



New Climate Normals:

A Comparison of the 1991-2020 Climatological Normals with the 1981-2010 Climatological Normals, focusing on Columbia, SC and Augusta, GA.

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Columbia, SC

Introduction

- What are Climate Normals?
 - Normal daily/monthly/annual highs, lows, average temps, precipitation amounts, etc

Introduction

Climate Normal Examples

CLIMATE REPORT

NATIONAL WEATHER SERVICE COLUMBIA SC

124 AM EDT FRI MAY 21 2021

...THE COLUMBIA METRO AIRPORT SC CLIMATE SUMMARY FOR MAY 20 2021...

CLIMATE NORMAL PERIOD: 1991 TO 2020

CLIMATE RECORD PERIOD: 1887 TO 2021

WEATHER ITEM	OBSERVED VALUE	TIME (LST)	RECORD VALUE	YEAR	NORMAL VALUE	DEPARTURE FROM NORMAL	LAST YEAR
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TEMPERATURE (F)

YESTERDAY

MAXIMUM	84	4:20 PM	98	1964	85	-1	66
MINIMUM	58	5:48 AM	40	1894	62	-4	60
AVERAGE	71				73	-2	63

...THE COLUMBIA METRO AIRPORT SC CLIMATE SUMMARY FOR THE MONTH OF APRIL 2021...

CLIMATE NORMAL PERIOD: 1981 TO 2010

CLIMATE RECORD PERIOD: 1887 TO 2021

WEATHER	OBSERVED VALUE	DATE(S)	NORMAL VALUE	DEPART FROM NORMAL	LAST YEAR'S VALUE
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TEMPERATURE (F)

RECORD

HIGH 96 04/18/1896

LOW 26 04/08/2007

04/20/1983

01/01/2000

HIGHEST 87 04/14 MM MM

04/29

LOWEST 28 04/03 MM MM

AVG. MAXIMUM 77.2 76.3 0.9

AVG. MINIMUM 49.6 50.4 -0.8

MEAN 63.4 63.4 -0.0

DAYS MAX >= 90 0 1.1 -1.1

DAYS MAX <= 32 0 0.0 0.0

DAYS MIN <= 32 1 0.5 0.5

DAYS MIN <= 0 0 0.0 0.0

PRECIPITATION (INCHES)

RECORD

MAXIMUM 10.76 1936

MINIMUM 0.29 1994

TOTALS 0.80 2.62 -1.82

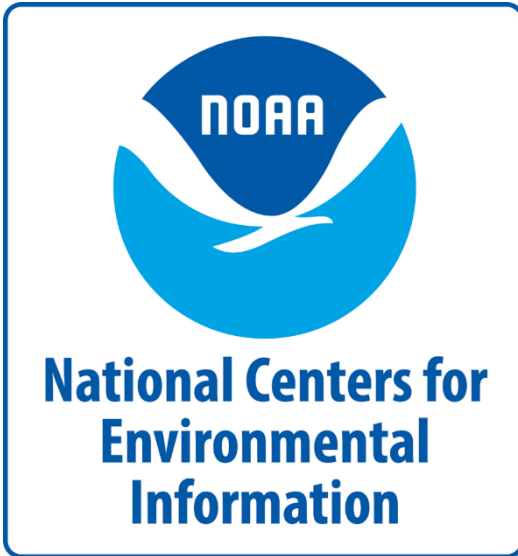
Introduction

- How are these climate normals calculated?
 - Using observations taken over a 30-year period



- WMO established the 30-year time period standard for normals
 - Early in the 20th century when most locations around the world only had about 30 years worth of continuous weather observations
- Updated every 10 years

Background



- NCEI recently released 1991-2020 climatological normals for the US
 - Normal daily/monthly/annual temperatures, precipitation amounts
 - Replacing the 1981-2010 dataset

What are climate normals used for?

- Forecasting
- Climate comparison by location
- Can identify trends in time
- Industry/Personal uses

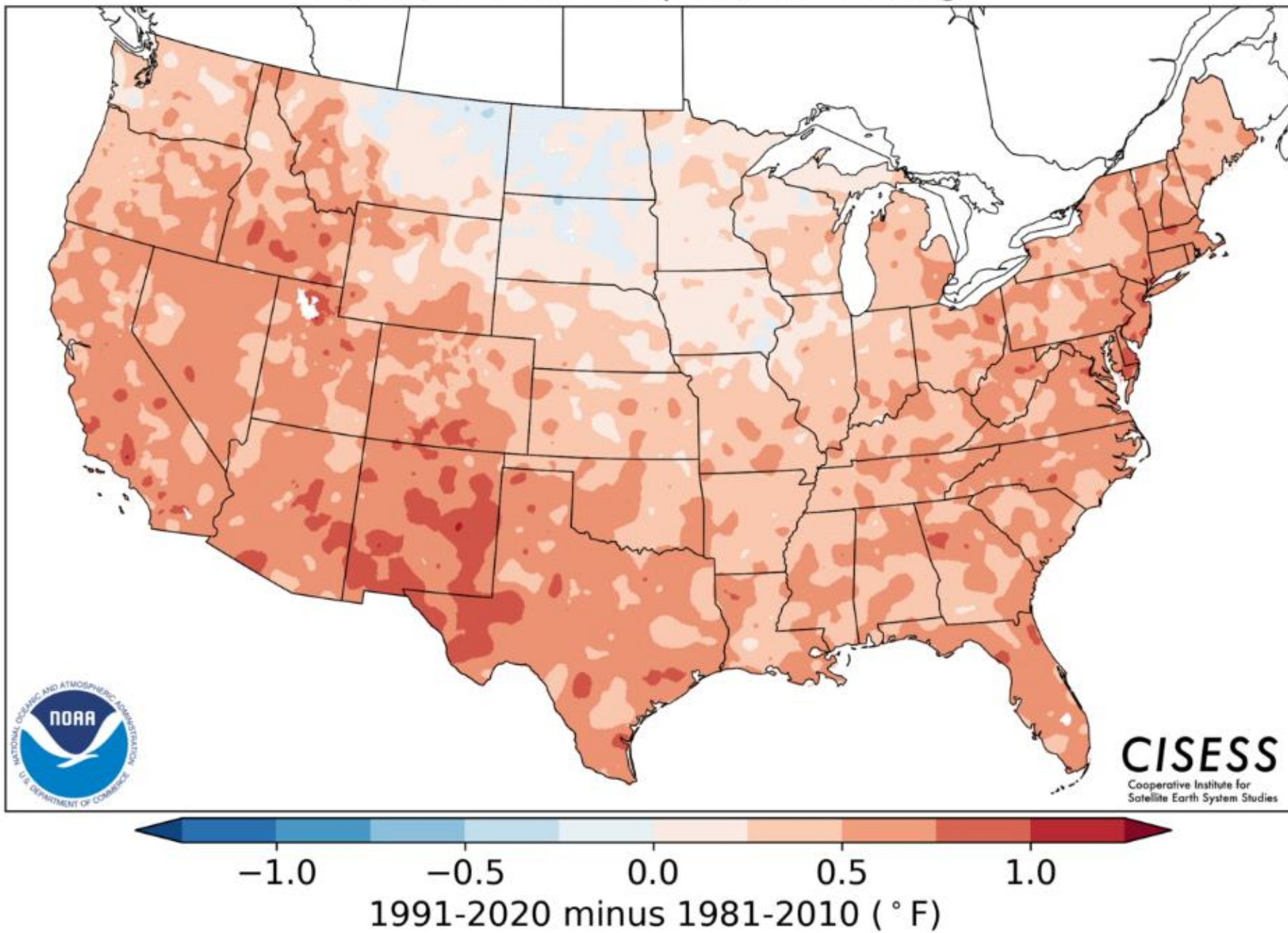
Outline

- CONUS Comparison
 - Change in average annual temperature and precipitation amount
- Normals comparison for Columbia, SC and Augusta, GA
 - Monthly/Annual Average Temperature and Precipitation Amount
 - Other Climate Statistics
- New Tropical Cyclone Normals for the Atlantic Basin

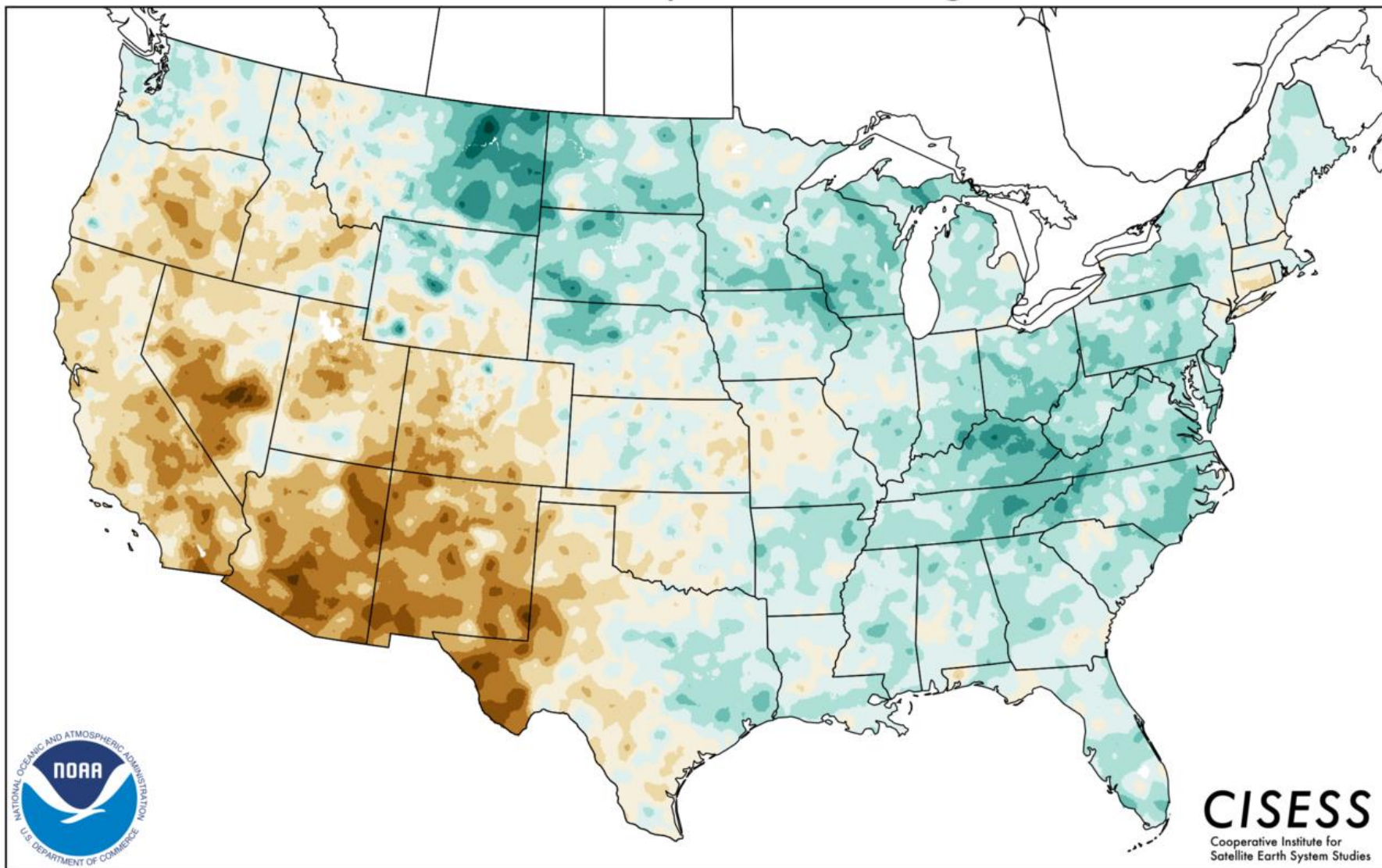
What has changed with the new normals?

- US Annual Average Temperature:
 - Warmer for most of the CONUS
 - Cooler Northern Plains/Upper Midwest
- US Annual Average Precipitation Amount:
 - Wetter values for much for the north and east
 - Drier Central/Southern Plains, Rockies, Desert SW
- For both Columbia, SC and Augusta, GA:
 - Warmer and wetter values for annual average temperature and precipitation amount.
- Slight increase in number of named Tropical Cyclones and Hurricanes in the Atlantic Basin
 - No change in number of “major” hurricanes (Cat. 3 or higher on Saffir-Simpson scale)

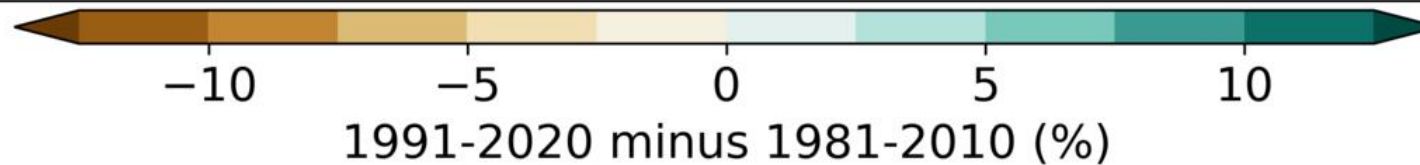
Annual Mean Temperature Change



Annual Precipitation Change



CISESS
Cooperative Institute for
Satellite Earth System Studies



Columbia SC

Monthly/Annual Normal Average Temperature Comparison (°F)

Month	1981-2010 Normal	1991-2020 Normal	Difference
January	44.8	45.7	+ 0.9
February	48.5	49.1	+ 0.6
March	55.6	55.9	+ 0.3
April	63.4	64.1	+ 0.7
May	71.7	72.2	+ 0.5
June	79.1	79.1	0
July	82.2	82.4	+ 0.2
August	80.8	81.0	+ 0.2
September	74.7	75.5	+ 0.8
October	64.1	64.6	+ 0.5
November	54.8	54.0	- 0.8
December	46.7	47.7	+ 1.0
Annual	63.9	64.3	+ 0.4

Augusta GA

Monthly/Annual Normal Average Temperature Comparison (°F)

Month	1981-2010 Normal	1991-2020 Normal	Difference
January	45.4	47.4	+ 2.0
February	49.1	50.8	+ 1.7
March	55.9	57.5	+ 1.6
April	62.7	64.6	+ 1.9
May	71.1	72.7	+ 1.6
June	78.6	79.7	+ 0.9
July	81.6	82.8	+ 1.2
August	80.5	81.8	+ 1.3
September	74.6	76.4	+ 1.8
October	64.4	66.0	+ 1.6
November	55.2	55.6	+ 0.3
December	47.2	49.4	+ 1.8
Annual	63.9	65.4	+ 1.5

Columbia SC
Monthly/Annual Normal Precipitation Amount Comparison
(Inches)

Month	1981-2010 Normal	1991-2020 Normal	Difference
January	3.58"	3.49"	- 0.09"
February	3.61"	3.39"	- 0.22"
March	3.73"	3.57"	- 0.16"
April	2.62"	2.83"	+ 0.21"
May	2.97"	3.49"	+ 0.52"
June	4.69"	4.97"	+ 0.28"
July	5.46"	5.35"	- 0.11"
August	5.26"	4.65"	- 0.61"
September	3.54"	3.91"	+ 0.37
October	3.17"	3.13"	- 0.04"
November	2.74"	2.76"	+ 0.02"
December	3.22"	3.70"	+ 0.48"
Annual	44.59"	45.24"	+ 0.65"

Augusta GA

Monthly/Annual Normal Precipitation Amount Comparison (Inches)

Month	1981-2010 Normal	1991-2020 Normal	Difference
January	3.91"	3.84"	- 0.07"
February	3.92"	3.67"	- 0.25"
March	4.18"	4.08"	- 0.10"
April	2.84"	2.92"	+ 0.08"
May	2.65"	3.05"	+ 0.40"
June	4.72"	4.75"	+ 0.03"
July	4.33"	4.48"	+ 0.15"
August	4.32"	4.61"	+ 0.29"
September	3.22"	3.60"	+ 0.38
October	3.27"	2.56"	- 0.71"
November	2.82"	2.66"	- 0.16"
December	3.39"	3.87"	+ 0.48"
Annual	43.57"	44.09"	+ 0.52"

Annual Number of Days \geq 100F Comparison

Location	1981-2010 Normal	1991-2020 Normal	Difference
Columbia, SC	5.2	6.0	+ 0.8
Augusta, GA	5.5	5.9	+ 0.4

Annual Number of Days \geq 90F Comparison

Location	1981-2010 Normal	1991-2020 Normal	Difference
Columbia, SC	71.6	80.9	+ 9.3
Augusta, GA	82.0	86.3	+ 4.3

Annual Number of Days \leq 32F Comparison

Location	1981-2010 Normal	1991-2020 Normal	Difference
Columbia, SC	47.3	46.5	- 0.8
Augusta, GA	51.3	51.0	- 0.3

Annual Snowfall Amount Comparison

Location	1981-2010 Normal	1991-2020 Normal	Difference
Columbia, SC	1.5"	1.2"	- 0.3"
Augusta, GA	0.9"	0.8"	- 0.1"

Average Date of the First Fall Freeze Comparison

Location	1981-2010 Normal	1991-2020 Normal	Difference
Columbia, SC	November 3 rd	November 7 th	4 days later
Augusta, GA	November 5 th	November 9 th	4 days later

Average Date of the Last Spring Freeze Comparison

Location	1981-2010 Normal	1991-2020 Normal	Difference
Columbia, SC	March 30 th	March 25 th	5 days earlier
Augusta, GA	March 29 th	March 23 rd	6 days earlier

New Tropical Cyclone Normals for the Atlantic Basin

'Average' Atlantic Hurricane Season

*** Effective 2021**

1981-2010

**12 Named Storms
6 Hurricanes
3 Major Hurricanes**



1991-2020

**14 Named Storms
7 Hurricanes
3 Major Hurricanes**

* Numbers for an average season reflect the climate record for tropical storms and hurricanes and use the most recent 3 decades as the period of reference. More at: <http://bit.ly/NOAAHurricaneSeasonAverages>

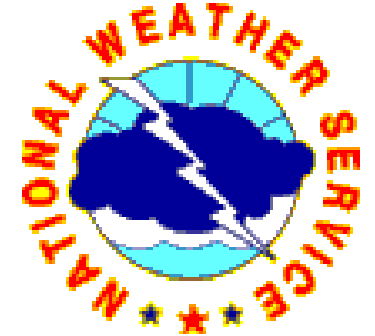


Summary

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Note

- Record values still use the entire period of record
 - Continuous temperature and precipitation records for Columbia, SC and Augusta, GA date back to the late 1800's.



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A Comparison of the 1991-2020 Climatological Normals
with the 1981-2010 Climatological Normals,
focusing on Columbia, SC and Augusta, GA.

Thank You!

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