

# NCEI Guidance for SCEC Information Gathering

August 2020

In the weeks preceding an SCEC call/vote, the local NWS representatives and/or regional experts on the team, should gather information for the SCEC voting members to review prior to the call/vote. The information gathered should be assembled and made available, digitally, so that all SCEC members have an opportunity to thoroughly review the materials prior to the call.

This document serves as general guidance for the types of information which would be useful to gather and document when considering validating a new SCEC record. We acknowledge that *in some cases, providing this level of detail may not be possible* due to constraints of time, resources, or a lack of available information. Also, see [NWS Directive 10-1004](#) for additional National Weather Service guidance.

## Three Key Questions/Topics

There are three overarching questions/topics to research and document when attempting to establish a new record:

- 1) Is this value *the* record for the state? Survey any known historical records (e.g. digital or paper records, books, newspapers, other publications, etc.) to determine if the value in question is the most extreme/plausible observation, both in the present and looking back as early as records began.
- 2) Is there meteorological support for this record/value or is this value plausible? Are there other nearby/regional observations which would support this event? What were the synoptic or even mesoscale conditions which would reinforce the plausibility of this record?
- 3) Instrumentation/observer standards - What kind of instrument was used? When was it last inspected/calibrated? What are the known instrument biases? What do you know about the observer (if not automated) and their observation practices? Is the instrument siting acceptable or prone to generating bias in the data record?

## **For All Potential Records – Any Element:**

- Draft a brief synoptic summary for the event in question. This summary should address environment, synoptic set-up, meteorological plausibility and factors which contributed to the potential record, to the extent appropriate or possible.
- Gather observations from nearby stations or locations which may corroborate the extreme nature of the event in question.
- Gather background information and metadata for the station/location and event. Provide information on how data were collected, measured, handled, etc. If an instrument was used, provide information on the type of instrument, any prior calibration/maintenance and if there were any follow-up visits, inspections, or calibration of the equipment after the event in question.

- Provide information regarding the known historical statewide record (if one exists). If one does not exist, investigate climate records to determine if a more extreme event may have occurred in the past, but hasn't been recognized. Document this in the report.
- Per [NWS Directive 10-1004](#), a site visit should be conducted by the WFO within two days of notification of the record. This is especially important for hail and snowfall records.

In addition, the following information from the list of currently tracked elements may be useful to collect and share with the SCEC members, if time permits and such information is available.

### **Surface Air Temperature**

- Detail history of the observer (length of service, any reporting issues in the past, reliability, etc.).
- Provide photographs of instrument, shelter, surrounding landscape/objects, and measurements of distances to these objects.

Example:

<https://www.ncdc.noaa.gov/monitoring-content/extremes/scec/reports/20171212-Texas-Minimum-Temperature.pdf>

### **Precipitation**

- Detail history of the observer (length of service, any reporting issues in the past, reliability, etc.).
- Provide photographs of instrument, shelter, surrounding landscape/objects, and measurements of distances to these objects.
- Provide an image of radar or satellite estimated precipitation for the region. Include topographical information, if relevant.

Example:

<https://www.ncdc.noaa.gov/monitoring-content/extremes/scec/reports/20120209-New-York-24-Hour-Precipitation.pdf>

### **Snow**

- Detail history of the observer (length of service, any reporting issues in the past, reliability, etc.).
- Provide photographs of snowfall/depth locations, surrounding landscape/objects, and measurements of distances to these objects.
- If possible, provide photographs taken throughout and immediately following the event of accumulated snow in the area as well as photos of the snowboard and snow measuring environment during and following the event.
- Compare snowfall and depth measurements, when possible, to ensure realistic values were recorded. Also look at water equivalents, if available.

Example:

<https://www.ncdc.noaa.gov/monitoring-content/extremes/scec/reports/20130429-Connecticut-Maximum-24-Hour-Snowfall.pdf>

## **Hail**

- Provide photographs of the hail stone with tape measurement at maximum diameter or comparison to another object of known size.
- When possible, notify “observer” to preserve the hailstone in a freezer until NWS personnel are able to arrange a site visit and inspect the stone. (see hail [guidance](#) PDF for best practices).
- Provide photographs of nearby hail stones which fell, if they exist. Social media is a great tool to utilize for this.
- Provide details for how the hail stone was handled between the time it fell and time it was officially measured.
- Provide an image of the radar reflectivity at the approximate time of the event, if one exists.
- If possible, make a [3D laser scan](#) of the hail stone. This will allow the SCEC to consider multiple records (diameter, volume, circumference and weight) with a high degree of confidence and accuracy.

Example: <https://www.ncdc.noaa.gov/monitoring-content/extremes/scec/reports/20180406-Alabama-Hailstone.pdf>

## **Wind**

- Provide manufacturer details for anemometer as well as specifications for maximum wind speed tolerance, margins of error, etc.

Example:

<https://www.ncdc.noaa.gov/monitoring-content/extremes/scec/reports/20171207-California-Strongest-Wind-Gust.pdf>

## **Pressure**

- (NOTE) High and low pressure records are established for mean sea-level pressure, as opposed to station pressure. Station pressure is a strong function of station elevation, so for locations which have complex terrain, it is important to adjust the station pressure to a reference elevation (i.e. mean sea-level) to identify pressure differences that are reflective of meteorological conditions as opposed to simply terrain gradients. Even so, methods used to convert station pressure to mean sea-level pressure make assumptions about the atmospheric profile and are subject to limitations.

Example:

<https://www.ncdc.noaa.gov/monitoring-content/extremes/scec/reports/20200508-Colorado-Mean-Sea-Level-Pressure.pdf>

Additional examples of record SCEC reports can be found at this URL:

<https://www.ncdc.noaa.gov/extremes/scec/reports>.