

**Product Description Document**  
**8- to 14-day Hazards Outlook (Contiguous U.S. and Alaska) with Experimental**  
**Probabilistic Hazard Information**

February 4, 2025

**Part 1 – Mission Connection**

**a) Product Description:**

This product is a set of outlook maps and associated composite maps highlighting potential hazards during the Days 8 – 14 (“Week 2”) period related to precipitation, temperature, wind, drought, and other weather, water, and climate hazards. This operational product is newly enhanced with experimental probabilistic information that allows users to make better decisions depending on their varying risk tolerances, consistent with the growing body of evidence demonstrating the value of probabilistic information in improving overall decision making.

Experimental probabilistic hazards are extreme temperatures (including extreme heat), heavy precipitation, high wind, and heavy snow. These experimental hazard types indicate when there is a low (20%), moderate (40%), or high (60%) risk of the hazard occurring based on the baseline definitions enumerated below.

**b) Purpose/Intended Use:**

The purpose of this product is to provide advanced notice (Days 8-14) of potentially high impact hazards related to extended-range weather and short term climate and water related events. The product fits within the NWS mission as the goal is to mitigate impacts to life and property as well as the national economy.

**c) Audience/Users:**

In addition to the general public, the audience includes decision makers for a number of sectors of the U.S. economy including the agriculture, water resources, energy, health sectors as well as the emergency management community.

**d) Presentation Format:**

The product is presented as static graphic maps as noted above. A Geographic Information System (GIS) display interface is also included so that users can scroll and zoom in if necessary to better understand the potential threats at geographic locations. GIS shapefiles and Keyhole Markup Language (KML) files are available for download from the official product webpage:

<https://www.cpc.ncep.noaa.gov/products/predictions/threats/threats.php>

**e) Feedback Method:**

The NWS is accepting comments through June 30, 2025, on the provision of the experimental probabilistic hazard information at:

[https://www.surveymonkey.com/r/8to14DayHazardsOutlookwithExpProbHazardInfo\\_2025](https://www.surveymonkey.com/r/8to14DayHazardsOutlookwithExpProbHazardInfo_2025)

Note that the operational, composite hazard maps are not the subject of this comment period.

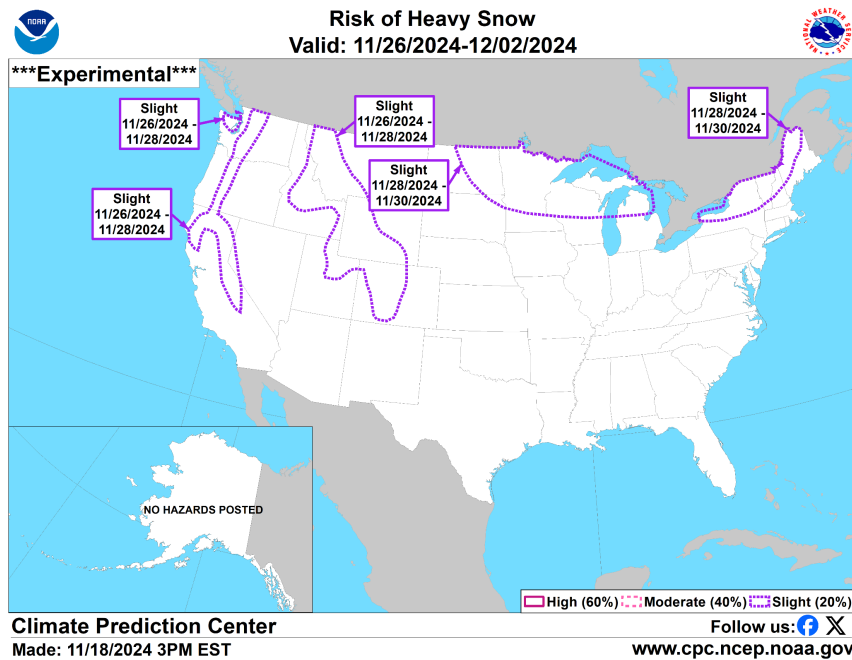
For further information, please contact:

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## Part 2 – Technical Description

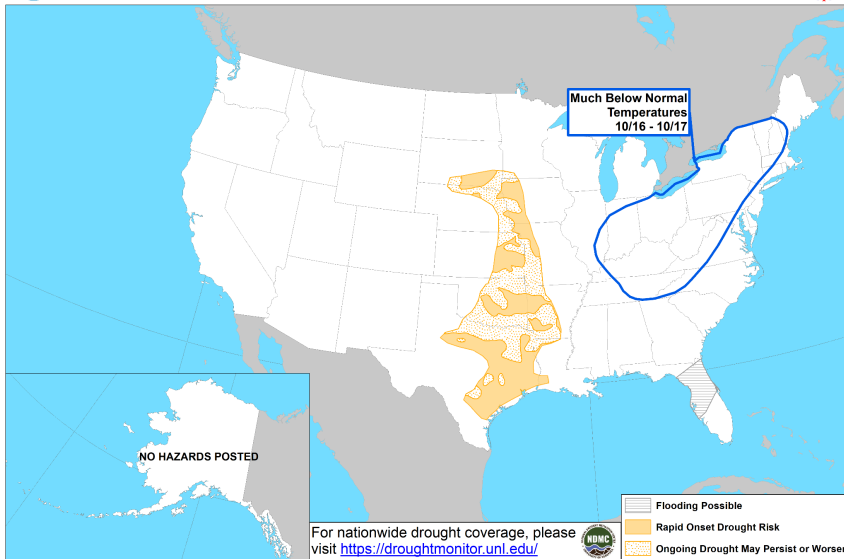
### a) Format and Science Basis:



**Figure 1:** Static map depicting probabilistic risk of heavy snow during the Week-2 period; this map is characteristic of the experimental probabilistic hazards types.



Day 8-14 U.S. Hazards Outlook  
Valid: 10/16/2024-10/22/2024



Climate Prediction Center

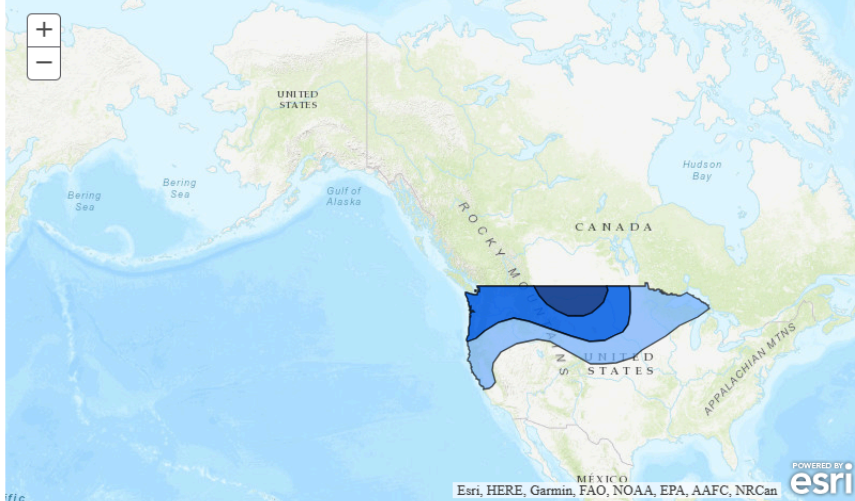
Made: 10/08/2024 3PM EDT

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**Figure 2:** Static map depicting the deterministic hazards for the Week-2 period; this map is characteristic of the composite hazard map, and is currently operational.

Type and Period	Temperature	Precipitation	Snow	Wind	Rapid Onset Drought
Composite Days 8-14 Map	<input checked="" type="checkbox"/>	<input type="checkbox"/>	No Hazards	No Hazards	No Hazards
Probabilistic Days 8-14 Map	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No Hazards	



<b>Excessive Heat</b>	<b>Much Above Normal Temperatures</b>	<b>Heavy Precipitation</b>	<b>Composite</b>
High Risk	High Risk	High Risk	Flooding Possible
Moderate Risk	Moderate Risk	Moderate Risk	Frozen Precipitation
Slight Risk	Slight Risk	Slight Risk	Rapid Onset Drought
<b>Much Below Normal Temperatures</b>	<b>High Winds</b>	<b>Heavy Snow</b>	
High Risk	Moderate Risk	High Risk	
Moderate Risk	Slight Risk	Moderate Risk	
Slight Risk		Slight Risk	

**Figure 3.** Dynamic map allows for plotting and overlaying all available hazard types, including the operational composite maps, and the experimental probabilistic hazard types.

See above figures for the product format. ArcGIS software is used by the forecaster to prepare the outlook maps and PNG images are created for the CPC web page. The outlook maps are also made available in GIS shapefile and Google Earth KML formats, and displayed on an interactive viewer. For a complete example, see a real-time product at the website addresses below:

<https://www.cpc.ncep.noaa.gov/products/predictions/threats/threats.php> and archived at <https://www.cpc.ncep.noaa.gov/products/archives/hazards/gethazards.php>

The primary driver of the outlook maps is a host of post-processed (bias corrected and reforecast calibrated) ensemble forecast systems from NCEP (GEFS), Environment Climate Change Canada (ECCC, GEPS) and European Centre for Medium Range Weather Forecasts (ECMWF). In addition to favored temperature and precipitation anomalies, antecedent conditions such as anomalous soil moisture and snow water equivalent impact the Week-2 Hazards Outlook (i.e., rapid drought onset potential or ongoing / persisting or potential developing flooding concerns).

Given the forecast time frame, the outlook maps are informed by calibrated probabilities due to the inherent increase in uncertainty in the Week-2 forecast period. In general, probabilities exceeding 40% warrant hazard depiction. The calibrated probabilities for various hazards related to precipitation amounts, snowfall, temperature, and winds are linked to known important criteria for hazardous conditions and vary across the forecast domain – in consultation with the NWS regional field structure.

The Week-2 U.S. Hazards Outlook contains human drawn delineations of where various variables are expected to have the potential of posing a hazard to life or property. The forecasters apply a subjective decision factor when delineating a hazard area. For example, a cold snap in the winter or a heat wave in the summer are likely threats to life and property, while a cool period in July is not.

For temperature, precipitation, wind, and snow hazards, experimental probabilities are available. These maps convey when there is a slight (>20%), moderate (>40%), or high (>60%) risk of exceeding the hazard threshold. For these hazard types, the area encompassed by a moderate risk is included on the operational composite hazard map.

The definitions of the hazards follow. Because prior conditions play a role in impacts of the hazards, the following definitions are only guidelines:

**Table 1. Hazard Types and Associated Thresholds**

Hazard	Nominal Threshold	Lower Threshold
Extreme Heat**	Heat Index values (summer season) >100°F northern tier >105°F southern tier	Predicted temperatures are likely to cross a physically significant

	>115°F southwest	value* or the first heat wave of the warm season.
Much below normal minimum temperatures**	Daily minimum temperatures less than the 15th percentile and near freezing or sub-freezing (or other temperature deemed hazardous) temperatures.	Predicted temperatures are likely to cross a physically significant value*
Much above normal maximum temperatures**	Daily maximum temperatures greater than the 85th percentile and temperatures reaching 90F or greater, or night time lows above 80F.	Predicted temperatures are likely to cross a physically significant value*
Heavy Precipitation**	Heavy precipitation - 3-day total precipitation exceeding the 85th climatological percentile and >1"	Flooding Saturated Soils Burn Scars
High Winds**	Sustained wind speeds reaching the 85th percentile as well as reaching 25 to 50 miles per hour, at any time over a 3-day period.	
Heavy Snow**	3-day accumulated precipitation exceeding the 85th climatological percentile, total snowfall amounts exceeding 0.5" liquid equivalent, and temperatures near values favorable for snow. An experimental objective probabilistic snow water equivalent (SWE) forecast tool is also used to make the determination above.	
Flooding	Highlights possible flooding that may extend into the Week-2 period based on current conditions and favored Week-1 precipitation and temperature outlooks. Specific information is outlined in the text discussion as each case in these situations often requires additional context.	CPC coordinates with the relevant area RFC and the NWC on these cases. CPC is working to formalize this protocol now.
Rapid Onset Drought	The following conditions are required for Rapid Onset Drought (ROD) risk: (1) abnormal dryness (D0) in the current U.S. Drought Monitor, (2) soil moisture below the 30 <sup>th</sup> percentile (3) 7-day positive temperature anomalies from the	

	<p>NDFD, especially if a period of extreme heat is possible  (4) no precipitation forecast or negative precipitation anomalies from the WPC  (5) Warm and/or dry conditions favored in the Week-2 outlook</p> <p>The above conditions are markers for potential degradation of two categories or more in the upcoming four-week period as characterized by the U.S. Drought Monitor and labeled as “Rapid Onset Drought Risk”.</p> <p>Because of the multiple conditions needed for “Rapid Onset Drought Risk”, these areas may be small and disconnected. “Ongoing Drought May Persist or Worsen” is a second category, used to connect “Rapid Onset Drought Risk” areas and indicate areas where D1-D4 drought is designated by the current U.S. Drought Monitor and is expected to persist or worsen in the coming four-week period.</p>	
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\*For temperature related hazards, a physically significant threshold may be used. For example, temperatures above freezing in Alaska, during the winter, can pose a hazard to travel on ice roads, and cause icing on highways. An early frost or freeze over agriculturally sensitive areas.

**\*\*Included in Experimental Probabilistic Hazards during the current Comment/Review Period**

**b) Availability:**

The CPC Week-2 U.S. Hazards Outlook is released daily Monday through Friday by 4PM ET.

The product/service is available at:

<https://www.cpc.ncep.noaa.gov/products/predictions/threats/threats.php>