



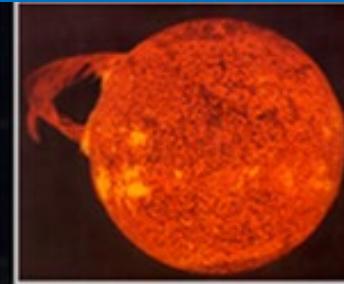
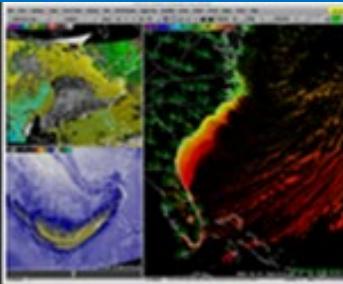
NOAA
National
Weather
Service

NWS Cooperative Observer Program

CoCoRaHS WxTalk Webinar

March 11, 2021

Presenter: Amy Fritz
Title: National COOP Program Manager





COOP Overview



Enacted by Congress with the Organic Act of 1890, it is one of the oldest weather observing networks in US and globally:

- To provide observational meteorological data (daily max & min temperatures, snowfall, and 24-hour precip totals), **required to define the climate** of the US and to help measure long-term climate changes.
- To provide observational meteorological data **in near real-time to support forecast, warning and other public service** programs of the NWS.

The COOP has ~8100 sites and over 10,000 volunteers.
2000 sites have been in operation for over 100 years!

Volunteers are in every state, and every US territory.



Granger, UT 1930s



Midvale, UT 1930s



COOP Equipment



- Temperature measuring equipment
 - 1) Liquid-in-Glass thermometers housed in a wooden shelter
 - 2) Max/Min Thermometer System
- Precipitation measuring equipment
 - 3) Standard 8" Rain Gauge
 - 4) Plastic 4" Rain Gauge
 - 5) Fisher-Porter Rain Gauge
- Other equipment used to measure snowfall, snow depth, evaporation (6), and other hydrological elements



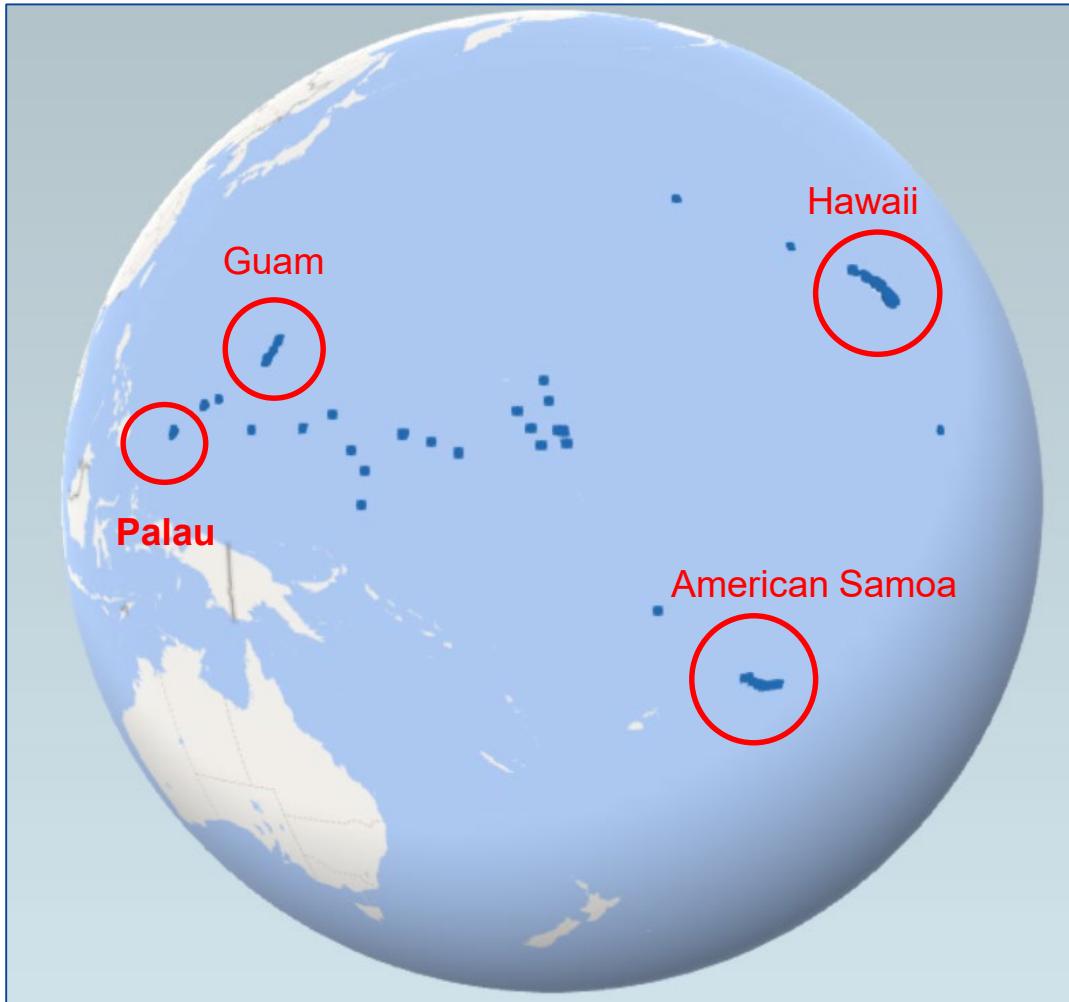


COOP Spatial Distribution





COOP Spatial Distribution





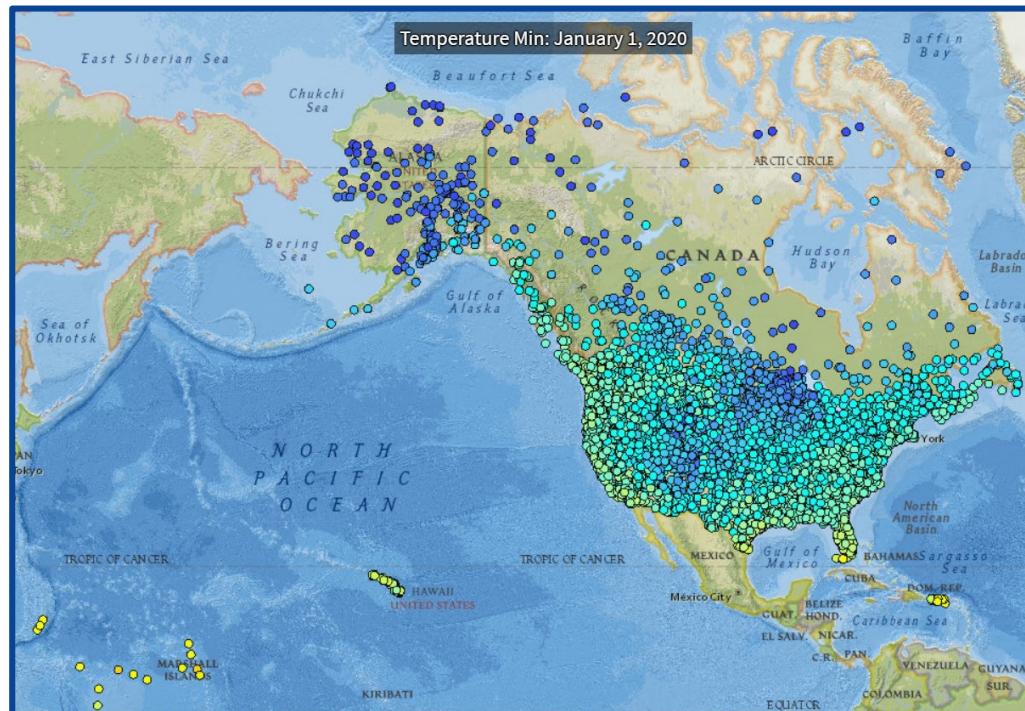
COOP Observations



How to find COOP Observations: National Centers for Environmental Information



- Daily obs. at NCEI – Global Historical Climate Network Daily product (**GHCN-D**)
<https://gis.ncdc.noaa.gov/maps/ncei/summaries/daily>
(NOTE: COOP observations just one of many sources)
- Metadata available on NCEI Historical Observing Metadata Repository (**HOMR**)
<https://www.ncdc.noaa.gov/homr/>
- Original records (paper forms) found at NCEI (aka NCDC) Image and Publications System (**IPS**)
<https://www.ncdc.noaa.gov/IPS/>





COOP Historical Records



Example of COOP observation from Ellensburg, WA on May of 1980, note comments on right state on the 19th and 20th "Ash heavy in air."

Second Example from Yakima, WA ".41 ash (volcanic) ... slight film on top of water

STATION WFO, YAKIMA			COUNTY YAKIMA	STATE WA	DATE (Month and Year) MAY 80													
TIME OF COMPLETE OBSERVATION (Local time) 7:30 A.M.			STANDARD TIME IN USE PD															
DATE	AIR TEMPERATURE - F			WATER TEMP. - F		PRECIPITATION		TOTAL EVAP. (inches)	At OBS. Anemometer Reading (inches) Wind Movement (miles/hr.)	Gage Reading (inches) Added Amount of Evap. (inches)	Wind Direction Filled Barometer Reading (inches)	Amount of Evaporation (inches)						
	24 Hours Ending at Observation		Air Observation		Supplemental Readings at beginning		Time of beginning						Time of ending					
	Max.	Min.	Dry-bulb	Wet-bulb	Dew Point	Dry-bulb	Wet-bulb						Dew Point	Max.	Min.			
1	70.42				72.42			0	5.42	60.6	57	3.07	4.11	15	61	56		
2	76.56				72.17			0	5.81	62.6	50	3.92	.21	61	56			
3	74.33				77.10			0	5.94	62.5	89	3.57	.33	64	58			
4	76.41				78.46			0	5.73	62.7	49	3.38	4.01	19	66	58		
5	85.54				83.48			0	5.69	63.8	54	3.85	.16	66	58			
6	79.50				77.54			.07	5.88	67.4	46	3.78	.14	66	62			
7	70.39				77.45			0	6.11	61.4	70	3.50	.29	67	60			
8	72.46				77.46			0	6.31	64.89	41	3.70	.20	67	57			
9	73.48				76.51			T	6.53	65.38	49	3.02	.22	63	59			
10	66.49				70.50			.07	6.65	69.8	20	3.03	.12	64	59			
11	65.44				61.46				.06	6.70	66.9	76	3.07	4.00	.05	61	58	
12	77.56				79.48				0	6.96	66.9	63	3.74	.25	65	58		
13	76.40				76.48				0	7.22	67.6	69	3.48	.26	65	61		
14	70.50				80.40				.05	7.33	68.0	54	3.32	.34	68	61		
15	62.35				64.43				.06	7.54	68.7	52	3.27	.11	64	59		
16	63.34				68.44				0	7.71	69.5	63	3.10	.11	64	57		
17	72.49				77.48				0	7.88	69.7	41	2.93	.17	65	57		
18	75.44				83.51				0	8.11	70.0	44	2.70	.23	68	61		
19	64.53				55.51				0	(8.41)	70.8	8	2.83*	(CAM)	64	61	x .41 ASH (VOLCANIC)	
20	73.55				68.53				0	(8.31)	70.6	32	2.70*	(CAM)	63	60	MEASURED 7.0	
21	51.52				77.54				0	(8.50)	70.7	37	2.57	5.78	(CAM)	64	57	WEIGHED RAINDOOR RAID GAGE
22	75.58				72.49				0	(8.77)	71.4	47	3.61	.17	66	61		
23	64.32				68.59				0	(8.87)	72.6	62	3.59	.21	64	57	J. 4544A17 THERMOMETER WORN	
24	64.44				67.41				0	(9.19)	72.8	83	3.49	.25	62	58		
25	64.48				65.44				0	(9.49)	73.8	93	3.82	.32	59	57		
26	66.46				65.47				0	(9.49)	74.2	70	3.03	.10	61	57	24 HR EVAP	
27	57.46				58.48				.14	(2.57)	20.0	36	3.16	.01	58	57	STC'S 12	
28	61.39				67.46				T	(9.66)	25.4	36	3.07	.09	59	56	PENCIL	
29	71.41				82.53				0	(9.87)	25.8	39	2.96	.21	65	57	PRE 577	
30	71.40				75.48				0	(9.49)	16.0	57	2.23	.23	64	61		
31	75.45				85.48				.08	(9.39)	76.0	40	2.51	.20	67	61		
					Sum						84							
					Avg.													
OBSERVER NWS			STATION YAKIMA, WA		DATE (Month and Year) MAY 80													

45-9465-9



Mount Saint Helens Eruption



Mount St. Helens erupted on May 18, 1980. Photo courtesy of USGS





COOP - CoCoRaHS Similarities...



Volunteers





COOP - CoCoRaHS Similarities...



CoCoRaHS Rain Gauge



COOP Rain Gauge



And Differences...



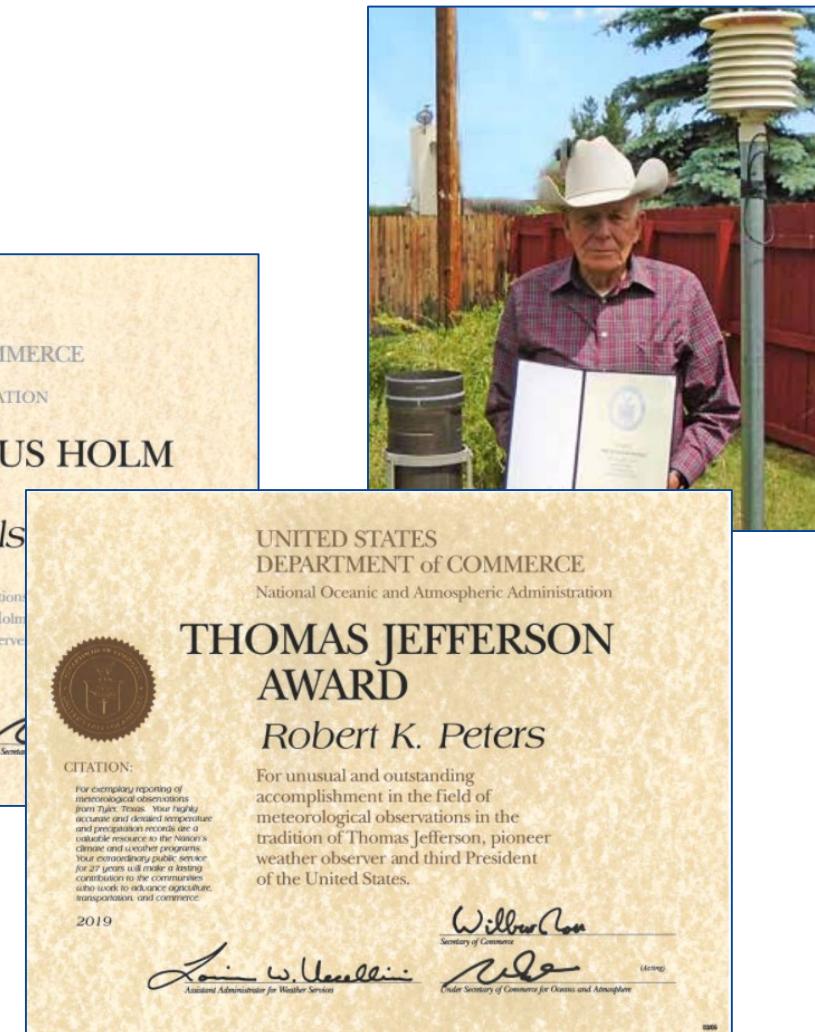
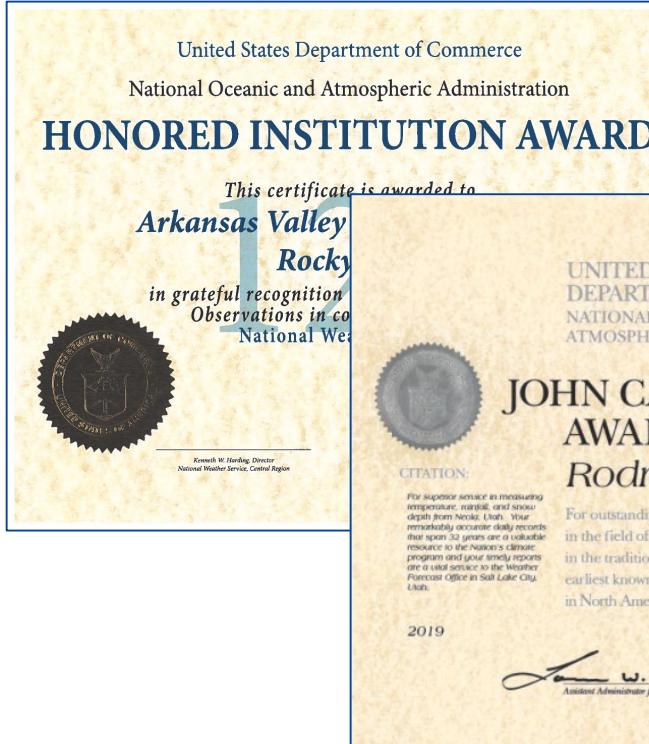
Hail measurements



Temperature and hourly precipitation



... Awards

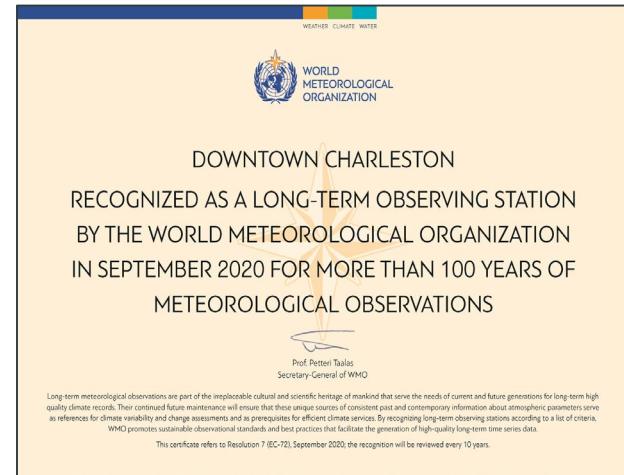




WMO Centennial Site...



U.S. Customs House showing wind equipment on roof.
Credit Library of Congress.





About the presenter



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www.weather.gov/coop



For more information on how you can volunteer

Contact your local

Weather Forecast Office

Observation Program Lead

www.weather.gov



To request a copy of her book, visit:

www.scienceofcardio.com/amy

