

THE ATMOSPHERIC RESERVOIR

Examining the Atmosphere and Atmospheric Resource Management

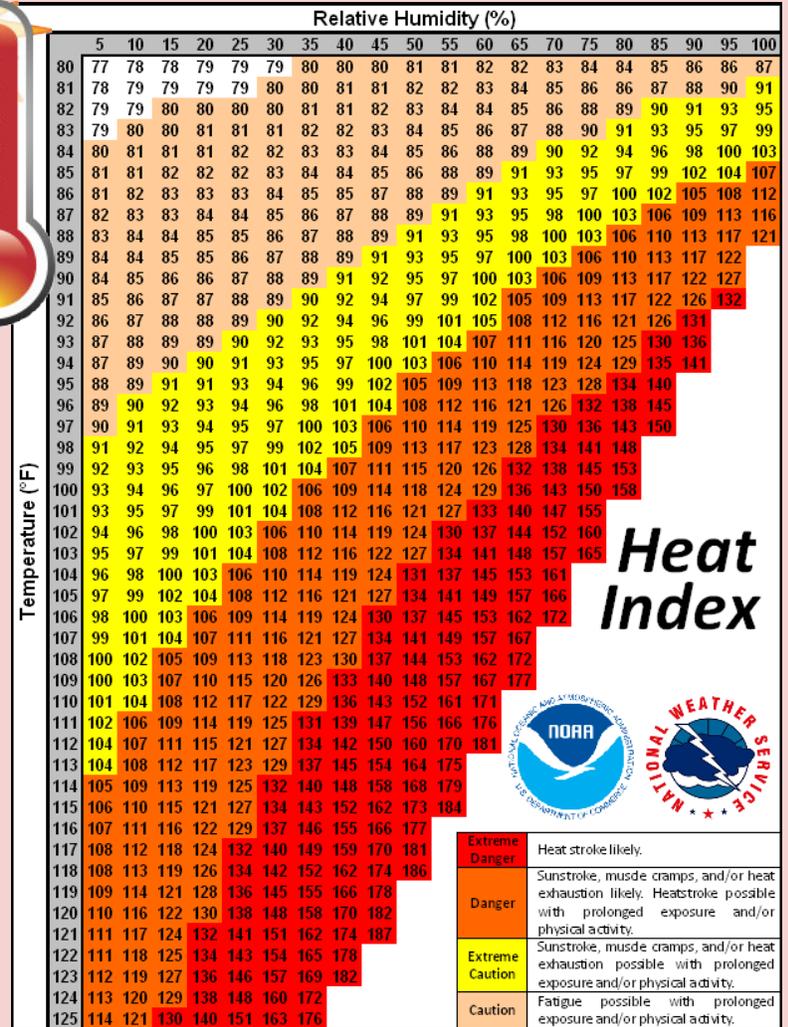
Heating Things Up



By Mark D. Schneider

Many locations across North Dakota experienced below normal temperatures in May. In fact, it wasn't uncommon to see monthly departures of five or more degrees below average. Fortunately for those that enjoy warmer conditions, June started out with normal to above normal temperatures. Now that July is upon us, we're likely to experience hot, humid conditions and our bodies feel the greatest effects of heat when warm temperatures and high humidity combine. We can measure this using what's called the Heat Index (HI). The National Weather Service (NWS) defines the HI as "an accurate measure of how hot it really feels when Relative Humidity (RH) is added to the actual air temperature." The HI chart shows the "feels like" temperatures for different values of air temperature and humidity. Dangerous HI values can occur at temperatures as low as the mid-80s, if the humidity is high.

There are other ways to calculate HI, such as the Canadian method which uses dew point temperatures instead of RH as an indicator of moisture. However, both indices are very good at approximating how the outside air actually feels to us. The physiological basis for the creation of the HI is that moist air doesn't allow our bodies to cool themselves as quickly as with dry air. This is explained by slower evaporation (and thus cooling) of sweat and perspiration in moist air versus drier air. If we're unable to cool off, conditions such as heat cramps and even heat stroke can occur. These health conditions are very serious and the NWS issues Heat Advisories, and Excessive Heat Watches and Warnings when conditions are favorable for dangerous heat. An Excessive Heat Watch is defined as medium confidence that extremely hot weather will develop across a given



Heat Index



Extreme Danger	Heat stroke likely.
Danger	Sunstroke, muscle cramps, and/or heat exhaustion likely. Heatstroke possible with prolonged exposure and/or physical activity.
Extreme Caution	Sunstroke, muscle cramps, and/or heat exhaustion possible with prolonged exposure and/or physical activity.
Caution	Fatigue possible with prolonged exposure and/or physical activity.

region and recommends avoiding strenuous activity during the hottest part of the day. If an Excessive Heat Warning is issued, then confidence is high that extremely hot weather will cause significant stress on people and animals unless caution is taken.

You've probably heard the precautions to avoid direct sunlight, drink plenty of fluids to stay well-hydrated, stay indoors, and never leave pets and children in parked, unattended vehicles. Just be sure to "stay cool" for the rest of this North Dakota summer!