HeatRisk - Understanding HeatRisk

The purpose of the experimental NWS HeatRisk service is to place the upcoming forecast of temperatures into climatological context and identify upcoming heat events that will lead to increased heat-related impacts. To make it easier to understand, the HeatRisk is divided into five categories:

HeatRisk Values **When the HeatRisk value is:**	**Risk of Heat Effects** **…the risk of heat effects are:**	**Level of Heat Concern** **…as symbolized by this color:**
0	Little to None	Green
1	Minor	Yellow
2	Moderate	Orange
3	Major	Red
4	Extreme	Magenta

Simply put, the higher the value, the greater the level of heat concern would be for that location and the higher the risk of heat-related impacts.

Essentially when HeatRisk values are 1 or greater, heat is considered to be of increasing concern – at first for those who are extremely sensitive to heat, then for everyone exposed to heat as HeatRisk values get to the highest levels. For example, a HeatRisk value of 0 represents little to no risk of heat-related impacts; a HeatRisk value of 2 represents a moderate risk of heat-related impacts, primarily amongst those individuals who are sensitive to heat and/or exposed to heat, especially those without effective cooling and/or adequate hydration; while a HeatRisk value of 3 represents a major risk of heat-related impacts affecting all individuals without proper hydration and adequate cooling. If both the overnight lows and daytime highs are exceptionally warm for that date (i.e. in the upper 5% of the historical daily temperature distribution) at a given location over a period of at least 48 hours, at levels that pose an elevated risk for heat complications, the highest level of 4 for HeatRisk is achieved. These higher levels of HeatRisk also identify increasing risk of impacts throughout health systems, heat-sensitive industries, and infrastructure.

The NWS has assigned a specific color to each HeatRisk category to make it easier for people to understand quickly whether heat is reaching a high enough level to potentially cause heat concerns for their unique situation. Each HeatRisk category corresponds to a different level of potential heat-related impacts. The five levels of HeatRisk and what they mean are shown in the table below.

Numerical Value	Meaning	Who/What is at Risk?	How Common is this Heat?	For those at risk, what actions can be taken?
0	• This level of heat poses **little to no** risk from expected heat	• No elevated risk	• Very common	• No preventative actions necessary
1	• Heat of this type is **tolerated by most**; however there is a **minor risk for extremely heat-sensitive groups** to experience negative heat-related health effects	• **Primarily those who are *extremely* sensitive to heat**, especially when outdoors without effective cooling and/or adequate hydration	• Very Common	• Increase hydration • Reduce time spent outdoors or stay in the shade when the sun is strongest • Open windows at night and use fans to bring cooler air inside buildings
2	• Heat of this type is tolerated by many; however there is a **moderate risk for members of heat-sensitive groups** to experience negative heat-related health effects, including heat illness • **Some risk for the general population who are exposed to the sun flor longer periods of time** • For those without air conditioning, **living spaces can become uncomfortable during the afternoon and evening**, but fans and leaving windows open at night will help	• **Primarily heat-sensitive or vulnerable groups**, especially those without effective cooling or hydration • Those not acclimated to this level of heat (i.e. visitors) • Otherwise healthy individuals exposed to longer duration heat, without effective cooling or hydration, such as in the sun at an outdoor venue • Some transportation and utilities sectors • Some health systems will see increased demand, with increases in ER visits	• Fairly common in most locations • Very common in southern regions of the country	• Reduce time in the sun during the warmest part of the day • Stay hydrated • Stay in a cool place during the heat of the day • Move outdoor activities to cooler times of the day • For those without a/c, use fans to keep air moving and open windows at night
3	• Heat of this type represents **a major Risk to all individuals who are 1) exposed to the sun and active or 2) are in a heat-sensitive group**	• **Much of the population, especially anyone without effective cooling or hydration** • Those exposed to the	• Uncommo n most locations • Fairly common in	• Consider canceling outdoor activities during the heat of the day, otherwise move activities to the

	• **Dangerous to anyone without proper hydration or adequate cooling** • **For those without air conditioning, living spaces can become deadly during the afternoon and evening. Fans and open windows will not be as effective.** • **Poor air quality** is possible • **Power interruptions** may occur as electrical demands increase	heat/sun at outdoor venues • Health systems likely to see increased demand with significant increases in ER visits • Most transportation and utilities sectors	southern regions of the country	coolest parts of the day • Stay hydrated • Stay in a cool place especially during the heat of the day and evening • If you have access to air conditioning, use it, or find a location that does. Even a few hours in a cool location can lower risk. Fans may not be adequate
4	• **This is a rare level of heat leading to an Extreme Risk for the entire population** • **Very dangerous to anyone without proper hydration or adequate cooling.** • **This is a multi-day excessive heat event**. A prolonged period of heat is dangerous for everyone not prepared. • **Poor air quality** is likely. • **Power outages are increasingly likely** as electrical demands may reach critical levels.	• **Entire population exposed to the heat is at risk.** • For people without effective cooling, especially heat-sensitive groups, **this level of heat can be deadly**. • Health systems highly likely to see increased demand with significant increases in ER visits • Most transportation and utilities sectors	• Rare most locations • Occurs up to a few times a year in southern regions of country, especially the Desert Southwest	• Strongly consider canceling outdoor activities • Stay hydrated • Stay in a cool place, including overnight • If you have access to air conditioning, use it, or find a location that does. Even a few hours in a cool location can lower risk. Fans will not be adequate • Check on your neighbors

Because heat affects people and various economic sectors in very individual and different ways, the level of HeatRisk that is important to you may be different than for another person. It also may be different depending on what activities you are engaged in, or what medication you are on.

So for someone who is in a heat-sensitive group, monitoring the HeatRisk forecasts and taking specific actions to avoid adverse heat effects when the forecast is calling for an “orange” day or greater would make sense for them. For someone not in a heat-sensitive group who has routine access to air conditioned spaces, “red” or “magenta” might be the only levels they would pay attention to and take specific actions to avoid adverse heat effects. In this way HeatRisk allows for decisions to be made based on an individual’s heat tolerance and situation and provides recommendations of appropriate actions to be taken when that level is forecast.

Your Level May Change As Your Activities Do

The level of HeatRisk that is important for you is not always the same. For example, if you decide to take up jogging in July during your lunch break, you may want to monitor the forecast for “orange” HeatRisk forecasts for the first few weeks until you get used to both jogging and the heat of the day. You are initially more heat-vulnerable due to this change in your activities and exposure. So initially, when “orange” levels or greater are forecast, you might follow the suggested action of moving the time you jog to before work, and avoid the heat of the day. Once you get used to the heat and to jogging, you may decide to start modifying your activities only when “red” levels are forecast.

Or let’s say you are traveling in April from a northern climate to the desert Southwest for a week of hiking and exploring the landscape in some of our national parks. You haven’t gotten used to temperatures in the 80s or 90s yet, but these temperatures are not that uncommon in the desert regions at this time of year. So, you may want to monitor the forecast for “orange” levels or greater during the vacation to identify days that you may want to begin taking additional steps to ensure proper hydration, schedule activities around the heat of the day, etc. Taking just these few actions may make the difference between having an enjoyable and safe trip or becoming ill or perhaps worse. Meanwhile, those that live in the desert Southwest who are not in a heat-sensitive group are doing their normal day-to-day activities when “orange” levels are forecast, because they have already become acclimated to these types of temperatures and are able to stay hydrated and cool.

The HeatRisk service can also be used by industry as well as public health sectors. For example, for a HeatRisk of 3/Red or 4/Magenta, the power industry might anticipate a significantly increased demand and load on the power grid. They could take appropriate actions well in advance of any NWS issued product, based on the NWS forecast of potential heat effects through HeatRisk. Higher levels of HeatRisk are likely to result in increasing ER visits at hospitals, so monitoring the HeatRisk forecast to make appropriate staffing and resources decisions may be beneficial.

So you can see that the NWS HeatRisk forecast is something that can be adapted to your particular needs and heat sensitivity, allowing you to track the forecast and take the actions that you need to take, when you need to take them.