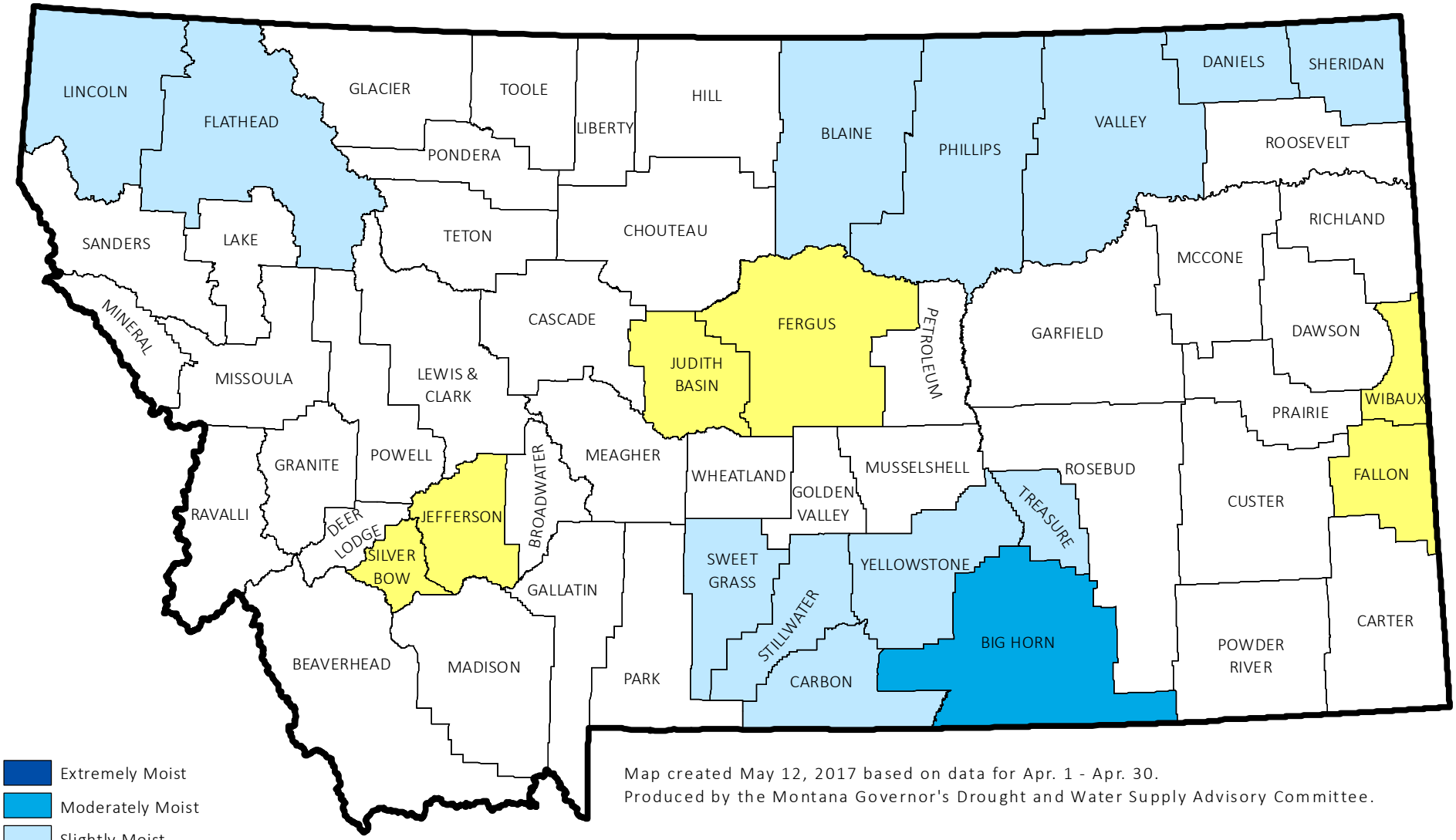
Work Meeting Agenda
Governor's Drought and Water Supply Advisory Committee
Thursday, May 18, 2017, 9:00 a.m.
DNRC Headquarters, Montana Room, 1539 11th Avenue, Helena

9:00	**Welcome – Acting Chair, John Tubbs, Director, DNRC**
9:10	Drought Outlook **Ada Montague**, DNRC Water Planner and Staff for the Governor's Drought and Water Supply Advisory Committee
9:15	Report from the National Weather Service **Megan Syner**, Warning Coordination Meteorologist, Great Falls, National Weather Service
9:30	Report on Snow Pack from the NRCS Montana Snow Survey **Lucas Zukiewicz**, NRCS Montana Snow Survey, Water Supply Specialist
9:45	Report on Stream Flows from the USGS **John Kilpatrick**, USGS Hydrologist
10:00	Report on Reservoirs from the BOR **Stephanie Micek**, Bureau of Reclamation, Montana Area Office, Reservoir Operations
10:10	Agency Impact Reports and Discussion on Any Actions Needed **Committee Members**
10:15	Integrated Water Resources Planning (IWRP) **Sara Meloy,** DNRC Water Planner and Lead Planner for the Yellowstone Basin
10:30	Presentation on Drought Mitigation Techniques for Range Producers **Hailey Wilmer**, USDA Northern Plains Climate Hub Fellow, USDA-ARS Rangeland Resources and Systems Research Unit
10:45	Discussion on Israeli Dignitary Visit **Chair Lt. Governor Mike Cooney**
11:00	**Adjourn**

Next Meeting: Tuesday, June 20, 2017 9:00 – 11:00 a.m., DNRC Headquarters, Montana Room, 1539 11th Avenue, Helena

Montana Drought Status by County - May 1, 2017

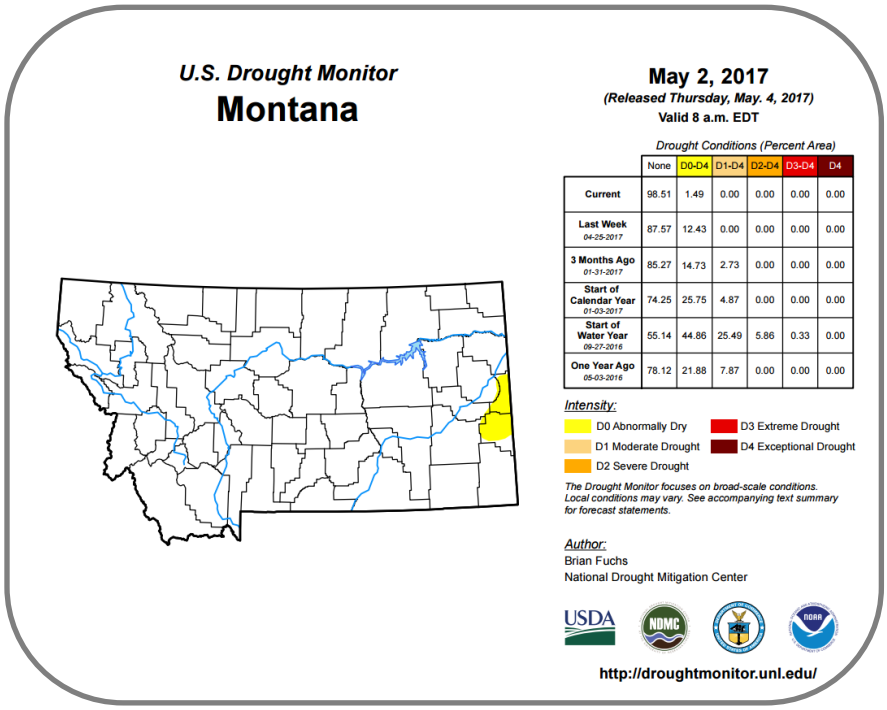


- Extremely Moist
- Moderately Moist
- Slightly Moist
- Near Average
- Slightly Dry (D0)
- Moderately Dry (D1)
- Severely Dry (D2)
- Extremely Dry (D3)
- Exceptionally Dry (D4)

Map created May 12, 2017 based on data for Apr. 1 - Apr. 30.
Produced by the Montana Governor's Drought and Water Supply Advisory Committee.

More information: http://drought.mt.gov http://nris.mt.gov/drought

Montana — *Current Drought Conditions*



	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	98.51	1.49	0.00	0.00	0.00	0.00
Last Week 04-25-2017	87.57	12.43	0.00	0.00	0.00	0.00
3 Months Ago 01-31-2017	85.27	14.73	2.73	0.00	0.00	0.00
Start of Calendar Year 01-03-2017	74.25	25.75	4.87	0.00	0.00	0.00
Start of Water Year 09-27-2016	55.14	44.86	25.49	5.86	0.33	0.00
One Year Ago 05-03-2016	78.12	21.88	7.87	0.00	0.00	0.00

The U.S. Drought Monitor, is a weekly map of drought conditions produced jointly by the National Oceanic and Atmospheric Administration, the U.S. Department of Agriculture, and the National Drought Mitigation Center (NDMC) at the University of Nebraska-Lincoln. The U.S. Drought Monitor website is hosted and maintained by the NDMC. http://droughtmonitor.unl.edu

Highlights for the State

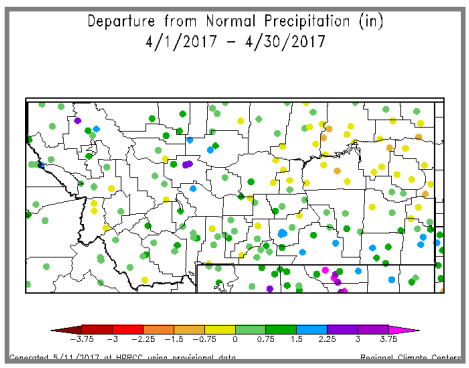
April continued to benefit water supplies around the state. By the end of the month almost all drought concern was removed from the state, with the exception of Wibaux and Fallon Counties. Nationally, the country saw its first record low of drought concern since records first being kept in 2000. By April 25 the U.S. Drought Monitor had the smallest drought on record (6.1%). As of May 9, 2017 Montana was 98.45% drought free. While this is great news, the areas of Judith Basin and Fergus, as well as Silver Bow and Jefferson counties continue to be monitored closely for the potential for drought conditions to resurface. As such, they continue to be categorized as D1 on the Montana Drought Status by County Map found on page 2 of this report.

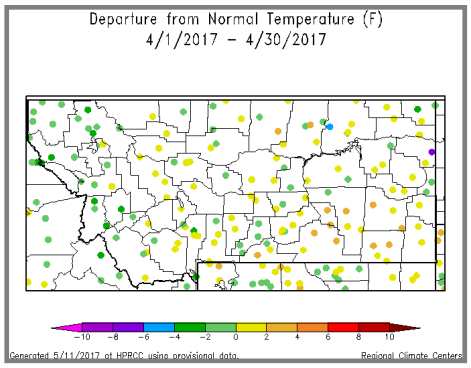
In contrast, some areas, particularly the Bighorn and Flathead rivers will likely see spring flooding. The Bureau of Reclamation is currently releasing 13,000 cubic feet per second (cfs) from Yellowtail Dam in preparation for the record flows anticipated. They expect an inflow of 2.4 million acre-feet, or 259% of average, for the May –July inflow to Bighorn Lake.

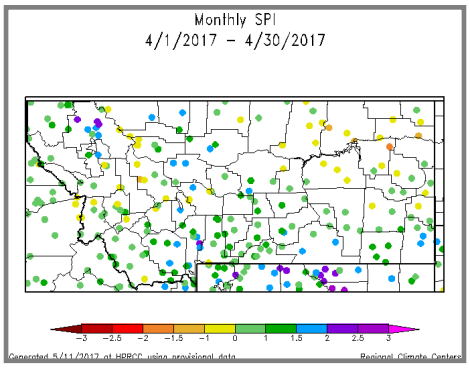
According to the May 1st NRCS Montana Water Supply Outlook Report, "In northwest Montana, and the southern third of the state, cool and wet weather during the month of April delayed melt and brought increases to the snowpack at many mid to high-elevation snow courses and SNOTEL sites." Snowpack gains in April and abundant precipitation has resulted in "streamflow forecasts that are near to above average in most locations across the state."

Montana — *Climate Overview for Last 30 Days*

Temperature and Precipitation Anomalies







PERIOD	AVG TEMP	20TH CENTURY AVERAGE	DEPARTURE	RANK	WARMEST/COOLEST SINCE	RECORD
Apr 2017 1-month period	42.2°F (5.7°C)	40.7°F (4.8°C)	1.5°F (0.9°C)	81st Coolest	Coolest since: 2014	1975
				43rd Warmest	Warmest since: 2016	1915
	Ties: 1944					

April 2017 was above average in terms of precipitation across the state for the period of record (1895-2017).

Temperatures over the 30-day period were normal across the state. April was the 81st coolest and the 43rd warmest according to records from 1944-2017.

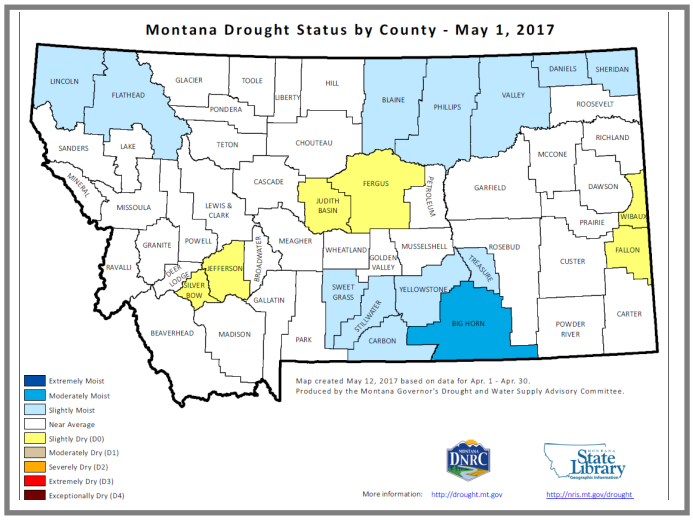
Contact: Ada Montague
(amontague@mt.gov)

Montana — *Drought Indicators*

Montana Drought Status by County

The Montana Drought Status by County is a monthly assessment tool used to monitor the moisture at a county level for the state. Temperature, precipitation, snowpack, reservoirs status, surface water gages, groundwater, crop reports, and field reports are compiled to create this map. To see a historical record go here: https://mslservices.mt.gov/Geographic_Information/Maps/drought/

Do you have impacts to report? We need your on-the-ground reports and you can send them to amontague@mt.gov



Water Resources

The chart below shows the current status of Montana's reservoir storage. While all reservoirs are currently above average, the Sun-Judith-Musselshell and the Headwaters of the Missouri River Basin are being monitored for changes reflecting any potential for drought. Reservoir inflows have increased generally due to the low elevation snowmelt that occurred during the month of April.

Reservoir Storage

5/1/2017	*% Average*	*% Capacity*	*% Last Year*
Columbia River Basin	108	58	82
Kootnenai in Montana	87	40	64
Flathead in Montana	124	74	95
Upper Clark Fork	105	84	96
Bitterroot	124	76	81
Lower Clark Fork	107	98	102
Missouri River Basin	117	81	104
Jefferson	108	66	114
Madison	108	79	98
Gallatin	106	64	72
Headwaters Mainstem	119	83	104
Smith-Judith-Musselshell	116	76	89
Sun-Teton-Marias	111	61	108
St. Mary-Milk	134	70	107
Yellowstone River Basin	99	55	92
Upper Yellowstone	117	54	97
Lower Yellowstone	99	56	92
West of Divide	108	58	82
East of Divide	116	79	103
Montana State-Wide	114	72	97

Montana — *Short– and Long-term Outlooks*

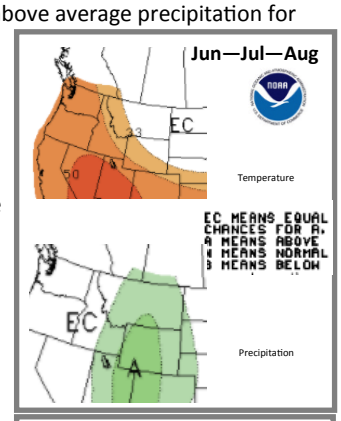
Weather and Drought Outlooks

For the next month there are equal chances of above, normal, or below average temperatures for the entire state. There is a 40% chance of above average precipitation for the majority of the state, with the area west of the divide looking at a 33% chance of elevated precipitation.

Looking further out, the Jun-Jul-Aug period shows a 33% chance of above average temperatures for the area west fo the divide, while the rest of the state has equal chances of above, below or normal temperatures. There is a 33% chance of above average precipitation for the majority of the state.

Although there is less certainty when looking at predictions beyond the next three months, the same pattern is expected to remain for the majority of the state, though temperatures are 33-40% likely to be above average.

Drought conditions are expected to improve, but should remain closely monitored in 2017 to ensure the lingering effects of the last two years do not persist. Read the National Drought Mitigation Center's Drought and Climate for April 2017 Report to learn more.



Need a Forecast?

Visit your local National Weather Service Weather Forecast Office for the most up-to-date forecast at: http://www.weather.gov

Stay Tuned and In Touch

The next Montana Drought Impacts and Outlook Summary will be released around June 15th. If you need information in the meantime, please reach out to any of the partners listed to the right or contact Ada Montague directly at amontague@mt.gov.

Read the NOAA National Drought Overview at: https://www.ncdc.noaa.gov/sotc/drought/201611#detailed-discussion

Heard Around the State

Our neighbors to the south in Wyoming have benefitted greatly from winter snows and are seeing some of their mountain snowpack set new records. This will mean a high probability of springtime flooding for Montana, especially along the Big Horn and Yellowstone Rivers.

In addition, the Flathead River is likely to experience above average flows and is also being closely monitored by the National Weather Service.

Partners

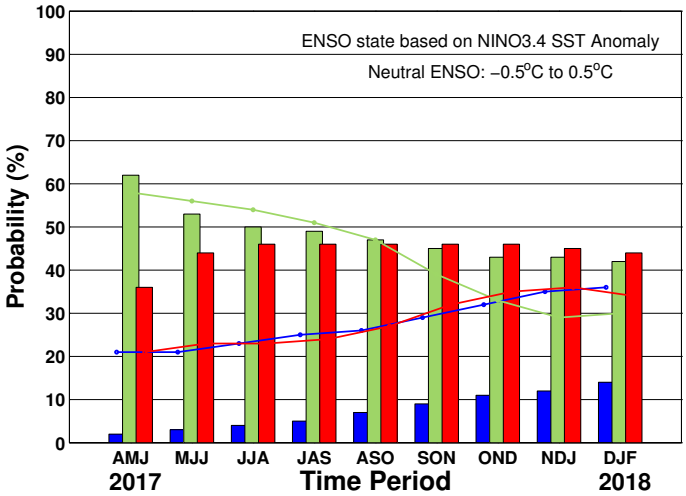
Montana State Climate Office
www.climate.umt.edu
National Weather Service
Great Falls Weather Forecast Office
www.wrh.noaa.gov/tfx/
Missoula Weather Forecast Office
www.wrh.noaa.gov/mso/
Billings Weather Forecast Office
www.wrh.noaa.gov/byz/
Natural Resource Conservation Service, Snow Survey and Water Supply Forecasting
www.nrcs.usda.gov/wps/portal/nrcs/main/mt/snow/
Montana Bureau of Mines and Geology
data.mbmg.mtech.edu/mapper/
Montana State Library
mslservices.mt.gov
United States Geologic Survey
http://wy-mt.water.usgs.gov/
Bureau of Reclamation, AGRImet
www.usbr.gov/pn/agrimet/h2ouse.html
National Agricultural Statistics Service
www.nass.usda.gov/Statistics_by_State/Montana/

Contact: Ada Montague
(amontague@mt.gov)

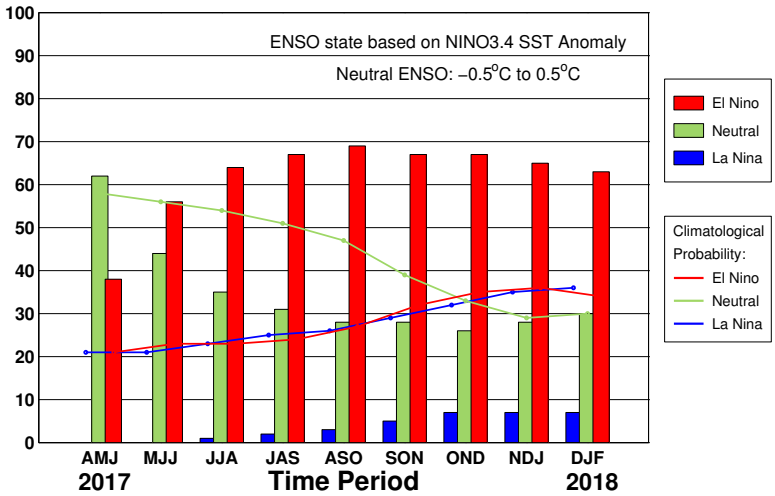
ENSO *QUICK LOOK* May 18, 2017 A monthly summary of the status of El Niño, La Niña and the Southern Oscillation, or "ENSO", based on NINO3.4 index (120-170W, 5S-5N)

By mid-May 2017, the tropical Pacific remained in an ENSO-neutral state, with above-average SSTs present in the eastern tropical Pacific Ocean, and near-average SSTs across the central and east-central part of the basin. The collection of ENSO prediction models indicates increasing chances of El Nino into the summer and fall of 2017.

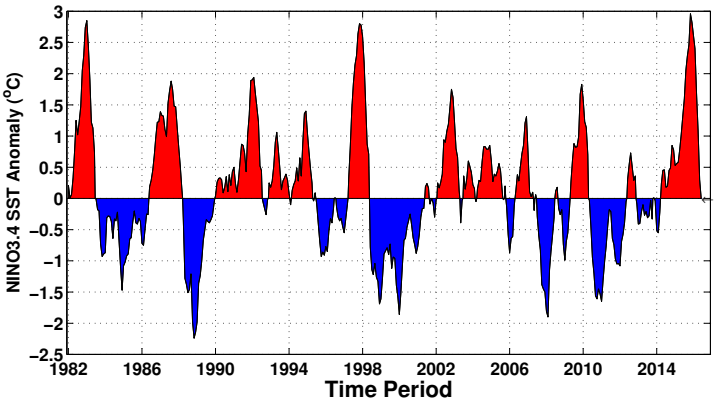
Early-May CPC/IRI Official Forecast[1]



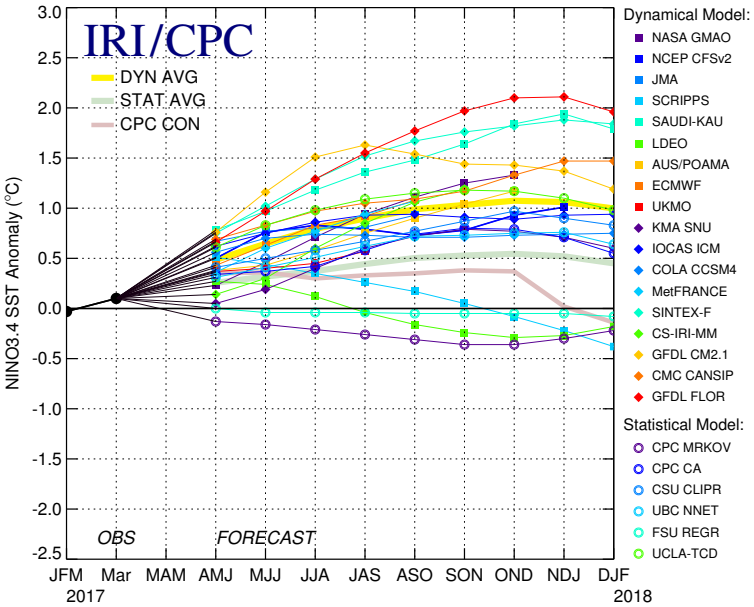
Mid-Apr IRI/CPC Model-Based Forecast[2]



Historical NINO3.4 SST Anomaly



Mid-Apr 2017 Plume of Model ENSO Predictions



Historically Speaking

El Niño and La Niña events tend to develop during the period Apr-Jun and they:
- Tend to reach their maximum strength during Dec-Feb
- Typically persist for 9-12 months, though occasionally persisting for up to 2 years
- Typically recur every 2 to 7 years

[1]Based on a consensus of CPC and IRI forecasters, in association with the official CPC/IRI ENSO Diagnostic Discussion.
[2]Purely objective, based on regression, using equally weighted model predictions from the plume.