HeatRisk - What's in HeatRisk?

HeatRisk takes into consideration:

1. How unusually above normal the temperatures are at your location (is it warmer than the top 5% of hottest days in the period of record for this date?)
2. Forecast-driven humidity detection (leveraging known relationships between minimum temperature, dewpoint temperature, and diurnal range differences, both climatologically and in the current forecast period)
3. The time of the year (for example, is this early season heat that you likely haven't become used to, typical mid-summer heat, or late season heat that you may have become more used to?)
4. The duration of unusual heat (for example, are temperatures overnight at levels that would lower heat stress, maintain it, or will unusually warm overnight low temperatures add to heat stress into the next day?)
5. If those temperatures are at levels that pose an elevated risk for heat complications, such as heat stress, based on peer-reviewed science and heat-health thresholds supported by the Centers for Disease Control and Prevention (CDC) national data sets.

You may wonder about how we incorporate humidity in this process. We all know that humidity plays a significant role in making warm temperatures feel even more oppressive. Unfortunately, there are not an adequate number of weather stations across the country which report humidity values for a long enough period of time to be used directly in the HeatRisk approach. But there are many more stations that report temperature. Because of this, we use well known physical relationships of temperature to dew point temperature (humidity) to approximate the role of humid air. This is done by considering:

1. How unusually warm the overnight temperatures are (more humid air usually leads to warmer overnight low temperatures than are typical for an area, even traditionally humid areas)
2. How large the difference is between overnight lows and daytime high temperatures (the difference tends to be larger the less humid the air is).

All of the factors listed above are used to create daily dynamic temperature thresholds to identify what is truly unusual and at levels that would result in increased heat stress and heat risk. These thresholds differ from one location to another, especially between cities and rural locations and in areas where elevation changes. As appropriate, these thresholds also change based on the day of year so that they are lower in the spring than in the summer, for example. The official NWS gridded forecasts for high and low temperatures are then compared to these dynamic temperature thresholds at each location, and the forecast temperatures are matched to their appropriate HeatRisk color/level. Information from both the overnight lows and daily highs are combined to create the final output: the 24 hour HeatRisk value. This information is available for the entire upcoming seven day period and provides additional information to base heat-related decisions on, not only for human health, but for the many sectors that are also affected

by heat. The experimental HeatRisk service is just one more way the NWS is working toward ensuring that communities have the right information at the right time to be better prepared for upcoming heat events.