Warning Operations
Seasonal Readiness Tools in 2017

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Warning Decision Training Division

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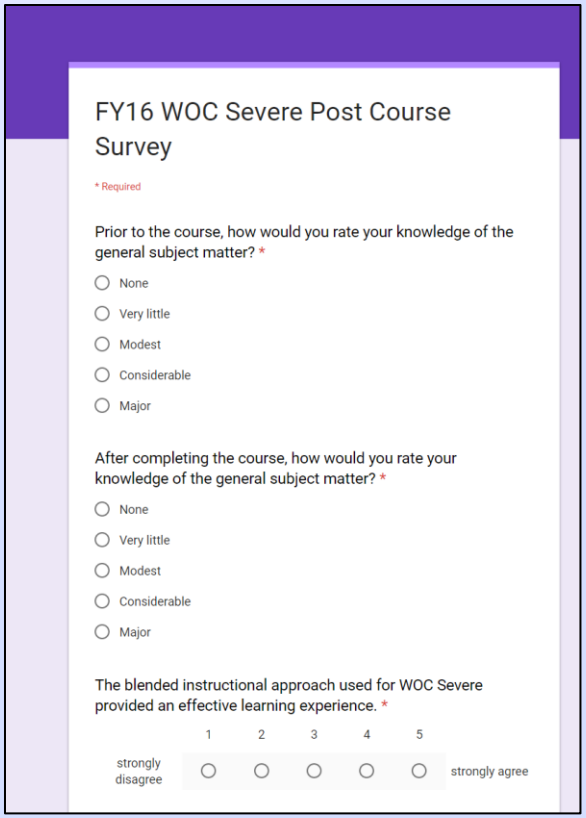
December 7, 2016

2016 SOO Development Course

Methods for Determining Needs for Seasonal Readiness

- Direct observation
- Questionnaires
- Consultation with individuals
- Review of relevant studies
- Interviews
- Assessments and/or surveys
- Case Study WES-2 Reviews
- Work samples



FY16 WOC Severe Post Course Survey

* Required

Prior to the course, how would you rate your knowledge of the general subject matter? *

- None
- Very little
- Modest
- Considerable
- Major

After completing the course, how would you rate your knowledge of the general subject matter? *

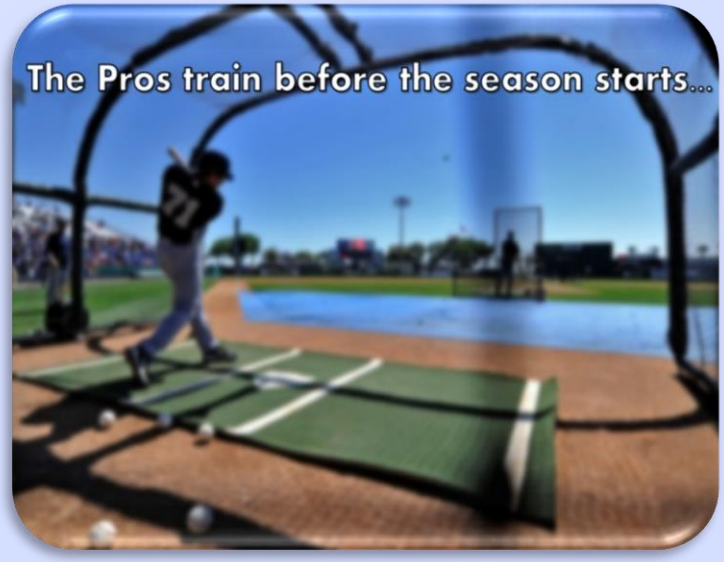
- None
- Very little
- Modest
- Considerable
- Major

The blended instructional approach used for WOC Severe provided an effective learning experience. *

	1	2	3	4	5	
strongly disagree	○	○	○	○	○	strongly agree

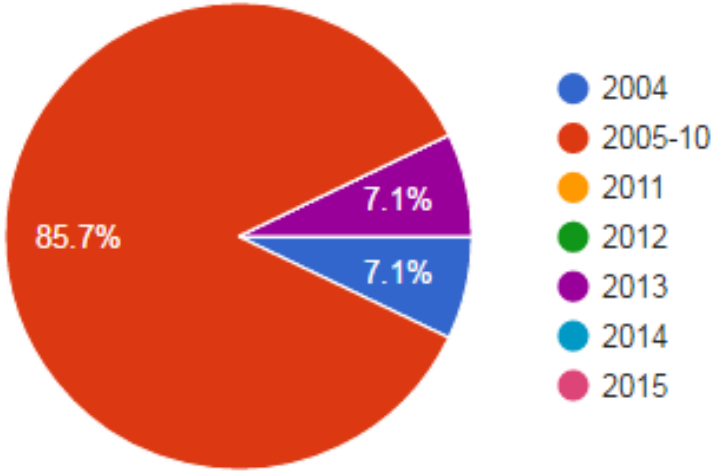
Enhancing Warning Operations Training

- Warning Training Requirements
  - Existing Warning Skills Require Refreshing
  - New Science & Technology Requires Integration
- Seasonal Readiness Training
  - Move from “One & Done” to Continuous Learning
  - Maximize Limited Training Time
  - Tailored Training to focus on the Individual Forecaster
  - Enhance SOO Effectiveness



WFO Connection Program – Summer 2016
Warning Operations Training

3) Other than a Meteorologist Intern (MIT), when was the last time someone in your staff completed AWOC (WOC)?

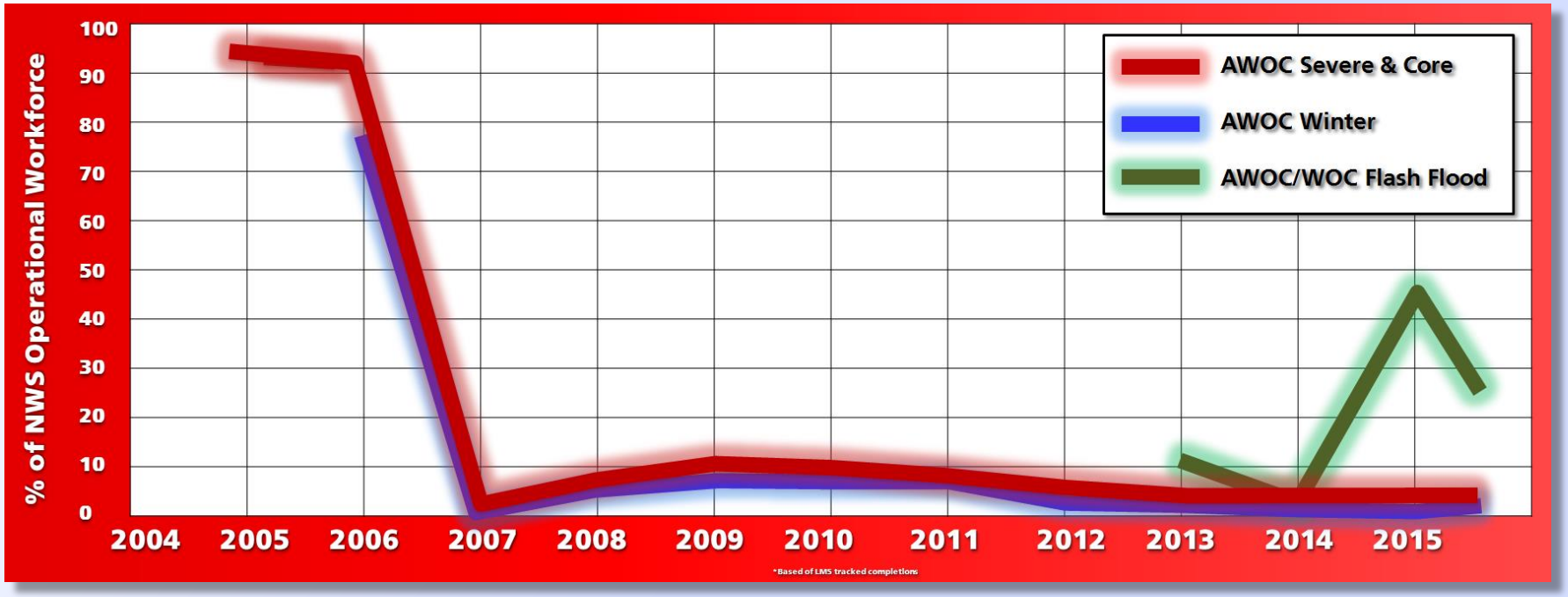


Offices = 11
Responses = 67

Warning Operations Courses

Course	Year	Completions
Core Decision Making	2004	2000
Severe Weather	2004	1600
Winter Weather	2005	1200
Flash Flood	2014	900
Core, Severe, Winter, Flash Flood	2016	55*

* average



Flash Flood Seasonal Readiness Training (FY17)

Length	IC 1: Conceptual Models of Flash Flood Events
15 min	1. Synoptic-Scale Pattern Recognition
20 min	2. Ingredients-Based Methodology
20 min	3. Other Mechanisms That Trigger Flash Floods
20 min	4. Integrating Climatology
	IC 2: Recognizing High-Impact Hydro Events
15 min	1. On the Value of Anomalies
20 min	2. Ensembles and Anomalies
15 min	3. Introduction to Average Recurrence Intervals (ARIs)
25 min	4. Using ARIs in AWIPS
10 min	5. Web-Based Tools for Flash Flooding
	IC 3: Flash Flood Warning Best Practices
15 min	1. Choosing Your Precipitation & Guidance Sources
20 min	2. Using FFMP
20 min	3. Hydro Products Decision Tree
15 min	4. Flash Flood Warning Fundamentals
20 min	5. Flash Flood Emergency Overview
	WES-2 Bridge Simulations
1.5 hrs	1. Simulation Application #1
1.5 hrs	2. Simulation Application #2
45 min	3. Simulation Application #3

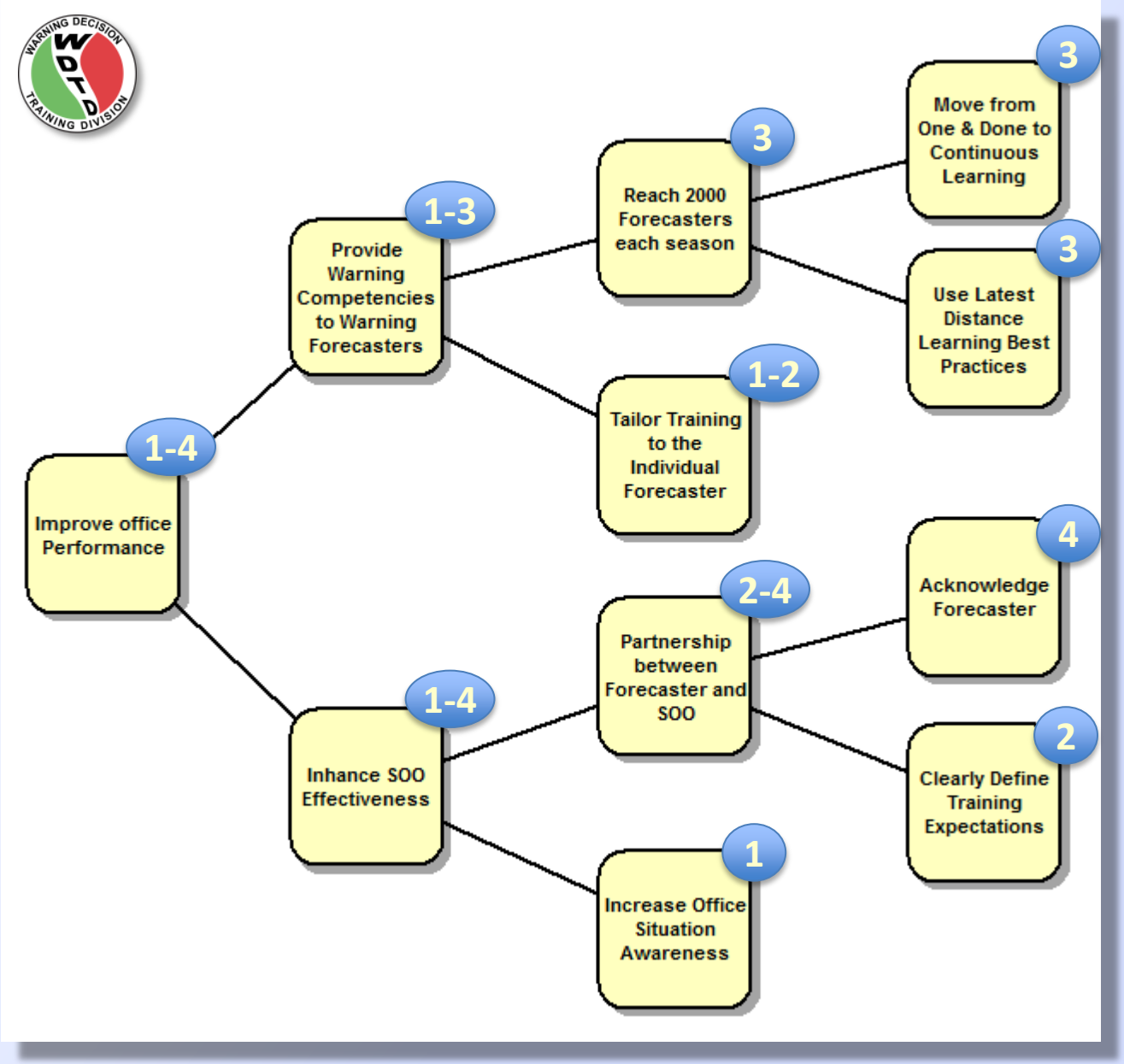
Updated for FY17

New in FY17

Includes new tools and products, focuses on enhanced wording

Total: ~ 7 hours (new material: ~2 hours)

A Seasonal Readiness Training RCA



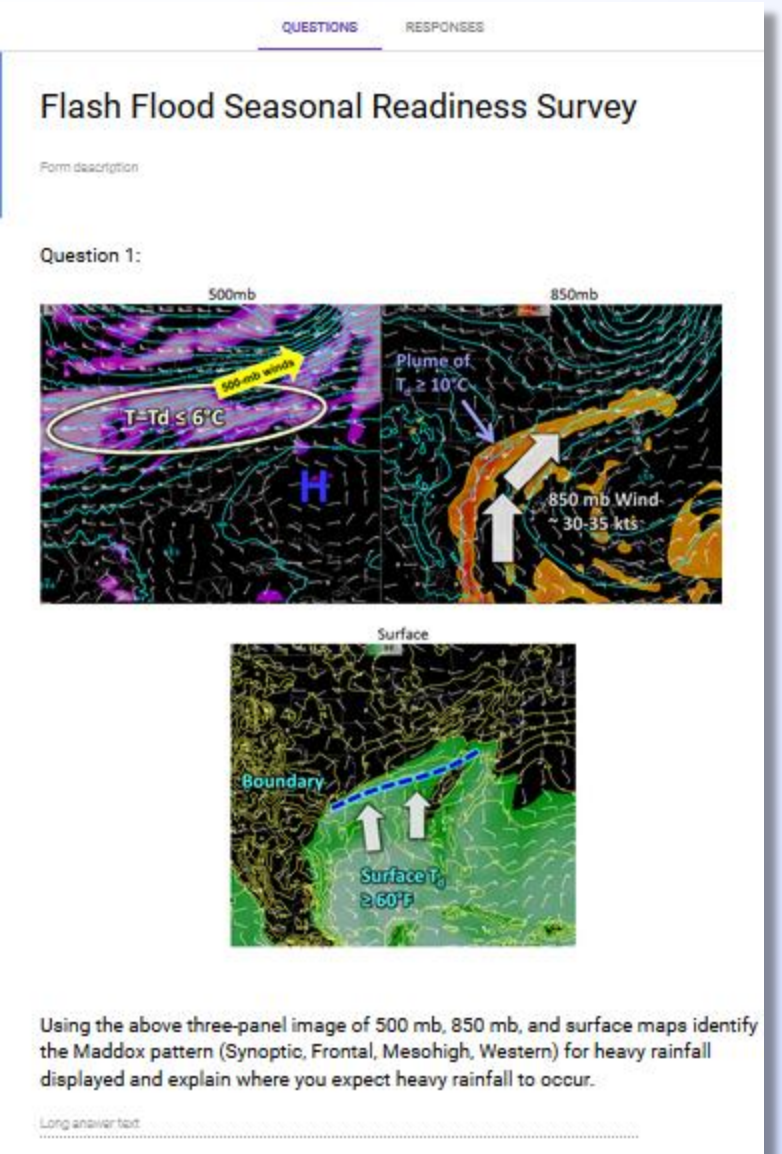
Seasonal Readiness Tool #1
Office Status Report

	11	Synoptic-Scale Pattern Recognition
	12	Ingredients-Based Methodology
	13	WOC Flash Flood Track IC 1, Lesson 3: Other Events that Trigger Flash Flooding
	14	Integrating Climatology
	21	On the Value of Anomalies
	22	Ensembles and Anomalies
	23	Introduction to Average Recurrence Intervals (ARIs)
	24	Using Average Recurrence Intervals (ARIs) in AWIPS
	25	Web-Based Tools for Flash Flooding
	31	Choosing Your Precipitation & Guidance Sources
	32	Warning Operations Using FFMP
	33	Hydro Products Decision Tree
	34	Flash Flood Warning Fundamentals
	35	WOC Flash Flood Track IC 3: How and When to Use "Flash Flood Emergency"
	W1	Simulation Application #1
	W2	Simulation Application #2
	W3	Simulation Application #3

# Lessons	Name	Office	Region	Last Completion	Not Completed
10	BANACOS, PETER	BURLINGTON WFO VERMONT	ER	9/2/2016	23 24 25 31 32 33 W3
10	DEAL, ROBERT	BURLINGTON WFO VERMONT	ER	9/26/2016	23 24 25 31 32 33 W3
10	GOFF, JOHN	BURLINGTON WFO VERMONT	ER	10/1/2016	23 24 25 31 32 33 W3
10	HANLEY, WILLIAM	BURLINGTON WFO VERMONT	ER	9/22/2016	23 24 25 31 32 33 W3
10	LAHIFF, CONOR	BURLINGTON WFO VERMONT	ER	9/27/2016	23 24 25 31 32 33 W3
10	LOCONTO, ANDREW	BURLINGTON WFO VERMONT	ER	4/13/2016	23 24 25 31 32 33 W3
10	MCMAHON, KIMBERLY	BURLINGTON WFO VERMONT	ER	9/9/2016	23 24 25 31 32 33 W3
10	NASH, ANDREW	BURLINGTON WFO VERMONT	ER	9/4/2016	23 24 25 31 32 33 W3
10	NEILES, JESSICA	BURLINGTON WFO VERMONT	ER	7/28/2016	23 24 25 31 32 33 W3
10	SISSON, PAUL	BURLINGTON WFO VERMONT	ER	9/28/2016	23 24 25 31 32 33 W3
10	TABER, BROOKE	BURLINGTON WFO VERMONT	ER	5/2/2016	23 24 25 31 32 33 W3
10	WHITTIER, SCOTT	BURLINGTON WFO VERMONT	ER	9/30/2016	23 24 25 31 32 33 W3
8	EVENSON, ERIC	BURLINGTON WFO VERMONT	ER	10/31/2016	23 24 25 31 32 33 W1 W2 W3
2	SCHIESSER, ROBERT	BURLINGTON WFO VERMONT	ER	4/26/2015	11 12 13 14 23 24 25 31 32 33 34 35 W1 W2 W3

- Course Status of all 1340s in your WFO
  - Show completions of all Modules in a Warning Operations Course

Seasonal Readiness Tool #2
Training Needs Questionnaire



QUESTIONS RESPONSES

Flash Flood Seasonal Readiness Survey

Form description

Question 1:

Using the above three-panel image of 500 mb, 850 mb, and surface maps identify the Maddox pattern (Synoptic, Frontal, Mesohigh, Western) for heavy rainfall displayed and explain where you expect heavy rainfall to occur.

Long answer text

- Can be implemented by all, some, or none of the forecasters
- Can customize by forecaster to cover all, some, or none of the questions
- Used along with Office Status Report
- If you're not aware of it… you can't manage it

Seasonal Readiness Tool #2
Training Needs Questionnaire Answer Key

Question 8: What are the objectives of a Root Cause Analysis (RCA)?
Identify the root causes of faults, problems and successes. This is done by identifying a problem statement, investigating to gather facts, and to build out causal factors until you arrive at a root cause.

Question 9: Identify methods for battling fake images submitted by spotters and the general public.
Does the image make sense? Does it look like it is where they say it is, is it likely to have occurred, do others have the same basic image? Is it from a legitimate/verified social media account? Use google image search or tin eye.

Question 10: Identify the five characteristics of effective warnings.
The messages contain wording that is specific, consistent, contains a tone of certainty, is clear, and accurate.

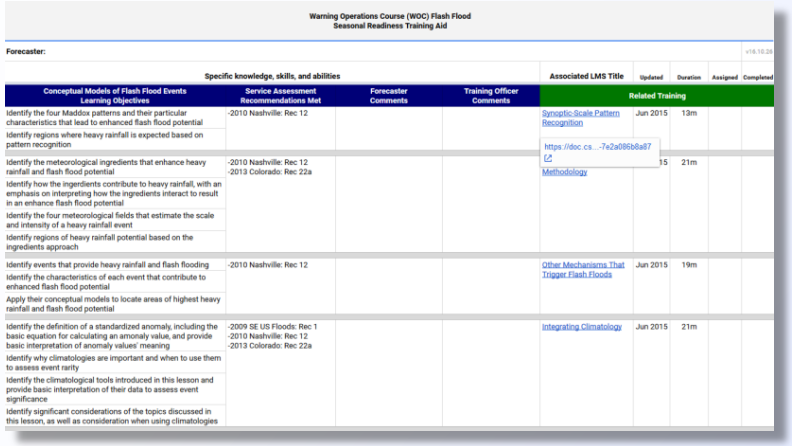
Question 11: Identify methods by which NWS can increase trust with the public.
By providing and updating of credible, truthful and consistent information.

Question 12: Using the concept of implicit communication, what are effective strategies for engagement and reciprocation when communicating risk.
Engage as a peer, not as a government authority. Be implicit, not explicit, and respond to questions.

Question 13: What is a key objective for NWS social media operations during quiet weather?
Keep your audience engaged, and growing by providing valuable content, information or photos.

Seasonal Readiness Tool #3

Customizing Training to Each of Your Forecasters

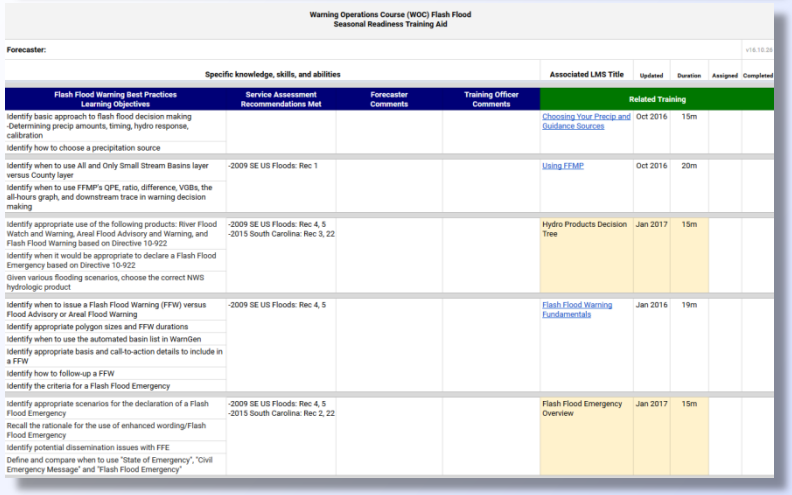


Warning Operations Course (WOC) Flash Flood
Seasonal Readiness Training Aid

Forecaster:

v16.10.26

Specific knowledge, skills, and abilities				Associated LMS Title	Updated	Duration	Assigned	Completed
Conceptual Models of Flash Flood Events Learning Objectives	Service Assessment Recommendations Met	Forecaster Comments	Training Officer Comments	Related Training				
Identify the four Maddox patterns and their particular characteristics that lead to enhanced flash flood potential	-2010 Nashville: Rec 12			Synoptic-Scale Pattern Recognition	Jun 2015	13m		
Identify regions where heavy rainfall is expected based on pattern recognition								
Identify the meteorological ingredients that enhance heavy rainfall and flash flood potential	-2010 Nashville: Rec 12 -2013 Colorado: Rec 22a			https://doc.cs...-7e2a086b8a87		15 21m		
Identify how the ingredients contribute to heavy rainfall, with an emphasis on interpreting how the ingredients interact to result in an enhance flash flood potential				Methodology				
Identify the four meteorological fields that estimate the scale and intensity of a heavy rainfall event								
Identify regions of heavy rainfall potential based on the ingredients approach								
Identify events that provide heavy rainfall and flash flooding	-2010 Nashville: Rec 12			Other Mechanisms That Trigger Flash Floods	Jun 2015	19m		
Identify the characteristics of each event that contribute to enhanced flash flood potential								
Apply their conceptual models to locate areas of highest heavy rainfall and flash flood potential								
Identify the definition of a standardized anomaly, including the basic equation for calculating an amonaly value, and provide basic interpretation of anomaly values' meaning	-2009 SE US Floods: Rec 1 -2010 Nashville: Rec 12 -2013 Colorado: Rec 22a			Integrating Climatology	Jun 2015	21m		
Identify why climatologies are important and when to use them to assess event rarity								
Identify the climatological tools introduced in this lesson and provide basic interpretation of their data to assess event significance								
Identify significant considerations of the topics discussed in this lesson, as well as consideration when using climatologies								

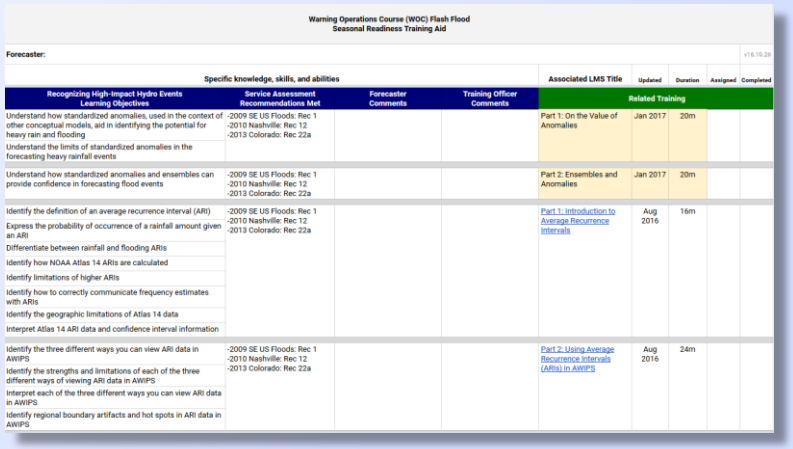


Warning Operations Course (WOC) Flash Flood
Seasonal Readiness Training Aid

Forecaster:

v16.10.26

Specific knowledge, skills, and abilities				Associated LMS Title	Updated	Duration	Assigned	Completed
Flash Flood Warning Best Practices Learning Objectives	Service Assessment Recommendations Met	Forecaster Comments	Training Officer Comments	Related Training				
Identify basic approach to flash flood decision making -Determining precip amounts, timing, hydro response, calibration				Choosing Your Precip and Guidance Sources	Oct 2016	15m		
Identify how to choose a precipitation source								
Identify when to use All and Only Small Stream Basins layer versus County layer	-2009 SE US Floods: Rec 1			Using FFMP	Oct 2016	20m		
Identify when to use FFMP's QPE, ratio, difference, VGBs, the all-hours graph, and downstream trace in warning decision making								
Identify appropriate use of the following products: River Flood Watch and Warning, Areal Flood Advisory and Warning, and Flash Flood Warning based on Directive 10-922	-2009 SE US Floods: Rec 4, 5 -2015 South Carolina: Rec 3, 22			Hydro Products Decision Tree	Jan 2017	15m		
Identify when it would be appropriate to declare a Flash Flood Emergency based on Directive 10-922								
Given various flooding scenarios, choose the correct NWS hydrologic product								
Identify when to issue a Flash Flood Warning (FFW) versus Flood Advisory or Areal Flood Warning	-2009 SE US Floods: Rec 4, 5			Flash Flood Warning Fundamentals	Jan 2016	19m		
Identify appropriate polygon sizes and FFW durations								
Identify when to use the automated basin list in WarnGen								
Identify appropriate basis and call-to-action details to include in a FFW								
Identify how to follow-up a FFW								
Identify the criteria for a Flash Flood Emergency								
Identify appropriate scenarios for the declaration of a Flash Flood Emergency	-2009 SE US Floods: Rec 4, 5 -2015 South Carolina: Rec 2, 22			Flash Flood Emergency Overview	Jan 2017	15m		
Recall the rationale for the use of enhanced wording/Flash Flood Emergency								
Identify potential dissemination issues with FFE								
Define and compare when to use "State of Emergency", "Civil Emergency Message" and "Flash Flood Emergency"								

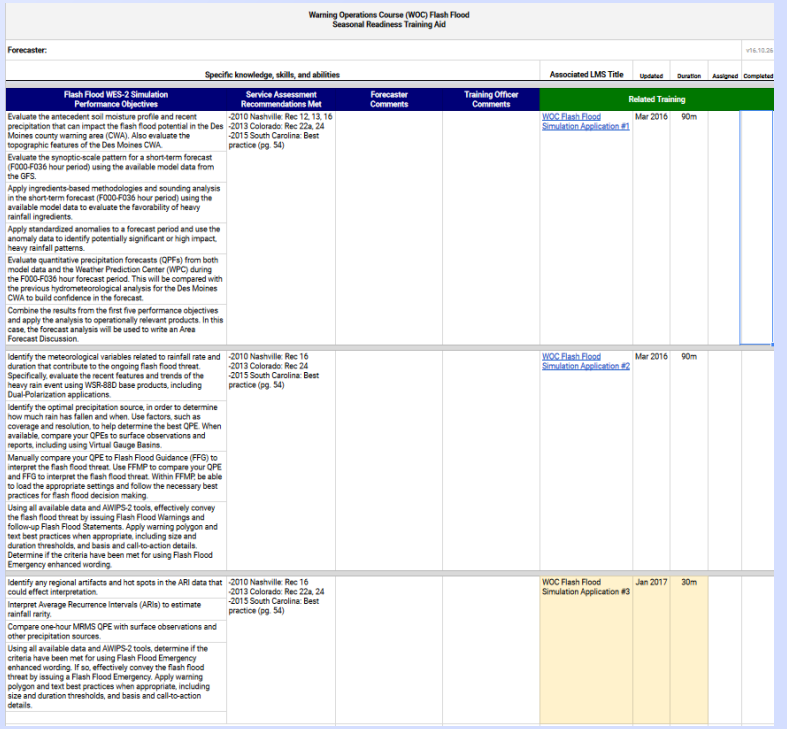


Warning Operations Course (WOC) Flash Flood
Seasonal Readiness Training Aid

Forecaster:

v16.10.26

Specific knowledge, skills, and abilities				Associated LMS Title	Updated	Duration	Assigned	Completed
Recognizing High-Impact Hydro Events Learning Objectives	Service Assessment Recommendations Met	Forecaster Comments	Training Officer Comments	Related Training				
Understand how standardized anomalies, used in the context of other conceptual models, aid in identifying the potential for heavy rain and flooding	-2009 SE US Floods: Rec 1 -2010 Nashville: Rec 12 -2013 Colorado: Rec 22a			Part 1: On the Value of Anomalies	Jan 2017	20m		
Understand the limits of standardized anomalies in the forecasting heavy rainfall events								
Understand how standardized anomalies and ensembles can provide confidence in forecasting flood events	-2009 SE US Floods: Rec 1 -2010 Nashville: Rec 12 -2013 Colorado: Rec 22a			Part 2: Ensembles and Anomalies	Jan 2017	20m		
Identify the definition of an average recurrence interval (ARI)	-2009 SE US Floods: Rec 1 -2010 Nashville: Rec 12 -2013 Colorado: Rec 22a			Part 1: Introduction to Average Recurrence Intervals	Aug 2016	16m		
Express the probability of occurrence of a rainfall amount given an ARI								
Differentiate between rainfall and flooding ARIs								
Identify how NOAA Atlas 14 ARIs are calculated								
Identify limitations of higher ARIs								
Identify how to correctly communicate frequency estimates with ARIs								
Identify the geographic limitations of Atlas 14 data								
Interpret Atlas 14 ARI data and confidence interval information								
Identify the three different ways you can view ARI data in AWIPS	-2009 SE US Floods: Rec 1 -2010 Nashville: Rec 12 -2013 Colorado: Rec 22a			Part 2: Using Average Recurrence Intervals (ARIs) in AWIPS	Aug 2016	24m		
Identify the strengths and limitations of each of the three different ways of viewing ARI data in AWIPS								
Interpret each of the three different ways you can view ARI data in AWIPS								
Identify regional boundary artifacts and hot spots in ARI data in AWIPS								



Warning Operations Course (WOC) Flash Flood
Seasonal Readiness Training Aid

Forecaster:

v16.10.26

Specific knowledge, skills, and abilities				Associated LMS Title	Updated	Duration	Assigned	Completed
Flash Flood WES-2 Simulation Performance Objectives	Service Assessment Recommendations Met	Forecaster Comments	Training Officer Comments	Related Training				
Evaluate the antecedent soil moisture profile and recent precipitation that can impact the flash flood potential in the Des Moines county warning area (CWA). Also evaluate the topographic features of the Des Moines CWA.	-2010 Nashville: Rec 12, 13, 16 -2013 Colorado: Rec 22a, 24 -2015 South Carolina: Best practice (pg. 54)			WOC Flash Flood Simulation Application #1	Mar 2016	90m		
Evaluate the synoptic-scale pattern for a short-term forecast (F000-F036 hour period) using the available model data from the GFS.								
Apply ingredients-based methodologies and sounding analysis in the short-term forecast (F000-F036 hour period) using the available model data to evaluate the favorability of heavy rainfall ingredients.								
Apply standardized anomalies to a forecast period and use the anomaly data to identify potentially significant or high impact, heavy rainfall patterns.								
Evaluate quantitative precipitation forecasts (QPFs) from both model data and the Weather Prediction Center (WPC) during the F000-F036 hour forecast period. This will be compared with the previous hydrometeorological analysis for the Des Moines CWA to build confidence in the forecast.								
Combine the results from the first five performance objectives and apply the analysis to operationally relevant products. In this case, the forecast analysis will be used to write an Area Forecast Discussion.								
Identify the meteorological variables related to rainfall rate and duration that contribute to the ongoing flash flood threat. Specifically, evaluate the recent features and trends of the heavy rain event using WSR-88D base products, including Dual-Polarization applications.	-2010 Nashville: Rec 16 -2013 Colorado: Rec 24 -2015 South Carolina: Best practice (pg. 54)			WOC Flash Flood Simulation Application #2	Mar 2016	90m		
Identify the optimal precipitation source, in order to determine how much rain has fallen and when. Use factors, such as coverage and resolution, to help determine the best QPE. When available, compare your QPEs to surface observations and reports, including using Virtual Gauge Basins.								
Manually compare your QPE to Flash Flood Guidance (FFG) to interpret the flash flood threat. Use FFMP to compare your QPE and FFG to interpret the flash flood threat. Within FFMP, be able to load the appropriate settings and follow the necessary best practices for flash flood decision making.								
Using all available data and AWIPS-2 tools, effectively convey the flash flood threat by issuing Flash Flood Warnings and follow-up Flash Flood Statements. Apply warning polygon and text best practices when appropriate, including size and duration thresholds, and basis and call-to-action details. Determine if the criteria have been met for using Flash Flood Emergency enhanced wording.								
Identify any regional artifacts and hot spots in the ARI data that could effect interpretation.	-2010 Nashville: Rec 16 -2013 Colorado: Rec 22a, 24 -2015 South Carolina: Best practice (pg. 54)			WOC Flash Flood Simulation Application #3	Jan 2017	30m		
Interpret Average Recurrence Intervals (ARIs) to estimate rainfall rarity.								
Compare one-hour MRMS QPE with surface observations and other precipitation sources.								
Using all available data and AWIPS-2 tools, determine if the criteria have been met for using Flash Flood Emergency enhanced wording. If so, effectively convey the flash flood threat by issuing a Flash Flood Emergency. Apply warning polygon and text best practices when appropriate, including size and duration thresholds, and basis and call-to-action details.								

Seasonal Readiness Tool #3
Customizing Training to Each of Your Forecasters

Specific knowledge, skills, and abilities				Associated LMS Title	Updated	Duration	Assigned	Completed
Recognizing High-Impact Hydro Events Learning Objectives	**Service Assessment Recommendations Met**	**Forecaster Comments**	**Training Officer Comments**	**Related Training**				
Understand how standardized anomalies, used in the context of other conceptual models, aid in identifying the potential for heavy rain and flooding	-2009 SE US Floods: Rec 1 -2010 Nashville: Rec 12 -2013 Colorado: Rec 22a			Part 1: On the Value of Anomalies	Jan 2017	20m		
Understand the limits of standardized anomalies in the forecasting heavy rainfall events								
Understand how standardized anomalies and ensembles can provide confidence in forecasting flood events	-2009 SE US Floods: Rec 1 -2010 Nashville: Rec 12 -2013 Colorado: Rec 22a			Part 2: Ensembles and Anomalies	Jan 2017	20m		
Identify the definition of an average recurrence interval (ARI)	-2009 SE US Floods: Rec 1 -2010 Nashville: Rec 12 -2013 Colorado: Rec 22a			Part 1: Introduction to Average Recurrence Intervals	Aug 2016	16m		
Express the probability of occurrence of a rainfall amount given an ARI								
Differentiate between rainfall and flooding ARIs								
Identify how NOAA Atlas 14 ARIs are calculated								
Identify limitations of higher ARIs								
Identify how to correctly communicate frequency estimates with ARIs								
Identify the geographic limitations of Atlas 14 data								
Interpret Atlas 14 ARI data and confidence interval information								
Identify the three different ways you can view ARI data in AWIPS	-2009 SE US Floods: Rec 1 -2010 Nashville: Rec 12 -2013 Colorado: Rec 22a			Part 2: Using Average Recurrence Intervals (ARIs) in AWIPS	Aug 2016	24m		
Identify the strengths and limitations of each of the three different ways of viewing ARI data in AWIPS								
Interpret each of the three different ways you can view ARI data in AWIPS								

Seasonal Readiness Tool #3
Customizing Training to Each of Your Forecasters

"Only 28% feel quite confident with TOR Warnings for QLCS"

"Indicates a real training need for QLCS"

Warning Operations Course (WOC) Severe Weather
Seasonal Readiness Training Aid for 2017

Forecaster: v16.5.25

Specific knowledge, skills, and abilities				Associated LMS Title	Updated	Duration	Assigned	Completed
Quasi-Linear Convective System (QLCS) Curriculum	**Severe Warning Competencies**	**Forecaster Comments**	**Training Officer Comments**	**Related Training**				
Identify some of the key features found in conceptual models of QLCS events.				Threat Assessment of Quasi-Linear Convective Systems	June 2016	28 min		
Identify the types of QLCS events that produce the most intense impacts.								
Identify parameters for evaluating the severity of QLCS events								
Identify discrimination capabilities of parameters used in forecasting QLCS events								
Identify patterns/parameters that affect longevity of a QLCS.								
Determine motion of a QLCS (both forward propagating and backward).								

Seasonal Readiness Tool #4
Certification of Completion

- Monthly Office Status Report Show Completion
  - WDTD provides templates to the SOOs
  - SOOs complete certificate to acknowledge SRT accomplishments

Seasonal Readiness Tools Timeline

FY17

O	N	D	J	F	M	A	M	J	J	A	S

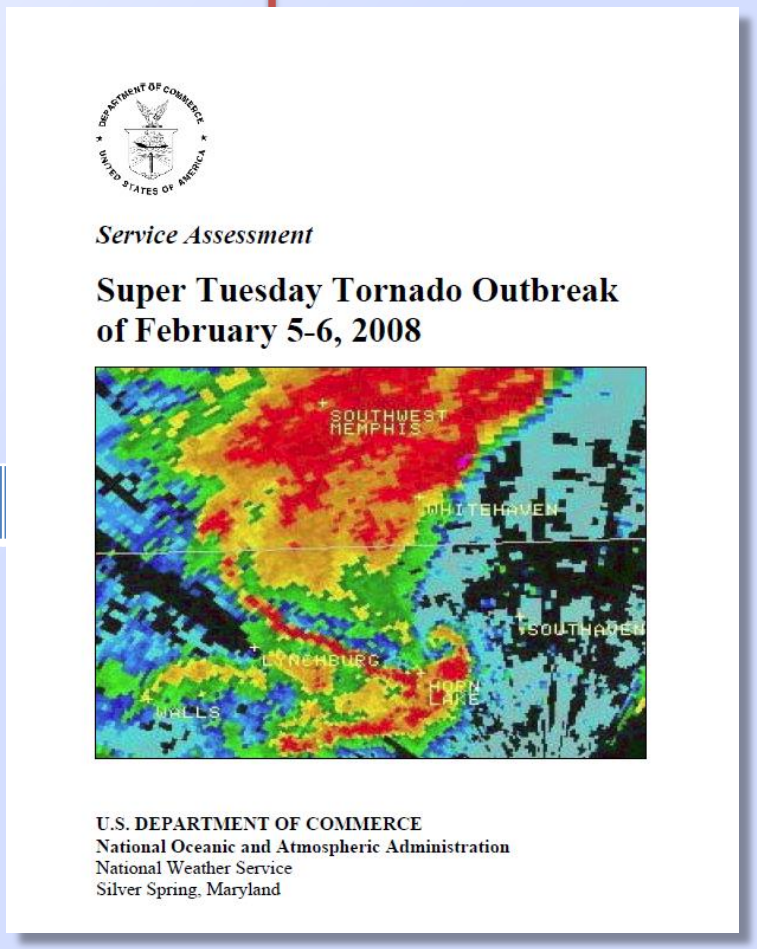
Severe Released

Flash Flood Released

Core Released

FY18

O	N	D	J	F	M	A	M



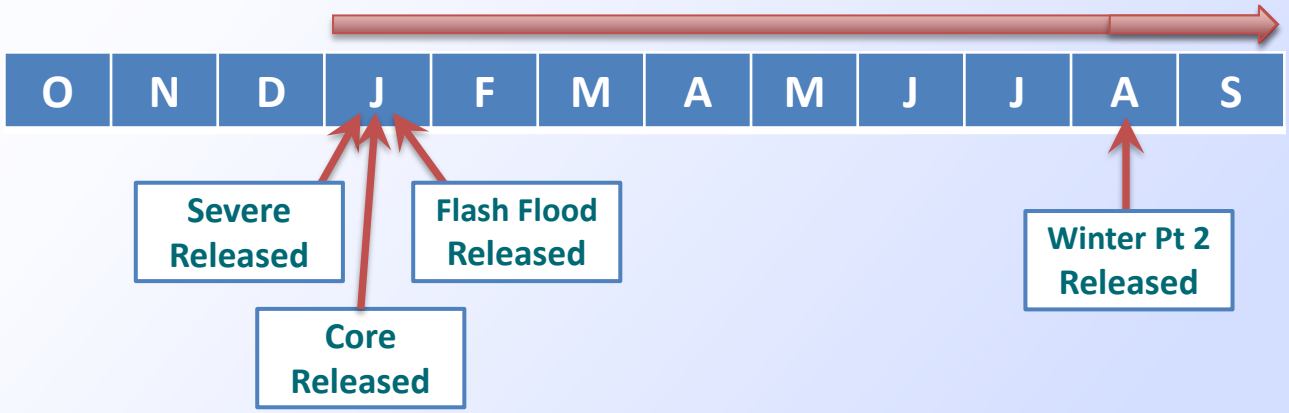
Service Assessment

Super Tuesday Tornado Outbreak of February 5-6, 2008

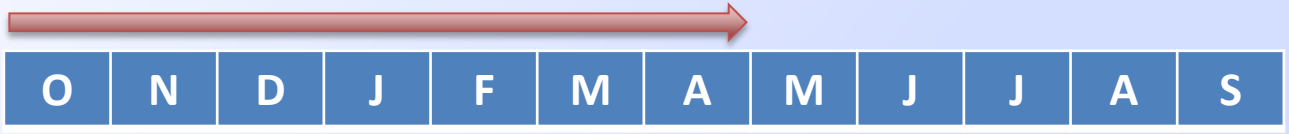
U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Weather Service
Silver Spring, Maryland

Seasonal Readiness Tools Timeline

FY18

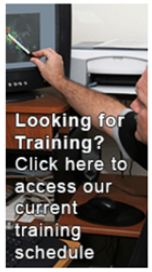


FY19



Enhancing SOOs' Seasonal Readiness Training

- Recorded Webinar
  - Available after Dec 12
    http://wdtd.noaa.gov/courses/wocsr/index.php
- Warning Operations Courses Loaded
  - First Week in Jan 2017
- Seasonal Readiness Tools E-Mailed to SOOs
  - Monday Jan 9, 2017



NWS employees can access the LMS here

Seasonal Readiness

Warning Decision Training Division
Office of Chief Learning Officer

Weather.gov > Warning Decision Training Division > Courses > WOC

Introduction

Seasonal Readiness is a concept analogous to spring training in baseball: train as you play. It is available for NWS Meteorologists with warning responsibilities. The idea is that WDTD releases lesson material in time for most local offices and/or individual forecasters to prepare training plans in advance of upcoming severe, flash flood, and winter seasons. Within this framework, local WFO SOOs and training facilitators have the flexibility to "peruse" the available lessons and create curricula tailored to their local needs and training gaps.

WDTD has several tools to support local offices, including brief online surveys about lesson content in order to determine which lessons may be worth assigning, as well as regular LMS reports for situational awareness. Currently, Seasonal Readiness is only supported for lessons traditionally available as part of the Warning Operations Course (WOC). Note that each WOC track (as listed below) is still available to take *in its entirety* to receive FY17 WOC certificates of completion. The following sections will outline the Seasonal Readiness training tools for each track, along with a section about how the NWS Virtual Lab (VLab) will aid in hosting many of the tools and references.

Release Date: January 7, 2016

* The FY17 Seasonal Readiness training tools will be released on this date, alongside the release of each WOC track (with the exception of Winter, which will come later in 2017). Keep in mind that individual offices have the flexibility to plan and execute their personalized training plans closer to the start of their climatological convective or rainy seasons. For example, offices in the Northern Plains can execute their severe weather Seasonal Readiness plans later in the Spring, ahead of the usually active summer months.

Recorded Instructional Webinar

This webinar was provided to NWS SOOs, local and regional training facilitators, and other interests to provide an overview and guidance on the Seasonal Readiness plans, tools, and vision. Follow the link below to be directed to the Commerce Learning Center to view the video (must have a CLC account).

December 6, 2016 – Briefing Slides (PPT)

Seasonal Readiness Tracks

Severe Weather
The start of the convective season varies across the country and so should the pre-season learning and training activities for each office and region. Seasonal Readiness gives local WFO SOOs and training facilitators a template for potential training plans for their staff but also the flexibility to determine their own plans. If an office already performs a local "pre-season" training regime through either a one-day workshop/seminar for the staff, a drill with questions about operational protocol, convective weather exercises through a local WES (Weather Event Simulator) case, or a combination of these, Seasonal Readiness is designed to supplement this effort. The training modules, exercises, and other training delivery through WOC Severe can be broken-down into more targeted needs for each office and operation.

Core Warning Decision-Making
[Brief introduction]

Flash Flooding
Supported lesson material covers conceptual models of flash flooding, interpreting anomalies, climatologies, average recurrence intervals (ARIs), using web-based tools, choosing what NWS products to use, and the flash flood decision making process.

Winter Weather (*coming in late 2017*)

Enhancing SOOs' Seasonal Readiness Training

- Recorded Webinar
  - Available after Dec 12
    http://wdtd.noaa.gov/courses/wocsr/index.php
- Warning Operations Courses Loaded
  - First Week in Jan 2017
- Seasonal Readiness Tools E-Mailed to SOOs
  - Monday Jan 9, 2017

Seasonal Readiness Tools

Needs Assessment/Questionnaire (internal NWS)
For each track, we have created a Google Form needs assessment. These questionnaires are designed to be taken by individual forecasters to help identify areas that may need further training and development. Links to these online assessments will be sent to each of the SOOs in NWS WFOs. SOOs will be able to view the responses for each forecaster, and will be provided an Answer Key with which to compare. Questions were created based on available lesson material, meaning SOOs can choose to assign training based on whether they (or the forecaster) feel the question response meets their needs.

Training Aid
For each track, we have created a Google Sheet training aid. This spreadsheet has information about each of the available modules including their learning objectives, length, and the last time the module was updated. This aid is meant to provide transparency about what you can expect from each lesson. SOOs can use this to determine office-wide needs, or as a "conversation starter" with individuals.

[PDF for severe] [PDF for core] [PDF for flash flood]



Coming soon for Winter Weather!

Regular LMS Reports (internal NWS)
WDTD will provide regular (e.g. monthly) LMS reports for offices who wish to participate in Seasonal Readiness. This allows training officers to keep track of forecaster completions. It is mainly a situational awareness tool.

Commonly Asked Questions

Q: *I am concerned about the length of this course. One of the reasons I and my colleagues haven't taken AWOC in several years is that it is just too long, too many elements that are tough to match up with my schedule of rotating shifts and priorities of inclement weather over training. Why would Seasonal Readiness change this opinion?*

A: Seasonal Readiness is NOT a course; it is a method to take a smaller, more targeted subset of modules from each of the WOC tracks. Additionally, you determine your training along with your local training officer. Using the training aid, you determine what to take based on what is important to you and the enhancement of your skills and knowledge as a NWS Meteorologist with warning responsibilities.

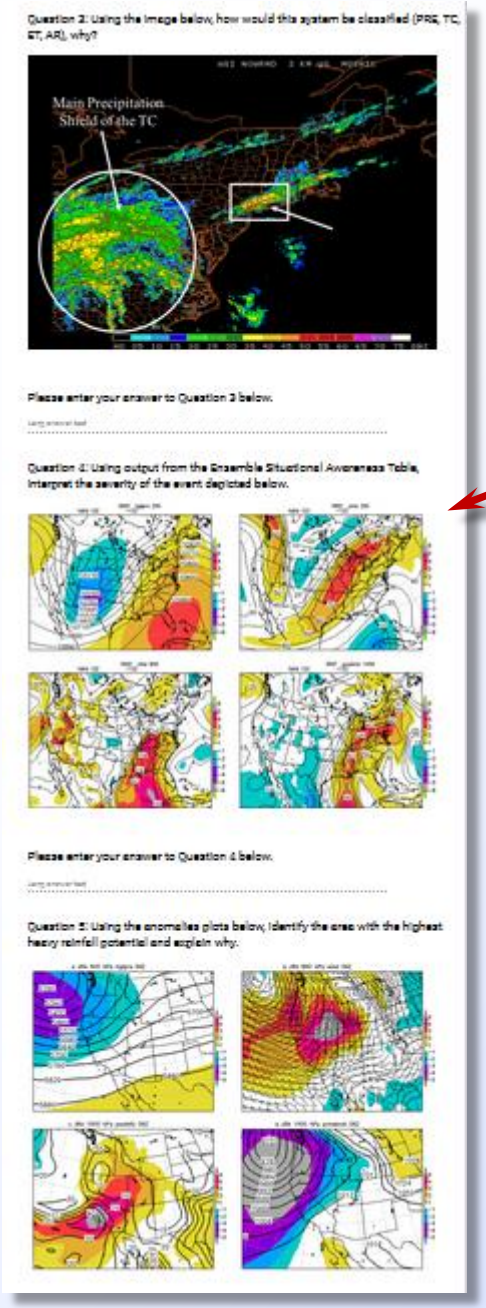
WDTD has heard the overarching sentiment from WFOs about training and how coursework should be more targeted for the changing tasks and duties of the operational staff. Over the past few years, we have worked to shorten the length of our online modules and the WES (Weather Event Simulator) simulations to better fit into the current duty structure and schedule for the average NWS Meteorologist. Seasonal Readiness allows the forecaster and their training officer to target and enhance their meteorological knowledge for areas that they identify, either based upon the forecaster's skillset and needs or

Using Seasonal Readiness Tools
Scenario 1

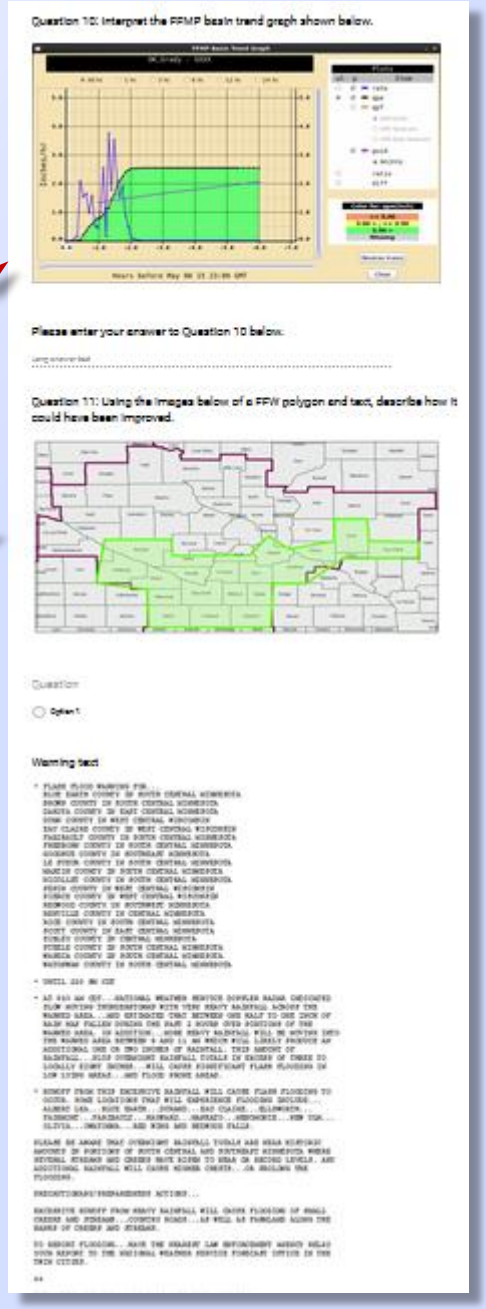
	11	Synoptic-Scale Pattern Recognition
	12	Ingredients-Based Methodology
	13	WOC Flash Flood Track IC 1, Lesson 3: Other Events that Trigger Flash Flooding
	14	Integrating Climatology
	21	On the Value of Anomalies
	22	Ensembles and Anomalies
	23	Introduction to Average Recurrence Intervals (ARIs)
	24	Using Average Recurrence Intervals (ARIs) in AWIPS
	25	Web-Based Tools for Flash Flooding
	31	Choosing Your Precipitation & Guidance Sources
	32	Warning Operations Using FFMP
	33	Hydro Products Decision Tree
	34	Flash Flood Warning Fundamentals
	35	WOC Flash Flood Track IC 3: How and When to Use "Flash Flood Emergency"
	W1	Simulation Application #1
	W2	Simulation Application #2
	W3	Simulation Application #3

# Lessons	Name	Office	Region	Last Completion	Not Completed
10	BANACOS, PETER	BURLINGTON WFO VERMONT	ER	9/2/2016	23 24 25 31 32 33 W3
10	DEAL, ROBERT	BURLINGTON WFO VERMONT	ER	9/26/2016	23 24 25 31 32 33 W3
10	GOFF, JOHN	BURLINGTON WFO VERMONT	ER	10/1/2016	23 24 25 31 32 33 W3
10	HANLEY, WILLIAM	BURLINGTON WFO VERMONT	ER	9/22/2016	23 24 25 31 32 33 W3
10	LAHIFF, CONOR	BURLINGTON WFO VERMONT	ER	9/27/2016	23 24 25 31 32 33 W3
10	LOCONTO, ANDREW	BURLINGTON WFO VERMONT	ER	4/13/2016	23 24 25 31 32 33 W3
10	MCMAHON, KIMBERLY	BURLINGTON WFO VERMONT	ER	9/9/2016	23 24 25 31 32 33 W3
10	NASH, ANDREW	BURLINGTON WFO VERMONT	ER	9/4/2016	23 24 25 31 32 33 W3
10	NEILES, JESSICA	BURLINGTON WFO VERMONT	ER	7/28/2016	23 24 25 31 32 33 W3
10	SISSON, PAUL	BURLINGTON WFO VERMONT	ER	9/28/2016	23 24 25 31 32 33 W3
10	TABER, BROOKE	BURLINGTON WFO VERMONT	ER	5/2/2016	23 24 25 31 32 33 W3
10	WHITTIER, SCOTT	BURLINGTON WFO VERMONT	ER	9/30/2016	23 24 25 31 32 33 W3
8	EVENSON, ERIC	BURLINGTON WFO VERMONT	ER	10/31/2016	23 24 25 31 32 33 W1 W2 W3
2	SCHIESSER, ROBERT	BURLINGTON WFO VERMONT	ER	4/26/2015	11 12 13 14 23 24 25 31 32 33 34 35 W1 W2 W3

Using Seasonal Readiness Tools
Scenario 2

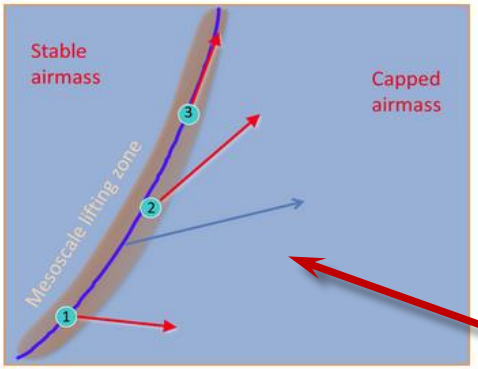


- Selective Questions
  - Question 4
  - Question 10
  - Question 11



Using Seasonal Readiness Tools
Scenario 2

3) Which boundary-relative flow motion scenario would provide the best opportunity for storm intensification? *

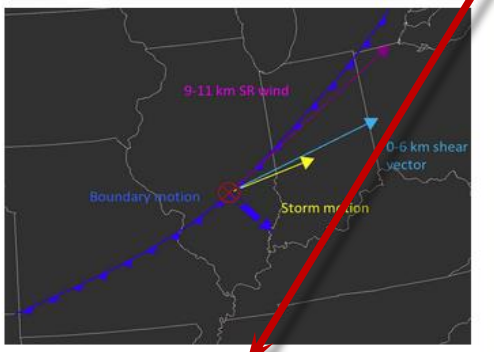


- ○ Storm 1 Motion
- ○ Storm 2 Motion
- ○ Storm 3 Motion

4) What is the most likely convective mode given the synoptic pattern shown below?

- ○ Discrete convection
- ○ Linear convection
- ○ Elevated convection

Example pattern for question #4

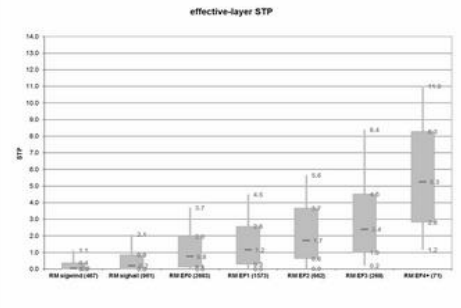


5) What is the most likely convective mode given the synoptic pattern shown below?

- ○ Discrete convection
- ○ Linear convection
- ○ Elevated convection

- Selective Questions
  - Question 3
  - Question 5
  - Question 6
- Lesson Learned
  - Keep total questionnaire time to 20 minutes or less

6) The rationale behind the operational use of STP is that it can identify sustained supercell environments, identify strong low-level stretching potential, and estimate resistance to stretching within the RFD. Using the figure below, what is the most likely tornado intensity given the forecast sounding and derived parameters shown? *



Box-and-whiskers plot of effective-layer STP (dimensionless; sample period March 2005–11) for all Right-Moving (RM) tornadic supercells by EF-scale damage rating classes (shaded gray, labels on right), including nontornadic RMs that produced only sigwind or only sighail. Black overlays (labels on left) denote maximum STP values within 185 km (100 n mi) of each event grid point, at the analysis time immediately preceding the event time.

Your answer

Example sounding and parameters for Question #6.

7) In a supercell thunderstorm what does a lightning hole tell you about the main updraft? *

- ○ The updraft is especially intense; hydrometeors are quickly being evacuated leaving behind a local charge minimum.
- ○ The updraft is weakening; charging is no longer active leaving behind a region of low lightning activity.
- ○ A lightning hole does not relate to updraft characteristics.

Using Seasonal Readiness Tools
Scenario 3

Specific knowledge, skills, and abilities				Associated LMS Title	Updated	Duration	Assigned	Completed
Recognizing High-Impact Hydro Events Learning Objectives	**Service Assessment Recommendations Met**	**Forecaster Comments**	**Training Officer Comments**	**Related Training**				
Understand how standardized anomalies, used in the context of other conceptual models, aid in identifying the potential for heavy rain and flooding	-2009 SE US Floods: Rec 1 -2010 Nashville: Rec 12 -2013 Colorado: Rec 22a		These are updated for FY17	Part 1: On the Value of Anomalies	Jan 2017	20m	Feb '17	
Understand the limits of standardized anomalies in the forecasting heavy rainfall events								
Understand how standardized anomalies and ensembles can provide confidence in forecasting flood events	-2009 SE US Floods: Rec 1 -2010 Nashville: Rec 12 -2013 Colorado: Rec 22a		Updated for FY17	Part 2: Ensembles and Anomalies	Jan 2017	20m	Feb '17	
Identify the definition of an average recurrence interval (ARI)	-2009 SE US Floods: Rec 1 -2010 Nashville: Rec 12 -2013 Colorado: Rec 22a	I'd like to use ARIs in my forecasts & warnings		Part 1: Introduction to Average Recurrence Intervals	Aug 2016	16m		
Express the probability of occurrence of a rainfall amount given an ARI								
Differentiate between rainfall and flooding ARIs								
Identify how NOAA Atlas 14 ARIs are calculated								
Identify limitations of higher ARIs								
Identify how to correctly communicate frequency estimates with ARIs								
Identify the geographic limitations of Atlas 14 data								
Interpret Atlas 14 ARI data and confidence interval information								
Identify the three different ways you can view ARI data in AWIPS	-2009 SE US Floods: Rec 1 -2010 Nashville: Rec 12 -2013 Colorado: Rec 22a	ARIs on AWIPS: YES!		Part 2: Using Average Recurrence Intervals (ARIs) in AWIPS	Aug 2016	24m		
Identify the strengths and limitations of each of the three different ways of viewing ARI data in AWIPS								
Interpret each of the three different ways you can view ARI data in AWIPS								

Using Seasonal Readiness Tools
Scenario 4

Specific knowledge, skills, and abilities				Associated LMS Title	Updated	Duration	Assigned	Completed
Recognizing High-Impact Hydro Events Learning Objectives	**Service Assessment Recommendations Met**	**Forecaster Comments**	**Training Officer Comments**	**Related Training**				
Understand how standardized anomalies, used in the context of other conceptual models, aid in identifying the potential for heavy rain and flooding	-2009 SE US Floods: Rec 1 -2010 Nashville: Rec 12 -2013 Colorado: Rec 22a		These are updated for FY17	Part 1: On the Value of Anomalies	Jan 2017	20m	Feb '17	May '17
Understand the limits of standardized anomalies in the forecasting heavy rainfall events								
Understand how standardized anomalies and ensembles can provide confidence in forecasting flood events	-2009 SE US Floods: Rec 1 -2010 Nashville: Rec 12 -2013 Colorado: Rec 22a		Updated for FY17	Part 2: Ensembles and Anomalies	Jan 2017	20m	Feb '17	Jun '17
Identify the definition of an average recurrence interval (ARI)	-2009 SE US Floods: Rec 1 -2010 Nashville: Rec 12 -2013 Colorado: Rec 22a	I'd like to use ARIs in my forecasts & warnings		Part 1: Introduction to Average Recurrence Intervals	Aug 2016	16m	Feb '17	Feb '17
Express the probability of occurrence of a rainfall amount given an ARI								
Differentiate between rainfall and flooding ARIs								
Identify how NOAA Atlas 14 ARIs are calculated								
Identify limitations of higher ARIs								
Identify how to correctly communicate frequency estimates with ARIs								
Identify the geographic limitations of Atlas 14 data								
Interpret Atlas 14 ARI data and confidence interval information								
Identify the three different ways you can view ARI data in AWIPS	-2009 SE US Floods: Rec 1 -2010 Nashville: Rec 12 -2013 Colorado: Rec 22a	ARIs on AWIPS: YES!		Part 2: Using Average Recurrence Intervals (ARIs) in AWIPS	Aug 2016	24m	Feb '17	Mar '17
Identify the strengths and limitations of each of the three different ways of viewing ARI data in AWIPS								
Interpret each of the three different ways you can view ARI data in AWIPS								

Using Seasonal Readiness Tools
Scenario 4

Seasonal Readiness Tools: Supporting SOO Innovation in the WFO

Figure 8: Root-cause analysis of enhanced NWS performance has it results to training related to this proposal

Diversity

With a longer career progression, there is a chance that diversity of the NWS may suffer even though a large majority of the hires at the GS-12 level are already internal hires[1]. The NWS will continue to work hard to ensure diversity in our workforce, and the best way to increase diversity