizzard warning, and snow amount is below winter storm warning criteria. Option D is not a valid product anymore.

Student Notes:

AWOC Winter Weather Track

SCENARIO # 3

Cold air advection behind a strong cold front is expected to change the precipitation from rain, to a very brief period of sleet, then to all snow. Widespread snow and blowing snow is expected with accumulations reaching advisory criteria but below warning criteria. Wind speeds of 25 to 35 mph with occasional gusts to 40 mph are expected. Visibility is expected to occasionally drop to ¼ mile or less for three hours or more.

What winter weather product should be issued for this event?

- A) Blizzard Warning
- B) Winter Storm Warning
- C) Winter Weather Advisory
- D) Snow and Blowing Snow Advisory

Wind Speed and visibility criteria not met

Not a valid product

Winter Weather Product Quiz

33. SCENARIO # 4

Instructor Notes: A Nor'Easter is expected to bring heavy snow to the northwestern 1/3 of your CWA. The remaining 2/3 of your CWA is expected to receive heavy snow. Then, as the dry slot aloft moves in, the precipitation briefly changes to some patchy freezing drizzle before ending. Wind speeds are expected to be less than 15 m.p.h. What winter weather product should be issued for this event? A) Single Heavy Snow Warning for the entire CWA, B) Single Winter Storm Warning for the entire CWA, or C) Two Separate Warnings – Heavy Snow Warning NW 1/3 and Winter Storm Warning SE 2/3. Note: the key word is “predominant”.

Student Notes:

AWOC Winter Weather Track

SCENARIO # 4

A Nor'Easter is expected to bring heavy snow to the northwestern 1/3 of your CWA. The remaining 2/3 of your CWA is expected to receive heavy snow, then as the dry slot aloft moves in, the precipitation briefly changes to some patchy freezing drizzle before ending. Wind speeds are expected to be less than 15 mph.

What winter weather product should be issued for this event?

- A) Single Heavy Snow Warning for the entire CWA
- B) Single Winter Storm Warning for the entire CWA
- C) Two Separate Warnings – Heavy Snow Warning NW 1/3 and Winter Storm Warning SE 2/3
- D) Two Separate Warnings – Winter Storm Warning NW 1/3 and Ice Storm Warning SE 2/3

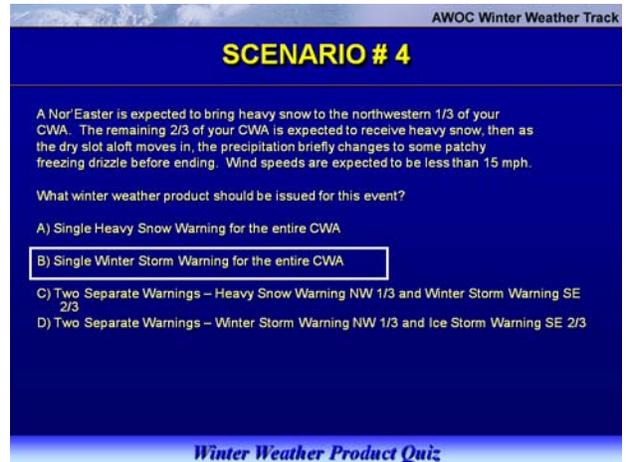
Advance to next slide to hear the answer

Winter Weather Product Quiz

34. SCENARIO # 4 (answer)

Instructor Notes: The answer is B, issue a single Winter Storm Warning for the entire CWA. The predominant precipitation is heavy snow.

Student Notes:



AWOC Winter Weather Track

SCENARIO # 4

A Nor'Easter is expected to bring heavy snow to the northwestern 1/3 of your CWA. The remaining 2/3 of your CWA is expected to receive heavy snow, then as the dry slot aloft moves in, the precipitation briefly changes to some patchy freezing drizzle before ending. Wind speeds are expected to be less than 15 mph.

What winter weather product should be issued for this event?

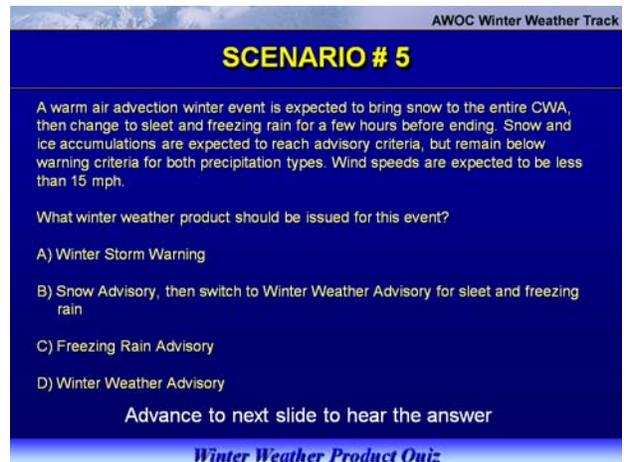
- A) Single Heavy Snow Warning for the entire CWA
- B) Single Winter Storm Warning for the entire CWA
- C) Two Separate Warnings – Heavy Snow Warning NW 1/3 and Winter Storm Warning SE 2/3
- D) Two Separate Warnings – Winter Storm Warning NW 1/3 and Ice Storm Warning SE 2/3

Winter Weather Product Quiz

35. SCENARIO # 5

Instructor Notes: Question 5 – A warm air advection winter event is expected to bring snow to the entire CWA, then change to sleet and freezing rain for a few hours before ending. Snow and ice accumulations are expected to reach advisory criteria, but remain below warning criteria for both precipitation types. Wind speeds are expected to be less than 15 m.p.h. What winter weather product should be issued for this event? A) Winter Storm Warning, B) Snow Advisory, then switch to Winter Weather Advisory for sleet and freezing rain, C) Freezing Rain Advisory, or D) Winter Weather Advisory.

Student Notes:



AWOC Winter Weather Track

SCENARIO # 5

A warm air advection winter event is expected to bring snow to the entire CWA, then change to sleet and freezing rain for a few hours before ending. Snow and ice accumulations are expected to reach advisory criteria, but remain below warning criteria for both precipitation types. Wind speeds are expected to be less than 15 mph.

What winter weather product should be issued for this event?

- A) Winter Storm Warning
- B) Snow Advisory, then switch to Winter Weather Advisory for sleet and freezing rain
- C) Freezing Rain Advisory
- D) Winter Weather Advisory

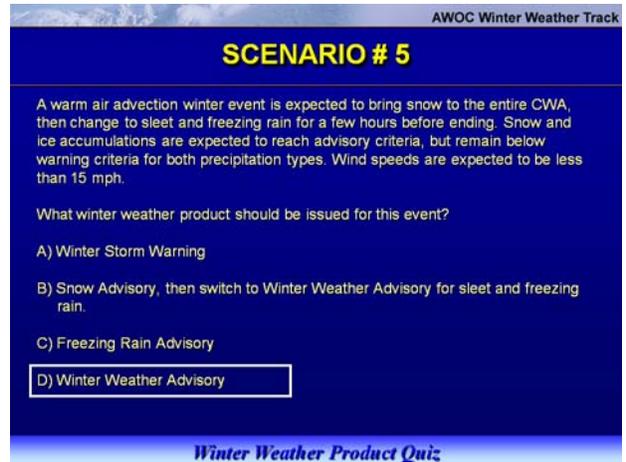
Advance to next slide to hear the answer

Winter Weather Product Quiz

36. SCENARIO # 5 (answer)

Instructor Notes: The correct answer is D, issue a Winter Weather Advisory (WWA), since mixed precipitation types met advisory criteria. However, in the event the snow was just below criteria, a Freezing Rain Advisory would be appropriate

Student Notes:



AWOC Winter Weather Track

SCENARIO # 5

A warm air advection winter event is expected to bring snow to the entire CWA, then change to sleet and freezing rain for a few hours before ending. Snow and ice accumulations are expected to reach advisory criteria, but remain below warning criteria for both precipitation types. Wind speeds are expected to be less than 15 mph.

What winter weather product should be issued for this event?

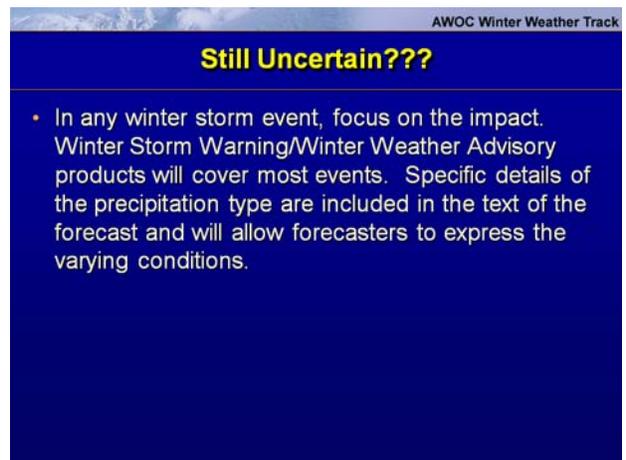
- A) Winter Storm Warning
- B) Snow Advisory, then switch to Winter Weather Advisory for sleet and freezing rain.
- C) Freezing Rain Advisory
- D) Winter Weather Advisory

Winter Weather Product Quiz

37. Still Uncertain???

Instructor Notes: Although we as forecasters should try to provide the most accurate picture of what is to occur, there are situations that are rapidly changing, have tight gradients, or are just too close to call. If the forecaster feels there is too much uncertainty in the specific precipitation type, use the more inclusive Winter Storm Warning or Winter Weather Advisory. In most areas this will be the norm!

Student Notes:



AWOC Winter Weather Track

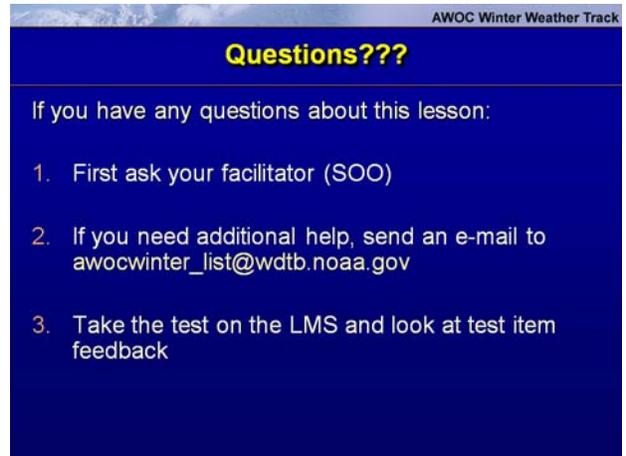
Still Uncertain???

- In any winter storm event, focus on the impact. Winter Storm Warning/Winter Weather Advisory products will cover most events. Specific details of the precipitation type are included in the text of the forecast and will allow forecasters to express the varying conditions.

38. Questions???

Instructor Notes: There are more scenarios on the LMS test. After going through this lesson if you have any questions, first ask your SOO (or your WCM about specific product formatting). Your SOO is your local facilitator and should be able to help answer many questions about AWOC. If you need additional info other than what your SOO provided, send an e-mail to the address on the slide. This address sends the message to all the instructors involved with this IC. Our answer will be CC'd to your SOO so that they can answer any similar questions that come up in the future. We may also consider the question and answer for our FAQ page. Thanks for your time and good luck on the exam!

Student Notes:



AWOC Winter Weather Track

Questions???

If you have any questions about this lesson:

1. First ask your facilitator (SOO)
2. If you need additional help, send an e-mail to awocwinter_list@wdtb.noaa.gov
3. Take the test on the LMS and look at test item feedback