



NCEI and CoCoRaHS Data

Bryant Korzeniewski

Meteorologist/Datzilla Gatekeeper/COOP Focal Point

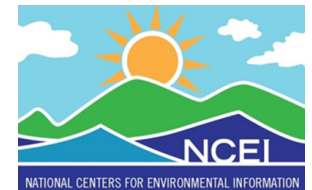
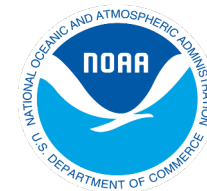
Riverside Technology, Inc.

on behalf of NOAA's National Centers for Environmental Information

May 2020



National Oceanic and Atmospheric Administration | NOAA Satellite and Information Service





FULL DISCLOSURE



- Bryant Korzeniewski is a **FEDERAL CONTRACTOR** with Riverside Technology, Inc. (a.k.a. Riverside) as part of the Science and Data Stewardship (SDS) Contract at NCEI in Asheville, NC
- Bryant Korzeniewski represents and presents **on behalf of** NCEI at this meeting



NCEI's To-Do List With CoCoRaHS Data

- Address Data Matches Detected by GHCN-Daily Between CoCoRaHS Data and NWS-Submitted Data (e.g. COOP Station)



Data Matches Between CoCoRaHS and NWS-Submitted Data

	2014	2016	2017	2019
GHCN-Daily Stations Affected	215	240	221	190
Stations with at least 90% Data-Match of Non-Zero Values for PRCP/SNOW/SNWD	114	113	110	134
Stations with 75 to less than 90% Data-Match of Non-Zero Values for PRCP/SNOW/SNWD	49	59	46	27
Stations with 50% to less than 75% Data-Match of Non-Zero Values for PRCP/SNOW/SNWD	52	68	65	29
Disclaimer: 2015 and 2018 are not included within this table due to BK not presenting at WERA for said years. Also, 2020 isn't included due to not being available in time for this WERA Presentation.				



NCEI's To-Do List With CoCoRaHS Data

- Address Data Matches Detected by GHCN-Daily Between CoCoRaHS Data and NWS-Submitted Data (e.g. COOP Station)
- Handle Incoming Multi-Day Accumulated Precipitation Values received from CoCoRaHS

Handle Incoming Multi-Day Accumulated Values From CoCoRaHS

GHCN Browser Screen - USC00161705 Created on-05/17/2020 10:0

CHAUVIN, LA Date:202001 Elev= 1.5 Lat: 29.4817 Lon:-90.5814

day	PRCP	MDPR	DAPR	SNOW	MDSF	DASF	SNWD
01							
02							
03		1.25 7	3 7				
04	0.77 L7						
05	0.00 L7						
06	0.00 L7	0.77 LN	3 LN				
07	0.00 L7						
08	0.00 L7						
09	0.00 L7						
10	0.25 L7	0.25 LN	4 LN				
11							
12							
13		1.00 7	3 7				
14	0.00 7						
15	0.00 7						
16	0.00 7						
17							
18							
19							
20							
21		0.20 7	5 7				
22	0.00 7						
23							
24							
25							
26							
27							
28							
29							
30		1.85 7	8 7				
31							

TotPcn FMA 4.30 Snow M Depth

DEFN:
Grd 24Hr: Day: Number Days With: Pcn >.01: 0 >.1: 0 >.5: 0 >1.0: 0
MaxSnw : Day: Snow >1.0: M Snw Depth>1: M

Change Yr... 2020... Display Precip Elem... Show MS Data Save Data
Split Month ? Units : US Close

Single Day PRCP values from CoCoRaHS; Multi-Day Precip. Accumulations (MDPR) from WxCoder3

Data-Source of '7' is WxCoder3;
Data-Source of 'N' is CoCoRaHS

Handle Incoming Multi-Day Accumulated Values From CoCoRaHS

GHCN Browser Screen - USC00398420 Created on-05/17/2020 10:7

TURTON, SD Date:201912 Elev= 406.9 Lat: 45.0500 Lon:-98.0956

day	PRCP	MDPR	DAPR	SNOW	MDSF	DASF	SNWD
01	0.18 7			2.0 7			5 7
02	0.00 7			0.0 7			5 7
03	0.00 7			0.0 7			5 7
04	0.00 7			0.0 7			5 7
05	0.00 7			0.0 7			5 7
06							
07							
08							
09							
10							
11		0.20 7	6 7				5 7
12	0.00 7			0.0 7			5 7
13	0.00 7			0.0 7			
14	0.00 7			0.0 7			4 7
15	0.00 7			0.0 7			4 7
16	0.00 7			0.0 7			4 7
17	0.00 7			0.0 7			4 7
18	0.00 7			0.0 7			4 7
19	0.00 7			0.0 7			4 7
20	0.00 7			0.0 7			3 7
21	0.00 7			0.0 7			3 7
22	0.00 7			0.0 7			2 7
23	0.00 7			0.0 7			1 7
24							
25							
26							
27							
28		0.22 7	5 7	2.0 7			3 7
29	0.15 7			2.0 7			5 7
30							
31	0.30 L7	0.30 LN	2 LN	4.0 7			9 7

TotPcn FMA 0.75 Snow M Depth 9

DFN: M

Gr24Hr: 0.18 Day: 01 Number Days With: Pcn >.01: 2 >.1: 2 >.5: 0 >1.0: 0

MaxSnw : 9 Day: 31 Snow >1.0: M Snw Depth>1: 20

Change Yr... Display Save Data

2020... Precip Elem... Show MS Data

☐ Split Month ? Units : US Close

2-day Accumulated Precip. (MDPR) of 0.30" from CoCoRaHS; 0.30" of Single-Day PRCP from WxCoder3

Data-Source of '7' is WxCoder3;
Data-Source of 'N' is CoCoRaHS



NCEI's To-Do List With CoCoRaHS Data

- Address Data Matches Detected by GHCN-Daily Between CoCoRaHS Data and NWS-Submitted Data (e.g. COOP Station)
- Handle Incoming Multi-Day Accumulated Precipitation Values received from CoCoRaHS ← **COMPLETED!**
- Include Time of Observation for CoCoRaHS within the GHCN-Daily By-Year Files and Super-GHCND Files



Time of Observation for CoCoRaHS Within GHCN-Daily

- When will this be incorporated into GHCN-Daily?
- NCEI's GHCN-Daily POC Matt Menne continues to have it in his work plan to complete.
- Current target is the end of this Fiscal Year (end of Q4 FY20 or around September 30th, 2020).

Time of Observation for CoCoRaHS Within GHCN-Daily

GHCN ID	Date	Element	Value	Measurement Flag	Quality Flag	Source Flag	Observation Time
US1GAFT0037	20190204	PRCP	0			N	0800
US1GAFT0037	20190204	SNOW	0			N	0800
US1GAFT0037	20190205	PRCP	0			N	0756
US1GAFT0037	20190205	SNOW	0			N	0756
US1GAFT0037	20190207	PRCP	69			N	0757
US1GAFT0037	20190209	PRCP	0			N	0810
US1GAFT0037	20190209	SNOW	0			N	0810
US1GAFT0037	20190214	PRCP	0			N	0812
US1GAFT0037	20190214	SNOW	0			N	0812
US1GAFT0037	20190219	PRCP	0			N	0754
US1GAFT0037	20190219	SNOW	0			N	0754
US1GAFT0037	20190220	PRCP	460			N	0800
US1GAFT0037	20190224	PRCP	10			N	0756
US1COAM0033	20190324	PRCP	0			N	0754
US1COAM0033	20190324	SNOW	0			N	0754
US1COAM0033	20190330	PRCP	0			N	0757
US1COAM0033	20190330	SNOW	0			N	0757
US1COAM0033	20190406	PRCP	0			N	0810
US1COAM0033	20190406	SNOW	0			N	0810

(**DISCLAIMER:** The Observation Time Column in this example is not in Super-GHCN-D as of this presentation and may not appear this way or in the position that it appears above when it gets implemented.)



NCEI's To-Do List With CoCoRaHS Data

- Address Data Matches Detected by GHCN-Daily Between CoCoRaHS Data and NWS-Submitted Data (e.g. COOP Station)
- Handle Incoming Multi-Day Accumulated Precipitation Values received from CoCoRaHS ← **COMPLETED!**
- Include Time of Observation for CoCoRaHS within the GHCN-Daily By-Year Files and Super-GHCND Files
- Ensuring that CoCoRaHS Data Values that are Extreme are reflected as valid in GHCN-Daily



Honoring CoCoRaHS Data Values Due To Extreme Events

When CoCoRaHS values are known to be related to an extreme event, please coordinate with the following NCEI Staff:

NCEI's GHCN-Daily POC, Matt Menne
(Matthew.Menne@noaa.gov)

NCEI's Datzilla Gatekeeper, Bryant Korzeniewski
(Bryant.Korzeniewski@noaa.gov)



NCEI's To-Do List With CoCoRaHS Data

- Address Data Matches Detected by GHCN-Daily Between CoCoRaHS Data and NWS-Submitted Data (e.g. COOP Station)
- Handle Incoming Multi-Day Accumulated Precipitation Values received from CoCoRaHS ← **COMPLETED!**
- Include Time of Observation for CoCoRaHS within the GHCN-Daily By-Year Files and Super-GHCND Files
- Ensuring that CoCoRaHS Data Values that are Extreme are reflected as valid in GHCN-Daily
- **NEW ITEM** Documenting Change Points in CoCoRaHS Stations For Historical Metadata Provenance



Documenting Change Points in CoCoRaHS Stations For Historical Metadata Provenance

- Station Name Changes
- When a Station Officially Opens and Officially Closes (NCEI needs more precise station closure dates)
- Previous communications between NCEI and CoCoRaHS Team related to data user inquiries; more work to be done on this



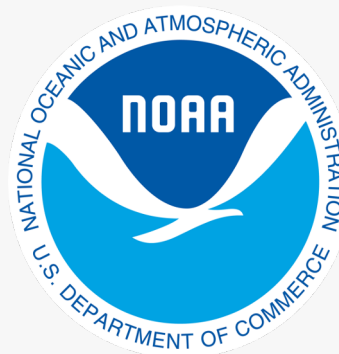
Benefits of CoCoRaHS Data to NCEI's Archived Datasets

- Fills in Gaps of Spatial Coverage when other archived data sources don't
- Improves Spatial Checks by the GHCN-Daily Quality Control (QC) when comparing Precipitation Data within neighboring observing sites
- Helps NCEI's Datzilla Gatekeeper when further investigating precipitation values from other data sources that may have been flagged by GHCN-Daily's QC or need to be flagged via Datzilla Ticket submission
- Allows for more near-real-time investigations of recent rainfall events that are queried by NCEI's data users
- Are included in the 1-day/2-day/3-day Snowfall Extremes Tables produced by NCEI's Monitoring Section for FEMA's Evaluation of County-based Disaster Declarations
- Are considered as data records by The State Climate Extremes Committee (SCEC)



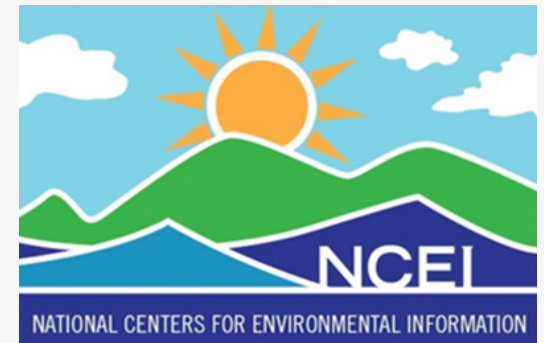
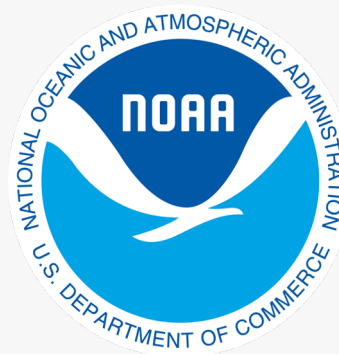
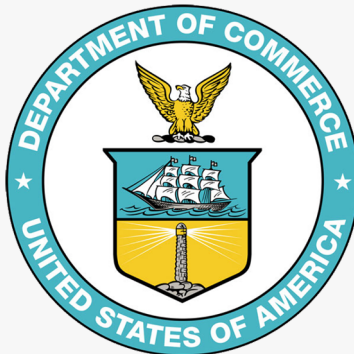
•Thank You!

Extra info re: NCEI appears in the following slides



Questions?

- **Bryant.Korzeniewski@noaa.gov**
- **1-(828) 271-4307**

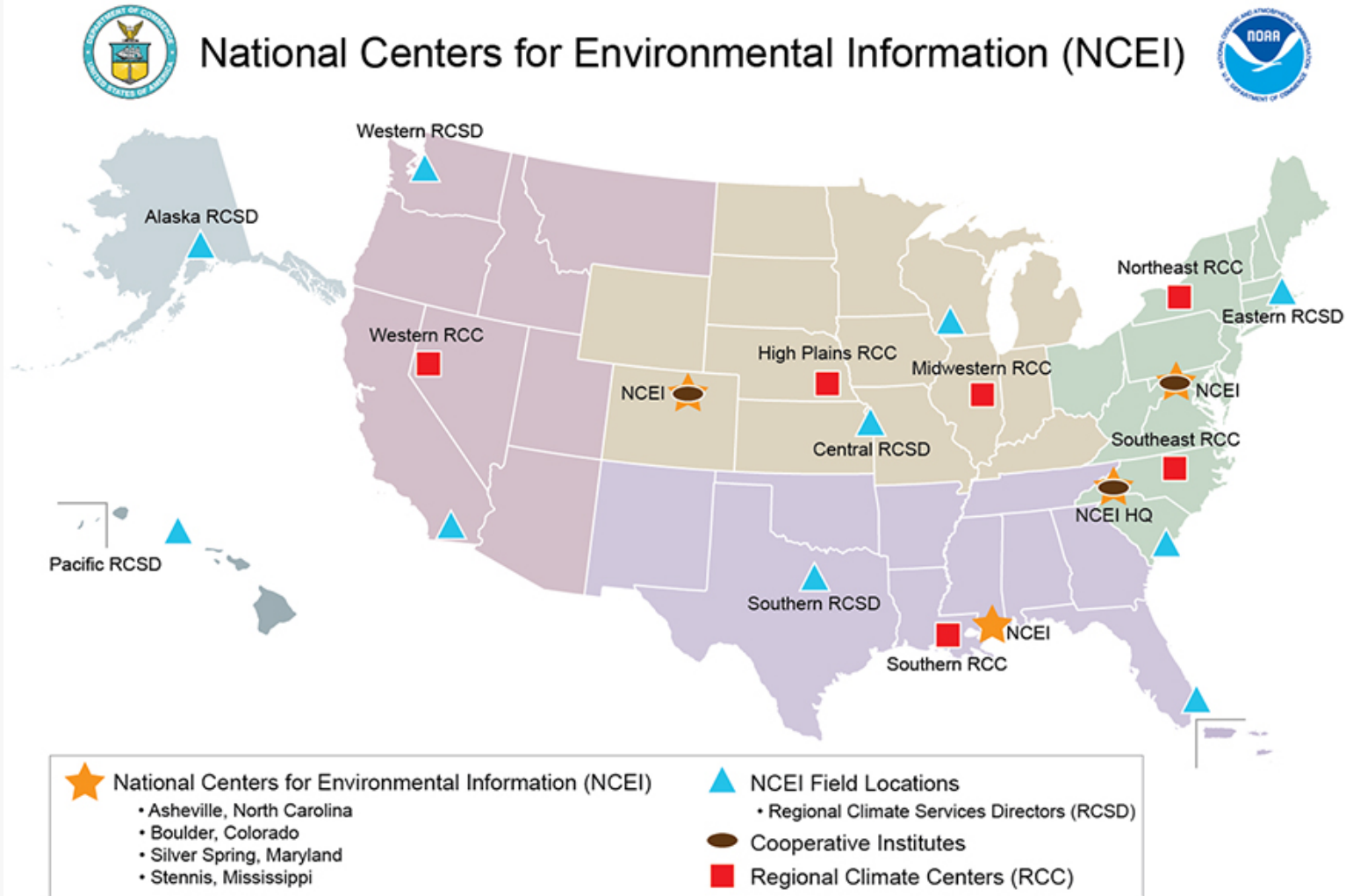




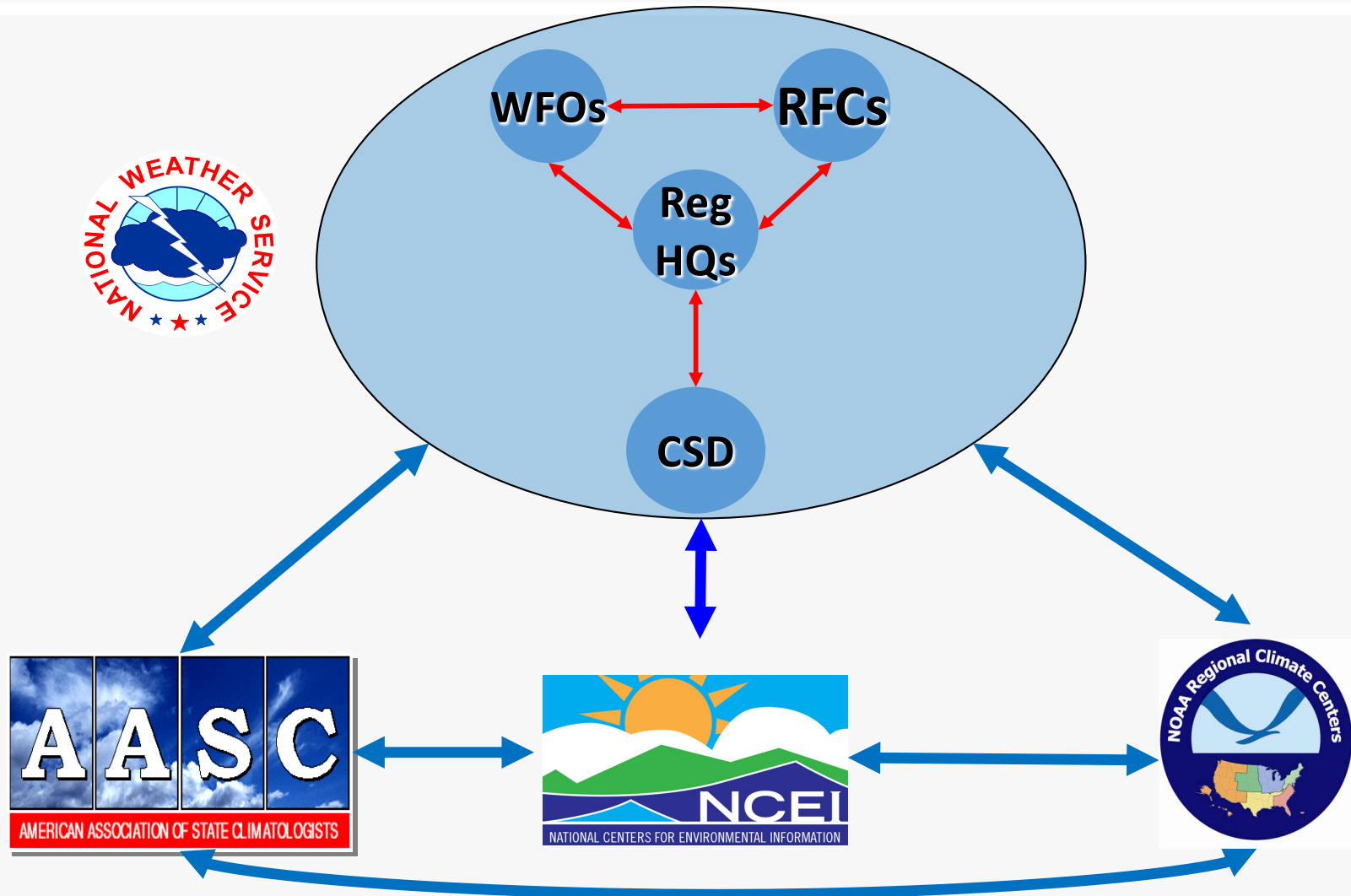
HELLO! I'M BK!



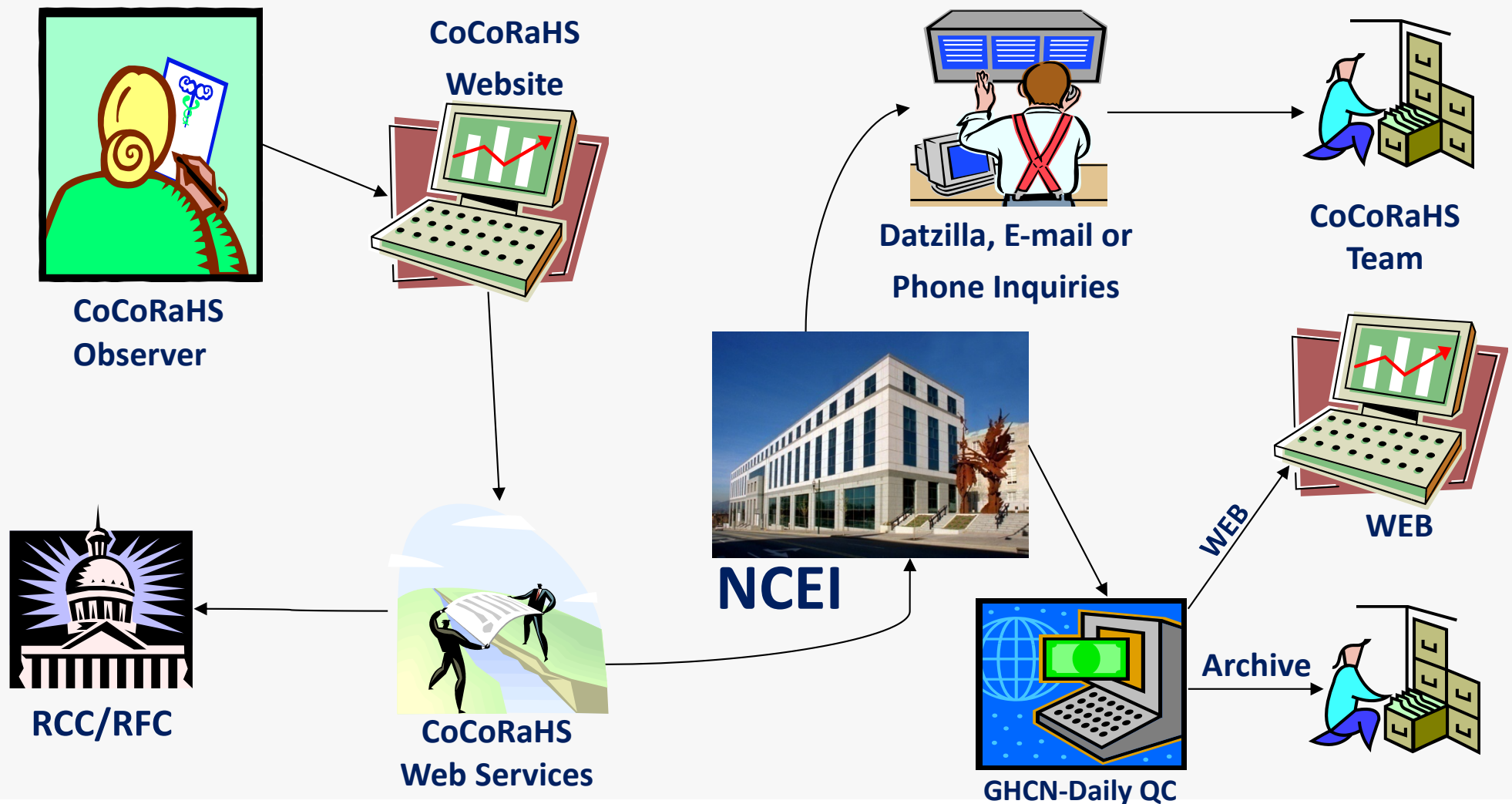
The Footprint of NCEI



Tiered National Climate Services Support System



CoCoRaHS Data Flow To NCEI





Data Matches Between CoCoRaHS and NWS-Submitted Data


- **190** GHCN-Daily Stations Affected (**decrease** from **221** in 2017)
- Data-Matches are for the whole history of the CoCoRaHS Station and it being compared to the GHCN-Daily Station (inclusive of COOP Keyed Data and WxCoder3)
- **134** Stations with at least 90% Data-Match of Non-Zero Values for PRCP/SNOW/SNWD (**increase** by **24** from **110**)
- **27** Stations with 75% to less than 90% Data-Match of Non-Zero Values for PRCP/SNOW/SNWD (**decrease** by **19** from **46**)
- **29** Stations with 50% to less than 75% Data-Match of Non-Zero Values for PRCP/SNOW/SNWD (**decrease** of **36** from **65**)

	A	B	C	D
1	CoCoRaHS ID (padded by four leading zeroes)	Percent Match of Non-Zero Values	GHCN ID	CoCoRaHS ID (padded by four leading zeroes)
2	0000AR-PL-1	100.00	USC00034756	0000AR-PL-1
3	0000FL-MN-7	100.00	USC00084571	0000FL-MN-7
4	0000MD-PG-3	100.00	USC00186800	0000MD-PG-3
5	0000MO-BT-1	100.00	USC00231748	0000MO-BT-1
6	0000TX-RF-2	100.00	USC00410436	0000TX-RF-2
7	000AK-FN-19	100.00	USC00509891	000AK-FN-19
8	000CO-HF-24	100.00	USC00058781	000CO-HF-24
9	000CO-LR-40	100.00	USC00055236	000CO-LR-40
10	000IN-BN-35	100.00	USC00124910	000IN-BN-35
11	000MO-BN-11	100.00	USC00231801	000MO-BN-11
12	000TN-FY-15	100.00	USC00408450	000TN-FY-15
13	000UT-UN-14	100.00	USC00429111	000UT-UN-14
14	000WA-KP-53	100.00	USC00456706	000WA-KP-53
15	0000MI-OT-4	99.80	USC00203096	0000MI-OT-4
16	0000GA-LP-3	99.70	USC00092475	0000GA-LP-3
17	0000MS-AM-3	99.70	USC00223441	0000MS-AM-3
18	0000WV-TY-3	99.70	USC00465963	0000WV-TY-3
19	000IL-CP-64	99.70	USC00118740	000IL-CP-64
20	0000GA-HY-8	99.60	USC00095666	0000GA-HY-8
21	0000KS-MS-5	99.60	USC00140911	0000KS-MS-5
22	0000MI-WY-7	99.60	USC00202016	0000MI-WY-7
23	0000MT-FG-1	99.60	USC00244979	0000MT-FG-1
24	0000OH-CK-1	99.60	USC00337926	0000OH-CK-1
25	0000PA-UN-1	99.60	USC00365724	0000PA-UN-1
26	0000KS-WB-3	99.50	USC00145132	0000KS-WB-3
27	000NY-WY-10	99.50	USC00309593	000NY-WY-10
28	000OH-HM-24	99.50	USC00331516	000OH-HM-24
29	000FL-MD-28	99.40	USC00085667	000FL-MD-28
30	000NY-ON-15	99.40	USC00303184	000NY-ON-15
31	0000IL-DG-4	99.30	USC00118684	0000IL-DG-4
32	0000LA-NT-2	99.30	USC00166584	0000LA-NT-2
33	0000NJ-SS-8	99.30	USC00288644	0000NJ-SS-8
34	000NM-SN-17	99.30	USC00297477	000NM-SN-17
35	0000GA-OG-1	99.20	USC00095165	0000GA-OG-1
36	0000LA-EC-1	99.20	USC00165090	0000LA-EC-1
37	0000WV-KN-5	99.20	USC00467852	0000WV-KN-5
38	000NY-WC-20	99.20	USC00307742	000NY-WC-20
39	0000KS-RL-1	99.10	USC00144972	0000KS-RL-1
40	0000MI-MR-1	99.10	USC00205822	0000MI-MR-1




Data Matches Between CoCoRaHS and NWS-Submitted Data

- Of the **169** GHCN-Daily Stations Affected:
 - **37** CoCoRaHS stations are co-located at COOP Sites that use the 4" Plastic Rain Gauges which are the same specifications as those used for CoCoRaHS (per NCEI's HOMR Website and NCEI's GHCN-Daily CoCoRaHS Data Match Query)
 - Why are the other **153** CoCoRaHS sites' non-zero values matching up with those for COOP Stations?
 - Need NWS WFO's and CoCoRaHS Team's assistance to further investigate
 - These instances are being noticed when GHCN-Daily's QC detects multi-day precipitation values from COOP stations conflicting with single-day precipitation values from CoCoRaHS stations



Data Matches Between CoCoRaHS and NWS-Submitted Data

- Verification of stations appearing on the 2017 CoCoRaHS Data-Match List presented that year to WERA 1012
 - **14** scenarios coming through as the result of Datzilla Ticket submissions to NCEI or via e-mail
 - **8** of the 14 CoCoRaHS Stations confirmed using the same 4" Plastic Gauge to take their COOP Observations for NWS
 - **6** of the 14 CoCoRaHS Stations confirmed by NWS to use the 8" Standard Rain Gauges (SRG's) for CoCoRaHS Observations ***AND*** to take their COOP Observations for NWS



Data Matches Between CoCoRaHS and NWS-Submitted Data

- What's the big deal about knowing the type of observing equipment that's being used?
 - Assumptions are made regarding CoCoRaHS Data Collection and the Types of Gauges Being Used
 - Documentation, Documentation, Documentation!
 - NWS documents the type of rain gauge(s) used for their COOP Observations (4" Plastic or 8" SRG) so that the data users know the type of equipment the observations originate from
 - Should the same standards applied to NWS also be applied to CoCoRaHS in these cases of observations being taken from 8" SRG instead of 4" Plastic?
 - Data values are considered for State Climate Extremes Committee (SCEC)
 - Siting is reviewed
 - Quality ***AND*** Quantity of the CoCoRaHS data values submitted by the observer are considered

Handle Incoming Multi-Day Accumulated Values From CoCoRaHS

GHEN Browser Screen - USC00244979 Created on-05/14/2014 4:31

LEWISTOWN 11ESE, MT Date:201402 Elev=1532.5 Lat: 47.0111 Lon:109.2261

day	PRCP	MDPR	DAPR	SNOW	MDSF	DASF	SNWD
01	0.02	7		1.0	7		
02	0.00	7		0.0	N		
03	0.02	7		1.0	7		
04	0.13	7		2.0	7		
05	0.01	7		0.5	7		
06	0.00	7		0.0	N		
07	0.00	7		0.0	N		
08	0.00	7		0.0	N		
09	0.07	7		1.5	7		
10	0.00	7		0.0	N		
11	0.00	7		0.0	N		
12	0.00	7		0.0	N		
13	0.00	7		0.0	N		
14	0.00	7		0.0	N		
15	0.00	7		0.0	N		
16	0.00	7		0.0	N		
17	0.05	7		0.0	N		
18	0.00	7		0.0	N		
19	0.00	7		0.0	N		
20	0.09	7		2.5	7		
21	0.00	N		0.0	N		
22	0.24	N	0.24 7	2 7	4.5	7	
23	0.02	7		0.5	7		
24	0.32	7		3.5	7		
25	0.02	7		0.3	7		
26	0.00	7		0.0	N		
27	0.00	7		0.0	N		
28	0.27	7		6.5	7		
29							
30							
31							

TotPcn A 1.26 Snow M 23.8 Depth

DFN:

Grt 24Hr: 0.32 Day: 24 Number Days With: Pcn >.01: 11 >.1: 3 >.5: 0 >1.0: 0

MaxSnw : Day: Snow >1.0: 8 Snw Depth>1: 0

0.00" of PRCP on Day 21 and 0.24" of PRCP on Day 22 from CoCoRaHS; 2-day Accumulated Precip. (MDPR) of 0.24" on Day 22 from WxCoder3

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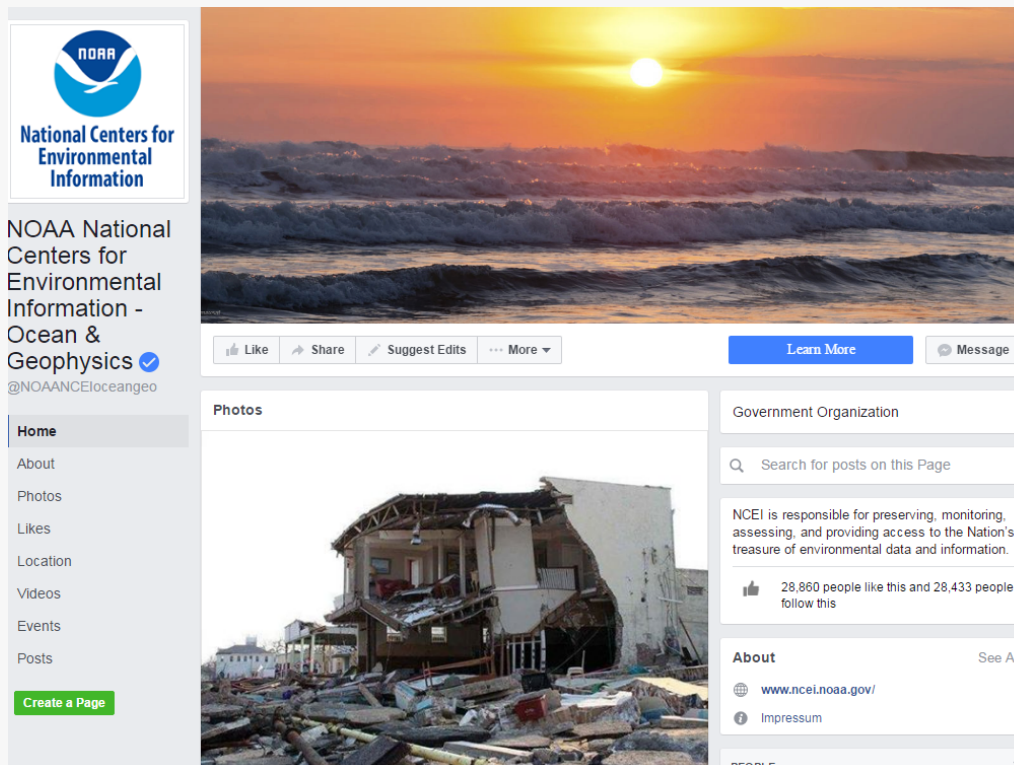
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The image shows the Facebook profile page for NOAA National Centers for Environmental Information - Ocean & Geophysics. The profile picture is a sunset over the ocean. The cover photo is a sunset over the ocean. The page has 2,068 likes, 143 followers, and 2,259 likes. The bio states: "NOAA's National Centers for Environmental Information (NCEI) preserve, monitor, assess, and provide access to the Nation's environmental data and information." The page is categorized as a Government Organization. The "About" section includes the website "www.ncei.noaa.gov/" and an "Impressum" link. The "Photos" section shows a photo of a damaged building. The "Home" tab is selected, showing a post about a damaged building.



The image shows the Twitter profile page for NOAA NCEI Ocean Geo. The profile picture is a sunset over the ocean. The cover photo is a sunset over the ocean. The page has 2,068 tweets, 143 following, 2,259 followers, and 7 likes. The bio states: "NOAA's National Centers for Environmental Information (NCEI) preserve, monitor, assess, and provide access to the Nation's environmental data and information." The page is categorized as a Government Organization. The "About" section includes the website "www.ncei.noaa.gov/" and an "Impressum" link. The "Photos" section shows a photo of a damaged building. The "Home" tab is selected, showing a tweet from NOAA NCEI Ocean Geo retweeted by NOAA Ocean Explorer.

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