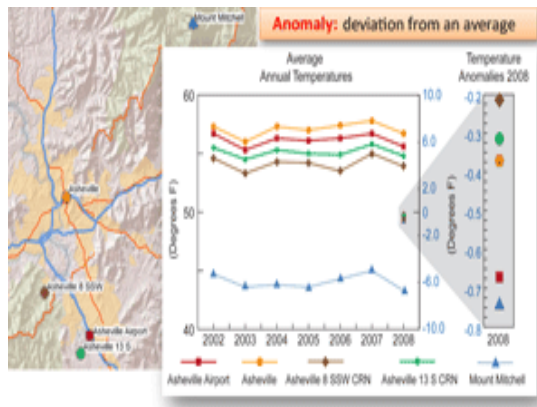


Anomalies vs. Temperature



In climate change studies, temperature **anomalies** are more important than absolute temperature. A temperature anomaly is the difference from an average, or *baseline*, temperature. The baseline temperature is typically computed by averaging 30 or more years of temperature data. A **positive anomaly** indicates the observed temperature was **warmer** than the baseline, while a **negative anomaly** indicates the observed temperature was **cooler** than the baseline. When calculating an average of absolute temperatures, things like station location or elevation will have an effect on the data (ex. higher elevations tend to be cooler than lower elevations and urban areas tend to be warmer than rural areas). However, when looking at anomalies, those factors are less critical. For example, a summer month over an area may be cooler than average, both at a mountain top and in a nearby valley, but the absolute temperatures will be quite different at the two locations.

Using anomalies also helps minimize problems when stations are added, removed, or missing from the monitoring network. The above diagram shows absolute temperatures (lines) for five neighboring stations, with the 2008 anomalies as symbols. Notice how all of the anomalies fit into a tiny range when compared to the absolute temperatures. Even if one station were removed from the record, the average *anomaly* would not change significantly, but the overall average temperature could change significantly depending on which station dropped out of the record. For example, if the coolest station (Mt. Mitchell) were removed from the record, the average absolute temperature would become significantly warmer. However, because its anomaly is similar to the neighboring stations, the average anomaly would change much less.

<https://www.ncei.noaa.gov/access/monitoring/dyk/anomalies-vs-temperature>