

# Updating a Climatology of Extreme Snowfall Events in the United States

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## Introduction

Snowfall extremes are important to understand, primarily because they can disrupt economic functions, particularly logistics and transportation concerns, including roadways, air, and rail. NOAA's National Centers for Environmental Information (NCEI), to support the Federal Emergency Management Agency (FEMA), have maintained climatologies of 1-day, 2-day, and 3-day snowfall events for U.S. counties using the NOAA's cooperative observer program (COOP).

## Project Scope

Update and validate 1-day, 2-day, and 3-day snowfall extremes for every United States county.

Utilize data from GHCN-Daily, which includes the latest COOP data, emerging networks (ASOS, CoCoRaHS, RAWS), and latest quality assurance to remove questionable data.

Validate records by either the original paper record from NCEI's digital archive or spatial plots built in the Python Programming Language.

## Results and Discussion

First round of vetting has been completed. Over 9,300 cases reviewed by meteorologist.

Have identified over 1,000 errors in data. Errors include 10:1 factor, along with bad user entries not flagged by Quality Control. Errors have been placed in queue for update in GHCN-D.

Next steps include:

- Finish vetting after analysis from local National Weather Service Offices
- Build and finalize website to show records, along with near-real time monitoring
- Update Snowfall QC in GHCN-D by relaxing spatial thresholds, yet limit Type I Errors

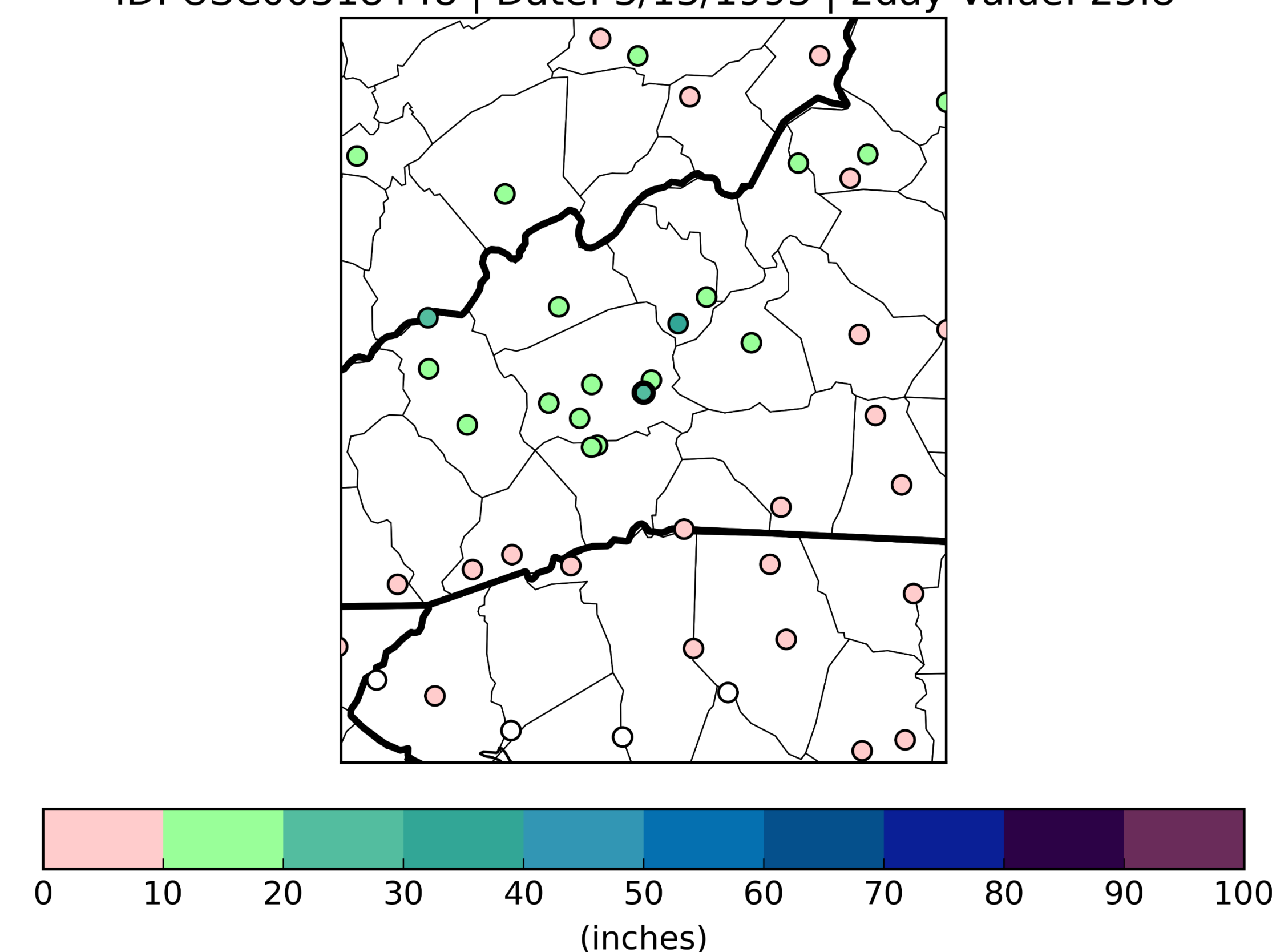
2-day snowfall extremes  
for Washington (left) and  
Oregon (right)

Website Link:  
<http://tiny.cc/snow-ex>

## Example Analyses

### Buncombe County, North Carolina: 2-Day Snowfall of 25.8 inches: **PASS**

Snowfall for NC\_BUNCOMBE  
ID: USC00318448 | Date: 3/13/1993 | 2day Value: 25.8



STATION Swannanoa 2 SSE		STATE N.C.	COUNTY Buncombe	MONTH March	YEAR 1993	WS FORM B-91 7-89	U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION NATIONAL WEATHER SERVICE				
TIME (LOCAL) 24-HR ENDING 24:00		OBSERVATION 24 Mid 24 Mid		TEMPERATURE F. Eastern		PRECIPITATION Eastern		WIND		REMARKS	
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