

NOAA Climate Science & Services Monthly Climate Update



Karin Gleason

Climate Scientist, NOAA National Centers for
Environmental Information

Freja Vamborg, Ph.D.

Senior Climate Scientist, Copernicus Climate Change
Service, ECMWF

Dan Collins, Ph.D.

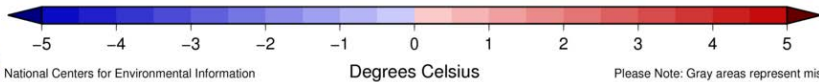
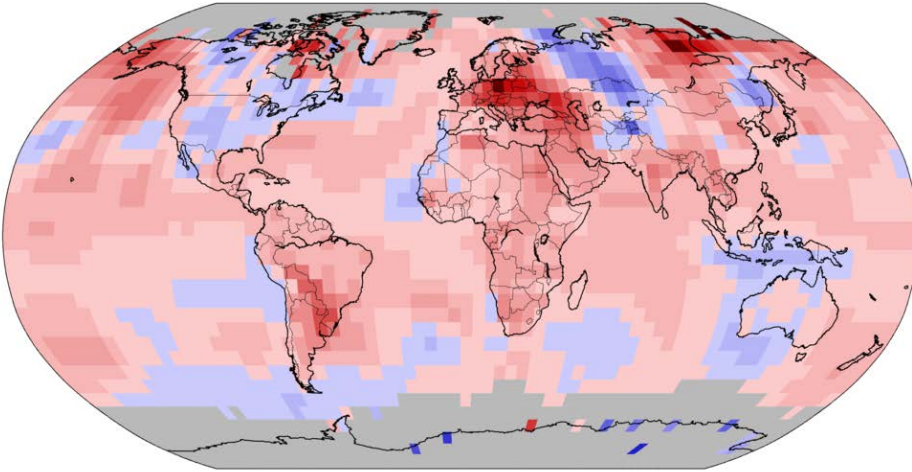
Meteorologist, NOAA Climate Prediction Center

Global Temperature - June 2019

The global temperature record dates back to 1880 (140 years)

Land & Ocean Temperature Departure from Average Jun 2019
(with respect to a 1981–2010 base period)

Data Source: NOAA GlobalTemp v5.0.0–20190710



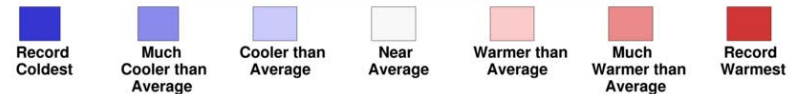
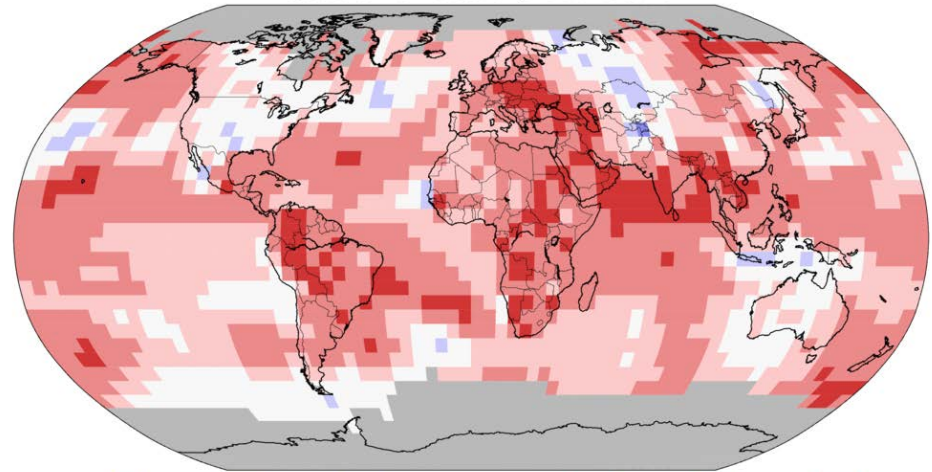
National Centers for Environmental Information
GHCNM v4.0.1.20190708.q1e

Please Note: Gray areas represent missing data
Map Projection: Robinson

Land & Ocean Temperature Percentiles Jun 2019

NOAA's National Centers for Environmental Information

Data Source: NOAA GlobalTemp v5.0.0–20190710

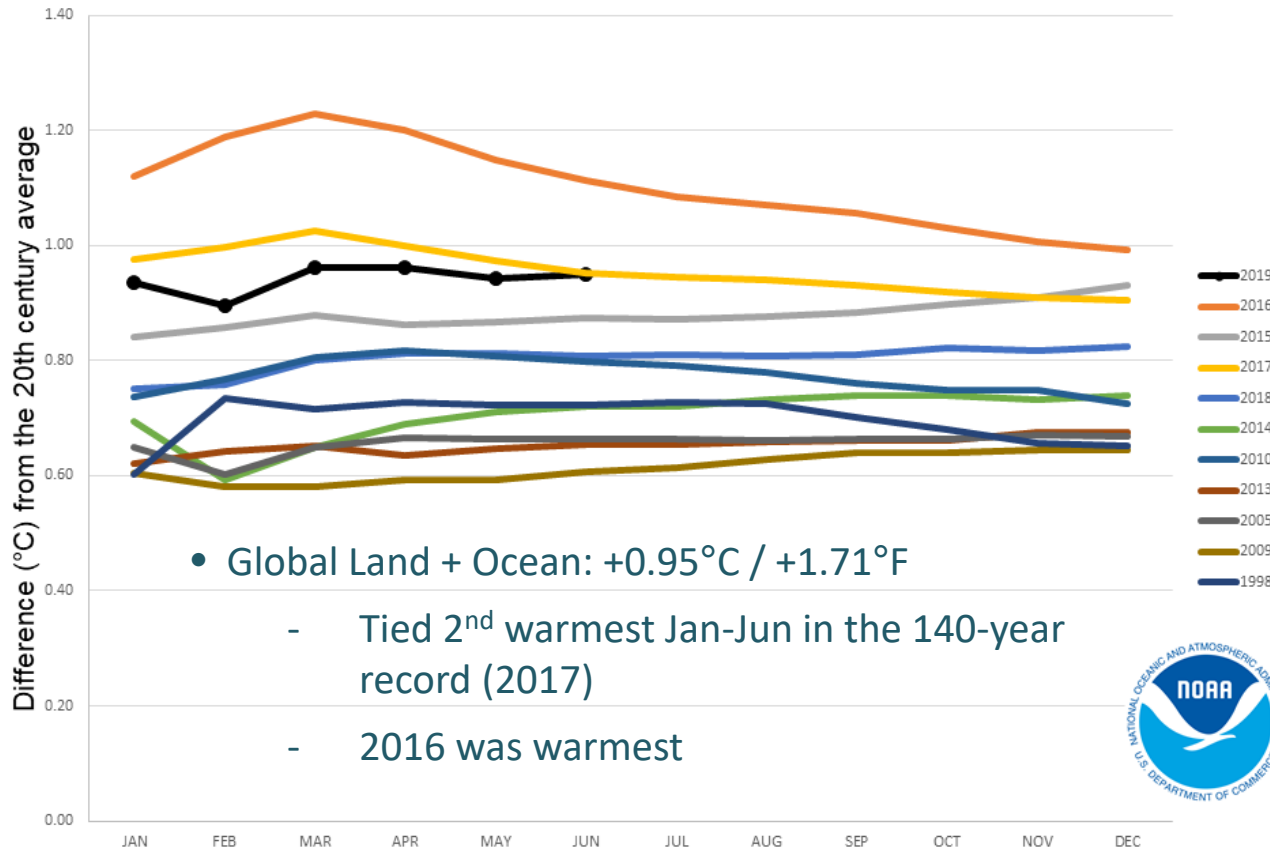


GHCNM v4.0.1.20190708.q1e

- Global Land: $+1.34^{\circ}\text{C}$ / $+2.41^{\circ}\text{F}$ (Warmest on record)
- Global Ocean: $+0.81^{\circ}\text{C}$ / $+1.46^{\circ}\text{F}$ (Tied w/2016 - warmest on record)
- Global Land & Ocean: $+0.95^{\circ}\text{C}$ / $+1.71^{\circ}\text{F}$ (Warmest on record)

Global Temperature: Jan-Jun 2019

Year-to-Date Global Temperatures for 2019 and the ten warmest years on record



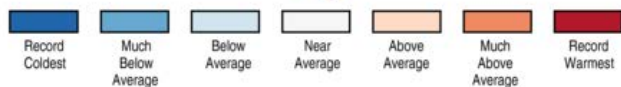
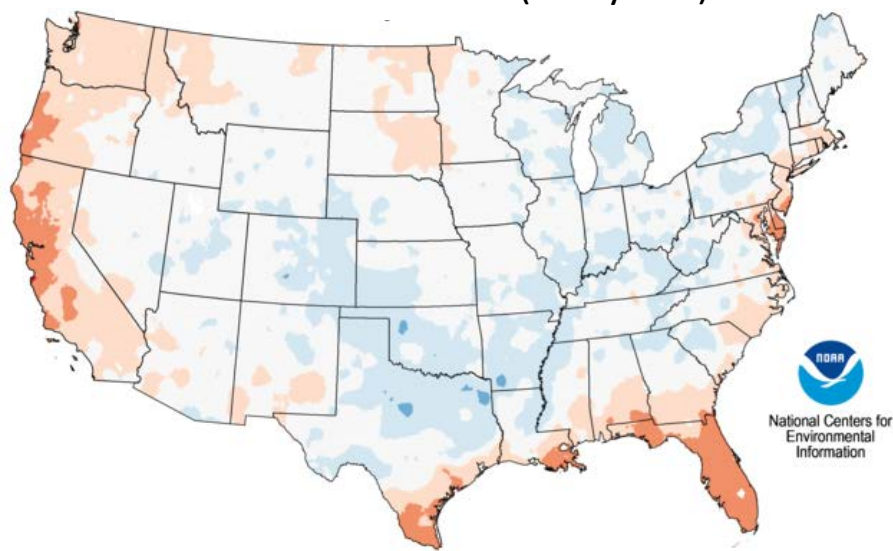
- Virtually certain (100% chance) 2019 will end among the 5 warmest years on record

Contiguous U.S. June 2019

Temperature: 68.7°F, +0.2°F, near average

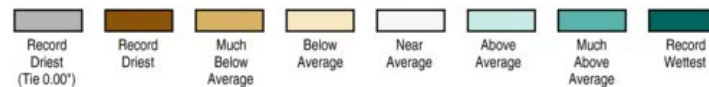
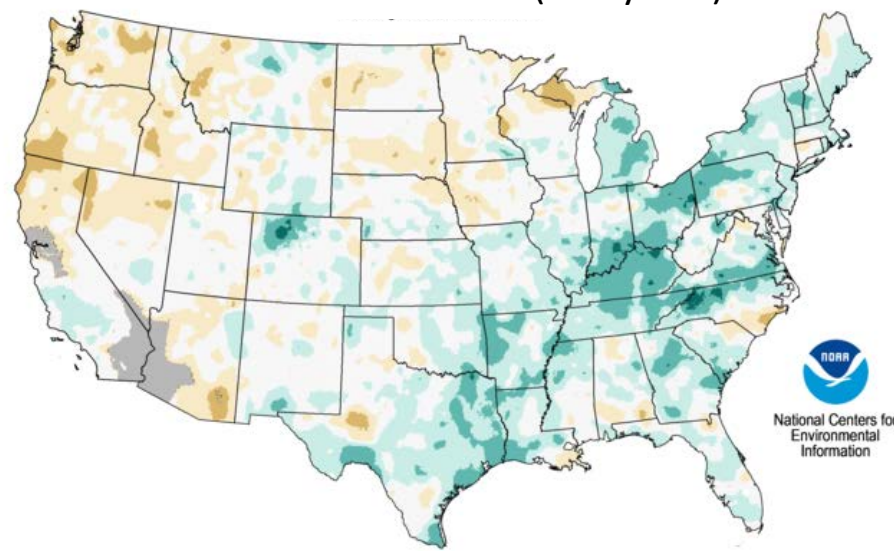
Precipitation: 3.30", +0.37", above average

Temperature Percentiles June 2019
Period: 1895-2019 (125 years)



- Above avg temperature ranks across 11 states
 - FL – 3rd warmest
- Below avg temperatures across interior CONUS
- Warm nights outpace warm days

Precipitation Percentiles June 2019
Period: 1895-2019 (125 years)

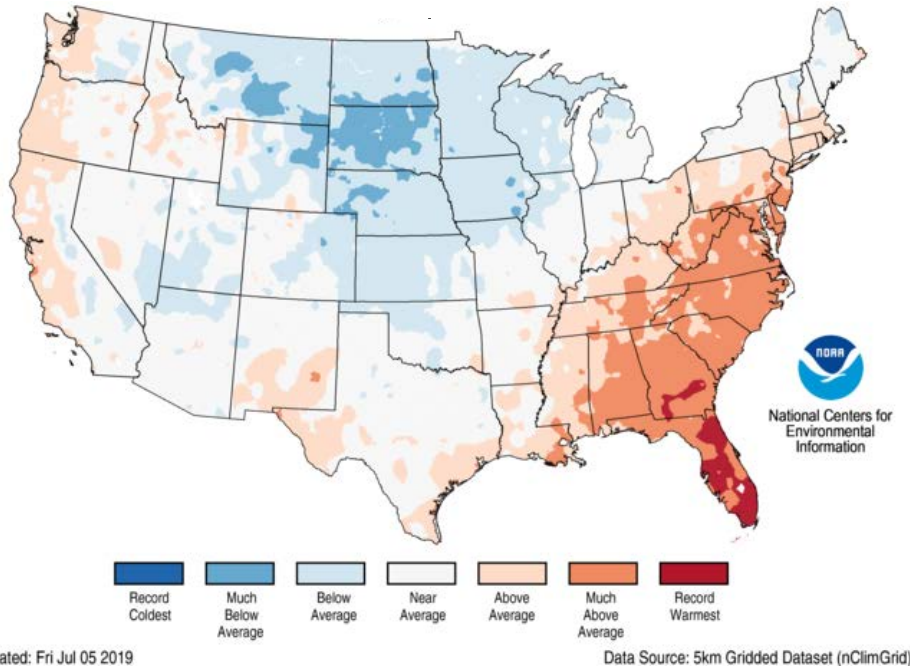


- Wet from TX through MS and OH valleys into NE
 - KY – 3rd wettest, OH – 5th wettest, TN – 8th wettest
- Dry PNW, n Plains, n Great Lakes
- Historic flooding continues across Plains, MS Valley

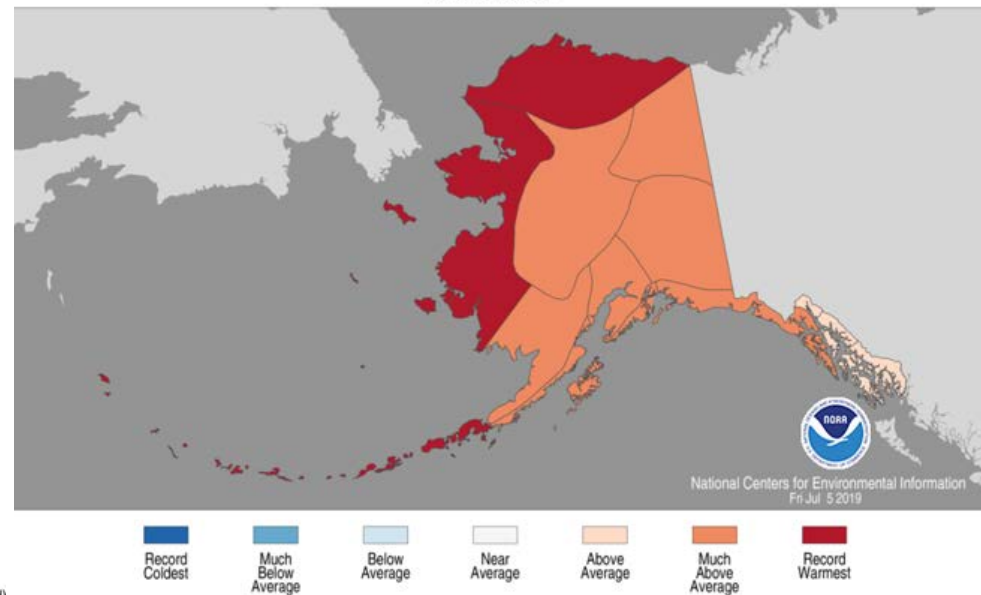
Contiguous U.S. & Alaska Jan-Jun 2019

CONUS Temperature: 47.6°F, +0.1°F, “near average”/ Alaska Temperature: 29.2°F, +7.9°F, 2nd warmest

Temperature Percentiles Jan-Jun 2019
Period: 1895-2019 (125 years)



Alaska Divisional Average Temperature Percentiles
Jan-Jun 2019
Period: 1925-2019 (95 years)

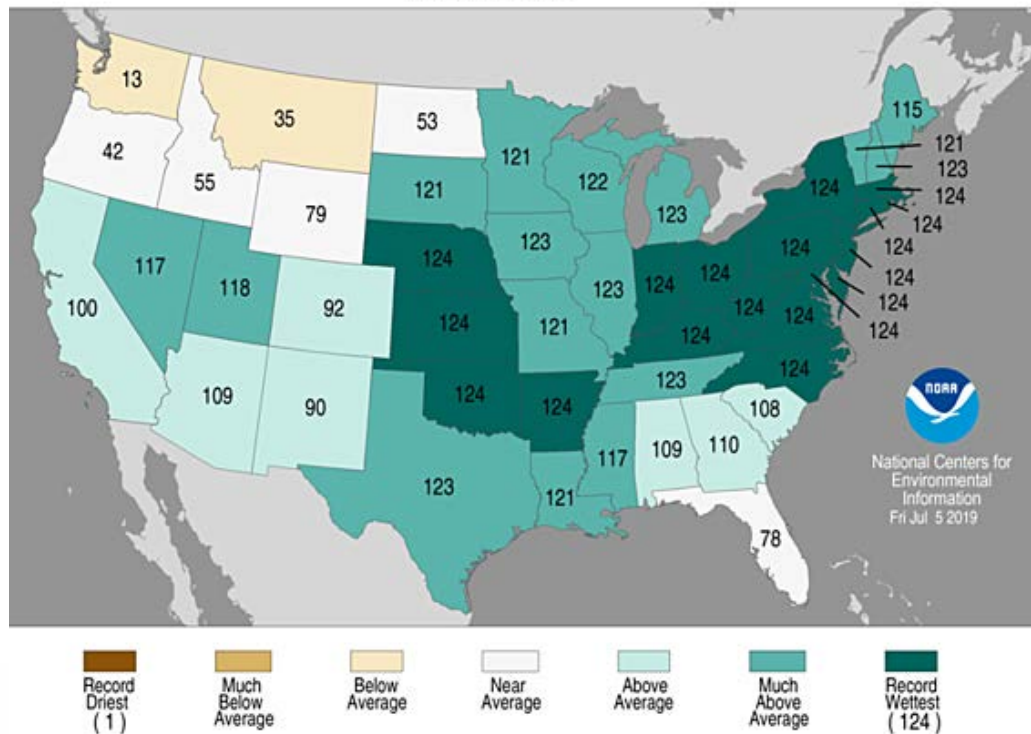


- Large regional anomalies (cold Plains, warm Southeast)
- South Dakota: 10th coldest / Florida: warmest
- Utqiagvik (Barrow) warmest YTD on record (11.3°F above avg)

Contiguous U.S. 12-Month Precipitation

CONUS July 2018 – June 2019 Precipitation: 37.86", +7.90", wettest 12-month period on record
Also wettest YTD (Jan – Jun)

Statewide Precipitation Ranks
July 2018–June 2019
Period: 1895–2019



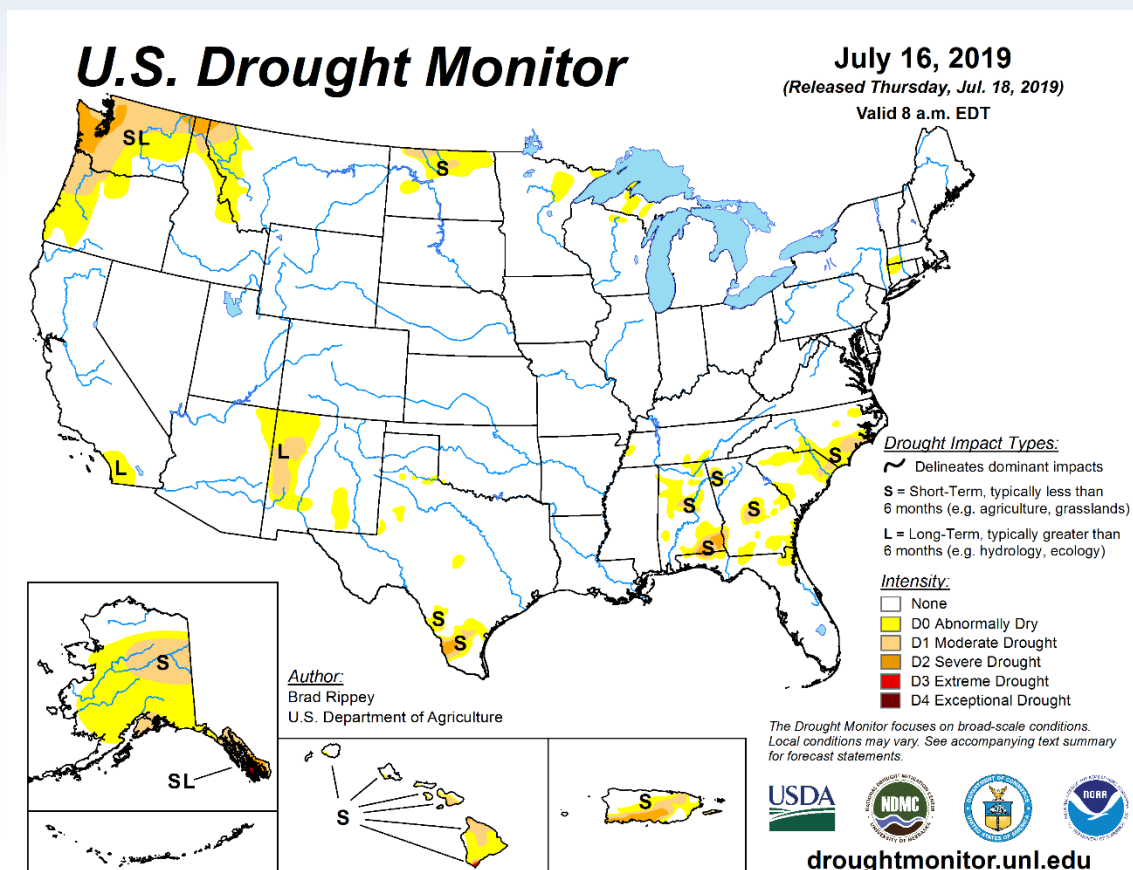
10 Wettest 12-Month Periods in CONUS History

Value (inches)	Period
37.86	July 2018 – June 2019
37.72	June 2018 – May 2019
36.31	May 2018 – April 2019
35.95	May 2015 – April 2016
35.78	April 2015 – March 2016
35.78	March 2018 – February 2019
35.63	February 1973 – January 1974
35.55	April 2018 – March 2019
35.47	June 1982 – May 1983
35.42	May 1982 – April 1983

Current U.S. Drought

3.1% of Contiguous U.S. in Drought (down 2% since early June)

- Improvement: Southeast, Southwest, and northern Plains
- Degradation: Parts of the Pacific Northwest
- Outside CONUS: Drought expanded across Alaska and Puerto Rico, improved across Hawaii



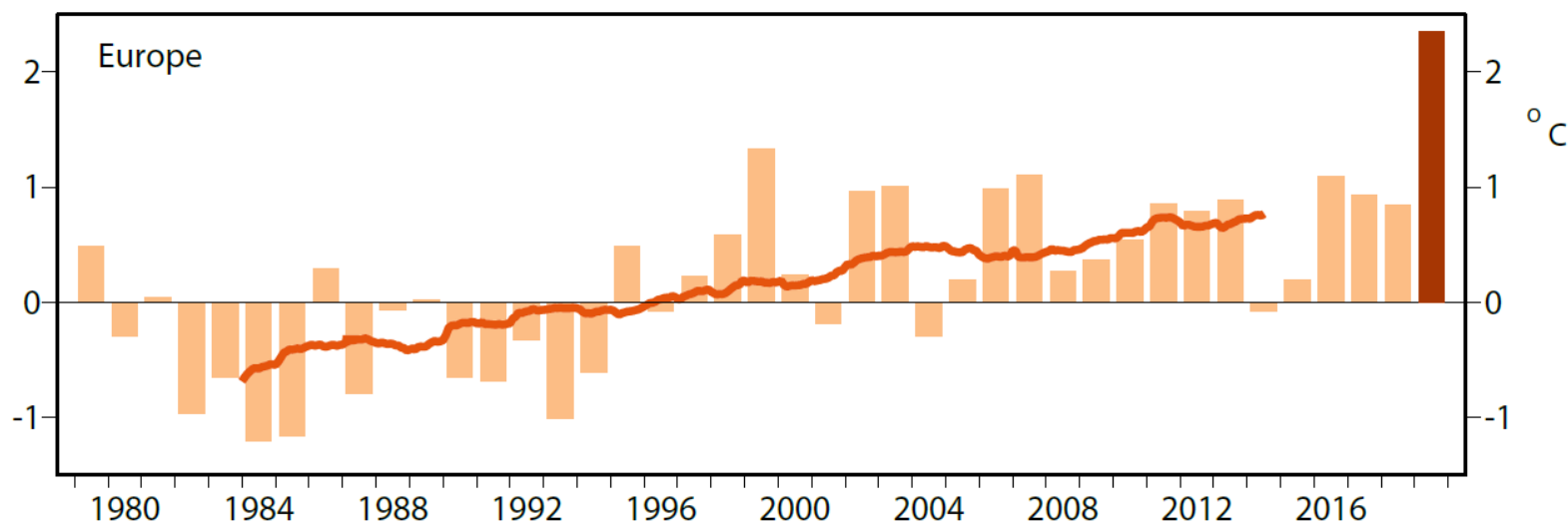
Europe – June 2019

Temperature: +2.3°C, 1st warmest June to date

Temperature Anomaly (°C) June 1979-2019

Reference Period: 1981-2010

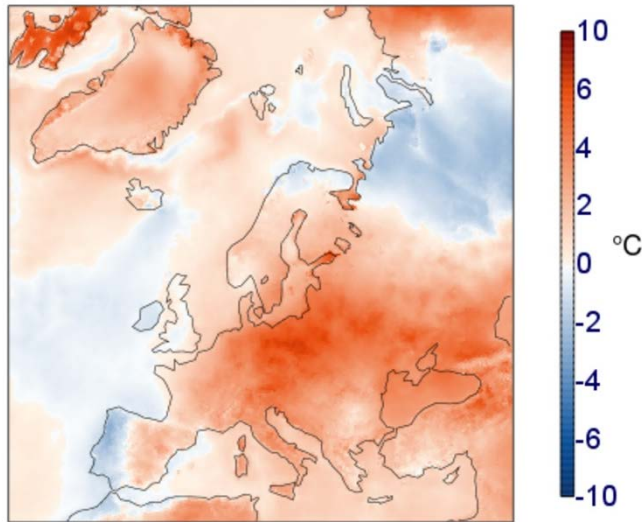
Overlay line: 10-year running averages all months



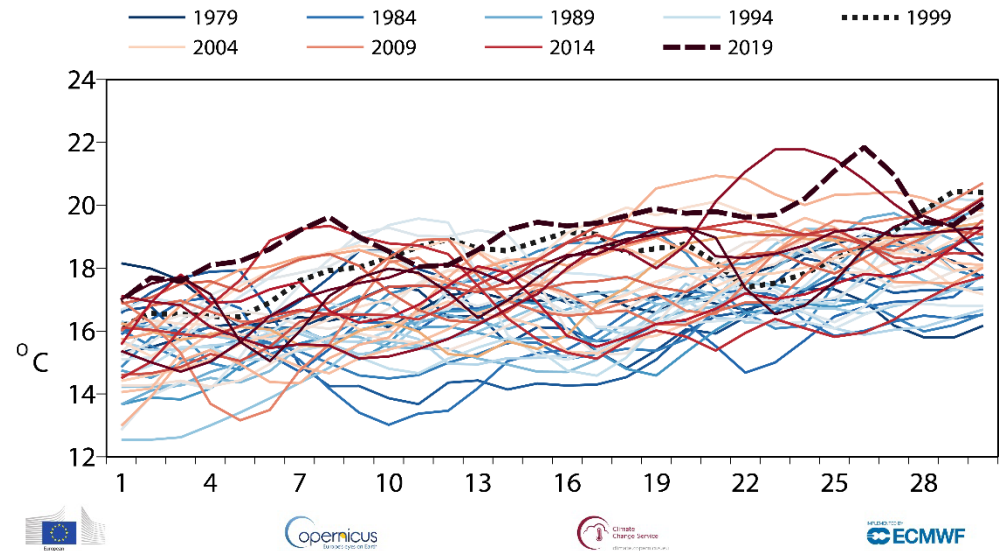
- June was by a large margin the warmest June to date
- Almost 1°C warmer than previous warmest June, in 1999
- Followed an average month of May

Europe – June 2019

Temperature Anomaly (°C) June 2019
Reference Period: 1981-2010



Daily average temperature (°C) June 1979-2019



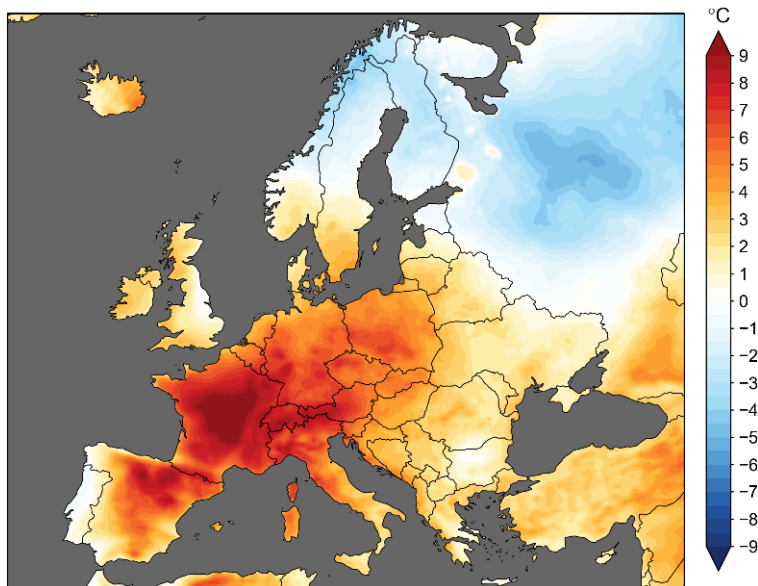
- Most of Europe was warmer than average, with exceptions including Portugal, Ireland and northern Scandinavia, most above average in central and eastern Europe
- Most days were close to or just below the previous daily record for Europe
- Largest average daily temperature occurred at the time of the start of the heatwave in western Europe

Heatwave Europe – late June 2019

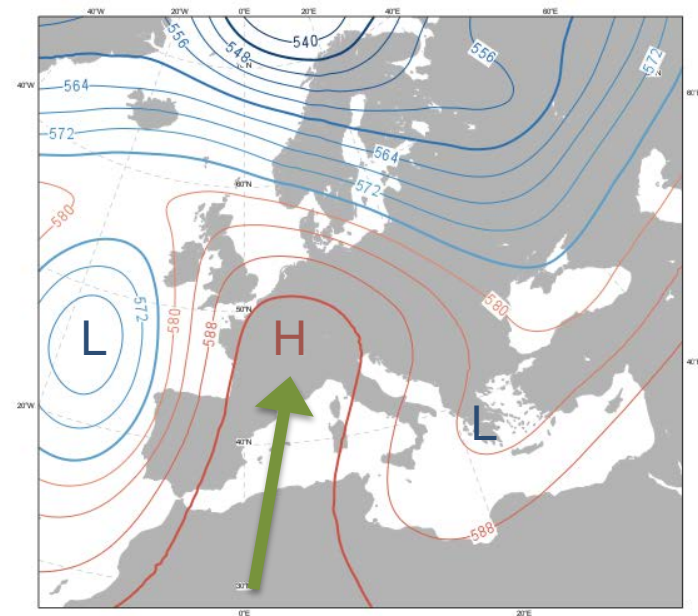
Short, but record-breaking heatwave

- Heatwave started in east, culminated in west in last week of June
- Circulation pattern allowed hot Saharan air to flow into western Europe
- Country records broken, e.g. in France: 45.9°C (114.6°F)

Temperature Anomaly (°C) 25-29 June 2019
Reference Period: 1981-2010

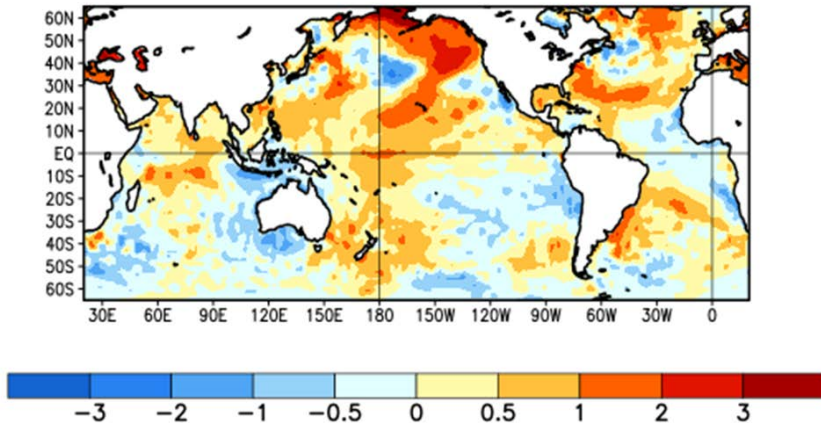


Geopotential height 25-29 June 2019



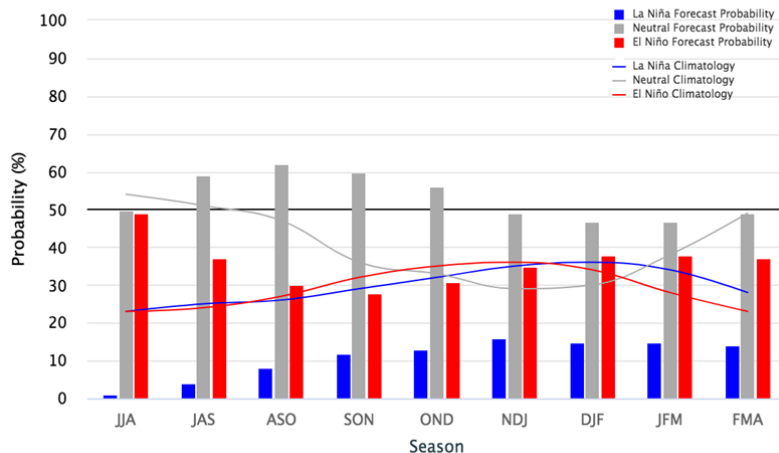
Sea Surface Temperatures & ENSO

Average SST Anomalies
16 JUN 2019 – 13 JUL 2019



Early-July 2019 CPC/IRI Official Probabilistic ENSO Forecasts

ENSO state based on NINO3.4 SST Anomaly
Neutral ENSO: -0.5 °C to 0.5 °C



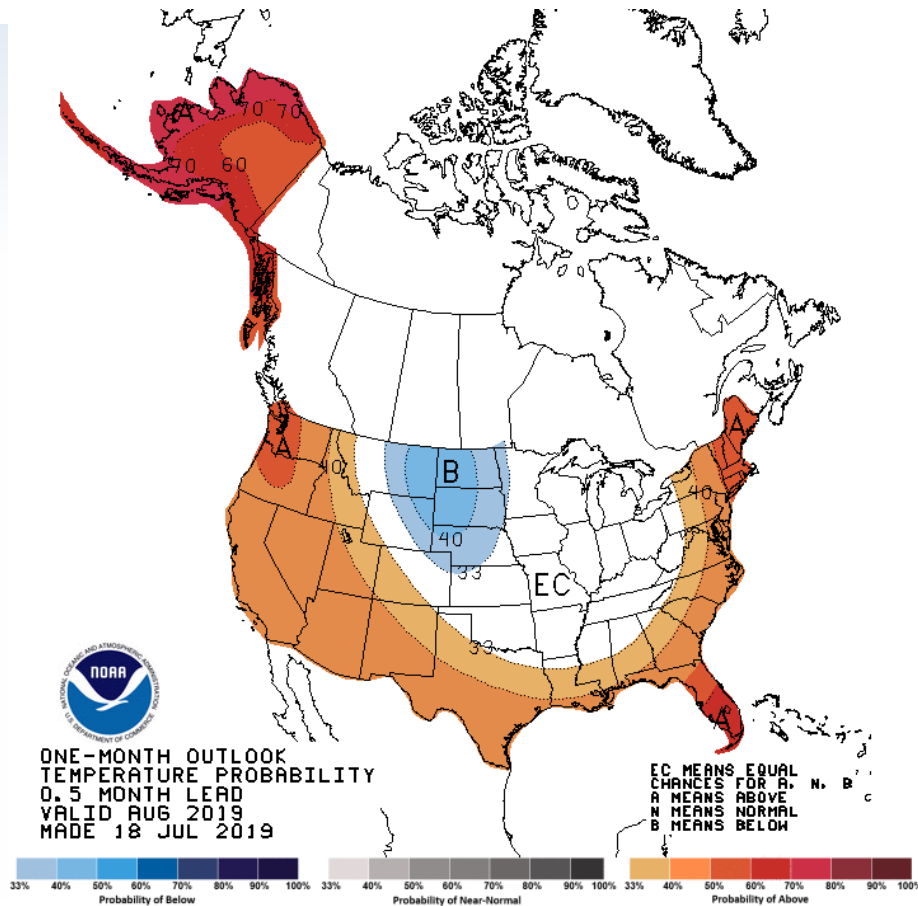
- Sea surface temperatures
 - Above normal SSTs in the central equatorial Pacific
 - Near normal SSTs in the eastern Pacific
 - Away from the equator, above normal SSTs in the North Pacific near Alaska
 - Weak El Niño conditions are present, while the East Pacific SSTs have cooled

- ENSO forecast

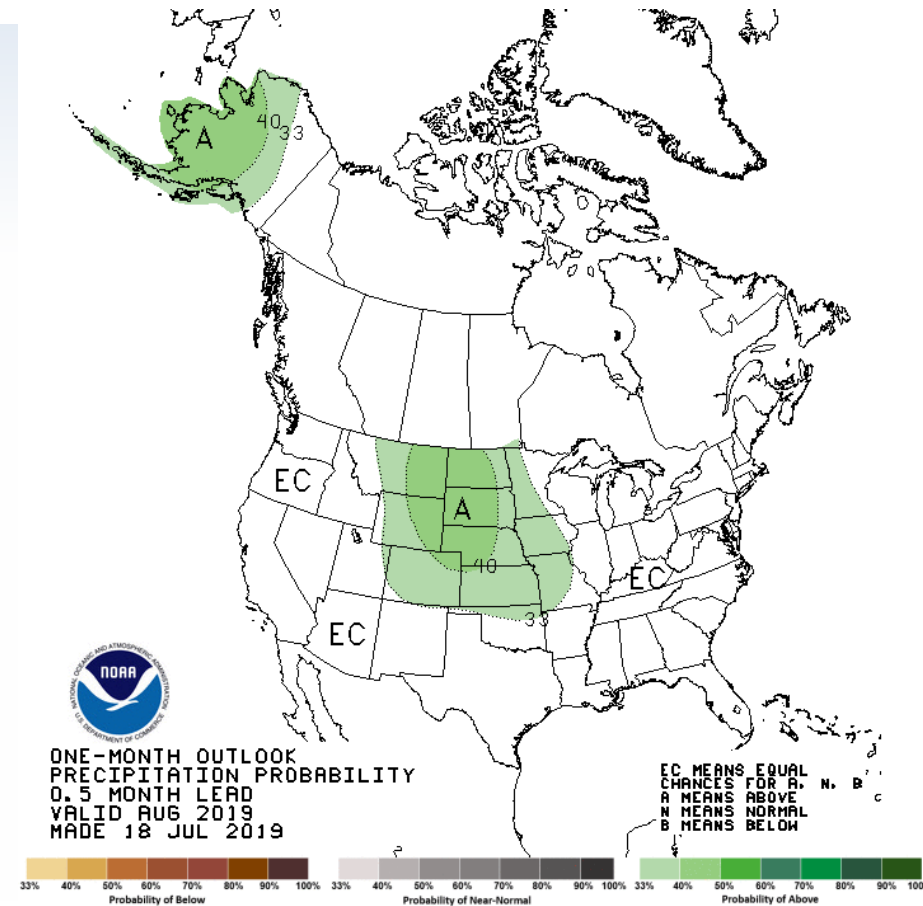
- A return to ENSO-neutral conditions is likely in the next two months
- In winter the chances of El Niño increase to just below 40%, while the chance of ENSO-neutral conditions is near 50%
- A La Niña is unlikely this year

Monthly Forecast (August)

August Average Temperature Probability

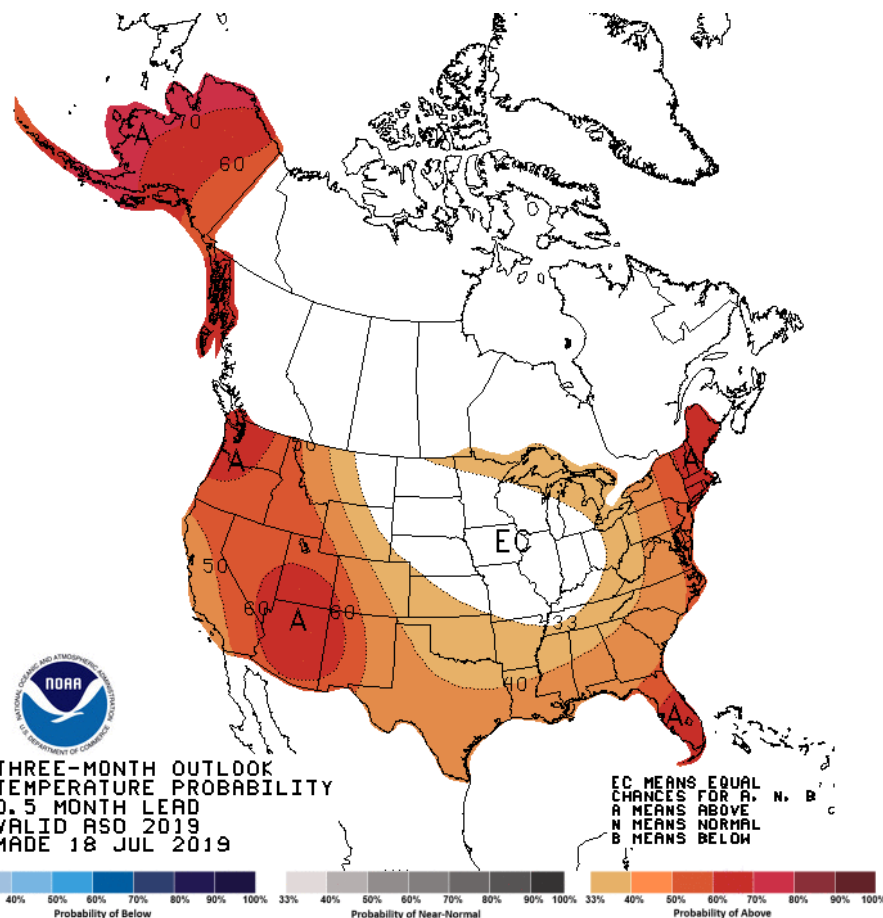


August Total Precipitation Probability

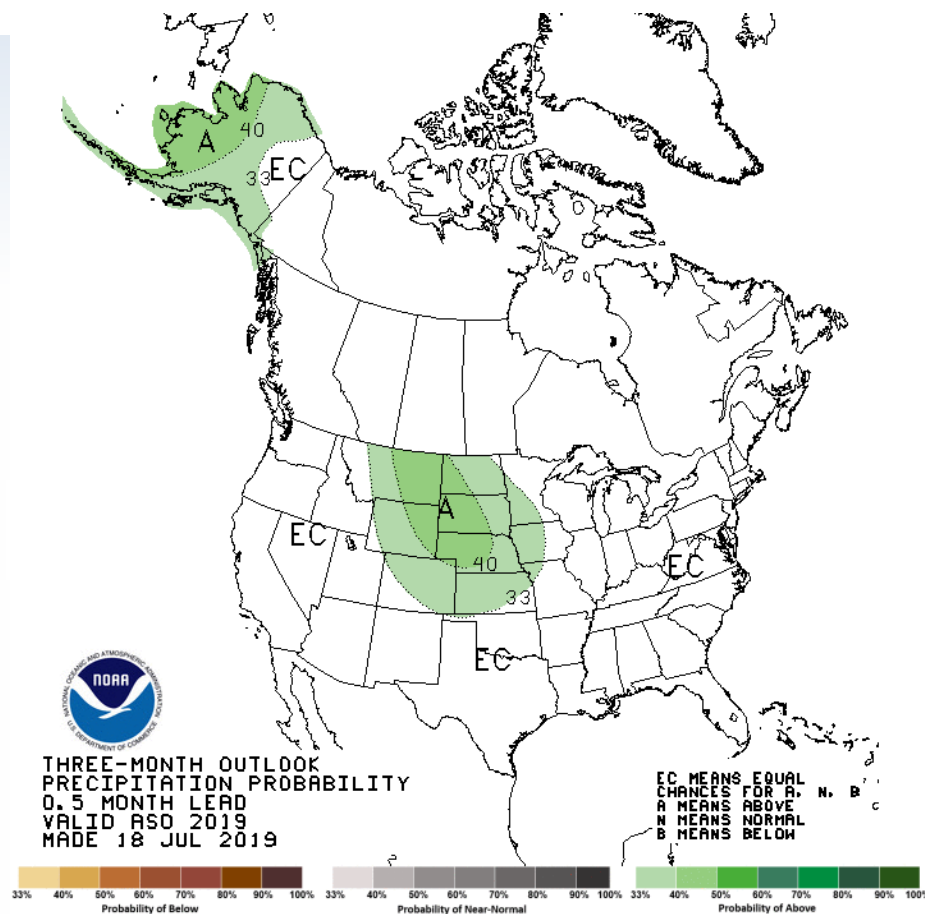


Seasonal Forecast (Aug-Sept-Oct)

Aug-Sept.-Oct Average Temperature Probability



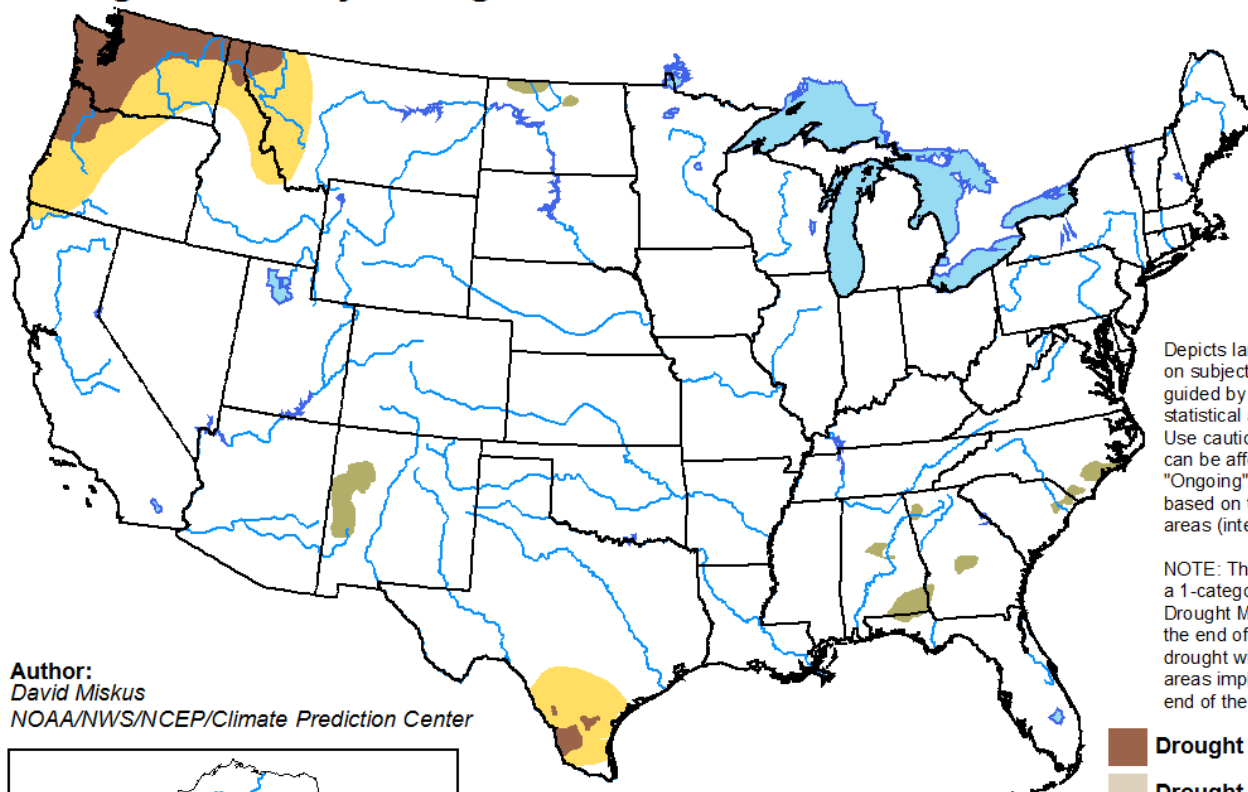
Aug-Sept.-Oct Total Precipitation Probability



U.S. Drought Outlook

U.S. Seasonal Drought Outlook Drought Tendency During the Valid Period

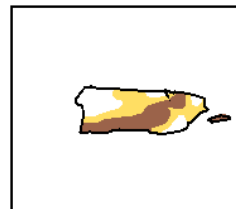
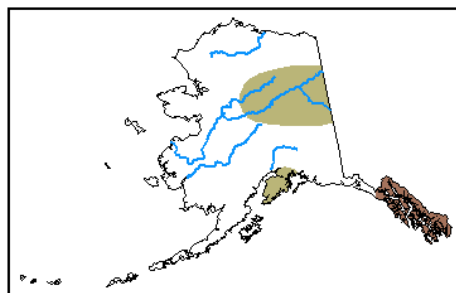
Valid for July 18 - October 31, 2019
Released July 18







Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Use caution for applications that can be affected by short lived events. "Ongoing" drought areas are based on the U.S. Drought Monitor areas (intensities of D1 to D4).

NOTE: The tan areas imply at least a 1-category improvement in the Drought Monitor intensity levels by the end of the period, although drought will remain. The green areas imply drought removal by the end of the period (D0 or none).

Author:
David Miskus
NOAA/NWS/NCEP/Climate Prediction Center



-  Drought persists
-  Drought remains but improves
-  Drought removal likely
-  Drought development likely



<http://go.usa.gov/3eZ73>

For More Information



TODAY'S PRESENTATION:

- <http://www.ncdc.noaa.gov/sotc/briefings>

NOAA's National Centers for Environmental Information:

www.ncdc.noaa.gov

- Monthly climate reports (U.S. & Global): www.ncdc.noaa.gov/sotc/
- Dates for upcoming reports: <http://www.ncdc.noaa.gov/monitoring-references/dyk/monthly-releases>

NOAA's Climate Prediction Center: www.cpc.ncep.noaa.gov

Copernicus Climate Change Service: <https://climate.copernicus.eu/>

European Centre for Medium-Range Weather Forecasts, ECMWF: <https://www.ecmwf.int>

U.S. Drought Monitor: <http://drought.gov>

Climate Portal: www.climate.gov

NOAA Media Contacts: lauren.gaches@noaa.gov, 301-683-1327 (NOAA Communications/HQ)