

# The Cooperative Observations Program

Background and Overview

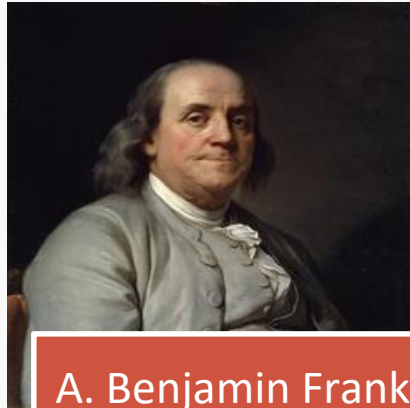
# Overview

- History
- Participants
- Challenges
- Future



## Pop Quiz!

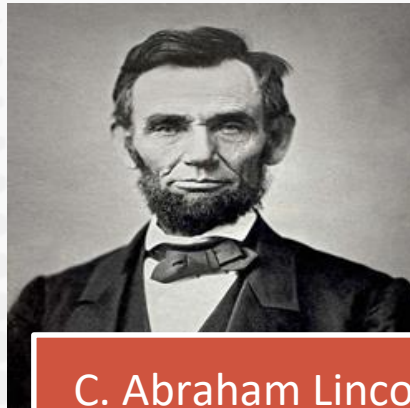
What famous U.S. historical figure first conceived the idea of a volunteer weather reporting network?



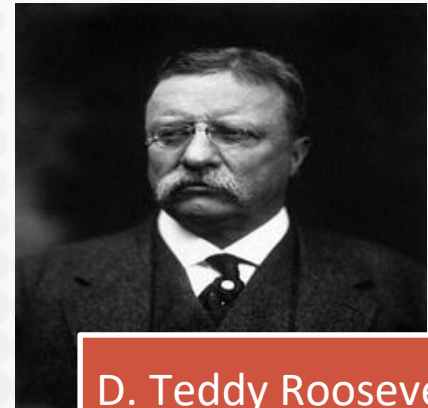
A. Benjamin Franklin



B. Thomas Jefferson



C. Abraham Lincoln



D. Teddy Roosevelt

## Pop Quiz!

What famous U.S. historical figure first conceived the idea of a volunteer weather reporting network?



B. Thomas Jefferson

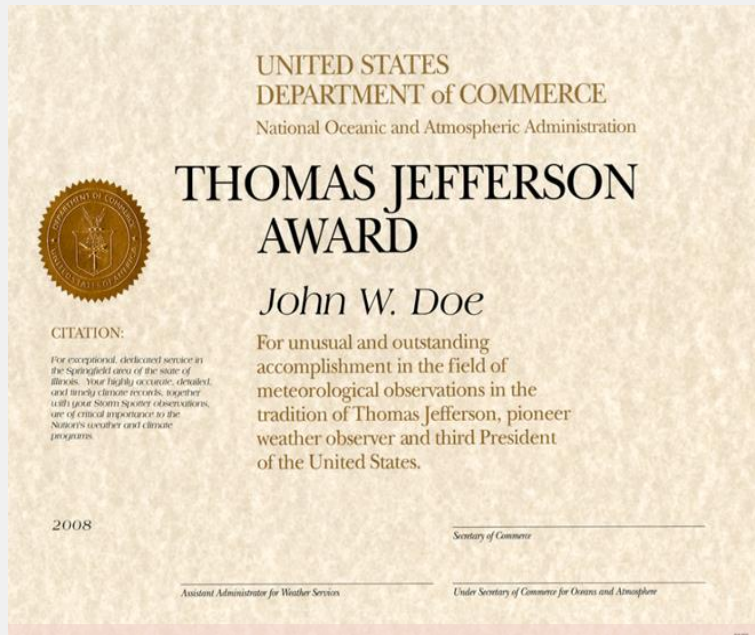
## Reverend John Campanius Holm

- The first to take systematic weather observations in the United States (1644)

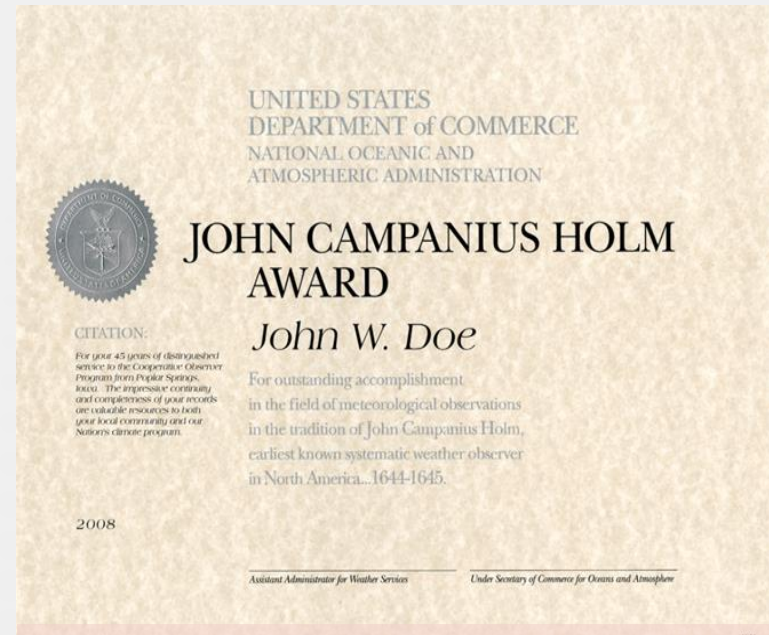
## Thomas Jefferson

- Jefferson maintained unbroken weather records from 1776 to just days before his death (1776-1816)

# History

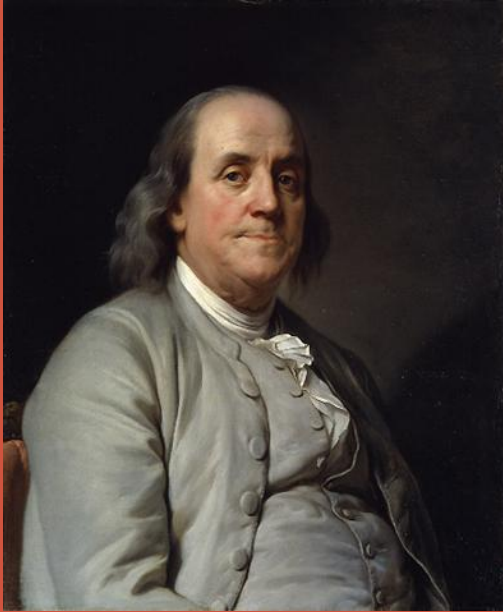


## Jefferson Award



## Holm Award

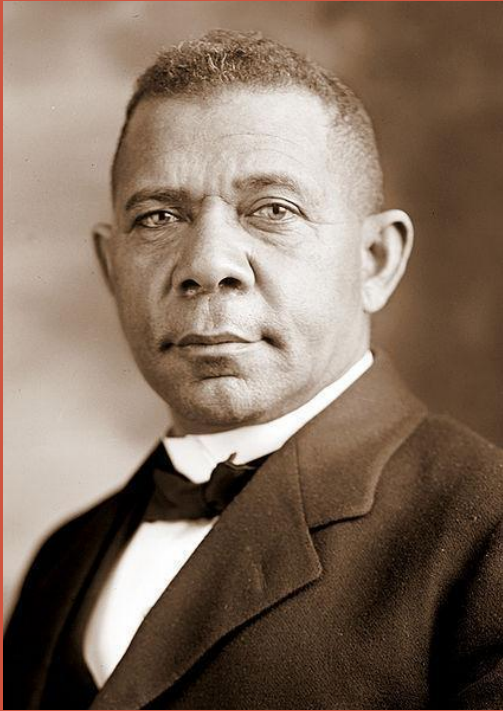
# Other Notable Observers



## **Benjamin Franklin -**

Took observations and also used them to make the first hurricane forecasts

## Other Notable Observers



### **Booker T. Washington -**

Took routine observations during his life  
(1856 -1915)

# History

1812 - After the War, post surgeons became official observers

1874 - Observers were transferred to the Army Signal Corp

1891 – Observers transferred to the Weather Bureau

1970 - The Weather Bureau became the NWS with approximately 11,000 COOP observers

Now – The National Weather Service has over 8500 COOP observers

# History

The Organic Act of 1890 charges the NWS with:

Providing weather and river forecasts and warnings

Disseminating forecasts and warnings

Reporting temperature, precipitation, and river conditions

Recording data to establish records of the climatic conditions of the US



# OUR OBSERVERS

# Who are they?

## Vannevar Bush

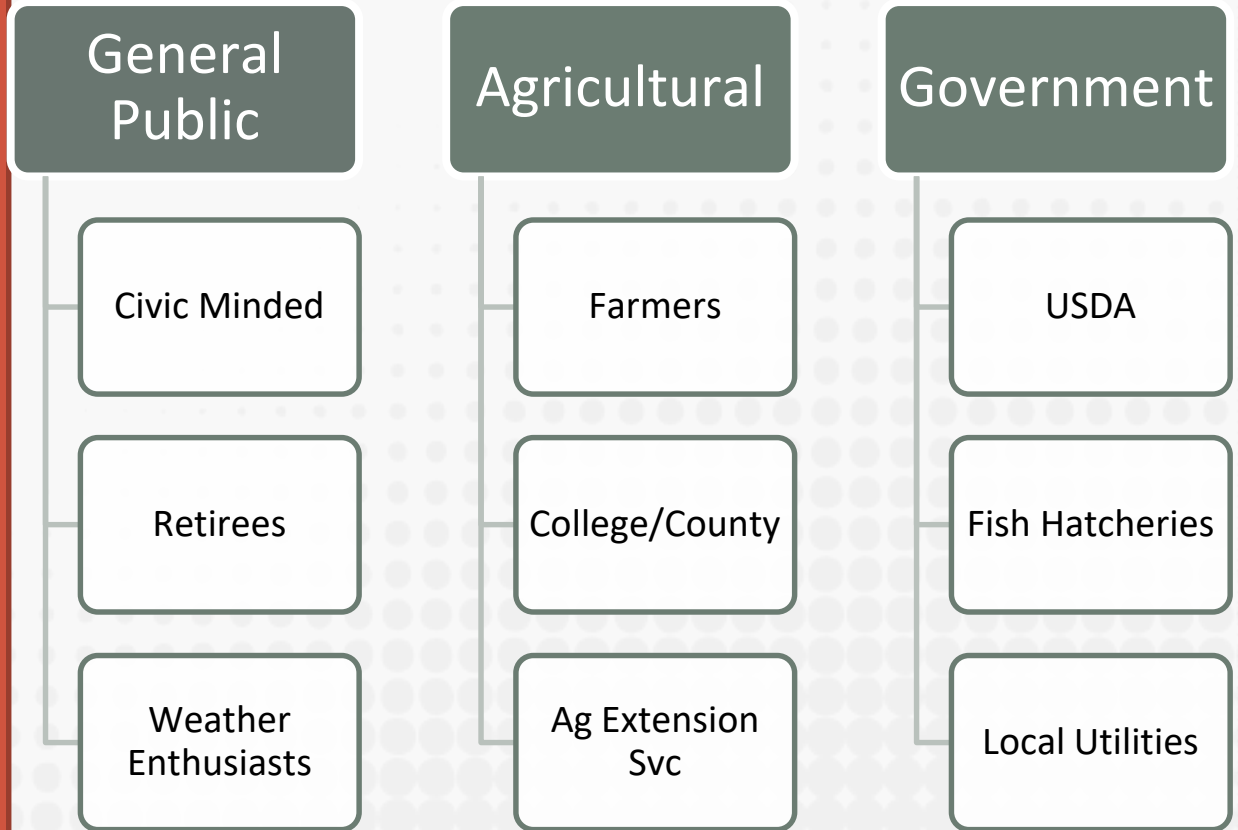


### Vannevar Bush on COOP

“...is one of the most extraordinary services ever developed, netting the public more per dollar expended than any other government service in the world...” (1933)

Bush was FDR's science advisor, work on the Manhattan Project, and helped develop the National Science Foundation.

# Who are they?





**WHO ARE WE?**

# Who are we?

## NWS Headquarters

Observing Services  
Division  
(OSD)

**National COOP Program  
Manager**

Climate Services Division  
(CSD)

National Climatic Data  
Center (NCDC)

## Regional

**Regional COOP Program  
Manager (RCMP)**

System Operations  
Division (SOD)

Scientific Services  
Division (SSD)

Data Acquisition Branch  
(DAB)

Regional Climate Centers  
(RCC)

## Field Offices

**Observing Program  
Leader (OPL)**

Data Acquisition Program  
Manager (DAPM)

COOP Focal Point

COOP Team Member

Climate Focal Point

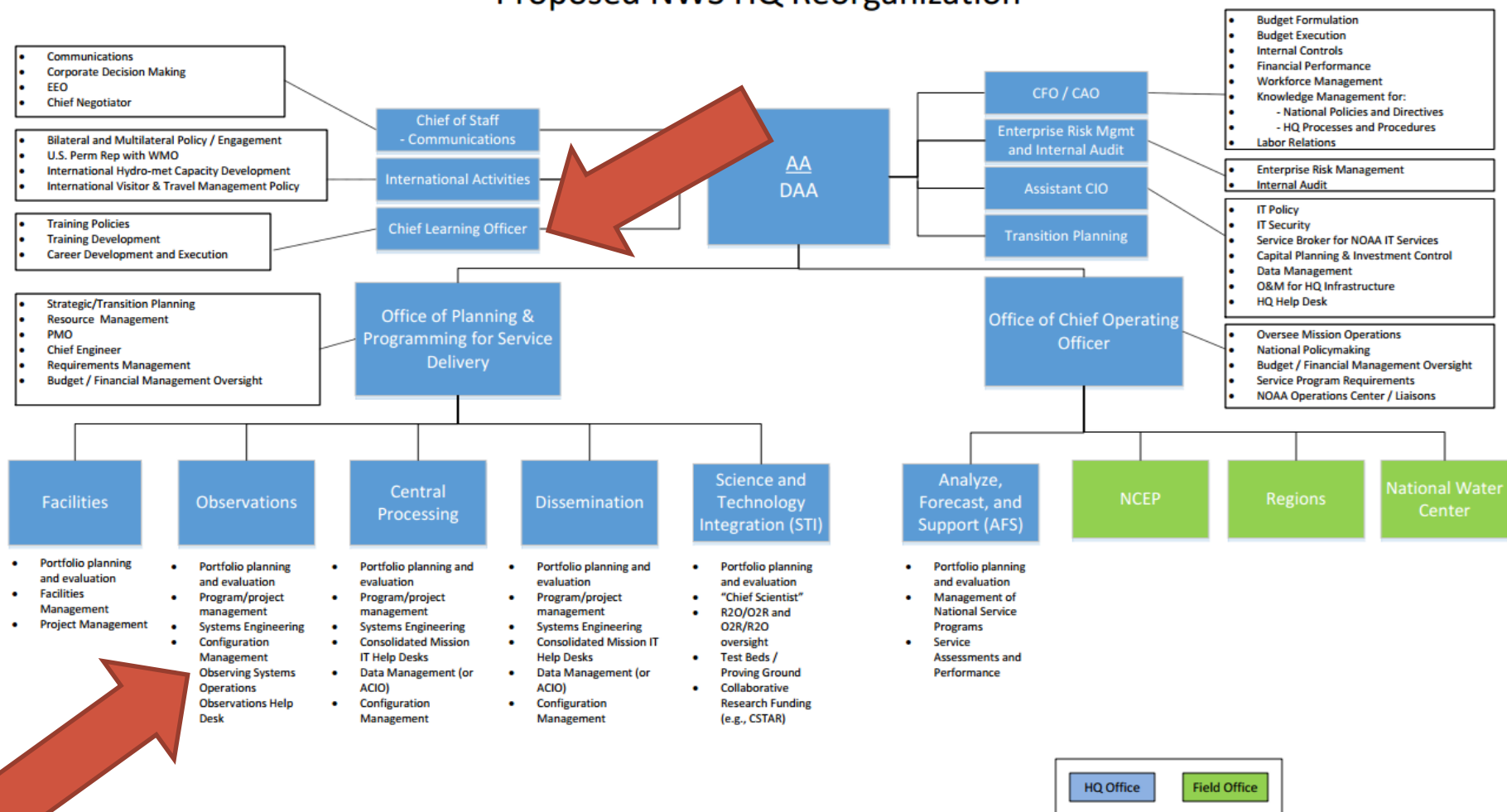
Data Focal Point

Service Hydrologist

Hydro Focal Point

# Who are we?

## Proposed NWS HQ Reorganization

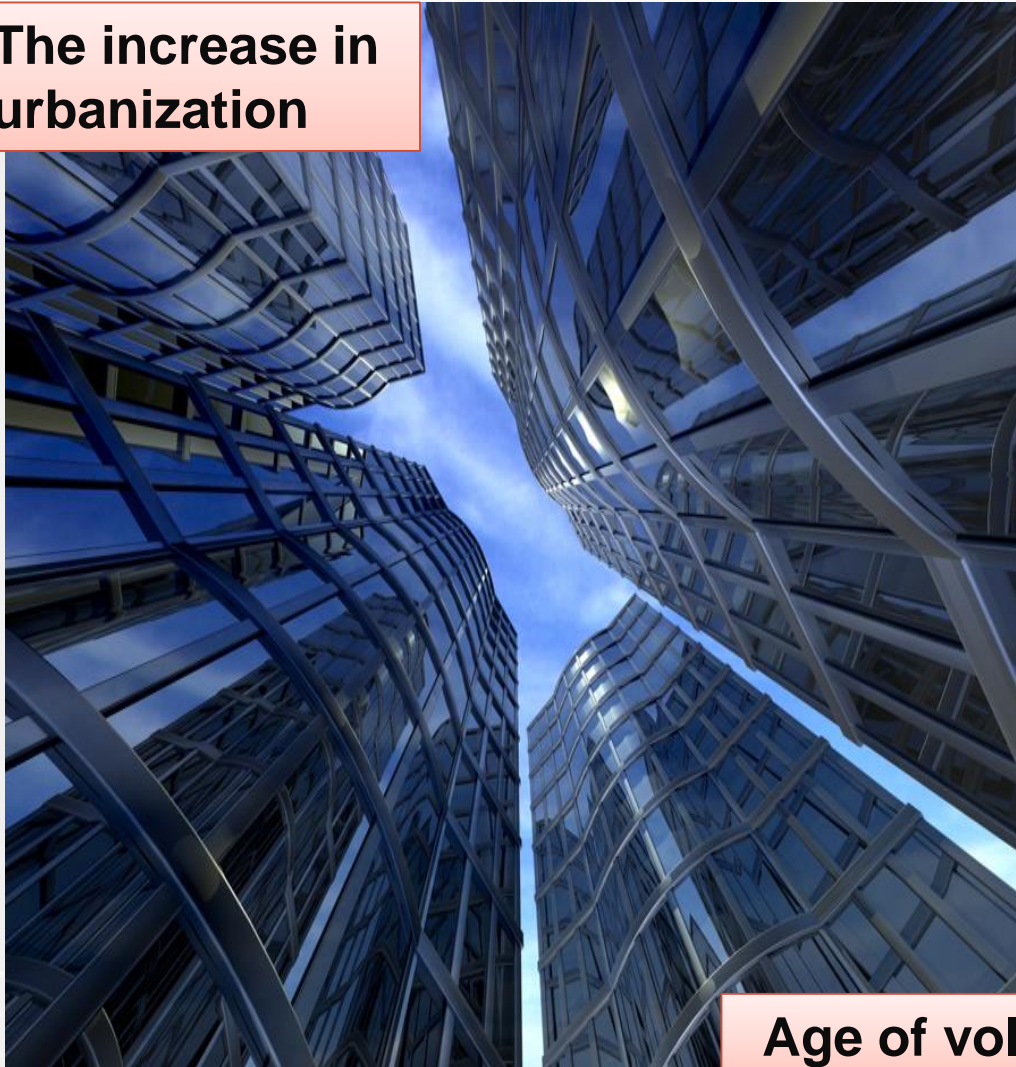


# COOP FUTURE

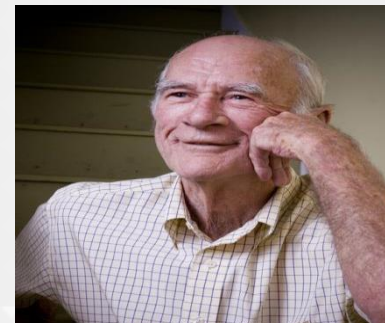


# Concerns

**The increase in urbanization**



**Society is more “mobile”**



**Age of volunteerism is diminishing**

# Preserving COOP

**How do we preserve this valuable resource?**

Maintain good communications and customer service

Acknowledge quality of observations and their commitment to the program



# Future of COOP

## Wireless Nimbus



CCOOP

## Occurring/Upcoming Changes

- Station Information System (Electronic Records)
- Wireless Nimbus (MMTS-W)
  - Test system installed at USC.
- Cellular COOP (CCOOP)
  - Transmits temperatures and rainfall via a cellular phone connection.
  - Test system at Sumter Water Plant



# McBee 1 SE

**OCCASION FOR THIS REPORT** ☐ 1. Establishment ☐ 2. Relocation of equipment ☒ 3. Discontinuance  
☐ 4. Publication of record ☐ 5. Change of observer ☐ 6. Change of station name; station formerly known as \_\_\_\_\_ ☐ 7. \_\_\_\_\_  
(Change in operating conditions, equipment, fees to observer, etc.)

**Remarks:** Station in the Agricultural Network discontinued because of poor records.  
(Pertinent information such as reason for discontinuance, substitute observer, serial numbers of river gage, etc.)  
Equipment moved to new station at Chesterfield 2 SE.

-----  
5-24-65 Winston L. Hurst 5-24-65  
(Effective date) (Name of person submitting form) (Date prepared)

-----  
PSMINV NWRC(2) CAE AAM/SC FF/CAE

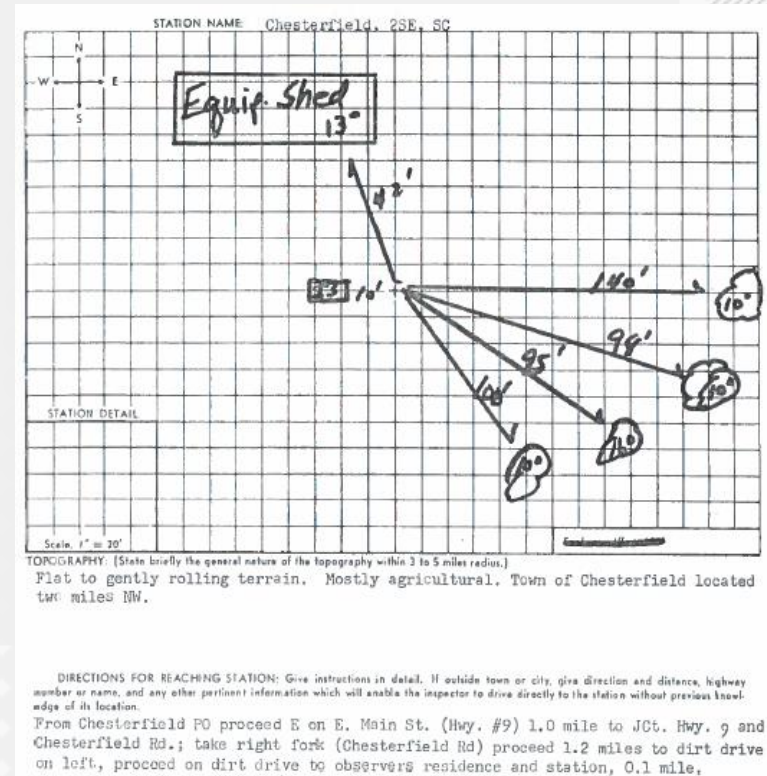
Original Station - McBee 1 SE  
McBee

29101 29593

Google Earth

# History of Observations in the Town of Chesterfield, SC (1965-Present)

- Station was originally located near the town of McBee (McBee 1 SE)
- **Chesterfield 2 SE**
- Moved to the town of Chesterfield on June 1<sup>st</sup>, 1965  
Observer – Ferris Russell through June 30<sup>th</sup>, 1980  
Observer – Mary Eliza Russell July 1<sup>st</sup>, 1980



# Station Move to the Chesterfield Water Plant (Chesterfield 1 E)

- Began July 1, 1982

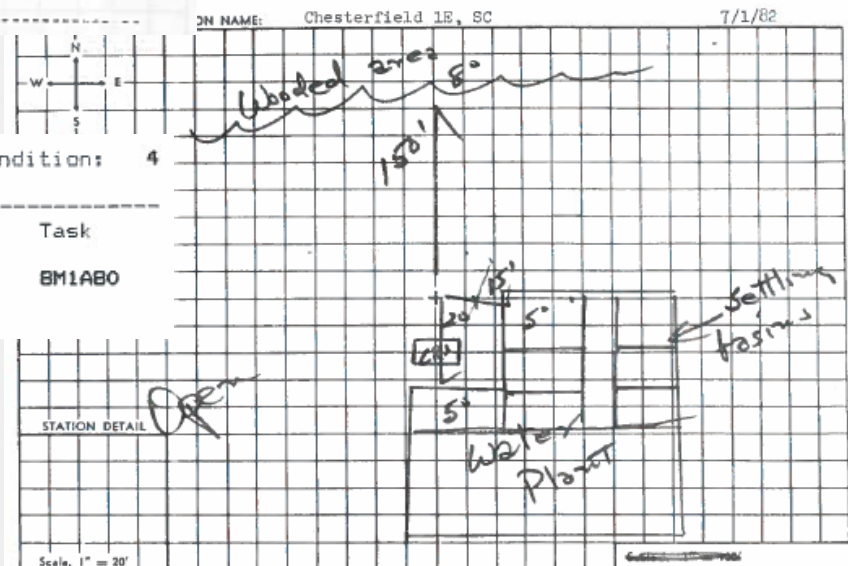
National Weather Service services (records and/or reports) (Paid) Rainfall (River)  
(Non-Paid) Temp., precip., soil temp. (S&E) (Agricultural)

Wage Rate \$6.60 mo. + \$1.00 ea. rpt. under Authorization. HRSNI: B-43, 7/7/82

Instrumental equipment. Max. min. therm. CRS; SRG; Thermograph; Palmer Soil Therm. at 4" depth under sod.

Station: 38-1641-4 CHESTERFIELD 1 E SID: CTFS1 Rendition: 4

Org	CD-404 Nr.	Service	Rate	Frg	Period	Task
WN9310	421DNW7W0055	PRECIP(H)	17.50	MO	12 MONTHS	BM1ABO



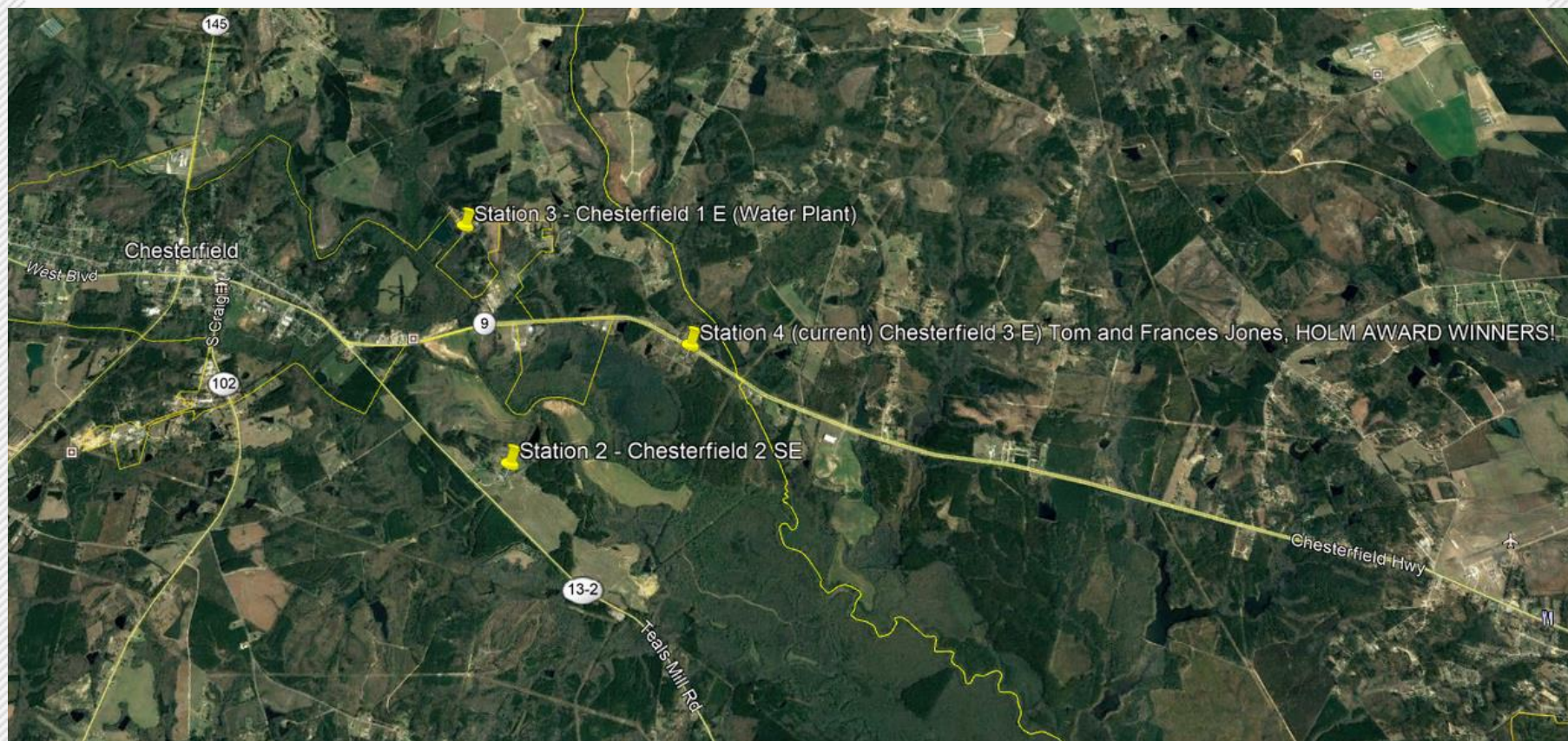
TOPOGRAPHY: (State briefly the general nature of the topography within 3 to 5 miles radius.)  
Rolling terrain. Mostly agricultural. Center of residential area 1.2 miles west.

DIRECTIONS FOR REACHING STATION: Give instructions in detail. If outside town or city, give direction and distance, highway number or name, and any other pertinent information which will enable the inspector to drive directly to the station without previous knowledge of its location.  
From P.O. in Chesterfield, SC proceed east on Business Hwy. #9 1.7 mi. (east side of Thompson Creek) to and turn left on SR 23, proceed about 200 feet, turn left on Sec. Rd. 846, proceed 0.7 mi. to water plant.

# Station Move to (Chesterfield 3 SW)

- Began March 1<sup>st</sup>, 1989,  
Observer Tom P. Jones Jr.

PATHFINDER STATION IDENTIFICATION		BER
Station Name:	DATE OF OBSERVATION:	
CHESTERFIELD 3SW	8-12-92	
Station Number:	Time of Observation:	
35-1145 FILED 0381645	8:51 LT 12:51 MT	
Observers Name:	Weather Conditions:	
Tom P. Jones Jr.	CLEAR	
Comments:		
to include rain gauge, max/min temp shelter, river gauge, evaporation pan, or any other collection device/shelter.		
Cotton REIGN SHUTTER		
STANDARD RAIN GAUGE		
34°42'42.30805" N 080°08'03.18530" W		
SKETCH (when needed)		
Azimuth's shown are magnetic. They are uncorrected for declination.		



# Observer Comments -



(Form No. 144—1885.)

WAR DEPARTMENT, SIGNAL SERVICE, U. S. ARMY.

Monthly Record of Observations taken at Special Cotton Region Stations.

Station: *Columbia SC*; Month: *August*, 188*6*

DATE.	TEMPERATURE.		PRECIPITATION, in inches and hundredths.	TIME OBSERVATION WAS TAKEN.	TIME REPORT WAS FILED AT TELEGRAPH OFFICE.	REMARKS. (Note severe storms and unusual phenomena.)
	Maximum	Minimum				
1	92	77	00	P. M.		<p>9 315</p> <p>Examined J. D. Fisher Capt R.C. U.S.A.</p> <p>Heavy Continuous shower at 9:55 and several lighter showers between that time and 12 midnight.</p>
2	88	77	00	"		
3	86	73	1.47	"		
4	79	66	00	"		
5	83	70	00	"		
6	86	72	00	"		
7	86	66	00	"		
8	85	65	00	"		
9	82	68	04	"		
10	85	73	.18	"		
11	90	71	00	"		
12	92	72	00	"		
13	94	71	00	"		
14	96	72	00	"		
15	96	76	00	"		
16	94	75	00	"		
17	93	75	00	"		
18	88	72	.75	"		
19	86	70	.48	"		
20	80	64	00	"		
21	80	61	00	"		
22	82	67	00	"		
23	85	64	00	"		
24	86	65	00	"		
25	91	68	00	"		
26	92	71	00	"		
27	91	72	.15	"		
28	87	70	00	"		
29	89	71	00	"		
30	87	71	00	"		
31	85	72	.30	"		
Sums.	2716	2171	3.37			
Means.	87.6	70.1	0.11			

(Sign here.)

*J. D. Fisher*  
24 T

Observer.

(Form No. 144—1885.)

WAR DEPARTMENT, SIGNAL SERVICE, U. S. ARMY.

Monthly Record of Observations taken at Special Cotton Region Stations.

Station: *Charleston SC*; Month: *September*, 188*6*

DATE.	TEMPERATURE.		PRECIPITATION, in inches and hundredths.	TIME OBSERVATION WAS TAKEN.	TIME REPORT WAS FILED AT TELEGRAPH OFFICE.	REMARKS. (Note severe storms and unusual phenomena.)
	Maximum	Minimum				
1			.00	P. M.		<p>No observation on account of earthquake and severe storm.</p> <p>Earthquake shocks on 1st, 2d, 3d, 4th, 5th, 7th, 8th, 10th, 12th, 13th, 14th, 15th, 16th, 17th, 18th, 19th, 20th, 21st, 22nd, 23rd, 24th, 25th, 26th, 27th, 28th, 29th, 30th, 31st.</p>
2			.00	"		
3	79.0	64.1	.00	"		
4	82.5	64.0	.00	"		
5	82.3	69.9	.00	"		
6	81.2	71.8	.02	"		
7	82.1	69.8	.15	"		
8	81.1	71.8	.28	"		
9	79.4	71.0	.94	"		
10	87.8	71.4	.00	"		
11	87.7	72.3	.12	"		
12	87.3	71.0	.50	"		
13	84.6	71.0	.20	"		
14	81.0	68.5	.00	"		
15	86.4	75.8	.05	"		
16	85.6	76.3	.00	"		
17	85.3	75.8	.00	"		
18	84.3	75.1	—	"		
19	84.0	72.3	.67	"		
20	86.4	71.8	.00	"		
21	85.6	69.8	.00	"		
22	79.9	67.8	.00	"		
23	81.5	68.6	.00	"		
24	82.9	68.8	.00	"		
25	83.0	73.0	.00	"		
26	83.3	74.8	.00	"		
27	86.4	70.0	.00	"		
28	87.8	70.6	.00	"		
29	87.0	72.8	.10	"		
30	73.1	60.5	—	"		
31				"		
Sums.	2333.6	1950.4	3.03			
Means.	83.3	70.7	.101			

(Sign here.)

*J. A. Smith*  
Capt, S.C. U.S.A. Observer.

Coop # 385200

U. S. Department of Agriculture, Weather Bureau.

Voluntary Observers' Meteorological Record: Month of

October

1893

Station

Little Mountain

County

North Carolina

State

10/1893

Coop # 385200

TEMPERATURE

PRECIPITATION

Time	A. M.	P. M.	P. M.	Maximum	Minimum	Mean	Range	Time of beginning	Time of ending	Amount	Snowfall, in.	Prevailing wind direction	Character of day
1	64	82	72			72.8						W	Fair
2	63	80	68			69.8						E	Fair
3	64	71	69			68.3						E	Cloudy
4	63	71	70			71						W	Fair
5	61	75	67			67.5						E	Fair
6	62	76	70			72.5						E	Fair
7	63	83	73			74.5						SW	Fair
8	67	84	73			74.5						W	Fair
9	68	83	73			73.5						NE	Clear
10	67	84	73			73.5						N	Clear
11	67	86	73			66.8						E	Clear
12	61	68	64			64.3		4:15 PM				E	Cloudy
13	64	68	63			61			4:30 PM 2:40			MSW	Cloudy
14	63	66	58			59						W	Clear
15	68	67	55			56						W	Clear
16	44	67	51			53						W	Clear
17	41	68	53			53.8						N	Clear
18	43	71	58			57.5						N	Fair
19	51	76	61			62						NE	Fair
20	51	61	64			64						SE	Fair
21	58	69	54			58		9 AM 10 AM	.07			E	Cloudy
22	54	63	61			63		DN DN	.28			E	Cloudy
23	62	71	63			64.8						W	Fair
24	63	72	76			73						E	Clear
25	60	80	67			67.5						NE	Clear
26	69	71	76			73						E	Fair
27	61	78	64			66.8		6 PM 8 PM	.13			W	Cloudy
28	56	72	64			64						W	Clear
29	53	62	58			57.8						W	Clear
30	36	57	49			44.8						N	Clear
31	38	59	45			45.5						NE	Clear
Sum.	1767	2273	1956			189.5				3.74		10 F	
Mean	57	73	63			64						F	

\* Including rain, hail, sleet, and melted snow.

† From maximum and minimum readings.

## Monthly Summary.

1727944-1641

Mean temperature,

64.1

Mean max. temperature,

mean min. temperature,

Maximum temperature, 84

date, 8/10/93

Minimum temperature, 33

date, 2/1

Total precipitation,

3.74 inches

Greatest precipitation in any 24 consecutive hours, 2.47

date, 12/13

No. of clear days, 13; partly cloudy, 13; cloudy, 6

on which all or more precipitation fell, 6

Prevailing wind direction, East

Depth of snow on ground on 15th, None

Depth of snow on ground at end of month, None

Total snowfall during the month, None

Dates of frost, Light, 15th, 16th, 17th

Killing, 31st

Dates of hail, None

Dates of sleet, None

Dates of auroras,

Time used on this form (4), 75 m.

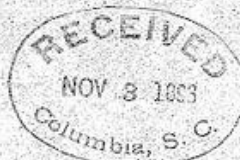
(a) Local, eastern, central, or Pacific.

## Remarks.

(Thunderstorms and miscellaneous phenomena, etc.)

First killing frost  
of last year was  
on Oct 1st

BEST AVAILABLE RECORD



## U. S. Department of Agriculture, Weather Bureau.

## MONTHLY SUMMARY.

## SPECIAL OBSERVERS' METEOROLOGICAL RECORD.

Month of October, 1903 Station Batesburg County Lexington  
 State A. C. Latitude 36° 45' N Longitude 80° 45' W Time used on this form 300

DATE	TEMPERATURE				PRECIPITATION				PREVAILING WIND DIRECTION	STATE OF WEATHER	MISCELLANEOUS PHENOMENA
	MAX. WIND	MIN. WIND	RANGE	MEAN	TIME OF BEGINNING	TIME OF ENDING	AMOUNT	DEPTH OF SNOW ON GROUND AT TIME OF OBSERVATION			
1	85	47	38						W	Clear	
2	86	51	35						E	Clear	
3	80	40	41						E	Clear	
4	81	35	46						N	Cloudy	
5	89	33	56						"	Clear	
6	82	54	28						"	Clear	
7	81	59	22		12:00pm	1:30pm	.14		N	Partly Cloudy	
8	74	60	14						N	Cloudy	
9	75	43	32		8:30am	9am	.31		E	Clear	
10	74	42	32						E	Clear	
11	77	40	37						E	Clear	
12	50	44	6						N	Clear	
13	84	46	38						E	Clear	
14	84	51	33						N	Clear	
15	74	52	22						N	Cloudy	
16	75	54	21		10am	11am	Trace		E	Cloudy	
17	66	55	11		1am	8am	.69		N	Partly Cloudy	
18	64	40	24		8am	3pm	1.42		N	Clear	
19	72	38	34						"	Clear	
20	75	43	32						"	Clear	
21	81	45	36						E	Clear	
22	86	46	40						N	Clear	
23	76	49	27						N	Cloudy	
24	51	40	11						E	Cloudy	
25	45	29	16						E	Clear	
26	77	31	46						E	Clear	
27	64	34	30						N	Clear	
28	72	34	38						N	Clear	
29	76	34	42						E	Clear	
30	75	36	39						W	Partly Cloudy	
31	78	42	36						W	Cloudy	
MEAN	76	45	31				7.66		W		
MEAN	75.8	45.0					8.6				

BATESBURG SC  
10-1903

## TEMPERATURE.

Mean maximum, 75.8 76Mean minimum, 45.0 45Mean, 60.4 60Maximum, 90 date, 2 10Minimum, 29 date, 25 10PRECIPITATION. CON 48Total, 7.66 inches.Greatest in 24 hours, 1.42 date, 18 10Total snowfall, 0 on ground 15th, 0 inches.At end of month, 0 inches.

## NO. OF DAYS—

With .01 inch or more precipitation, 4Clear, 1; partly cloudy, 2; cloudy, 8

## DATES OF—

Killing frost, 25 10 & 28 10Thunderstorms, 0Hail, 0Sleet, 0Auroras, 0

## REMARKS.

1st frost on the morning of the 25 10. Did much damage—killed late crop cotton, and all minor vegetation.

BEST AVAILABLE RECORD

\* May be left blank.  
 † Including rain, hail, sleet, and melted snow.  
 ‡ Thunderstorms, lakes, auroras, etc.

(IN TRIPLICATE.) 274

O. L. L. Special Observer  
 Post-Office Address, Batesburg

## U. S. DEPARTMENT OF AGRICULTURE, WEATHER BUREAU.

Report of River ~~Station at~~ Cheraw South Carolina on the  
Great Pee Dee River ~~Watershed~~ for the month of February 1914

Observations taken at 8 a. m., 75th meridian time, corresponding to 7-41 a. m. local time.

Height of flood stage, 27 feet. Elevation of zero of gage above mean sea level, 150 feet.

Date.	RIVER.		PRECIPITATION.			CHERAW ST.		Remarks.
	Reading of river gage.	Change in 24 hours.	Began—	Ended—	Depth of rain and melted snow.	Actual depth of snowfall.	Direction of wind.	Character of weather at time of observation.
1	4.1	+0.7	See Corrigenda.	1934	.03		W	Clear
2	4.3	+2.2					W	Clear
3	4.2	+1.9					W	Clear
4	4.7	+0.5					W	Clear
5	4.8	+1.2					W	Clear
6	5.0	+2.2	7:10 a.m.	2:40 p.m.	.11		W	Clear
7	4.7	+1.4			.63		W	Clear
8	4.2	+2.8					W	Clear
9	4.5	+3.3					W	Clear
10	1.8	-3.7	12:10 p.m.	3:30 p.m.			W	Clear
11	4.4	+1.6			.19		W	Clear
12	4.7	+1.3					W	Clear
13	4.2	-0.5	8:15 a.m.	3:30 p.m.	.44		W	Clear
14	4.2	0.0			.64		W	Clear
15	4.2	-1.0					W	Clear
16	4.2	-1.0					W	Clear
17	4.2	-1.0					W	Clear
18	4.2	-1.0					W	Clear
19	4.2	-1.0					W	Clear
20	4.2	-1.0					W	Clear
21	4.2	-1.0					W	Clear
22	4.2	-1.0					W	Clear
23	4.2	-1.0					W	Clear
24	4.2	-1.0					W	Clear
25	4.2	-1.0					W	Clear
26	4.2	-1.0					W	Clear
27	4.2	-1.0					W	Clear
28	4.2	-1.0					W	Clear
29	4.2	-1.0					W	Clear
30	4.2	-1.0					W	Clear
31	4.2	-1.0					W	Clear
Sum	208				4.96		W	Clear
Mean	11.5						W	Clear

Depth of accumulated snow on ground on 15th day of month, 1.5 inches; on last day of month, 7.6 inches.

Date on which the last snow of the season disappeared, 190

(See No. 18 on back.)

Examined at center by—

J. H. Scott

(Strictly follow instructions printed on back.)

G. H. Powe

River Observer.

REC'D MAR 6 1914

COLUMBIA S. C.

## U. S. Department of Agriculture, Weather Bureau.

MONTHLY SUMMARY.

## COOPERATIVE OBSERVERS' METEOROLOGICAL RECORD:

Month of August, 1925; Station, Walhalla; County, Adams  
 State, SC; Latitude, 34-46; Longitude, 83.3; Hour of Observation, 7 P.M.  
 Time used on this form, 3 1/2 hr. Time

DATE.	TEMPERATURE.				PRECIPITATION.				PREVAILING WIND DIRECTION.	CHARACTER OF DAY, SUNRISE TO SUNSET.	1 MISCELLANEOUS PHENOMENA.
	MAXIMUM.	MINIMUM.	RANGE.	* SET MAX.	TIME OF BEGINNING.	TIME OF ENDING.	AMOUNT.	SNOWFALL IN INCHES.			
1	89	59	30	75					W	Clear	
2	87	56	31	75					E	Clear	
3	85	61	24	79					E	Cloudy	
4	80	64	16	69	9 am	5:21	.24		N.E.	Cloudy	
5	80	60	20	80			.06		N.E.	P. Cloudy	
6	74	63	11	80					E	Clear	1st Open Cotton ball
7	76	63	13	84					SW	Clear	
8	98	62	36	86					SW	P. Cloudy	
9	77	69	28	84					SW	Clear	
10	78	68	30	88					SW	Clear	
11	78	68	30	80	2 PM	2:30	T		SW	P. Cloudy	
12	104	68	36	88					SW	Clear	
13	105	66	39	92					SW	Clear	
14	102	68	34	84					W	Clear	
15	76	67	29	85					N.E.	Clear	Started to pick Cotton
16	91	73	18	84					N.E.	P. Cloudy	
17	91	73	18	85					N.E.	P. Cloudy	
18	97	63	34	77	4:50	5 PM	.15		N.E.	P. Cloudy	
19	102	66	36	84					SW	Clear	
20	105	66	39	79	5 PM	5:30	.15		SW	Clear	Thunder & Wind Storm
21	91	67	24	78					N.E.	P. Cloudy	
22	86	63	23	74					N.E.	Clear	Cool
23	81	58	23	73					E	Clear	
24	83	61	22	74					E	Clear	
25	88	58	30	78					E	Clear	
26	93	58	35	82					S.E.	Clear	of the town Walhalla
27	91	57	34	82					E	Clear	Dimmed football
28	85	67	18	75					E	Clear	
29	81	68	13	74					N.E.	P. Cloudy	
30	89	63	26	79					E	Clear	
31	93	58	35	78					S.E.	Clear	
32	86	66	20	84					SW	Clear	
MEAN	82.5	64.0					0.60	0			

## TEMPERATURE.

Mean maximum, 92.5 ✓  
 Mean minimum, 64.0 ✓  
 Mean, 78.2 ✓  
 Maximum, 105 ✓ date, 13 & 20  
 Minimum, 56.5 ✓ date, 2 & 7  
 Greatest daily range, 39 ✓ 4/13/20

## PRECIPITATION.

Total, .60 ✓ inches.  
 Greatest in 24 hours, .24 ✓, date, 4 ✓

## SNOW.

Total snowfall, 0 inches; on ground 15th, 0 inches;  
 at end of month, 0 inches.

## NUMBER OF DAYS—

with .1 inch or more precipitation, 4 ✓  
 Clear, 21 ✓; partly cloudy, 8 ✓; cloudy, 2 ✓

## DATES OF—

Killing frost,

Thunderstorms, 20

Hail,

Sleet,

Auroras,

## REMARKS:

A Barn blown down in town &  
 a Mule & Cow got killed, and a  
 barn of Mr. G. B. B. blown down  
 Cotton opened & pick about  
 2 weeks sooner than other  
 years

\* Reading of maximum thermometer immediately after setting.  
 † Including rain, hail, sleet, and melted snow.  
 ‡ Transmitted by radio, auroras, etc.

TRIPPLICATE.)

See cover for instructions.

6-253

Cooperative Observer.  
 Post-Office Address, Walhalla



BEST AVAILABLE RECORD

# U. S. DEPARTMENT OF COMMERCE, WEATHER BUREAU COOPERATIVE OBSERVERS' METEOROLOGICAL RECORD.

STATION Cheraw COUNTY Chesterfield STATE S.C. HR. OF OBSERVATION  
 LATITUDE 34°-42' LONGITUDE 79°-56' ELEVATION 144 TEMP 77.4 AMV  
 MONTH Sept. 1945 MERIDIAN OF TIME 75° W.T. PRECIP S.W.T.

DATE	TEMPERATURE			PRECIPITATION			PREVAILING WIND DIRECTION FOR THE DAY	CHARACTER OF DAY SURF. TO SUNSET TYPE C.D.			MISCELLANEOUS PHENOMENA INCLUDING CHARACTER OF PRECIPITATION, AS RAIN, DRIZZLE, SNOW, SLEET, HAIL, THUNDERSTORMS, ETC.
	MAXIMUM	MINIMUM	SET MAX	TIME OF BEGINNING	TIME OF ENDING	AMOUNT INCHES & HUNDREDTHS		1	2	3	
1	91	59	66				E	✓			
2	88	65	70	9:15 AM	on p		NE	✓			
3	86	64	66			2.95	W	✓			
4	80	62	65	9:30 AM			W	✓			
5	79	65	68		10 PM	.33	E	✓			
6	92	68	70			2.25	SE	✓			
7	90	67	70				W	✓			
8	95	66	69				W	✓			
9	96	67	70				W	✓			
10	95	66	68				W	✓			
11	95	67	69				W	✓			
12	90	58	63				W	✓			
13	91	58	65	2:15 PM	on p		SW	✓			
14	85	64	70	10:50 AM	11 PM	.55	W	✓			
15	86	67	68	11:00 AM	on p	.25	S	✓			
16	75	67	68	10 AM		.61	S	✓			
17	76	64	69		on p	3.80	NE	✓			
18	83	60	63			4.60	E	✓			
19	90	59	62				E	✓			
20	91	60	60				W	✓			
21	96	58	66				SE	✓			
22	90	65	68	on p on p			SW	✓			
23	90	64	68			.50	E	✓			
24	92	66	67				W	✓			
25	93	65	70				S	✓			
26	90	64	67				W	✓			
27	92	65	69				SE	✓			
28	93	63	69				W	✓			
29	90	64	67				W	✓			
30	87	64	70				S	✓			
31											
1st											
SUM	2664	1911				17.84	U			N 2028	

## MONTHLY SUMMARY

(TO BE FILLED IN BY OBSERVER)

DATES OF -

HIGH WINDS, \_\_\_\_\_

GLAZE, (FREEZING RAIN) \_\_\_\_\_

SLEET, (SMALL ICE PELLETS) \_\_\_\_\_

HAIL \_\_\_\_\_

KILLING FROST, \_\_\_\_\_

THUNDERSTORMS, 5 PM 13thFOG, LIGHT (VISIBILITY 1/2 MI. OR MORE) 13th 24

DENSE (VISIBILITY LESS THAN 1/2 MI.) \_\_\_\_\_

DEPTH OF FROZEN GROUND AT END OF MO. \_\_\_\_\_ INS.

(NEED NOT BE FILLED IN BY OBSERVER)

## TEMPERATURE

MEAN MAXIMUM, 88.8MEAN MINIMUM, 63.7MEAN MONTHLY, 76.2 DEPARTURE, +2.5MAXIMUM, 96 DATE, 9/21MINIMUM, 58 DATE, 12/13/21

## PRECIPITATION

TOTAL, 17.84 INS. DEPARTURE, +14.03

## GREATEST AMOUNT

IN ANY OBSERVATIONAL DAY	COMPUTED FOR 24-HOUR PERIOD
AMOUNT DATE	AMOUNT DATE
4.60 18	4.60 17

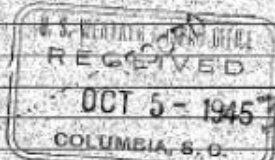
## SNOW

TOTAL SNOWFALL, 0 INCHESGREATEST IN ANY OBSERVATIONAL DAY 0DATE —

## NUMBER OF DAYS

MAX TEMP 90° OR ABOVE, 19MAX TEMP 32° OR BELOW, 0MIN TEMP 32° OR BELOW, 0MIN TEMP 0° OR BELOW, 0WITH 0.01 INCH OR MORE PRECIP, 90.25 INCH OR MORE, 9, 1.00 INCH OR MORE, 5CLEAR, 20 PARTLY CLOUDY, 2 CLOUDY, 8

REMARKS:



BEST AVAILABLE RECORD



STATION (Climatological)		(River Station, if different)		MONTH	DAY	WS FORM B-91 (12/00)		U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION NATIONAL WEATHER SERVICE	
SANTUCK		UNION		SEPT.	20	RECORD OF RIVER AND CLIMATOLOGICAL OBSERVATIONS			
STATE		COUNTY		RIVER					
S.C.									
TIME (local) OF OBSERVATION		TEMP		PRECIPITATION		STANDARD TIME IN USE			
		7P		7P		E.D		E	
TYPE OF RIVER GAGE		ELEVATION OF RIVER GAGE ZERO		FLOOD STAGE		NORMAL POOL STAGE			
		Ft.		Ft.		Ft.			
TEMPERATURE F.		PRECIPITATION		WEATHER (Calendar Day)		RIVER STAGE		REMARKS	
24 HRS. ENDING AT OBSERVATION		24-HR AMOUNTS		Mark 'X' for all types occurring each day.		GAGE READING AT		(Special observations, etc.)	
81		A.M. NOON P.M.		Fog Ice Pellets Glaze Thunder Hail Drizzling Winds		COND. TENDENCY			
MAX. MIN.		Rain, melted snow, etc. (in. and hundredths)		Snow, ice pellets, hail (in. and hundredths)		Time of observation if different from above			
AT OBS.		Snow, ice pellets, hail (in. and hundredths)		Snow, ice pellets, hail (in. and hundredths)					
DATE		1 2 3 4 5 6 7 8 9 10 11 12		1 2 3 4 5 6 7 8 9 10 11 12					
1	83 70	72	1.88						
2	76 69	73	0						
3	80 63	75	0						
4	83 64	77	0						
5	84 66	78	0						
6	79 70	75	.10						
7	75 72	74	5.65						
8	75 72	73	3.70						
9	81 67	76	0						
10	82 63	75	0						
11	82 64	75	0						
12	81 61	75	0						
13	76 63	72	T						
14	80 61	73	.01						
15	78 64	74	0						
16	77 68	76	.17						
17	77 70	75	.62						
18	80 61	70	0						
19	75 53	68	0						
20	71 49	66	0						
21	75 50	69	0						
22	81 53	76	0						
23	85 59	78	0						
24	81 62	75	0						
25	79 57	72	0						
26	80 56	72	0						
27	73 67	73	1.07						
28	82 69	77	1.56						
29	77 62	72	T						
30	80 60	73	0						
31									
SUM		14.76		CHECK BAR (For wire-weight) NORMAL CK. BAR					
CONDITION OF RIVER AT GAGE		READING		DATE		Fog Ice Pellets Glaze Thunder Hail Drizzling Winds			
A. Obstructed by rough ice.		E. Ice gage below gage				SUPERVISING OFFICE		STATION INDEX NO.	
B. Frozen, but open at gage.		F. Shore ice.				GSP		38 - 7722 - 2	
C. Upper surface of smooth ice.		G. Floating ice.							
D. Ice gage above gage.		H. Pool stage.							

STATION (Climatological)		(River Station, if different)		MON. <u>Aug.</u> <u>20</u> <u>08</u>		WS FORM B-91 (12/00)		U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION NATIONAL WEATHER SERVICE				
Hartsville		Darlington		Black Creek		RECORD OF RIVER AND CLIMATOLOGICAL OBSERVATIONS						
STATE <u>South Carolina</u>		COUNTY <u>Darlington</u>		RIVER <u>Black Creek</u>								
TIME (local) OF OBSERVATION RIVER <u>7 AM</u>		TEMP. <u>7 AM</u> <u>7 AM</u>		PRECIPITATION <u>7 AM</u> <u>7 AM</u>		STANDARD TIME IN USE <u>DE</u>						
TYPE OF RIVER GAGE <u>Stage</u>		ELEVATION OF RIVER GAGE ZERO <u>sea level</u>		FLOOD STAGE		NORMAL POOL STAGE						
TEMPERATURE F.		PRECIPITATION		WEATHER (Calendar Day)		RIVER STAGE		REMARKS				
24 HRS. ENDING AT OBSERVATION		24-HR AMOUNTS		At Gage		Mark 'X' for all types occurring each day		Time of observation if different from above				
MAX. MIN.		Rain, melted snow, etc. (in. and hundredths)		Snow, ice pellets, rain, sleet and sleet (in. and hundredths)		Fog Ice Pellets Glaze Thunder Hail Damaging Winds		GAGE READING AT TENDENCY				
AT 75 OBS.		Snow, ice pellets, rain, sleet and sleet (in. and hundredths)		Snow, ice pellets, rain, sleet and sleet (in. and hundredths)		Fog Ice Pellets Glaze Thunder Hail Damaging Winds		GAGE READING AT TENDENCY				
1 2 3 4 5 6 7 8 9 10 11 12 1 2 3 4 5 6 7 8 9 10 11 12		1 2 3 4 5 6 7 8 9 10 11 12 1 2 3 4 5 6 7 8 9 10 11 12		1 2 3 4 5 6 7 8 9 10 11 12 1 2 3 4 5 6 7 8 9 10 11 12		1 2 3 4 5 6 7 8 9 10 11 12 1 2 3 4 5 6 7 8 9 10 11 12		1 2 3 4 5 6 7 8 9 10 11 12 1 2 3 4 5 6 7 8 9 10 11 12				
1	96	73	73	0.31						158.6 S 16.5		
2	93	72	73	0						155.6 S 16.5		
3	98	67	68	1.75						157.0 R 143.6		
4	90	68	71	0.76						156.8 F 118.3		
5	93	71	74	0						156.1 F 47.8		
6	97	74	75	0						156.1 S 47.8		
7	99	72	72	0.29						157.0 R 143.6		
8	94	71	72	0.29						157.1 R 156.2		
9	89	67	69	0						157.0 F 143.6		
10	89	67	67	0						156.4 F 78.0		
11	89	67	70	0.16						155.0 F 15.1		
12	88	64	64	0						155.0 S 15.1		
13	86	64	68	0.40						155.2 R 15.6		
14	69	60	61	1.78						156.2 R 57.9		
15	83	61	69	0						156.0 F 37.7		
16	88	69	69	0/T						156.8 R 118.3		
17	83	67	68	0/T						156.8 S 118.3		
18	82	66	67	2.02						156.2 F 57.9		
19	87	66	66	0						156.0 F 37.7		
20	89	66	69	0						155.9 F 27.6		
21	89	69	72	0						155.6 F 16.5		
22	86	70	70	0						155.8 F 16.3		
23	81	68	68	0						155.9 R 27.6		
24	86	67	67	0						156.0 R 37.7		
25	88	67	73	0						156.8 R 118.3		
26	89	73	73	0.42						156.0 F 37.7		
27	82	73	76	0.54						156.5 R 88.1		
28	88	71	71	0						156.8 R 118.3		
29	89	71	72	0.06						156.8 R 118.3		
30	90	71	72	0.67						156.8 R 118.3		
31	90	70	70	0						156.8 R 118.3		
SUM		9.45										
CONDITION OF RIVER AT GAGE		READING		DATE		SUPERVISING OFFICE		STATION INDEX NO.				
A. Obstructed by rough ice. B. Frozen, but open at gage. C. Upper surface of smooth ice. D. Ice gorge above gage.		E. Ice gorge below gage. F. Frozen, but open at gage. G. Floating ice. H. Pool stage.		22.76 7-31-08 5.74/28.50 8-15-08 9.45/32.21 8-31-08		WFO WILMINGTON, NC		38 3990				

REMARKS  
(Special observations, etc.)

Hail-marble to quarter size strong winds  
Evening thunderstorm

Afternoon Thunderstorm w/ Marble  
Afternoon Thunderstorm hail

Afternoon Shower

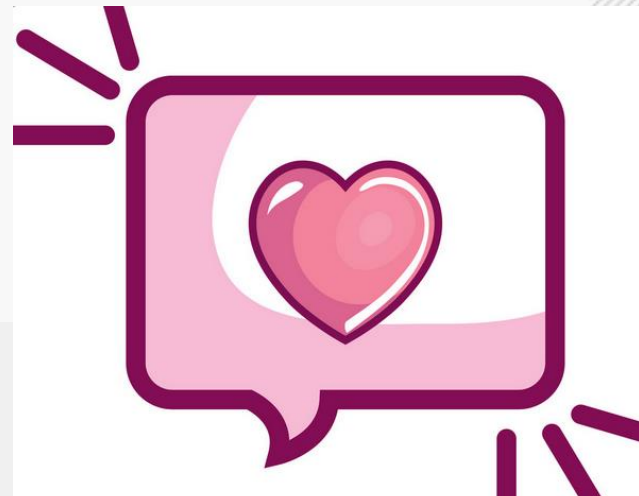
Early AM Shower - All day rain

Early AM Sprinkle  
Early AM Sprinkle - rain

Afternoon/night rains  
Afternoon rain

Short but Heavy Show

Afternoon Thunderstorm



Date ▲	Station Number	Station Name	Total Precip in.	Comments	
2/13/2010	SC-DC-19	Summerville 1.4 SSE	0.00	At my house, we have 7 inches of snow on the ground, and it is still snowing at 12:18 AM	<a href="#">View</a>
2/13/2010	SC-OR-3	North 0.3 W	0.51	Snowstorm started mid-afternoon with tiny snowflakes that got larger gradually. The temperature was 42.1 degrees and the dew point was 42. The snow started to stick about 4:01 pm. By 4:30 pm, it was really coming down and the temperature was 36.7. It got below freezing after midnight. The snow was 5 inches deep when the snow stopped about 3:3 am. Brought in sample to thaw about 4:00 am. The air was so calm and the snow was so fluffy that the snow piled up over the twigs on the trees 2 to 4 inches deep. On the ground it even piled up on the tops of the wires for my tomato frames. It was a very quiet storm and was pretty. I took lots of pictures.	<a href="#">View</a>



Date ▲	Station Number	Station Name	Total Precip in.	Comments	
2/14/2014	SC-AK-44	Aiken 9.8 NNE	0.00	Power off since noon yesterday, Had to find an alternate WiFi to send this. I have wood heat and a generator so I am OK.	<a href="#">View</a>
2/14/2014	SC-PC-5	Pickens 1.5 WSW	0.02	Melted snow flurries from yesterday morning.	<a href="#">View</a>
2/14/2014	SC-RC-12	Columbia 6.7 N	0.08	Some snow in the morning, becoming mostly cloudy in the afternoon.	<a href="#">View</a>
2/14/2014	SC-YR-13	Tega Cay 1.6 ESE	0.27	ZL at 7:30am. Change to S- 8:00am. (S 8:15-8:45). S-/S to 12:20pm (2.3" to Noon)(.27"swe). 4.3" on ground this morning. Event Totals: 7.3" snow, 1.49" precip.	<a href="#">View</a>
2/14/2014	SC-AK-39	North Augusta 1.5 WSW	1.25	Day 4 without electrical service and internet. Ice storm caused massive destruction in our community. Many trees down, especially the pines. Several homes with roof damage.	<a href="#">View</a>
2/14/2014	SC-AK-42	Aiken 8.7 E	0.00	Power restored. Without power for 1 1/2 days, although many still without power. Significant tree damage at home. Many roads in Aiken, SC are nearly impassable due to downed trees, limbs, and/or power lines.	<a href="#">View</a>
2/14/2014	SC-AN-10	Iva 5.2 SSW	T	This trace was early in the morning then the beautiful sun came out.	<a href="#">View</a>
2/14/2014	SC-BF-16	Bluffton 2.4 NNW	0.02	Yesterday, cloudy with clearing late, high 42, this morning clear, 35 degrees.	<a href="#">View</a>
2/14/2014	SC-BF-23	Daufuskie Island 1.7 SW	0.00	Zero rain.	<a href="#">View</a>
2/14/2014	SC-CR-4	Mount Pleasant 1.9 ESE	0.01	just a wee but left over from yesterday's rain after I measured	<a href="#">View</a>
2/14/2014	SC-MB-3		0.29	Ice and snow over much of the ground.. app 85%	<a href="#">View</a>
2/14/2014	SC-GT-24	Pawleys Island 2.6 N	0.02	TRACE	<a href="#">View</a>
2/14/2014	SC-GV-7	Travelers Rest 8.9 N	T	★ AFTER MY EFFORT TO GET A CORE VALUE FOR TOTAL SNOW AND MUCH ICE. MY REGARDS AND THANKS TO ALL THOSE OBSERVERS WHO DO IT MANY TIMES EVERY WINTER.	<a href="#">View</a>
2/14/2014	SC-GV-9	Taylors 4.6 N	T	A few light flurries in the morning of 13th. Extensive thawing in afternoon. Unable to get a core sample, morning of 14th as snow had a thick ice coating.	<a href="#">View</a>

Date	Station Number	Station Name	Total Precip in. ▲	Comments	
9/15/2018	SC-HR-19	Loris 1.4 ENE	8.19	8.19 inches is what I recorded from the gauge but the rain was blowing sideways all day yesterday so it was probably more than that.	<a href="#">View</a>
9/15/2018	SC-HR-73	Myrtle Beach 5.2 SW	6.93	Hurricane Florence-rain all day	<a href="#">View</a>
9/15/2018	SC-HR-33	Loris 2.9 WSW	6.63	6:57 am - a few drops , 8:00 am - 0.03 , 8:03 am - lights in house blinked , 9:00 am - 0.08 , Wind , 10 am - 0.16 , Wind - Rain , 10:30 am - 0.40 , 11 am - 0.49 , 12 noon - 0.61 , Wind - Rain , 12:30 pm - 0.72 , Wind Rain , 1:00 pm - 0.85 , 1:30 pm - 1.03 , 2 pm - 1.21 , 2:15 pm - 1.24 , (walked the dogs) 2:30 - 1.28 , 3:00 pm - 1.58 , 3:15 pm - 1.62 , 3:30 - 1.67 , 3:45 - 1.76 , 4:00 pm - 1.87 , 4:15 pm - 1.94 , 4:30 pm - 2.08 , 4:33 pm - light in house flickered , 4:38 pm - lights flicked again , 4:45 pm - 2.20 , 5 pm - 2.35 , 5:30 - 2.86 , 5:45 - 3.12 , 5:53 pm - lights flickered , 6:00 pm - 3.40 , 6:30 - 3.87 , 7:00 pm - 4.42 , 7:30 pm - 4.90 , 7:45 - 5.08 , 8 pm - 5.19 , 8:30 pm - 5.38 , 9 pm - 5.53 ( eye of storm ) , 10:00 pm - 5.76 , 10:40 pm - 5.88 , 12:15 am - 6.08 , 5:20 am - 6.46 , 6:00 am - 6.53 , 6:30 am - 6.59 , and finally 7:00 am - 6.63	<a href="#">View</a>
9/15/2018	SC-HR-61	Conway 6.2 E	6.40	Tropical Storm Florence	<a href="#">View</a>
9/15/2018	SC-HR-27	Myrtle Beach 8.4 WNW	6.38	lots of wind no trees down just branches and leaves. less rain than expected	<a href="#">View</a>
9/15/2018	SC-HR-46	Myrtle Beach 5.0 WNW	5.62	Hurricane Florence blew a lot of wind and tore a lot of branches and leaves from trees. No serious damage. My power stayed on also.	<a href="#">View</a>



We ♥ your  
comments

**Thank You!**

Questions?

Comments?

Suggestions?