

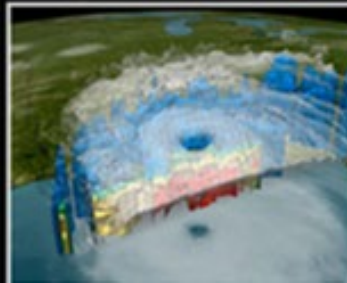
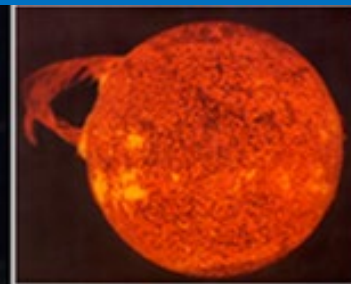
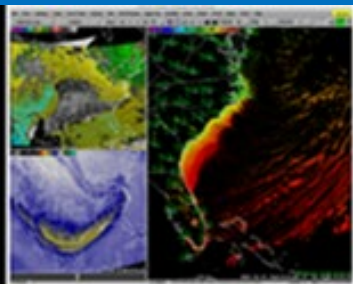
NOAA

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:

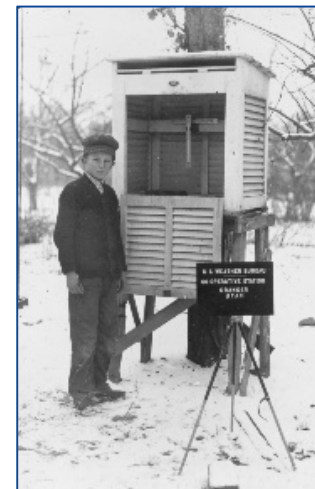
- To provide observational meteorological data (daily max & min temperatures, snowfall, and 24-hour precip totals), **required to define the climate** of the US and to help measure long-term climate changes.
- To provide observational meteorological data **in near real-time to support forecast, warning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



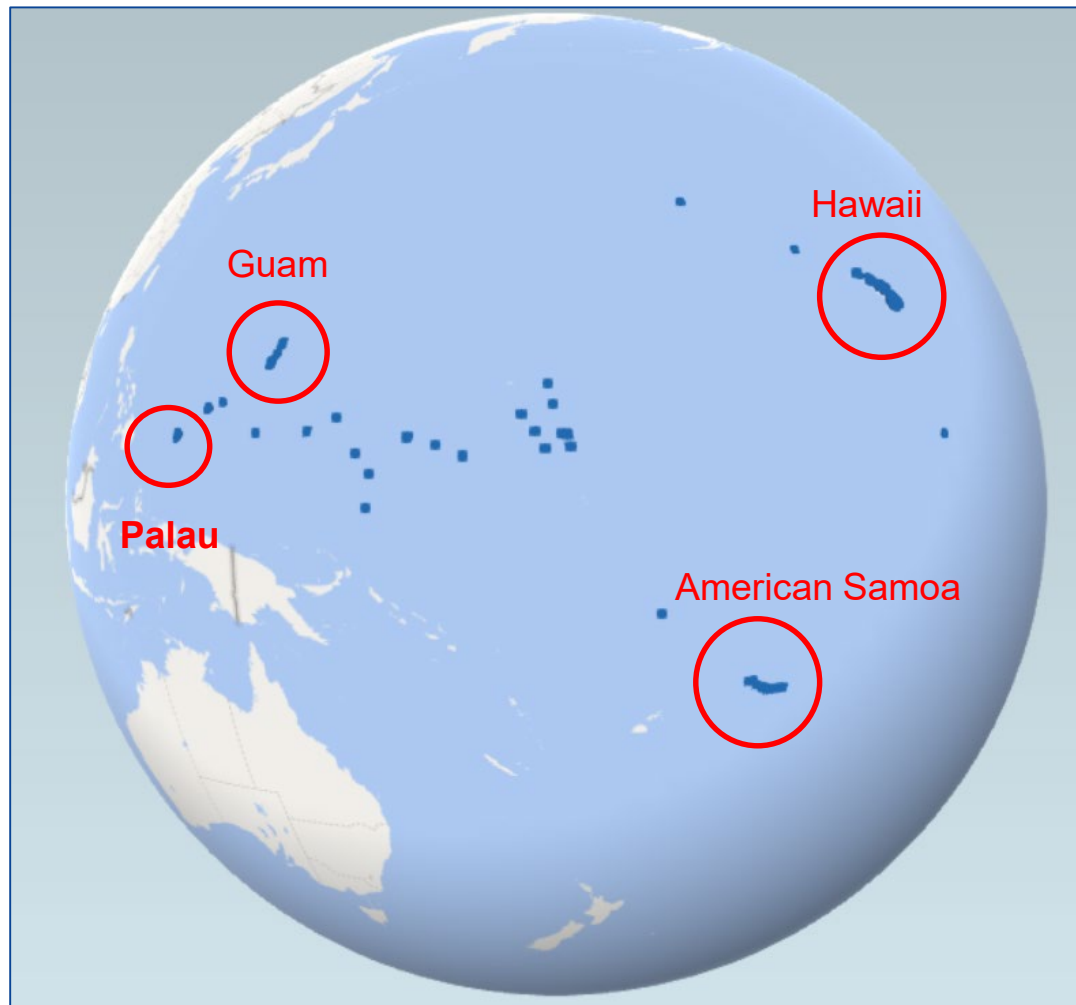


COOP Spatial Distribution





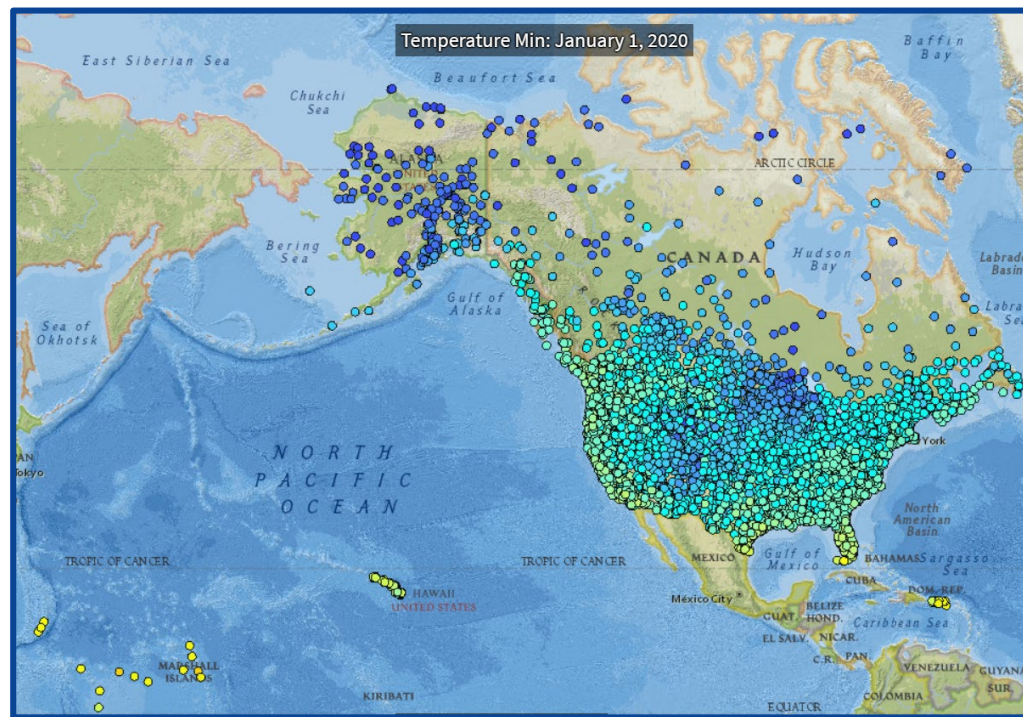
COOP Spatial Distribution



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

615

STATION		COUNTY		STATE		DATE (Month and Year)		WS FORM E-22 (8-74)		U. S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION NATIONAL WEATHER SERVICE										
W50 YAKIMA		YAKIMA		WA		MAY 80														
TIME OF COMPLETE OBSERVATION (Local time)				STANDARD TIME IN USE				RECORD OF EVAPORATION AND CLIMATOLOGICAL OBSERVATIONS												
7 30 A.M.				PD																
DATE	AIR TEMPERATURE - F					WATER TEMP. - F		PRECIPITATION				WIND		EVAPORATION (Inches & hundredths)		ADDITIONAL DATA/REMARKS				
	24 Hour Ending at Observation		At Observation			24 Hours Ending at Observation		Time of beginning		Time of ending		24 Hour		24 Hour			Amount of Evaporation			
	Max.	Min.	Dry-bulb	Wet-bulb	Dew Point	Max.	Min.	beginning	ending	beginning	ending	Rate, Multi-plied by 100 & rounded to nearest 0.1	Amount	Direction	Speed (Mph)					
1	70	47				72	52					0	0	0	0	0				
2	76	56				82	47					0	5.81	606	57	3.04	4.11	15	61	56
3	78	63				77	40					0	5.84	636	50	3.90		2.1	61	56
4	76	41				78	40					0	5.73	625	89	3.57		.33	61	58
5	85	54				83	48					0	5.69	638	49	3.38	4.01	.19	66	58
6	79	50				77	54					.07	5.83	674	46	3.78		.14	66	62
7	70	39				77	45					0	6.11	674	70	3.80		.28	67	60
8	72	46				77	46					0	6.3	685	43	3.70		.20	67	48
9	73	48				76	51					T	6.53	6538	49	3.08		.22	63	59
10	66	49				70	50					.07	6.65	6858	2.0	3.03		.12	64	59
11	65	44				61	46					.06	6.70	6631	76	3.04	4.00	.05	61	58
12	77	56				79	48					0	6.96	6677	63	3.74		.26	65	58
13	76	40				76	48					0	7.22	676	69	3.48		.26	65	61
14	73	50				80	46					.05	7.33	6820	54	3.32		.24	68	61
15	62	35				64	43					.06	7.54	6874	52	3.27		.11	64	59
16	63	34				68	44					0	7.71	8935	63	3.10		.17	64	57
17	72	49				77	48					0	7.88	6976	41	2.93		.17	65	57
18	75	44				83	51					0	8.11	7020	44	2.70		.23	68	61
19	64	53				55	51					0	(8.31)	7028	8	2.83		.33	68	61
20	73	55				68	53					0	(8.50)	7060	32	2.78		.60	63	60
21	81	52				77	54					0	(8.50)	7097	37	1.51	5.78	.60	64	59
22	75	48				72	49					0	(8.7)	7148	47	3.61		.17	66	61
23	64	32				68	39					0	(8.87)	7206	62	3.39		.27	64	57
24	64	44				67	41					0	(9.14)	7289	83	3.44		.25	62	58
25	64	48				65	44					0	(9.30)	7382	93	3.82		.32	59	57
26	66	46				65	47					.31	(9.56)	7474	90	3.03		.10	61	57
27	57	46				58	48					.14	(9.57)	7508	36	3.16		.01	58	57
28	61	39				67	46					T	(9.6)	7544	36	3.07		.09	59	56
29	71	41				82	53					0	(9.87)	7583	39	2.96		.09	65	57
30	71	40				75	48					0	(10.10)	7610	57	2.63		.23	64	61
31	75	45				85	48					.08	(10.30)	7680	40	2.51		.20	67	61
Sum						2361	1461						84	(10.30)		10.61		53.6		
Avg.						72.9	47.1											1.73		

Observer: NWS Station: YAKIMA, WA Date: 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...



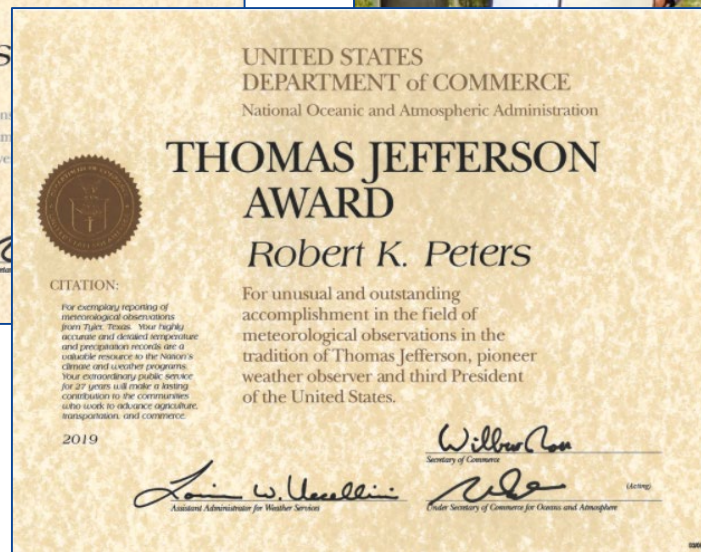
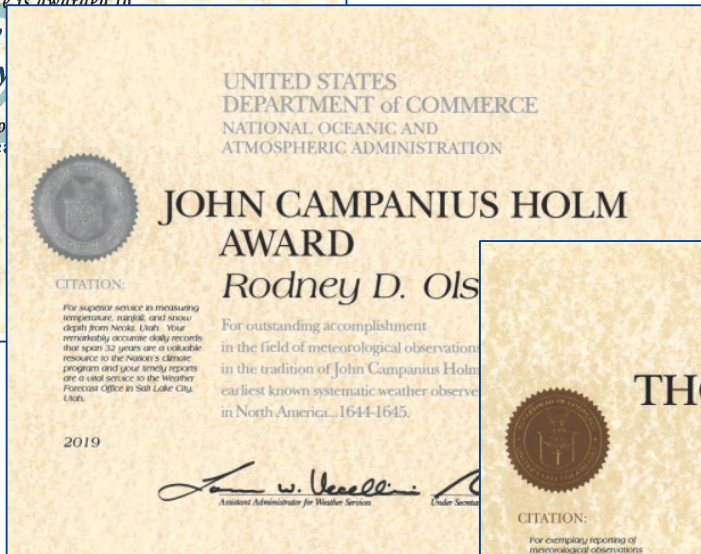
Hail measurements



Temperature and hourly precipitation



... Awards

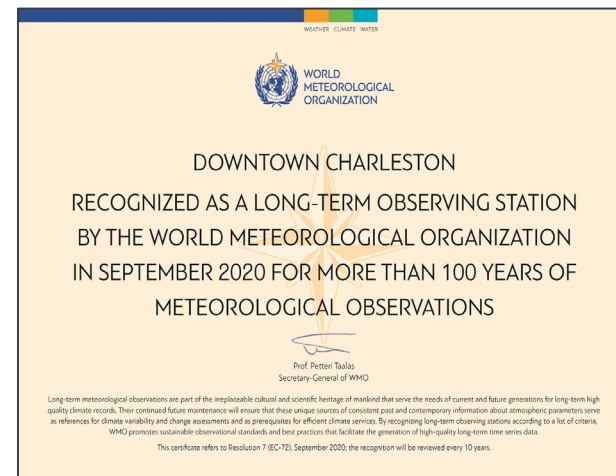




WMO Centennial Site...



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

