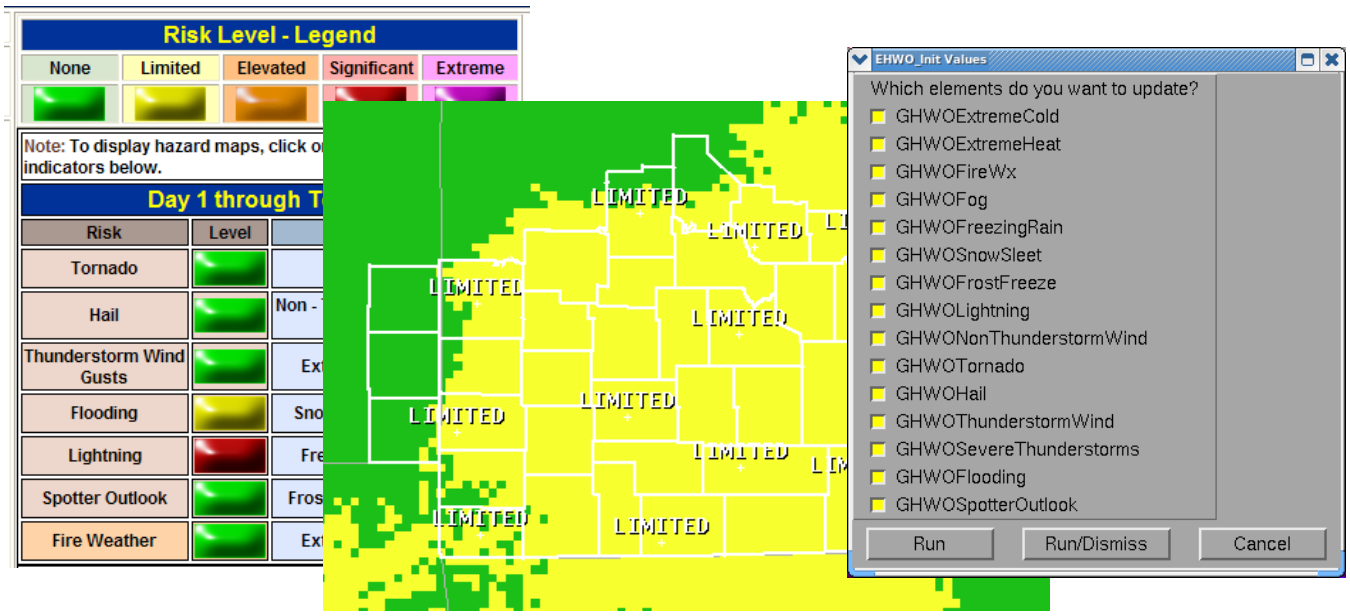
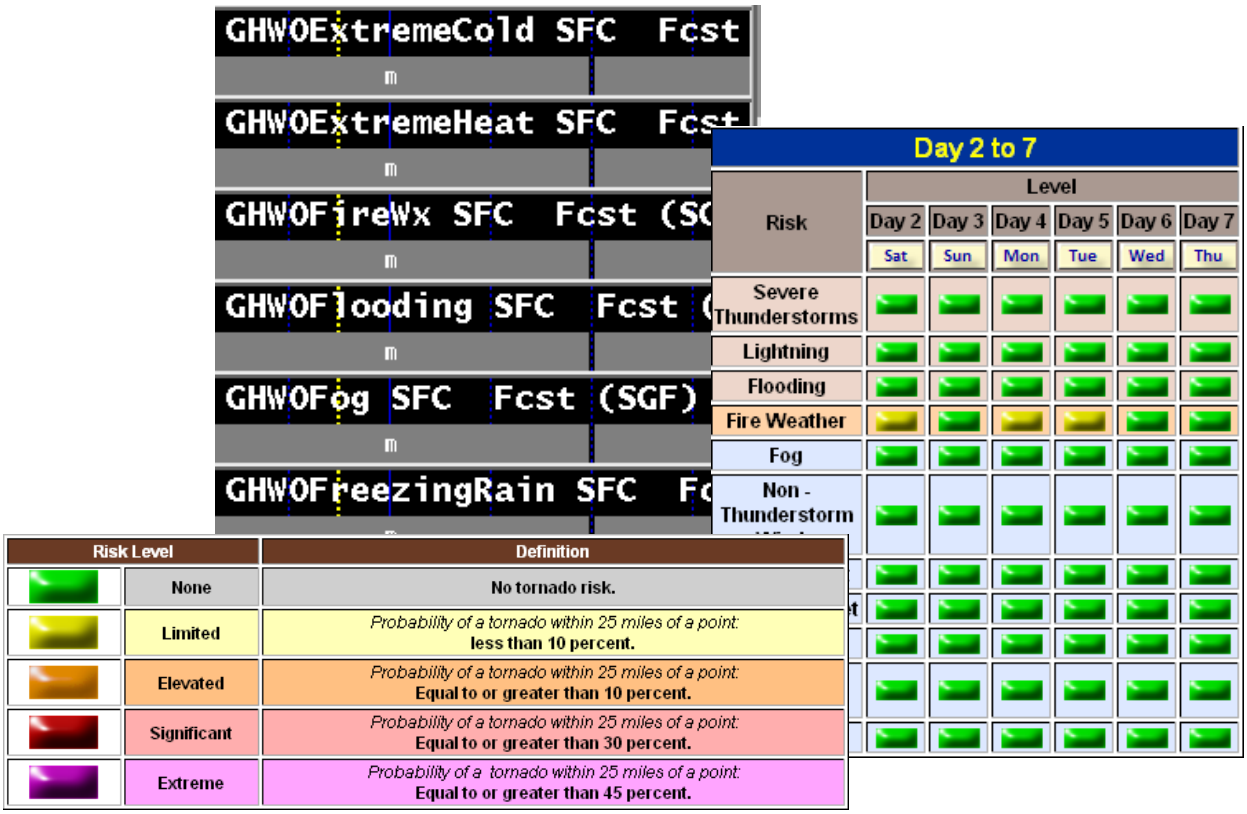


Enhanced Hazardous Weather Outlook

National Weather Service Springfield, Missouri



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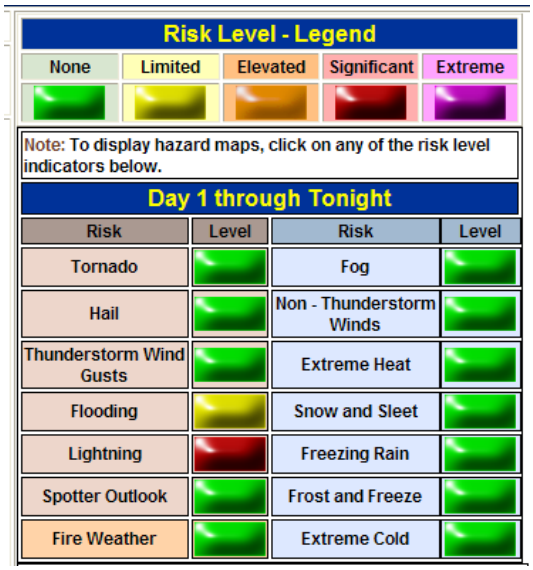
Introduction

Enhanced Hazardous Weather Outlook
National Weather Service Springfield, Missouri

Summary:
The NWS core mission is to provide accurate and timely hazardous weather information to critical users and the general public for the protection of life and property. The Enhanced Hazardous Weather Outlook (EHWO) is a decision support service that supports preparedness and response efforts prior to and during hazardous weather. The EHWO provides decision makers with convenient access to potential weather hazard information by graphically depicting the risk of weather hazards through day seven.

The GFE produced EHWO goes beyond this traditional goal by packaging five-level, color coded alert buttons and text within a comprehensive web page suite. Further, workload is conserved through the use of existing local and national guidance GFE grids, allowing a seamless office to office presentation.



Presentation Format:
The WFO Springfield EHWO is a comprehensive web page consisting of integrated graphics, text, and links to supporting products including threat level definitions, safety information, packaged self brief services, etc.
http://www.crh.noaa.gov/sgf/?n=dec_sup_main

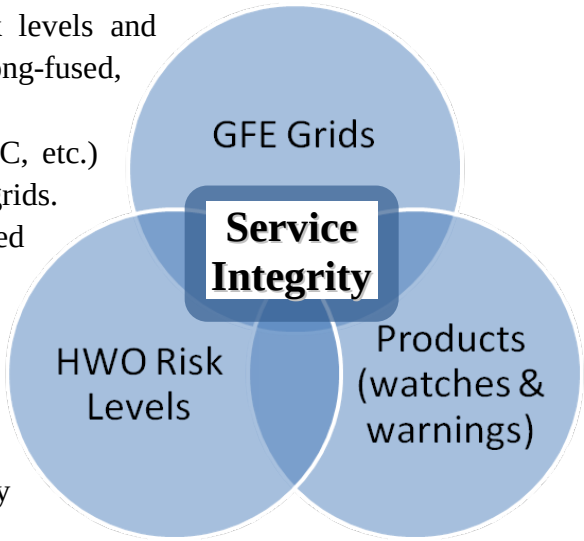
The Enhanced Hazardous Weather Outlook (EHWO) page provides:

- Weather Hazard Graphics depicting the type, severity and coverage of weather hazards
- Hazardous Weather Buttons conveying hazardous weather risk levels for a given day
- Hazardous Weather Outlook text
- Spotter Outlook Graphic that portrays the need for spotter activation
- Link to briefing pages that provide packaged information for a given weather hazard
- Links to video briefings that elaborate on a given hazardous weather event
- Links to GOES satellite and NEXRAD radar
- Risk Legend section that defines the risk levels
- Safety and Education information for a given weather hazard

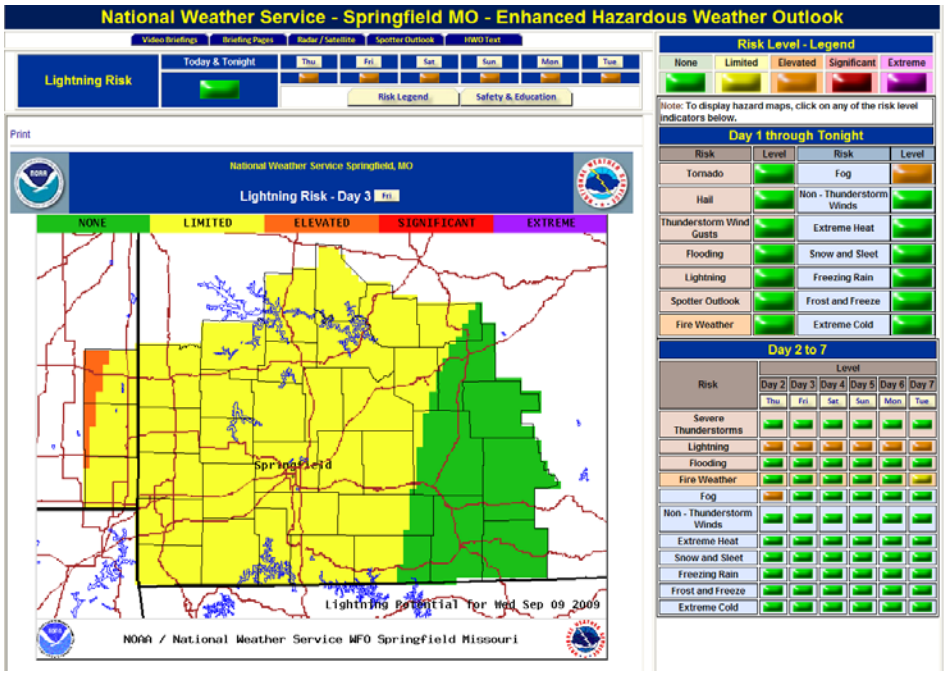
Methodology Promotes Service Consistency:
EHWO graphics will be generated utilizing GFE. Hazard type and risk will be derived from GFE generated weather elements. Model initialized and collaborated grids are combined with guidance grids from national centers.

The approach provided by the EHWO not only saves time, but also adds cross product integrity by providing the following advantages:

1) Promotes integrity between GFE grids and hazard risk levels.
2) Promotes integrity between hazard risk levels and traditional products (textual HWO, long-fused, etc.).
3) Utilizes core forecast sources (GFE, SPC, etc.) versus deriving threats only from model grids.
4) Promotes watch/warning decisions based on GFE grids versus manipulating grids to meet watch/warning criteria.
5) Increases situational awareness as potential threats are readily highlighted.
6) Eases decision making of forecaster as threat levels, areas, and times are readily highlighted.



The services provided by the Springfield EHWO couples forecast integrity with a display that includes not only the five-level threat system that has become the established norm, but also a one stop shop for partners with the desire for additional information.



Internal Risk Element and Risk Level Guidance

Purpose:
This section outlines the thresholds to be used by forecasters and GFE procedures to construct individual risk elements. Forecasters should refer to the GFE section of the binder to determine how each risk element is created and/or modified.

In addition to the guidance thresholds defined in the tables below, risk levels have also been matched to advisory and warning criteria where applicable. In the case of public risk elements, this information is highlighted by blue shading in the bottom row of the table. Fire weather risk levels highlighting red flag conditions are denoted by an asterisk.

Forecasters are highly encouraged to use the EHWO grids as a situational awareness tool to draw out potential watch, advisory, or warning conditions.

Convective

Tornado (Day 1)

NONE	LIMITED	ELEVATED	SIGNIFICANT	EXTREME
No Tornado Risk	2 or 5% SPC Tor	10 or 15% SPC Tor	30% SPC Tor	45 or 60% SPC Tor

Hail (Day 1)

NONE	LIMITED	ELEVATED	SIGNIFICANT	EXTREME
No Hail Risk	Threat for sub-severe hail	15 or 30% SPC Hail	45% SPC Hail	60% SPC Hail
	OR			
	5% SPC Hail			

Thunderstorm Wind Gust (Day 1)

NONE	LIMITED	ELEVATED	SIGNIFICANT	EXTREME
No TS Wind Risk	Threat for sub-severe TS winds	15 or 30% SPC Wind	45% SPC Wind	60% SPC Wind
	OR			
	5% SPC Wind			

Spotter Outlook (Day 1)

NONE	LIMITED	ELEVATED	SIGNIFICANT	EXTREME
No spotter activation today or tonight	Spotters may be needed later today or tonight	Spotters may be needed in next 6 hours	Spotters may be needed in next 3 hours	Not used

Severe (Day 2)

NONE	LIMITED	ELEVATED	SIGNIFICANT	EXTREME
No Severe Risk	Threat for sub-severe	15 or 30% SPC Severe	45% SPC Severe	60% SPC Severe
	OR			
	5% SPC			

Severe (Day 3)

NONE	LIMITED	ELEVATED	SIGNIFICANT	EXTREME
No Severe Risk	Threat for sub-severe	15 or 30% SPC Severe	45% SPC Severe	Not used
	OR			
	5% SPC			

NOTE: **Extreme** risk levels for severe thunderstorms shall not be used for Day 3 and beyond due to such circumstances as uncertainty in model solutions, run to run consistency, as well as unknown mesoscale features and processes. **Significant** and **Extreme** risk levels for thunderstorms shall not be used in Days 4 through 7 due to the same reasoning.

Severe (Days 4-7)

NONE	LIMITED	ELEVATED	SIGNIFICANT	EXTREME
No Severe Risk	SPC Day 4 to 8 outlook	Strongly worded SPC Day 4 to 8 outlook	Not used	Not used
	OR			
	Severe possible			

Flooding (Days 1-7)

NONE	LIMITED	ELEVATED	SIGNIFICANT	EXTREME
No Flood Risk		Flash Flood/Flood Watch	Flash Flood/Flood Watch	Flash Flood/Flood Watch
		AND/OR	AND/OR	AND/OR
	Threat for localized or minor flooding of lwcs, roads, small streams	Threat for flooding of several lwcs, roads, small streams	Threat for flooding of numerous lwcs, roads, small streams	Threat for flooding of widespread lwcs, roads, small streams
		AND/OR	AND/OR	AND/OR
		Threat for minor river flooding	Threat for moderate river flooding	Threat for major river flooding

Lightning (Days 1-7)

NONE	LIMITED	ELEVATED	SIGNIFICANT	EXTREME
No Lightning	Isolated to Scattered or Slight Chance to Chance of Thunder in Wx grids	Numerous or Likely Thunder in Wx grids	Widespread or Periods of Thunder in Wx grids	Nearly Continuous Lightning/User Discretion

Non-Convective

Fire (Days 1-7)

NONE	LIMITED	ELEVATED	SIGNIFICANT	EXTREME

Fire Wx Filter: Set manually in GFE by the Digital Services team based on input from the Fire Program Manager. The filter will be set to "on" during times of predominate green and moist live vegetation, usually from May 1st thru September 30th. Setting the filter to "on" effectively lowers the fire weather risk levels one to two categories versus the filter being set to "off". The filter setting can be found in the EHWO section of the Digital Services web page.

Category Thresholds: Four matrixes are provided below based on T and filter.

Fire Wx Filter "off" (Usually October 1st thru April 30th)

T ≥ 50 Deg F					
	Relative Humidity %				
20 ft Wind (knots)	<20	20-24.9	25-34.9	35-44.9	>=45
< 4.3	L	L	L	N	N
4.3 to 8.7	El	L	L	L	N
8.8 to 13.0	El	El	El	L	N
13.1 to 17.4	S*	S*	El	L	L
17.5 to 21.7	E*	S*	S*	El	L
≥ 21.8 (NPW Advisory Winds)	E*	E*	S*	El	L

T < 50 Deg F					
	Relative Humidity %				
20 ft Wind (knots)	<20	20-24.9	25-34.9	35-44.9	>=45
< 4.3	L	L	N	N	N
4.3 to 8.7	L	L	L	N	N
8.8 to 13.0	El	El	L	N	N
13.1 to 17.4	El	El	L	L	N
17.5 to 21.7	S*	S*	El	L	N
≥ 21.8 (NPW Advisory Winds)	E*	S*	El	L	N

* The Significant and Extreme categories represent Red Flag conditions.

Fire Wx Filter "on" (Usually May 1st thru September 30th)

T ≥ 50 Deg F					
	Relative Humidity %				
20 ft Wind (knots)	<20	20-24.9	25-34.9	35-44.9	>=45
< 4.3	N	N	N	N	N
4.3 to 8.7	L	N	N	N	N
8.8 to 13.0	L	L	L	N	N
13.1 to 17.4	L	L	L	N	N
17.5 to 21.7	El	L	L	L	N
≥ 21.8 (NPW Advisory Winds)	El	El	L	L	N

T < 50 Deg F					
	Relative Humidity %				
20 ft Wind (knots)	<20	20-24.9	25-34.9	35-44.9	>=45
< 4.3	N	N	N	N	N
4.3 to 8.7	N	N	N	N	N
8.8 to 13.0	L	L	N	N	N
13.1 to 17.4	L	L	N	N	N
17.5 to 21.7	L	L	L	N	N
≥ 21.8 (NPW Advisory Winds)	El	L	L	N	N

Fog (Days 1-7)

NONE	LIMITED	ELEVATED	SIGNIFICANT	EXTREME
No fog risk	Fog with visibility ≤ 1 mile	Fog with visibility ≤ 1/2 mile	Fog with visibility ≤ ¼ mile	Fog with visibility near zero
			Advisory	Advisory

Non-Thunderstorm Winds (Days 1-7)

NONE	LIMITED	ELEVATED	SIGNIFICANT	EXTREME
Sustained winds < 17.4 knots	Sustained winds 17.4 to 26.0 knots	Sustained winds 26.1 to 34.7 knots	Sustained winds 34.8 to 42.6 knots	Sustained winds ≥ 42.7 knots
AND	OR	OR	OR	OR
Wind Gusts < 26.1 knots	Wind gusts 26.1 to 39.0 knots	Wind gusts 39.1 to 50.3 knots	Wind gusts 50.4 to 55.6 knots	Wind gusts ≥ 55.7 knots
		Advisory	Warning	Warning

Extreme Heat (Days 1-7)

NONE	LIMITED	ELEVATED	SIGNIFICANT	EXTREME
Extreme ApparentT < 95° F	Extreme ApparentT 95 to 104°	Extreme ApparentT 105 to 109°	Extreme ApparentT 110 to 114°	Extreme ApparentT ≥ 115°
		OR	OR	OR
		Extreme Apparent T ≥ 100° for 4 consecutive days	Extreme Apparent T ≥ 105° for 4 consecutive days	Extreme Apparent T ≥ 105° for 5 consecutive days
		Advisory	Warning	Warning

Snow and Sleet* (Days 1-7)

NONE	LIMITED	ELEVATED	SIGNIFICANT	EXTREME
No snow accumulation	Snow/sleet accumulation < 1”	Snow/sleet accumulation 1 to 5.9”	Snow/sleet accumulation 6 to 11.9”	Snow/sleet accumulations ≥ 12”
		Advisory	Warning	Warning

* The advisory and warning section of the above table accounts for snow accumulation only as much less sleet accumulation is required to meet advisory and warning criteria.

Freezing Rain (Days 1-7)

NONE	LIMITED	ELEVATED	SIGNIFICANT	EXTREME
No Risk	Very light freezing rain or drizzle with no accumulation	Freezing rain or drizzle with accumulations < ¼”	Ice Storm with accumulations ¼ to < 1”	Ice storm with accumulations ≥ 1”
		Advisory	Warning	Warning

Frost and Freeze (Days 1-7)

Frost/Freeze Flag: Set manually in GFE by the Digital Services team based on input from the Public Service Program Manager. The flag will be set to "on" during the growing season. Guidance below assumed the flag is turned "on". The flag setting can be found in the EHWO section of the Digital Services web page.

NONE	LIMITED	ELEVATED	SIGNIFICANT	EXTREME
No Risk	Patchy frost during the growing season	Areas or widespread frost during the growing season	T ≤ 32° for 3+ hours during the growing season	T ≤ 28° during growing season
		AND/OR		
		T ≤ 32 for less than 3 hours		
		Advisory	Warning	Warning

Extreme Cold (Days 1-7)

NONE	LIMITED	ELEVATED	SIGNIFICANT	EXTREME
Extreme ApparentT ≥ 10° F	Extreme ApparentT -9 to 9° F	Extreme ApparentT -10 to -24° F	Extreme ApparentT -25 to -34° F	Extreme ApparentT ≤ -35° F
		Advisory	Warning	Warning

GFE

Location:
All EHWO grids are viewable by loading the EHWO Weather Element Group located in the Weather Element drop down menu.

EHWO GFE Procedures

The EHWO procedure is accessed from the "Populate" menu in GFE. Upon selecting the EHWO procedure, a box will pop up giving you the options of "New" or "Update".

New

The "New" option will create new days 1 to 7 grids for all risk elements selected. This procedure should be run between 4 and 6 am once **all** public and fire weather grids are complete. It is highly recommended that the initialization procedure be run before writing the HWO. Use the EHWO grids as guidance! These risk elements serve as a great situational awareness tool which will quickly draw your attention to potential hazards.

The "New" option must be run at least once in order for the proper days to be displayed. Once the "New" option has been run (between 4 and 6 am) **AND** the grids have been sent to the web, the "Update" option should therein be used. See the "Update" section below for further detail.

It is important to note that this procedure is very intensive and takes several minutes to run. Once the initialization is started, forecasters should refrain from using GFE until it finishes. On average, the initialization takes 5 minutes to complete. All risk elements must be present on their proper days or the send to web process will fail!

The method by which each element is initialized varies. The initialization uses the GFE grids and SPC products outlined in the Internal Risk Element and Risk Guidance section.

Method/Source used to Initialize each Element

	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Tornado	SPC						
Hail	SPC						
Thunderstorm Wind Gusts	SPC						
Severe Thunderstorms	SPC	SPC	SPC	Manual	Manual	Manual	Manual
Flooding	Manual	Manual	Manual	Manual	Manual	Manual	Manual

Lightning *	Grids	Grids	Grids	Grids	Grids	Grids	Grids
	Manual For Extreme	Manual For Extreme	Manual For Extreme	Manual For Extreme	Manual For Extreme	Manual For Extreme	Manual For Extreme
Spotter Outlook	Manual						
Fire Weather	Grids	Grids	Grids	Grids	Grids	Grids	Grids
Fog	Grids	Grids	Grids	Grids	Grids	Grids	Grids
Non-Thunderstorm Winds	Grids	Grids	Grids	Grids	Grids	Grids	Grids
Extreme Heat	Grids	Grids	Grids	Grids	Grids	Grids	Grids
Snow and Sleet	Grids	Grids	Grids	Grids	Grids	Grids	Grids
Freezing Rain	Grids	Grids	Grids	Grids	Grids	Grids	Grids
Frost and Freeze	Grids	Grids	Grids	Grids	Grids	Grids	Grids
Extreme Cold	Grids	Grids	Grids	Grids	Grids	Grids	Grids

* The initialization from the weather grids does not include the extreme category. Forecasters must manually input the extreme risk level into the lightning grids if desired.

Grid Editing Practices:
Based on the method used to initialize the risk elements, forecasters should use the following guidelines to edit the elements.

Grids – These grids **generally should not** be edited after the initialization. These grids are generated specifically from public and/or fire weather grids. Editing of these grids may result in integrity issues between grids, the EHWO, and other products! If forecasters are not satisfied with risks output by the initialization, it is recommended that they go back and change the necessary public and/or fire weather grids. Then, rerun the initialization.

There are a few circumstances where forecasters may manually edit these grids. These edits would be to effectively drop a small number of pixels to the next lowest category. Listed below are these circumstances.

1. A small number of stand-alone rogue pixels are scattered about.
2. A small cluster (less than the size of our typical county) is present.

Manual – These grids **must** be edited by the forecaster. The default risk level is set to none.

SPC – These grids are generated based on the SPC days 1, 2, and 3 outlooks. They are intended to be a starting point and incorporate the thresholds outlined in the Internal Risk Element and Risk Guidance section. These elements may be modified if forecasters feel

they are unrepresentative of what is expected. Forecasters should refrain from making significant alterations (2 or more risk levels) without coordinating with SPC.

NOTE: Extreme risk levels for severe thunderstorms shall not be used for Day 3 and beyond due to such circumstances as uncertainty in model solutions, run to run consistency, as well as unknown mesoscale features and processes. **Significant** and **Extreme** risk levels for thunderstorms shall not be used in Days 4 through 7 due to the same reasoning.

Update

The "Update" option will create new grids for the time period and risk elements selected. The "Update" option should only be used to initialize grids **AFTER** the "New" option has been run (between 4 and 6 am) **AND** those grids have been sent to the web.

If the "CurrentTime(Day1)" option is selected as the begin period, the init (for Day 1) will only account for those grids from the current hour until 12z the next day. In other words, the init ignores those hours that have already lapsed on the current day.

This procedure should be run before a textual HWO update. Running this procedure is recommended even when publishing new public and/or fire weather grids. Again, use these grids as a guide when writing the HWO!

EHWO Process and Troubleshooting

Introduction:
The EHWO process is split into two main components: GFE and the web. Forecasters are heavily involved in the GFE portion of the process, with the web portion mainly behind the scenes. Once the EHWO to Web script is run, forecasters should allow up to 10 minutes for the entire process to complete. Forecasters should refrain from running two scripts at once!

EHWO Headline News story Link

The Enhanced Hazardous Weather Outlook (EHWO) web page will be the primary portal for users and decision makers to utilize our hazardous weather services.

In order to highlight the hazard risk level and availability of the EHWO, a news story headline providing a link to the EWHO web page will be included at all times. This headline is generated automatically when the EHWO products are sent to the web.

If no hazards are present from days 1 to 3, the following headline will be displayed:

…Hazardous Weather Outlook for the Next 7 Days…

If hazards are present on days 1 to 3, a canned headline title will be used to communicate a clear and consistent message. The flowchart on the next page outlines the headline generation process. The headline titles will be as follows:

[risk level] **Risk of Hazardous Weather** ***[time reference]***

The risk level entered will be one of the following descriptors:

- Limited
- Elevated
- Significant
- Extreme

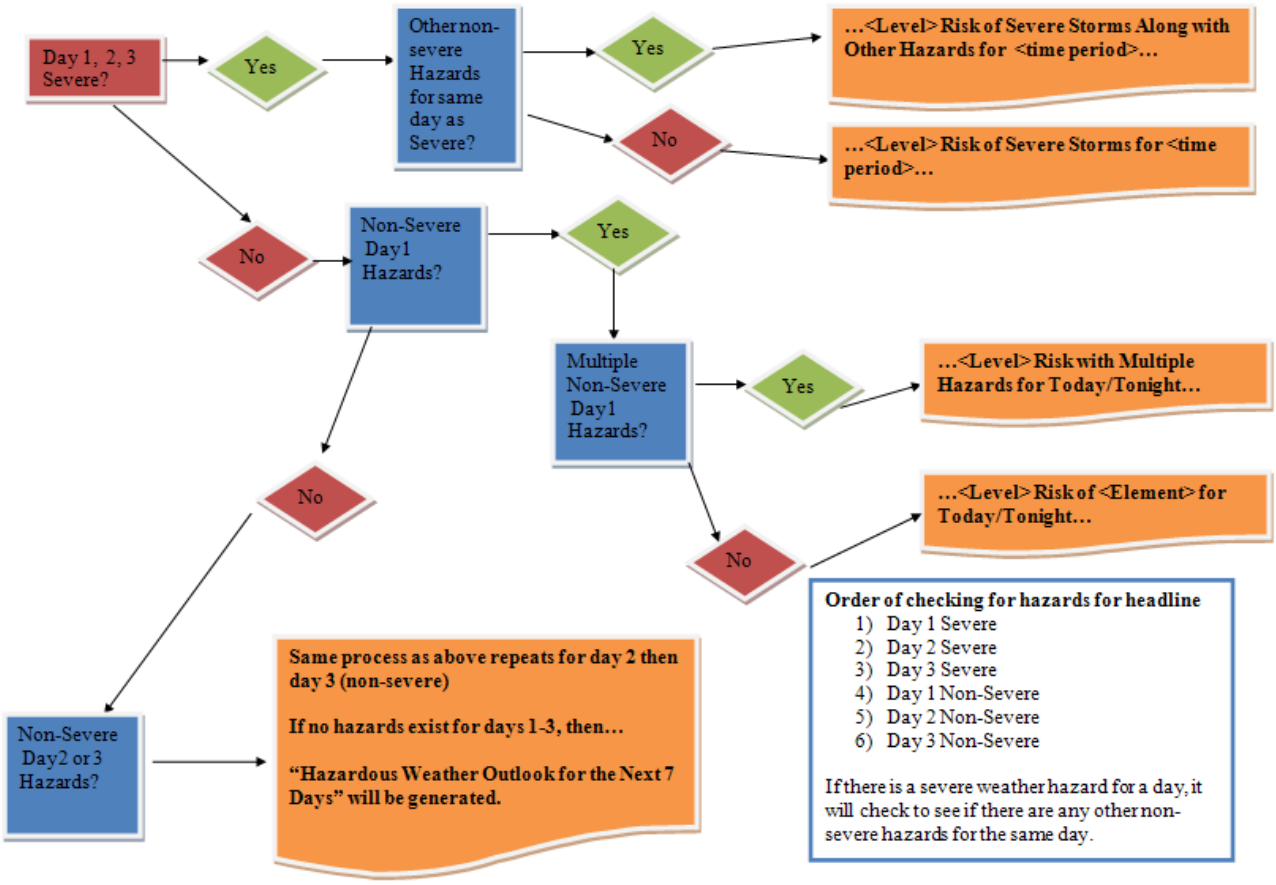
Use a red font – "Style 1" - for the text of the news story headline.
The new story will be linked to the following web address.

http://www.crh.noaa.gov/sgf/?n=dec_sup_main

The news story headline should always be at the top of the page!

Additional news stories may be utilized to highlight weather hazards, but must be consistent in message and not replace the hazard outlook link.

EHWO Headline Process



Entire process from A to Z

1) EHWO grids are generated and saved in GFE using initialization procedures and manual forecaster intervention.
2) The EHWO to Web script is run by the forecaster. This script accomplishes the following:
    a. All GFE EHWO grids are transformed to a web friendly format with labeling.
    b. These grids are saved to a specific directory on the Y: drive.
    c. A 2X2 matrix is created which contains:
        i. The maximum risk level for each risk element for days 1 to 7
        ii. The maximum risk level for the entire day
        iii. The maximum risk level of each element for the entire days 1 to 7 period
        iv. The maximum risk level for all elements for days 1 to 7
    d. This matrix file is saved to a specific directory on the Y: drive
3) An internally developed application running on the Apps PC decodes the matrix. This information is then used to display the proper risk levels on the SGF Internet website.
4) An RYSYNC process runs every 5 minutes which copies the web graphics to the Central Region web server.
5) A web news story headline is automatically generated that points to the EHWO page.

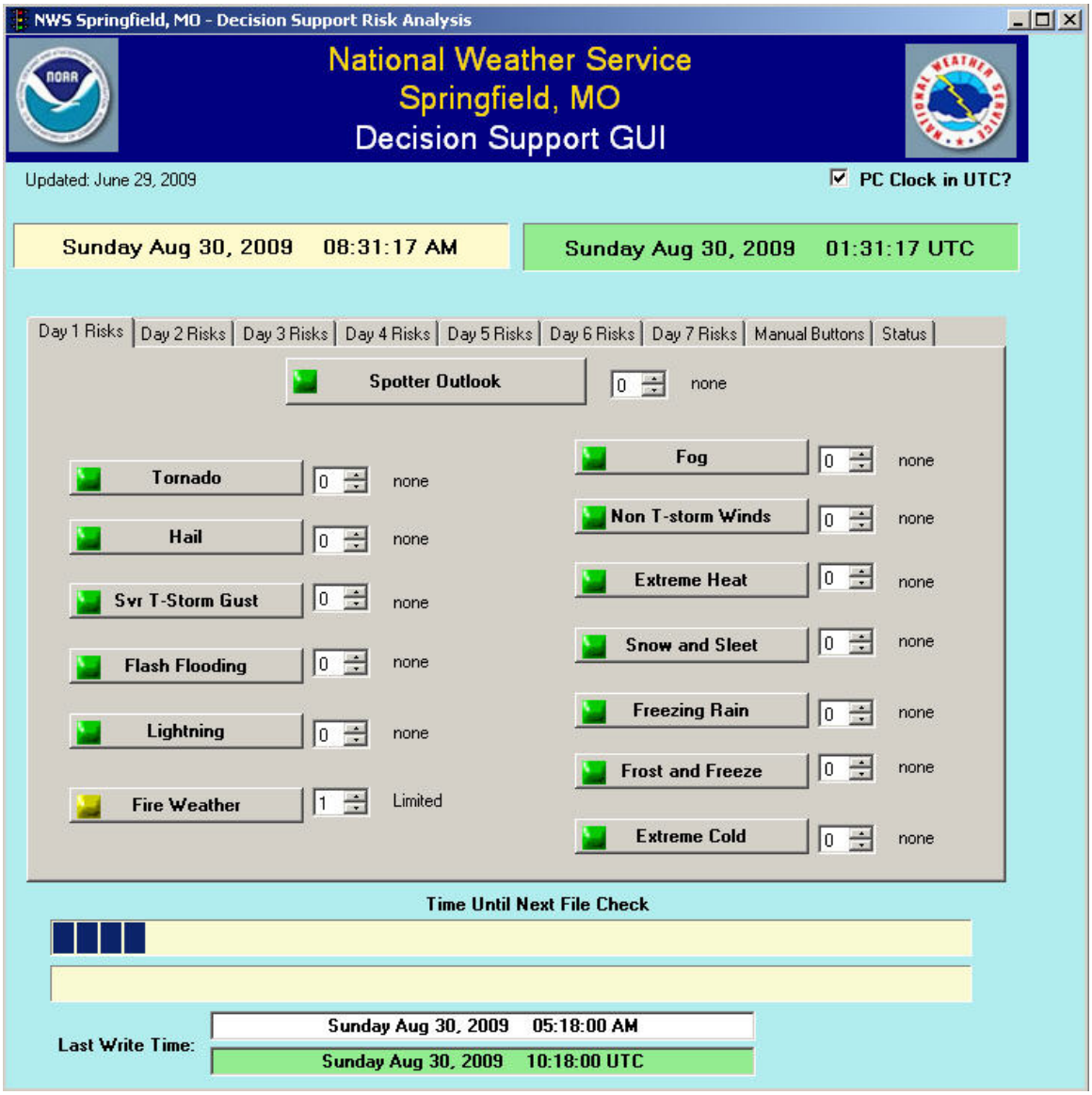
Troubleshooting

If the website fails to update after 10 minutes, forecasters should take the following steps:

1) Ensure all risk elements are present in GFE for their proper time periods.
2) Check the update times for the graphics and matrix on the status website. http://www.crh.noaa.gov/sgf/?n=ehwo_status
3) Ensure that the PC application is running on the Apps PC*. If not, restart the application by clicking on the Enhanced HWO GUI on the desktop.
4) Rerun the EHWO to Web script on a different workstation, again allowing 10 minutes for the web to update.
5) If all of these steps fail, notify the Digital Services Team via the Digital Services Request form: http://www.crh.noaa.gov/sgf/?n=digitalservicesform or contact the SGF webmaster.

    * The Apps PC can be accessed by hitting the port button until on port #1. This is the same port button used to access Real-Time ASOS.

EHWO Program on Apps PC



Web Definitions

Tornado

Risk Level		Definition
	None	No tornado risk.
	Limited	*Probability of a tornado within 25 miles of a point:* **less than 10 percent.**
	Elevated	*Probability of a tornado within 25 miles of a point:* **Equal to or greater than 10 percent.**
	Significant	*Probability of a tornado within 25 miles of a point:* **Equal to or greater than 30 percent.**
	Extreme	*Probability of a tornado within 25 miles of a point:* **Equal to or greater than 45 percent.**

Hail

Risk Level		Definition
	None	No risk of hail.
	Limited	**Risk of sub-severe hail (less than 1")** *or* *Probability of severe hail (1" or greater) within 25 miles of a point:* **less than 15%**
	Elevated	*Probability of severe hail (1" or greater) within 25 miles of a point:* **Equal to or greater than 15%**
	Significant	*Probability of severe hail (1" or greater) within 25 miles of a point:* **Equal to or greater than 45%**
	Extreme	*Probability of severe hail (1" or greater) within 25 miles of a point:* **Equal to or greater than 60%**

Thunderstorm Wind Gusts

Risk Level		Definition
	None	No thunderstorm wind risk.
	Limited	**Risk for sub-severe wind gusts (less than 58 mph)** *or* *Probability of severe wind gusts (58 mph or greater) within 25 miles of a point:* **Less than 15%**
	Elevated	*Probability of severe wind gusts (58 mph or greater) within 25 miles of a point:* **Equal to or greater than 15%**
	Significant	*Probability of severe wind gusts (58 mph or greater) within 25 miles of a point:* **Equal to or greater than 45%**
	Extreme	*Probability of severe wind gusts (58 mph or greater) within 25 miles of a point:* **Equal to or greater than 60%**

Severe Thunderstorms

Risk Level		Definition Severe Thunderstorm Risk Day 2
	None	**No risk of severe thunderstorms.**
	Limited	**Risk for sub-severe wind gusts (less than 58 mph), sub-severe hail (less than 1" in diameter)** or *Probability of severe thunderstorms* within 25 miles of a point:* **Less than 15%**
	Elevated	*Probability of severe thunderstorms* within 25 miles of a point:* **Equal to or greater than 15%**
	Significant	*Probability of severe thunderstorms* within 25 miles of a point:* **Equal to or greater than 45%**
	Extreme	*Probability of severe thunderstorms* within 25 miles of a point:* **Equal to or greater than 60%**

Lightning

Risk Level		Definition
	None	**No lightning risk**
	Limited	**Thunderstorms expected to be <u>isolated to scattered</u> in coverage.** *Atmospheric conditions support cloud to ground lightning strikes in and near thunderstorms.*
	Elevated	**Thunderstorms expected to be <u>numerous</u> in coverage.** *Atmospheric conditions support cloud to ground lightning strikes in and near thunderstorms.*
	Significant	**<u>Widespread</u> thunderstorms are expected.** *Atmospheric conditions support cloud to ground lightning strikes in and near thunderstorms.*
	Extreme	**Thunderstorms are expected with <u>nearly continuous</u> cloud to ground lightning strikes in and near thunderstorms.**

Spotter Outlook

Risk Level		Definition
	None	Spotters will not be needed for severe weather activation today or tonight.
	Limited	Spotters may be needed later in the day or tonight.
	Elevated	Spotters may be needed in the next 6 hours.
	Significant	Spotters may be needed in the next 3 hours.

Flooding

Risk Level		Definition
	None	No Flooding risk.
	Limited	Risk of localized flash flooding of small streams and low water crossings, and minor flooding of poor drainage or urban areas.
	Elevated	Risk of flash flooding of several low water crossings, roads, and small streams, *or* Minor River Flooding.
	Significant	Risk of flash flooding of numerous roads, low water crossings, and small streams, *or* Moderate river flooding.
	Extreme	Risk of widespread flash flooding of low water crossings, roads, and small strams. *or* Major river flooding.

Fire Weather

Risk Level		Definition
	None	Open burning is usually safe with proper containers and precautions under low fire danger conditions. *Residents should **always** check on local ordinances that prohibit open burning under any conditions.*
	Limited	Open burning is usually safe with the proper precautions. Burning should be done in the early morning and late evening to avoid windier and drier conditions from midday through mid-afternoon. *Residents should **always** check on local ordinances that prohibit open burning under any conditions.*
	Elevated	Any open burning is discouraged due to increased wind and lower humidity - except by experienced fire personnel. *Increasing winds and lower humidity contribute to drying fuels. Fires escape control more easily and containment is difficult for inexperienced fire personnel.* Approaching Red Flag conditions.
	Significant	Open burning should not be attempted. *High winds and extended dry periods lead to extreme burning conditions. Open fires can quickly escape and are very difficult to control, even for experienced fire fighters.* Conditions exceed minimum criteria for a Red Flag Warning in most cases.
	Extreme	Very strong winds, well in excess of Red Flag Criteria combined with moderate to low humidity. *Fires will spread very quickly with spot fires common. Fire control is extremely difficult due to very strong winds.*

Disclaimers:

***These definitions are geared towards the general public and general emergency management and should not be confused with the standard National Fire Danger Rating System (NFDRS) adjectives used by wildland fire personnel.*

The fire weather category for the Enhanced Hazardous Weather Outlook is based primarily on predicted wind, humidity and temperature, and does not account for fuel moisture from recent precipitation, snow cover and recently melted snow. Appropriate adjustments to the fire environment must be made.

Fire weather hazard categories will normally be more restricted, generally in the "none" or "limited" categories from May 1st to September 30th due to normally predominant green and moist live vegetation. This will be subject to change during unusual severe Spring and/or Summer drought.

Fog

Risk Level		Definition
	None	No risk of fog.
	Limited	Fog with visibilities less than or equal to 1 mile.
	Elevated	Fog with visibilities less than or equal to 1/2 mile.
	Significant	Fog with visibilities less than or equal to 1/4 mile.
	Extreme	Fog with near zero visibilities.

Non Thunderstorm Wind

Risk Level		Definition
	None	No thunderstorm wind risk.
	Limited	**Risk for sub-severe wind gusts (less than 58 mph)** *or* *Probability of severe wind gusts (58 mph or greater) within 25 miles of a point:* **Less than 15%**
	Elevated	*Probability of severe wind gusts (58 mph or greater) within 25 miles of a point:* **Equal to or greater than 15%**
	Significant	*Probability of severe wind gusts (58 mph or greater) within 25 miles of a point:* **Equal to or greater than 30%**
	Extreme	*Probability of severe wind gusts (58 mph or greater) within 25 miles of a point:* **Equal to or greater than 45%**

Extreme Heat

Risk Level		Definition
	None	Maximum Apparent Temperature < 95
	Limited	Maximum Apparent Temperature 95 to 104
	Elevated	Maximum Apparent Temperature 105 to 109
	Significant	Maximum Apparent Temperature 110 to 114
	Extreme	Maximum Apparent Temperature greater than or equal to 115

Snow and Sleet

Risk Level		Definition
	None	No snow or sleet.
	Limited	Snow and/or sleet with less than 1 inch of accumulation expected.
	Elevated	Snow and/or sleet with 1 to 5.9 inches of accumulation expected.
	Significant	Snow and/or sleet with 6 to 11.9 inches of accumulation expected.
	Extreme	Snow and/or sleet with greater than or equal to12 inches of accumulation expected.

Freezing Rain

Risk Level		Definition
	None	No freezing rain or drizzle.
	Limited	Very light freezing rain or drizzle with no accumulation.
	Elevated	Freezing rain or drizzle with accumulation less than 1/4 inch.
	Significant	Freezing rain with accumulation of 1/4 inch to less than 1 inch.
	Extreme	Freezing rain with accumulation of greater than or equal to 1 inch.

Frost and Freeze

Risk Level		Definition
	None	No danger of frost or freeze causing damage to vegetation.
	Limited	Patchy frost during the growing season with minor damage to unprotected vegetation.
	Elevated	Frost expected during the growing season with damage to unprotected vegetation. *This may include temperatures less than or equal to 32 degrees F for less than 3 hours.*
	Significant	Freeze expected *(less than or equal to 32 degrees F for 3 or more hours)* during the growing season with significant damage to unprotected vegetation.
	Extreme	Hard freeze *(less than or equal to 28 degrees F)* during the growing season with catastrophic damage to unprotected vegetation.

Extreme Cold

Risk Level		Definition
	None	Minimum apparent temperature greater than or equal to 10 degrees F.
	Limited	Minimum apparent temperature -9 to 9 deg F.
	Elevated	Minimum apparent temperature -10 to -24 deg. F
	Significant	Minimum apparent temperature -25 to -34 deg. F.
	Extreme	Minimum apparent temperature less than or equal to -35 degrees F

EHWO Text

Introduction:
The Hazardous Weather Outlook (HWO) is a component of the decision support suite of products issued to inform the public, media and emergency management of potential weather hazards. The graphical Enhanced HWO (EHWO) will be issued with each text HWO issuance.

Mission:

The Hazardous Weather Outlook (HWO) is designed to be a "Heads Up" to expected hazardous weather and its potential impact through seven days. The HWO is a decision support product that provides a "first-stop" for users to find hazardous weather information.

Definition of a Hazard:

In an HWO, a hazard is defined as a meteorological or hydrological event which could result in a harmful impact on people, property, or the economy. Effects of this impact can sometimes be reduced or eliminated, if appropriate action is taken.

Note:

Brevity and clarity are essential in an HWO. The potential for hazardous weather including the timing, areal coverage and impact must be communicated in a clear and concise manner. The text HWO must be consistent with the graphical EHWO and other products. EHWO graphics do not tell the whole story! The HWO must add detail in support of the EHWO graphics. Areas impacted, timing, severity, etc. should be conveyed? To ensure a consistent message, consistent terms are used to relay a hazardous weather risk in the text and graphical products.

NONE	**No risk**
LIMITED	**Minor to threat and impact. Generally sub-advisory criteria.**
ELEVATED	**Minor to moderate threat and impact. Generally advisory criteria.**
SIGNIFICANT	**Moderate to high threat and impact. Generally warning criteria.**
EXTREME	**High threat and impact. Warning criteria. Exceptional events.**

References:

- NWSPD 10-517...Multi-Purpose Weather Products Specification
- NWS CR Supplement...Hazardous Weather Outlook 01-2003-10-517 – Feb. 2007

- ESDM 5.01...Severe Thunderstorm Potential, ESDM 5.04...Winter Weather, & ESDM
  5.09...Non-Precipitation Hazards

Product ID:

WMO header - FLUS43
Product ID - STLHWOSGF

Routine Issuance:

Since the HWO is used as a decision support and planning tool, issue the HWO routinely at **6 AM** and **1 PM**. An HWO will also be issued at **8 PM** anytime nocturnal thunderstorms are forecast or ongoing. The information in the HWO should be consistent with other forecast products. The graphical EHWO will be updated with every routine HWO issuance.

Non-Routine Issuance:

Additional updates should be issued as needed at any time for changes within the first 24 hours and/or if there are changes in the hazardous weather potential in the long term (2 to 7 days). Issue updated HWO's for changes in the expectation of thunderstorms, flooding, winter weather and non precipitation hazards within the first 24-36 hours. When a long fuse warning/advisory (WSW/NPW) is in effect, update the HWO when overall trends & expectations have changed.

HWO GFE Text Formatter

The HWO text product will be generated utilizing the GFE HWO text formatter
Run the HWO GFE text formatter at least 5 minutes after publishing the EHWO grids.

1) Select "HWO" from the GFE Formatter Launcher
2) Select whether or not to include a headline and click OK
3) The HWO text will be generated and displayed
4) Check the weather hazard list to ensure it matches the EHWO grids. You may edit the hazard to include a range more representative for the entire CWA.
   Example : "ELEVATED TO LOCALLY SIGNIFICANT …"
5) Enter text within the ".Discussion…" and the "Days Two Through Seven…" sections.
6) Edit the spotter outlook statement.

Again, wait 5 minutes after publishing the EHWO grids before running the HWO GFE text formatter.

HWO Product Format

1) Headline (optional)

Optional headlines should be used to highlight the primary weather hazard(s) and when long fused watches, warnings, and advisories are in effect.

2) Geographical Description (automated)

The following geographical description should be included in every HWO: *"THIS HAZARDOUS WEATHER OUTLOOK IS FOR THE MISSOURI OZARKS AND EXTREME SOUTHEAST KANSAS"*

3) DAY ONE...(TODAY AND TONIGHT; THIS AFTERNOON AND TONIGHT, TONIGHT). (automated)

If no hazards are expected, include the statement…"*NO HAZARDOUS WEATHER IS EXPECTED AT THIS TIME*"

WEATHER HAZARDS EXPECTED... (semi-automated)

List the risk level for convective and non-convective weather hazards expected through the next 24 hours . The following terms will be used and generally in agreement with EHWO grids. Refer to the Internal Risk Level and Guidance for information and specific terms for each hazard type and risk.

NONE	**No risk**
LIMITED	**Minor threat and impact. Generally sub-advisory criteria.**
ELEVATED	**Minor to moderate threat and impact. Generally advisory criteria.**
SIGNIFICANT	**Moderate to high threat and impact. Generally warning criteria.**
EXTREME	**High threat and impact. Warning criteria. Exceptional events.**

DISCUSSION... (manual input)

If hazardous weather is expected, detail where and when the event is expected, and the potential magnitude. A concise description of the synoptic/meso-scale situation related to the hazardous weather may be included. Potential impacts, summary of current long fuse watches, warnings or advisories may be included. General impact and precautions may be included if confident.

4) DAYS TWO THROUGH SEVEN... "actual days". (manual input)

The 'Outlook' section of the HWO will cover the period beyond 24 hours out to 7 days. Include the new day 7 at the 6 AM issuance. Convey the potential magnitude and certainty of the event. The terminology to describe the hazard risk must be consistent with the graphical EHWO.

5) SPOTTER INFORMATION STATEMENT... (semi-automated)

State the potential of activation using the risk level terms consistent with the EHWO. A specific area and time frame should be included when possible. In addition, encourage spotters to relay reports.

$$

HWO Format Example

FLUS43 KSGF 051502

HWOSGF

KSZ073-097-101-MOZ055>058-066>071-077>083-088>098-101>106-160000
HAZARDOUS WEATHER OUTLOOK

Combine all zones.

NATIONAL WEATHER SERVICE SPRINGFIELD MO
600 AM CDT MON MAY 15 2002

...HEADLINES (optional)...
THIS HAZARDOUS WEATHER OUTLOOK IS FOR HE MISSOURI OZARKS AND EXTREME SOUTHEAST KANSAS.

General headline

.DAY ONE...TODAY AND TONIGHT

If no hazardous weather then include, "NO HAZARDOUS WEATHER IS EXPECTED AT THIS TIME".

WEATHER HAZARDS EXPECTED:

Weather Hazards within 24 hours. Include threat(s) and appropriate risk level consistent with the graphical EHWO.

DISCUSSION:

Concise synoptic/meso-scale discussion and reasoning.

ADDITIONAL INFORMATION:

Optional. Potential impacts, specific locations affected, overview of watches, advisories, warnings, call to actions, safety tips, etc.

.DAY TWO THROUGH SEVEN...MONDAY THROUGH SUNDAY

General outlook out to 7 days. Use risk level definition. If no hazardous weather then include, NO HAZARDOUS WEATHER IS EXPECTED AT THIS TIME".

.SPOTTER INFORMATION STATEMENT...

Specify activation potential. Always include.

&&
Web Sites
$$

<u>What EHWO Risk Levels to Include in HWO</u>

Forecasters should include nearly all risks and risk levels in the HWO, but there are a few exceptions:

1) Fire Weather – there will be several days throughout the course of a year with a limited risk level. This should not be included in the HWO. Elevated risk levels or higher shall be included through Day 2. A call to action type statement should be included as many customers may be unaware what increased or dangerous fire weather conditions mean for them. For example, "Open fires in these conditions can quickly escape control".

2) The actual lightning risk level is only included in the "WEATHER HAZARDS EXPECTED…" section on Day 1. In the discussion sections of the Day 1 and Days 2-7, thunderstorms are usually used in place of lightning. When applicable

(usually on Day 1 or 2), it is recommended that lightning frequency be used as a threat in the discussion section.

	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Tornado	All						
Hail	All						
Thunderstorm Wind Gusts	All						
Severe Thunderstorms	All	All	All	All	All	All	All
Flooding	All	All	All	All	All	All	All
Lightning (see #3 above)	All	All	All	All	All	All	All
Spotter Outlook	All						
Fire Weather (see #2 above)	Elevated or Higher	Elevated or Higher	None	None	None	None	None
Fog	All	All	All	All	All	All	All
Non-Thunderstorm Winds	All	All	All	All	All	All	All
Excessive Heat	All	All	All	All	All	All	All
Snow and Sleet	All	All	All	All	All	All	All
Freezing Rain	All	All	All	All	All	All	All
Frost and Freeze	All	All	All	All	All	All	All
Excessive Cold	All	All	All	All	All	All	All

HWO Examples

Day one convective hazard and extended hazards:

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FLUS43 KSGF 100916
HWOSGF

HAZARDOUS WEATHER OUTLOOK
NATIONAL WEATHER SERVICE SPRINGFIELD MO
416 AM CDT MON AUG 10 2009

KSZ073-097-101-MOZ055>058-066>071-077>083-088>098-101>106-110930-
BOURBON-CRAWFORD-CHEROKEE-BENTON-MORGAN-MILLER-MARIES-VERNON-
ST. CLAIR-HICKORY-CAMDEN-PULASKI-PHELPS-BARTON-CEDAR-POLK-DALLAS-
LACLEDE-TEXAS-DENT-JASPER-DADE-GREENE-WEBSTER-WRIGHT-NEWTON-
LAWRENCE-CHRISTIAN-DOUGLAS-HOWELL-SHANNON-MCDONALD-BARRY-STONE-
TANEY-OZARK-OREGON-
416 AM CDT MON AUG 10 2009

THIS HAZARDOUS WEATHER OUTLOOK IS FOR PORTIONS OF THE MISSOURI
OZARKS AND EXTREME SOUTHEAST KANSAS.

.DAY ONE...TODAY AND TONIGHT.

  WEATHER HAZARDS EXPECTED:

  LIMITED THUNDERSTORM WIND GUST RISK.
  LIMITED HAIL RISK.
  LIMITED LIGHTNING RISK.
  ELEVATED FLASH FLOODING RISK.

  DISCUSSION:

  A COLD FRONT ACROSS NORTHWESTERN MISSOURI WILL SLOWLY MOVE
  SOUTHEAST THROUGH THE DAY. WITH TEMPERATURES RISING INTO THE LOW
  90S AND SUFFICIENT LOW LEVEL MOISTURE ALREADY IN PLACE...THIS
  FRONT AND ANY REMNANT OUTFLOW BOUNDARIES FROM MORNING CONVECTION
  WILL SERVE AS THE FOCUSING MECHANISM FOR THUNDERSTORM
  DEVELOPMENT. THE FRONT IS EXPECTED TO MOVE SOUTH THROUGH THE DAY
  AND IMPACT COMMUNITIES ACROSS SOUTHERN AND SOUTHEASTERN MISSOURI
  THROUGH THE AFTERNOON HOURS. A LIMITED THREAT FOR SEVERE STORMS
  EXISTS...WITH HAIL TO THE SIZE OF QUARTERS AND WIND GUSTS TO
  60 MPH THE PRIMARY HAZARDS.

  INDICATIONS ARE THAT A CONVECTIVE COMPLEX WILL FORM OVER EASTERN
  KANSAS THIS EVENING AND MOVE SOUTHEAST INTO THE FORECAST AREA
  OVERNIGHT. THERE IS A LIMITED THREAT FOR SEVERE STORMS...WITH
  WIND GUSTS TO 60 MPH AND HAIL TO THE SIZE OF QUARTERS POSSIBLE.
  THERE WILL ALSO BE AN ELEVATED THREAT FOR HEAVY RAINFALL LEADING
  TO FLASH FLOODING.

.DAYS TWO THROUGH SEVEN...TUESDAY THROUGH SUNDAY.

  THUNDERSTORMS WILL END FROM NORTHWEST TO SOUTHEAST TUESDAY MORNING
  WITH AN ELEVATED THREAT FOR FLASH FLOODING BEING THE PRIMARY HAZARD.
  ALL THUNDERSTORMS SHOULD EXIT THE OUTLOOK AREA BY NOON TUESDAY.

.SPOTTER INFORMATION STATEMENT...

  SPOTTER ACTIVATION MAY BE NEEDED FOR COMMUNITIES IN SOUTHEAST
  KANSAS AND WEST CENTRAL MISSOURI...NORTH AND WEST OF A LINE FROM
  JOPLIN TO BOLIVAR TO VIENNA AROUND NOON TODAY. COMMUNITIES SOUTH
  AND EAST OF THIS LINE MAY NEED TO ACTIVATE SPOTTERS BY MID
  AFTERNOON.
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&&

THIS PRODUCT IS NOW AVAILABLE IN GRAPHICAL FORMAT...ALONG WITH
OTHER WEATHER...HYDROLOGICAL AND CLIMATE INFORMATION...AT
HTTP://WWW.CRH.NOAA.GOV/SGF(ALL LOWERCASE)

$$

Day one multiple hazards and extended hazards:

FLUS43 KSGF 011038
HWOSGF

HAZARDOUS WEATHER OUTLOOK
NATIONAL WEATHER SERVICE SPRINGFIELD MO
538 AM CDT THU OCT 1 2009

KSZ073-097-101-MOZ055>058-066>071-077>083-088>098-101>106-021045-
BOURBON-CRAWFORD-CHEROKEE-BENTON-MORGAN-MILLER-MARIES-VERNON-
ST. CLAIR-HICKORY-CAMDEN-PULASKI-PHELPS-BARTON-CEDAR-POLK-DALLAS-
LACLEDE-TEXAS-DENT-JASPER-DADE-GREENE-WEBSTER-WRIGHT-NEWTON-
LAWRENCE-CHRISTIAN-DOUGLAS-HOWELL-SHANNON-MCDONALD-BARRY-STONE-
TANEY-OZARK-OREGON-
538 AM CDT THU OCT 1 2009

THIS HAZARDOUS WEATHER OUTLOOK IS FOR PORTIONS OF THE MISSOURI
OZARKS AND EXTREME SOUTHEAST KANSAS.

.DAY ONE...TODAY AND TONIGHT.

WEATHER HAZARDS EXPECTED:

ELEVATED RISK OF HAIL.
LIMITED LIGHTNING RISK.
LIMITED RISK OF FLASH FLOODING.
ELEVATED RISK OF DAMAGING WINDS.

DISCUSSION:

SCATTERED THUNDERSTORMS WILL IMPACT AREAS GENERALLY ALONG AND
NORTH OF THE INTERSTATE 44 CORRIDOR THIS MORNING. THERE IS A
LIMITED THREAT FOR HAIL...WITH A FEW STORMS POSSIBLY
PRODUCING HAIL TO THE SIZE OF QUARTERS. LOCALLY HEAVY
RAINFALL WILL ALSO BE POSSIBLE WITH A LIMITED THREAT FOR
FLASH FLOODING. THERE IS ALSO A LIMITED NON THUNDERSTORM WIND
THREAT WITH GUSTS GREATER THAN 30 MPH EXPECTED THIS MORNING
ACROSS EXTREME SOUTHEAST KANSAS AND WESTERN MISSOURI.

ADDITIONAL THUNDERSTORMS ARE THEN EXPECTED TO DEVELOP AND
INTENSIFY THIS AFTERNOON AS A STRONG COLD FRONT PUSHES
INTO THE OUTLOOK AREA. AT THIS TIME...IT APPEARS THAT THE
GREATEST RISK FOR SEVERE THUNDERSTORMS WILL BE ALONG AND
EAST OF A NEVADA TO JOPLIN LINE FROM EARLY THIS AFTERNOON
INTO EARLY THIS EVENING.

THESE STORMS ARE THEN EXPECTED TO DEVELOP INTO A SQUALL LINE
BY MID AFTERNOON. THERE WILL BE AN ELEVATED THREAT FOR
DAMAGING WINDS...WITH STRAIGHT LINE WINDS UP TO 70 MPH
POSSIBLE. THERE IS ALSO A LIMITED THREAT FOR TORNADOES DUE TO
HIGH WIND SHEAR IN THE LOWER LEVELS OF THE ATMOSPHERE. A
LIMITED THREAT FOR HAIL WILL ALSO CONTINUE...WITH HAIL TO

THE SIZE OF QUARTERS POSSIBLE. A BRIEF PERIOD OF HEAVY
RAINFALL WILL ACCOMPANY THESE STORMS...BUT THE THREAT FOR
FLASH FLOODING WILL BE LIMITED AS THIS LINE OF STORMS WILL
MOVE QUICKLY TO THE EAST. THESE STORMS ARE EXPECTED TO EXIT
SOUTH CENTRAL MISSOURI EARLY THIS EVENING.

.DAYS TWO THROUGH SEVEN...FRIDAY THROUGH WEDNESDAY.

THERE IS A LIMITED NON THUNDERSTORM WIND THREAT ON FRIDAY
WITH WIND GUSTS OVER 30 MPH EXPECTED ACROSS THE OUTLOOK AREA.
STRONG AND GUSTY WINDS COMBINED WITH LOW RELATIVE HUMIDITIES
WILL LEAD TO AN ELEVATED FIRE DANGER. OPEN FIRES IN THESE
CONDITIONS CAN QUICKLY ESCAPE CONTROL.
THUNDERSTORMS WILL AGAIN BE POSSIBLE EARLY NEXT WEEK.

.SPOTTER INFORMATION STATEMENT...
SPOTTER ACTIVATION WILL LIKELY BE NEEDED THIS AFTERNOON AND
EARLY THIS EVENING...MAINLY ALONG AND EAST OF A NEVADA TO
JOPLIN LINE.
&&
THIS PRODUCT IS NOW AVAILABLE IN GRAPHICAL FORMAT...ALONG WITH
OTHER WEATHER...HYDROLOGICAL AND CLIMATE INFORMATION...AT
HTTP://WWW.CRH.NOAA.GOV/SGF(ALL LOWERCASE)
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Day one winter hazard:

FLUS43 KSGF 100916
HWOSGF

HAZARDOUS WEATHER OUTLOOK
NATIONAL WEATHER SERVICE SPRINGFIELD MO
416 AM CST MON JAN 10 2010

KSZ073-097-101-MOZ055>058-066>071-077>083-088>098-101>106-110930-
BOURBON-CRAWFORD-CHEROKEE-BENTON-MORGAN-MILLER-MARIES-VERNON-
ST. CLAIR-HICKORY-CAMDEN-PULASKI-PHELPS-BARTON-CEDAR-POLK-DALLAS-
LACLEDE-TEXAS-DENT-JASPER-DADE-GREENE-WEBSTER-WRIGHT-NEWTON-
LAWRENCE-CHRISTIAN-DOUGLAS-HOWELL-SHANNON-MCDONALD-BARRY-STONE-
TANEY-OZARK-OREGON-
416 AM CST MON JAN 10 2010

THIS HAZARDOUS WEATHER OUTLOOK IS FOR PORTIONS OF THE MISSOURI
OZARKS AND EXTREME SOUTHEAST KANSAS.

.DAY ONE...TODAY AND TONIGHT.

WEATHER HAZARDS EXPECTED:

SIGNIFICANT RISK OF SNOW AND SLEET.
ELEVATED FREEZING RAIN RISK.

DISCUSSION:

A STRENGTHENING LOW PRESSURE SYSTEM WILL TRACK FROM THE PANHANDLE TO
TEXAS INTO ARKANSAS LATER TODAY AND TONIGHT. THIS STORM SYSTEM WILL
INTERACT WITH ABUNDANT MOISTURE TO PRODUCE MODEATE TO HEAVY SNOW.
PRECIPITATION MAY CHANGE TO FREEZING RAIN AND SLEET THIS AFTERNOON
ACROSS FAR SOUTHERN MISSOURI SOUTH OF HIGHWAY 60. PRECIPITATION WILL
TRANSITION TO ALL SNOW AGAIN LATE TONIGHT AS COLDER AIR SPREADS INTO
THE REGION. IN ADDITION…INREASING NORTH WINDS TONIGHT IN EXCESS OF 20

MPH WILL CAUSE BLOWING AND DRIFTING SNOW AND REDUCE VISIBILITIES TO LESS THAN ONE HALF MILE AT TIMES.

WINTER STORM WARNIGS ARE IN EFFET FOR THE ENTIRE OUTLOOK AREA TODAY AND TONIGHT. TRAVEL WILL LIKELY BECOME TREACHEROUS DURING THE DAY.

.DAYS TWO THROUGH SEVEN...TUESDAY THROUGH SUNDAY.

SNOW WILL DIMINISH TUESDAY MORNING WITH AN ELEVATED RISK FOR ADDITIONAL SNOW ACCUMULATONS OF ONE TO THREE INCHES.

.SPOTTER INFORMATION STATEMENT...

EMERGENCY MANAGERS AND SPOTTERS ARE ENCOURAGED TO RELAY SNOW ACCUMULATONS AND ROAD REPORTS.

&&

THIS PRODUCT IS NOW AVAILABLE IN GRAPHICAL FORMAT...ALONG WITH OTHER WEATHER...HYDROLOGICAL AND CLIMATE INFORMATION...AT HTTP://WWW.CRH.NOAA.GOV/SGF(ALL LOWERCASE)

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Appendix A

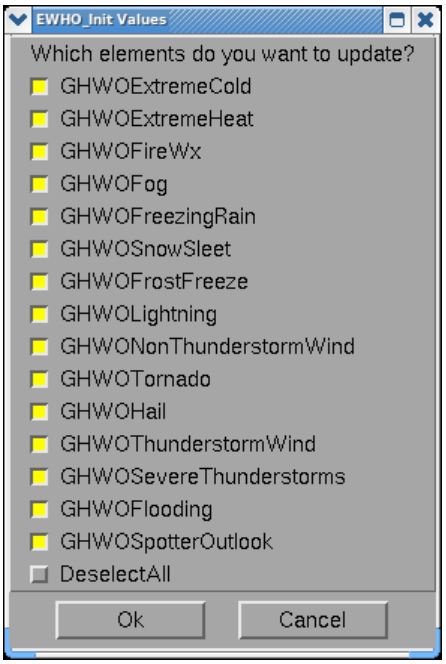
Step by Step Instructions for Initialization

Time Period:
These instructions apply to the new day initialization between 4 am to 6 am.

1) Load the EHWO in the GFE weather element group.
2) Select EHWO and "New" under the Populate menu.
3) Run the procedure with all risk elements selected (default)*. This will take approximately 5 minutes to run.
4) Edit those grids listed as Manual or SPC in the GFE section.
    a. Day 1 Tornado, Hail, T-Storm Wind, and Spotter Outlook
    b. Days 2 to 7 Severe
    c. Days 1 to 7 Lightning (for addition of Extreme category only)
    d. Days 1 to 7 Flooding
5) QC all risk elements. Refer to Grid Editing Practices in the GFE section.
6) Save the grids.
7) Run the EHWO to Web script under the Products and then Scripts menu.
8) QC the web 10 minutes after running the EHWO to Web script.
9) Check that the proper web headline is displayed.

To use the deselect option, just select the "DeselectAll" option and click OK.

* If the EHWO grids have already been initialized between 4 and 6 am **AND** sent to the web, rerun the EHWO initialization using the "Update" option.

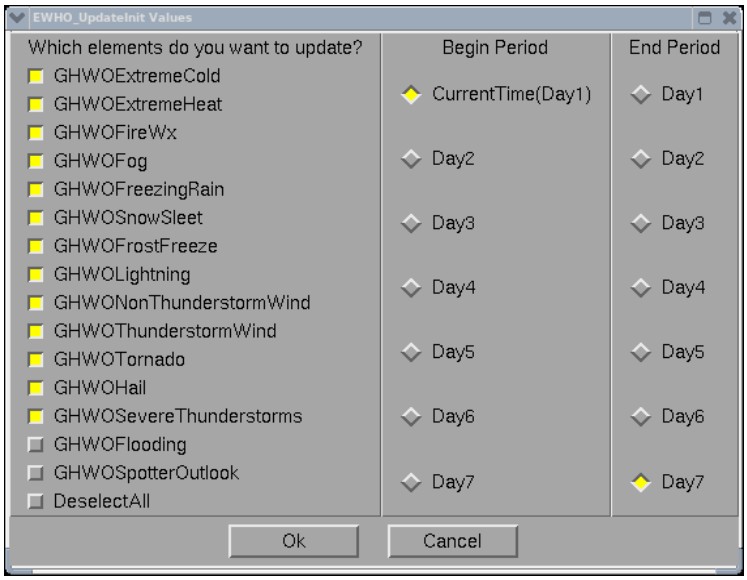


Appendix B

Step by Step Instructions for Updates

Time Period:
These instructions apply to any updates after the new day initialization has been sent to the web.

1) Load the EHWO in the GFE weather element group.
2) Select the EHWO and "Update" under the Populate menu.
3) Run the procedure with desired risk elements* and time period selected. Forecasters are encouraged to run the procedure for at least those risk elements listed as Grids in the GFE section.
4) Edit those grids listed as Manual or SPC in the GFE section.
    a. Day 1 Tornado, Hail, T-Storm Wind, and Spotter Outlook
    b. Days 2 to 7 Severe
    c. Days 1 to 7 Lightning (for addition of Extreme category only)
    d. Days 1 to 7 Flooding
5) QC all risk elements. Refer to Grid Editing Practices in the GFE section.
6) Save the grids.
7) Run the EHWO to Web script under the Products and then Scripts menu.
8) QC the Internet 10 minutes after running the EHWO to Web script.
9) Check that the proper web headline is displayed.

To use the deselect option, just select the "DeselectAll" option and click OK.

* Understand that running the update procedure for grids in the SPC and Manual category will delete the previously constructed grids! This may not be desired if forecasters prefer a persistence approach.