September 2019 FEWS NET Seasonal Forecast Review

Overview of the Seasonal Forecast

Review Technical Discussion

Prepared by Andy Hoell

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Agenda

State of the Global Climate

State of the Global Climate – Assumption 1 of 3

ENSO conditions are currently neutral. The most likely ENSO phase through Northern Hemisphere early Spring (MAM) 2020 is neutral.

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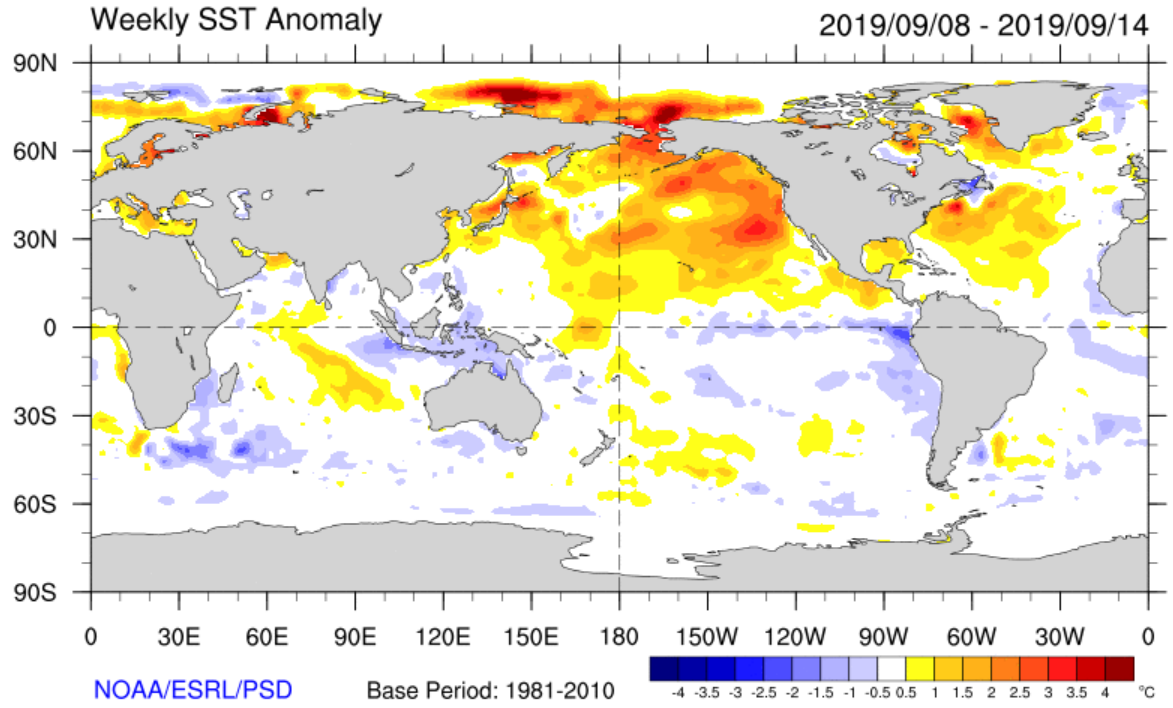
No Change



ENSO conditions are currently neutral. The most likely ENSO phase through Northern Hemisphere early Spring (MAM) 2020 is neutral.

No Change

EL NIÑO/SOUTHERN OSCILLATION (ENSO) DIAGNOSTIC DISCUSSION

issued by

CLIMATE PREDICTION CENTER/NCEP/NWS
and the International Research Institute for Climate and Society
12 September 2019

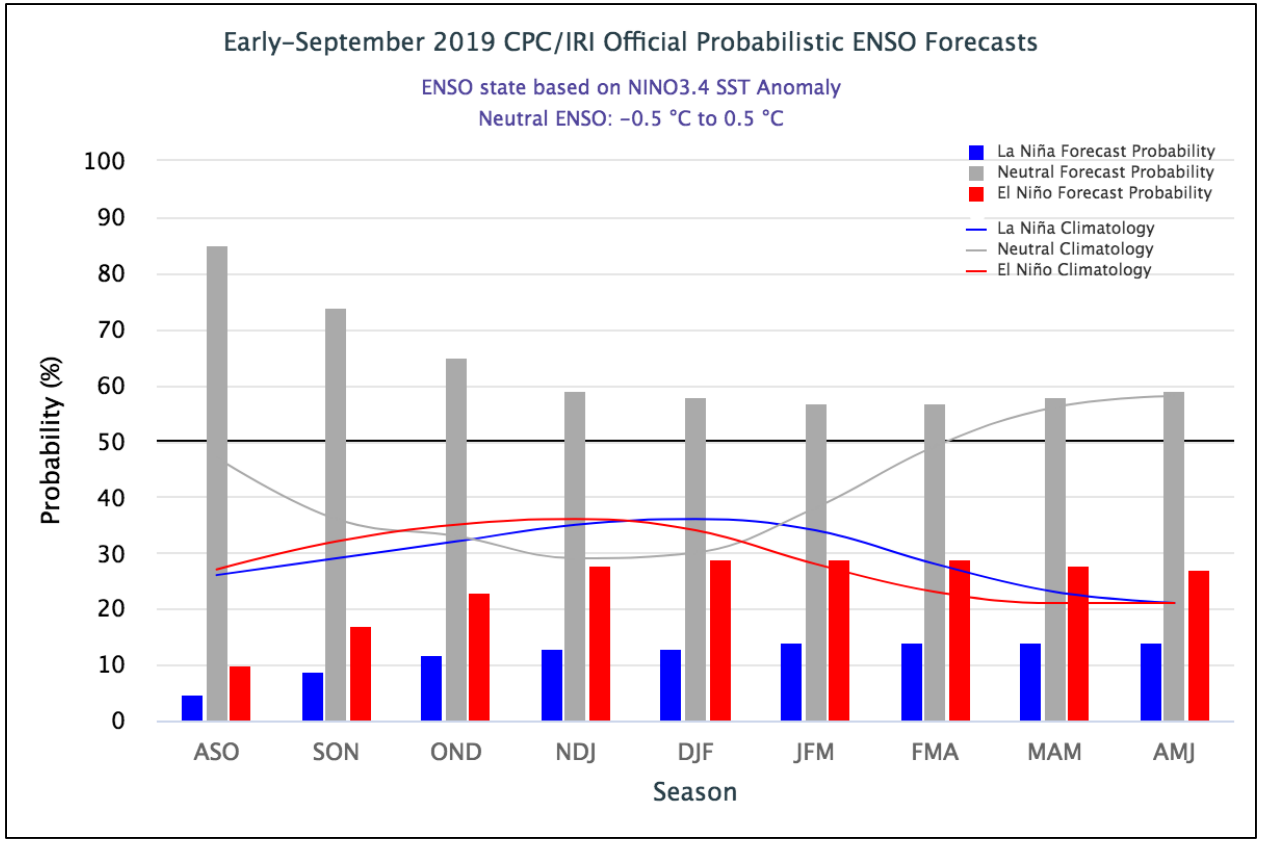
ENSO Alert System Status: Not Active

Synopsis: ENSO-neutral is favored during the Northern Hemisphere fall 2019 (~75% chance), continuing through spring 2020 (55-60% chance).

During August, ENSO-neutral continued as reflected by near-average sea surface temperatures (SST) across most of the central and eastern equatorial Pacific Ocean (Fig. 1). The latest weekly Niño-3 and Niño-3.4 indices were -0.2°C and 0.0°C, respectively, with the westernmost Niño-4 region index remaining above average (0.5°C) and the easternmost Niño-1+2 region index remaining below average (-0.6°C; Fig. 2). Upper-ocean subsurface temperature anomalies (averaged across 180°-100°W) decreased slightly during the month (Fig. 3), with below-average temperatures strengthening in the east-central equatorial Pacific (Fig. 4). Suppressed tropical convection continued over parts of Indonesia, while near-average convection was evident near the Date Line (Fig. 5). Low-level and upper-level winds were near average over most of the tropical Pacific Ocean. Overall, oceanic and atmospheric conditions were consistent with ENSO-neutral.

ENSO conditions are currently neutral. The most likely ENSO phase through Northern Hemisphere early Spring (MAM) 2020 is neutral.

No Change



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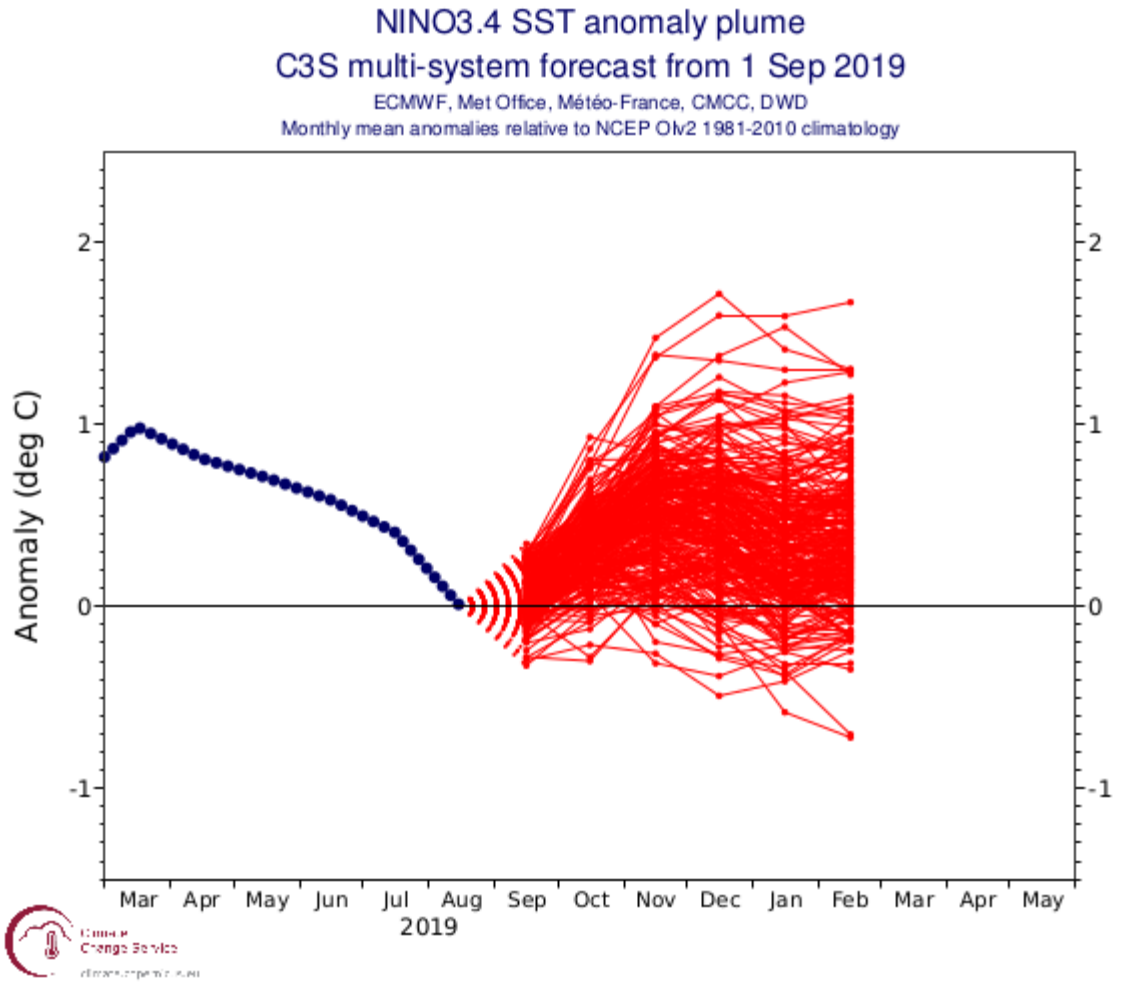
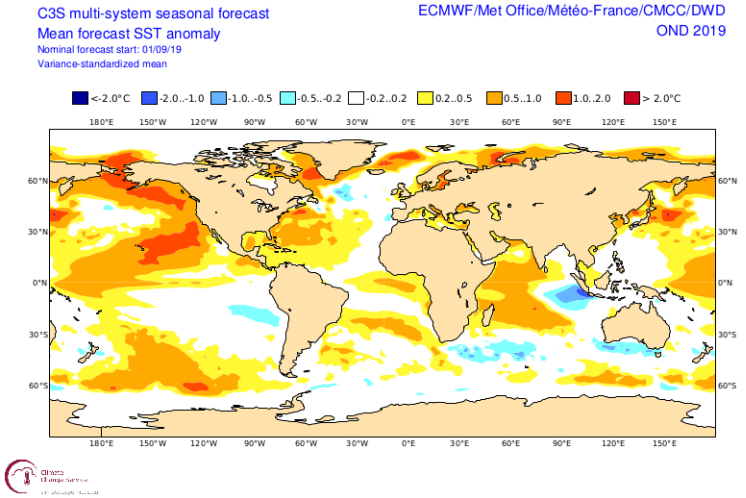
No Change

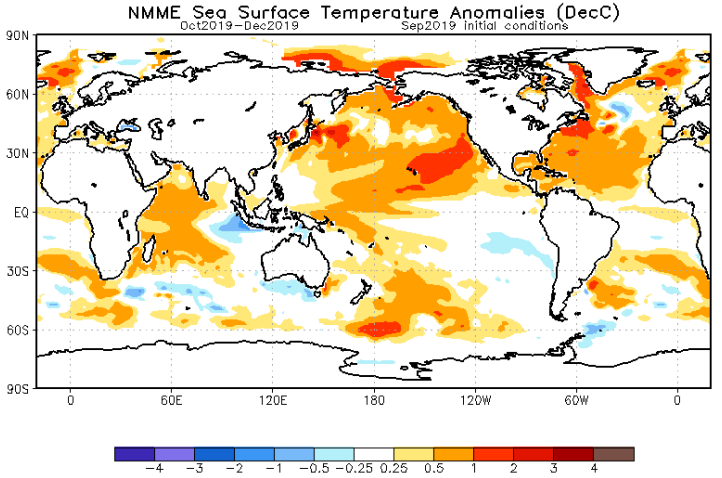


ENSO conditions are currently neutral. The most likely ENSO phase through Northern Hemisphere early Spring (MAM) 2020 is neutral.

No Change

Note: Tropical SST anomalies with these magnitudes will produce impacts. We will discuss these impacts alongside the regional forecast assumptions.

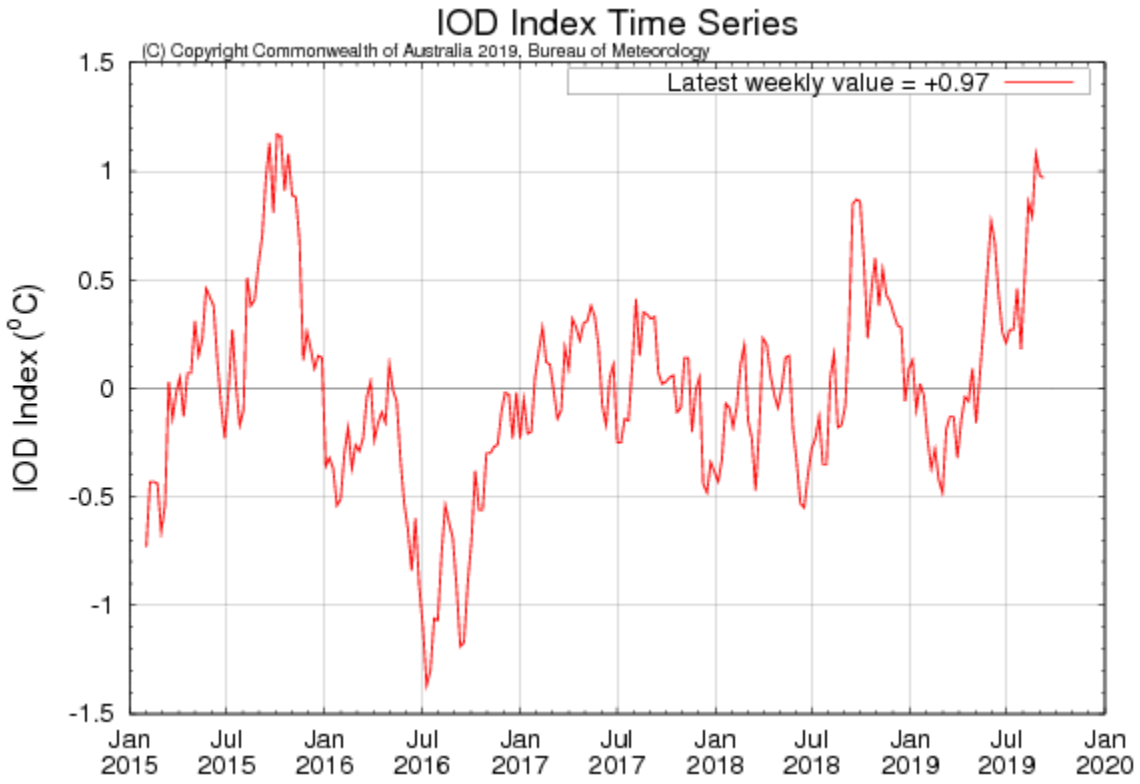




State of the Global Climate – Assumption 2 of 3

The most likely IOD phase from September to December 2019 is positive, with positive but near neutral conditions in January 2020.

The most likely IOD phase from September to December 2019 is positive. Neutral IOD conditions are most likely in early 2020. ~~with positive but near neutral conditions in January 2020.~~



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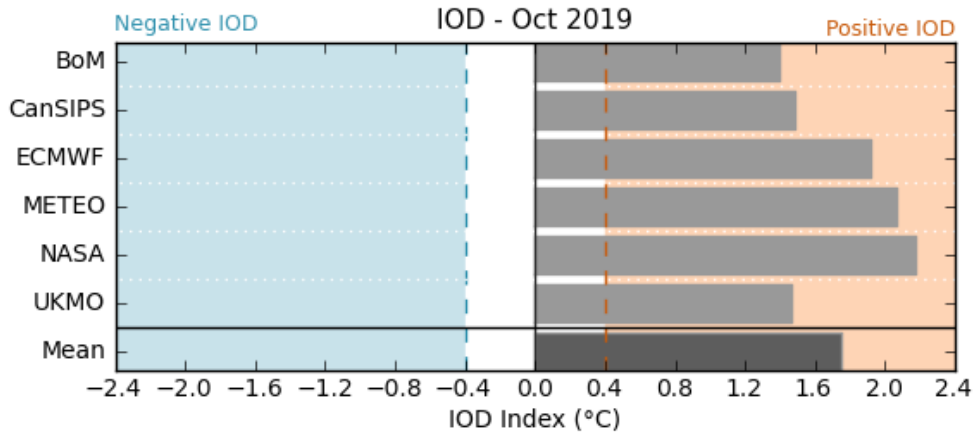

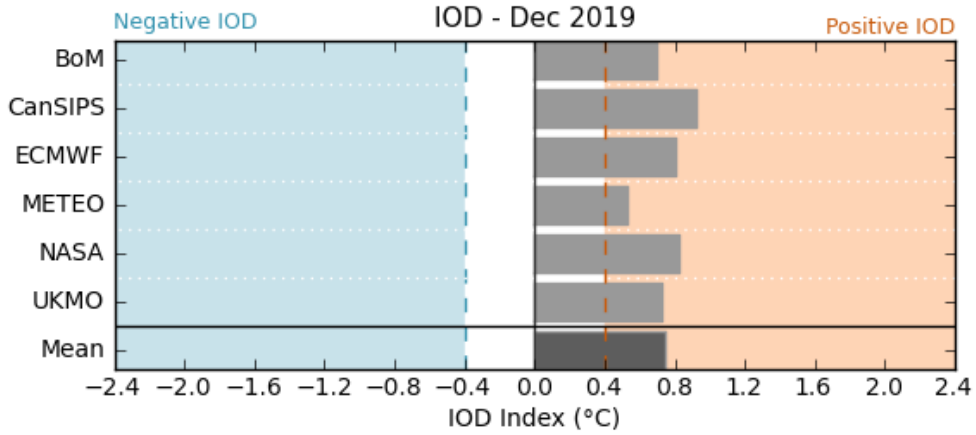

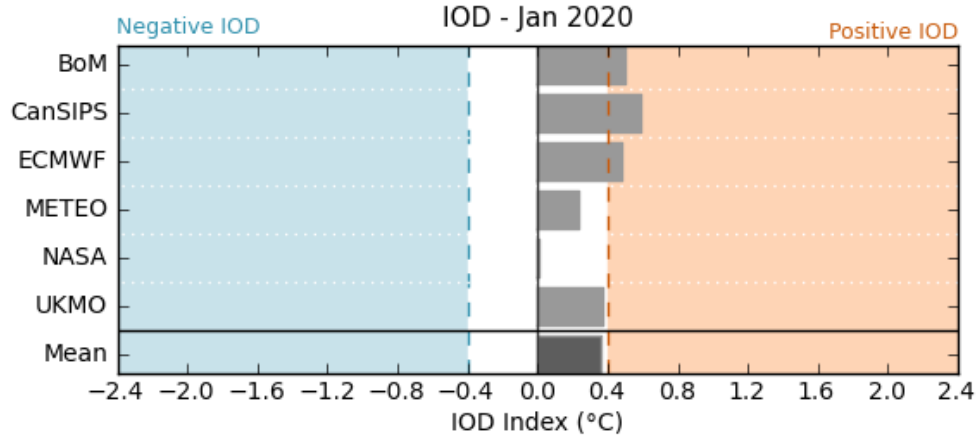

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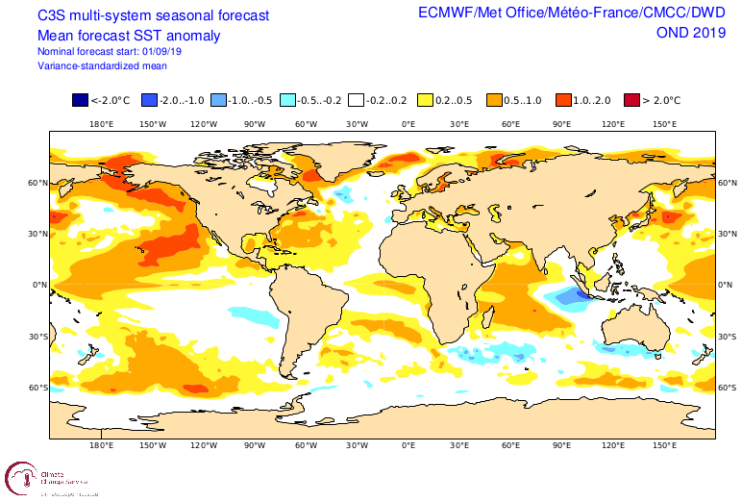
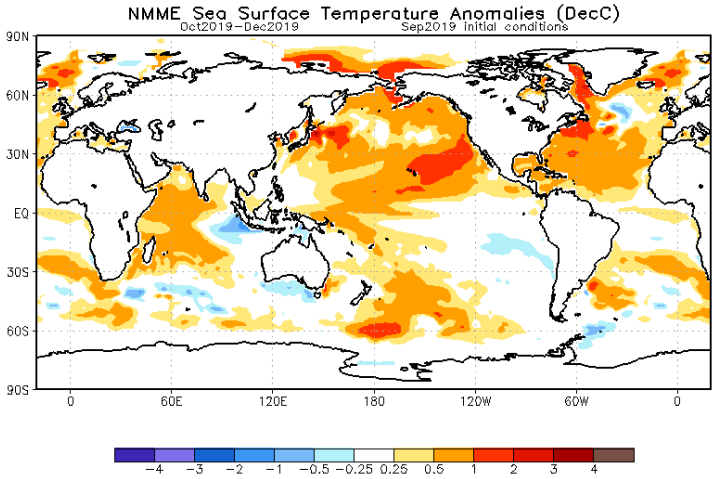


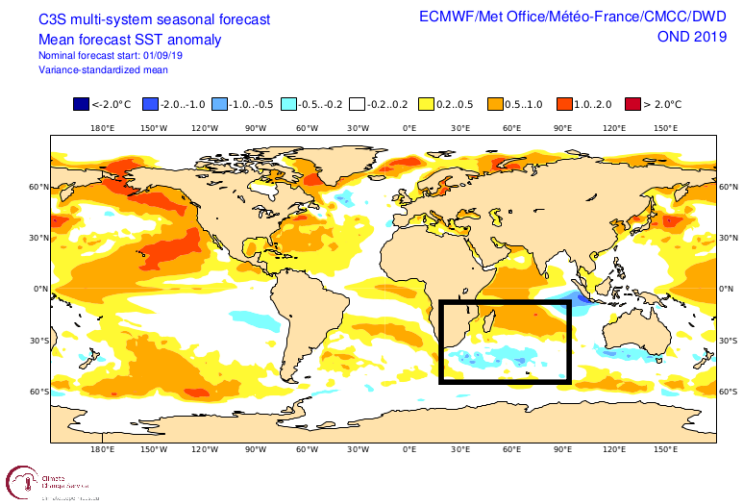


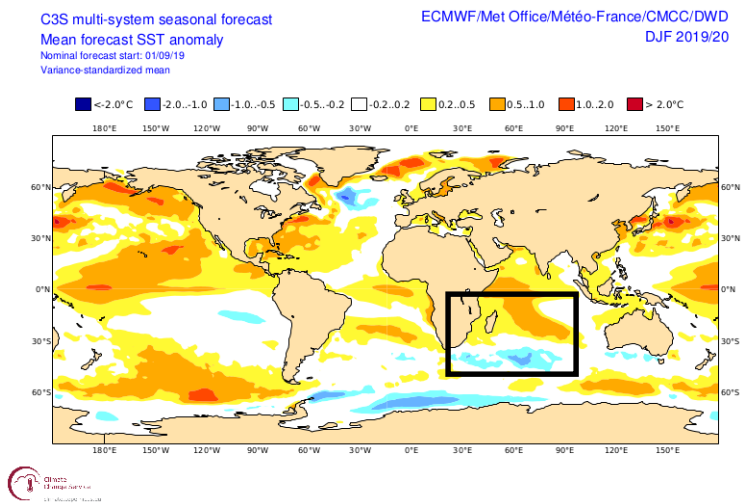
State of the Global Climate – Assumption 3 of 3

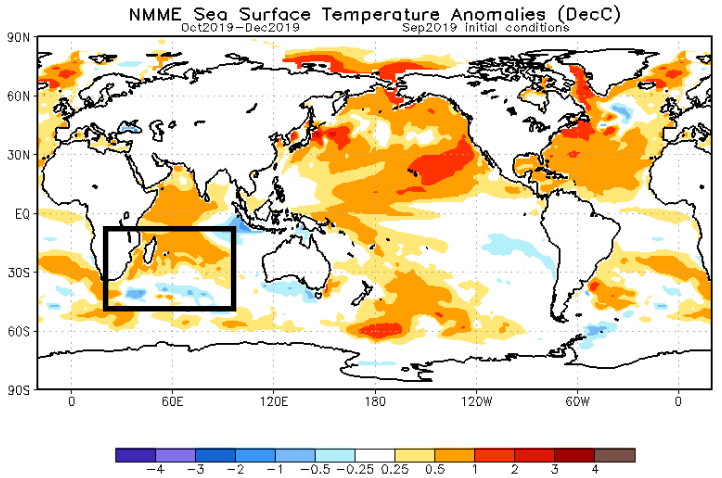
The most likely phase of the Southern Indian Ocean Dipole is negative through March 2020.

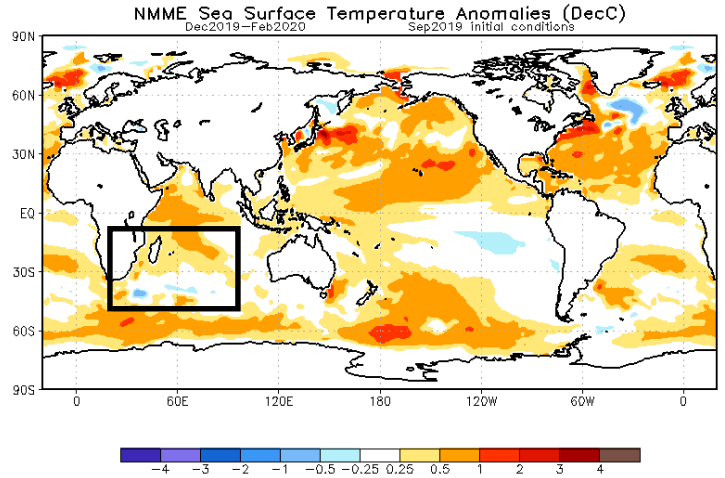
The most likely phase of the ~~Southern~~ Subtropical Indian Ocean Dipole is negative through March 2020.

No Change





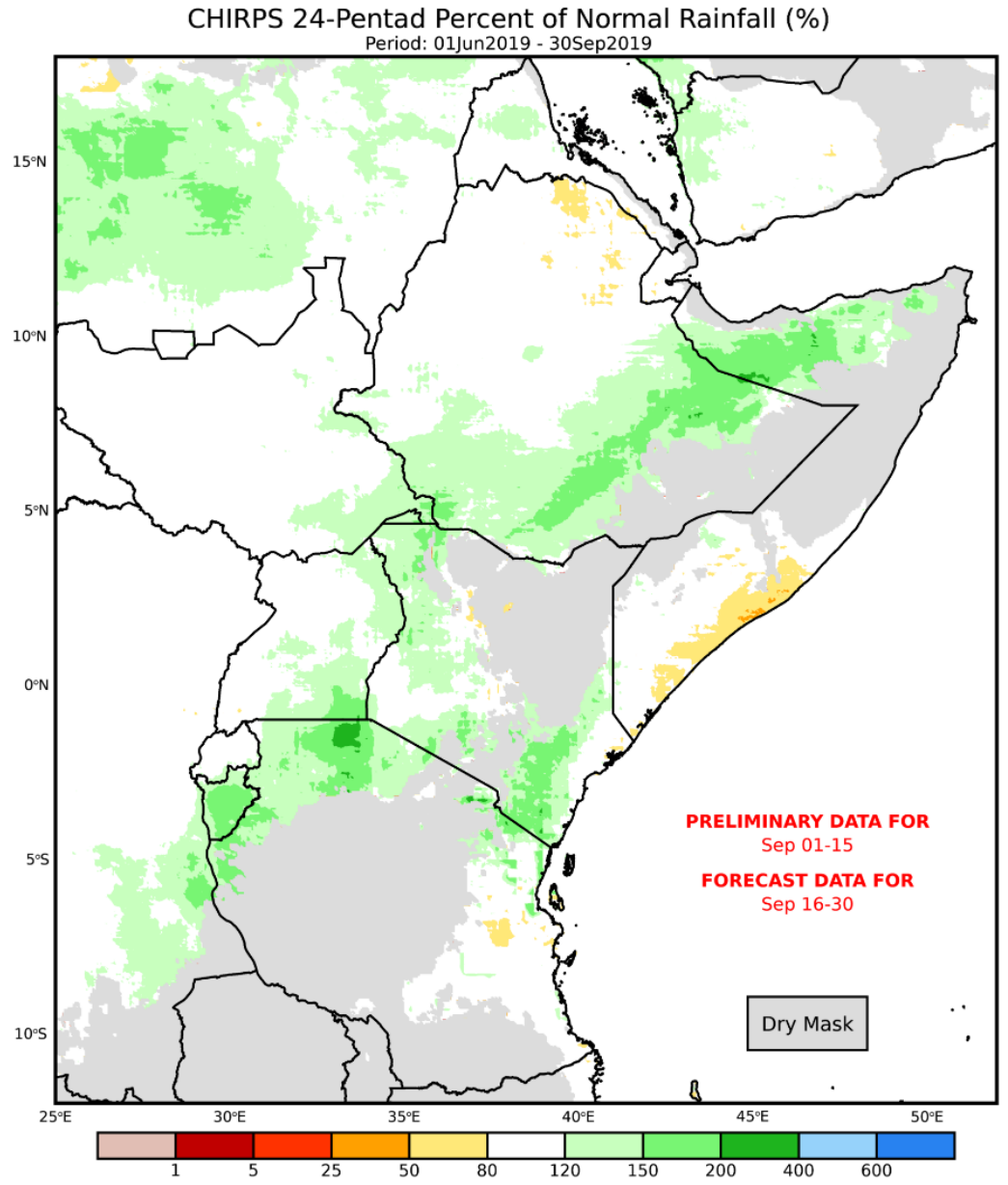




East Africa

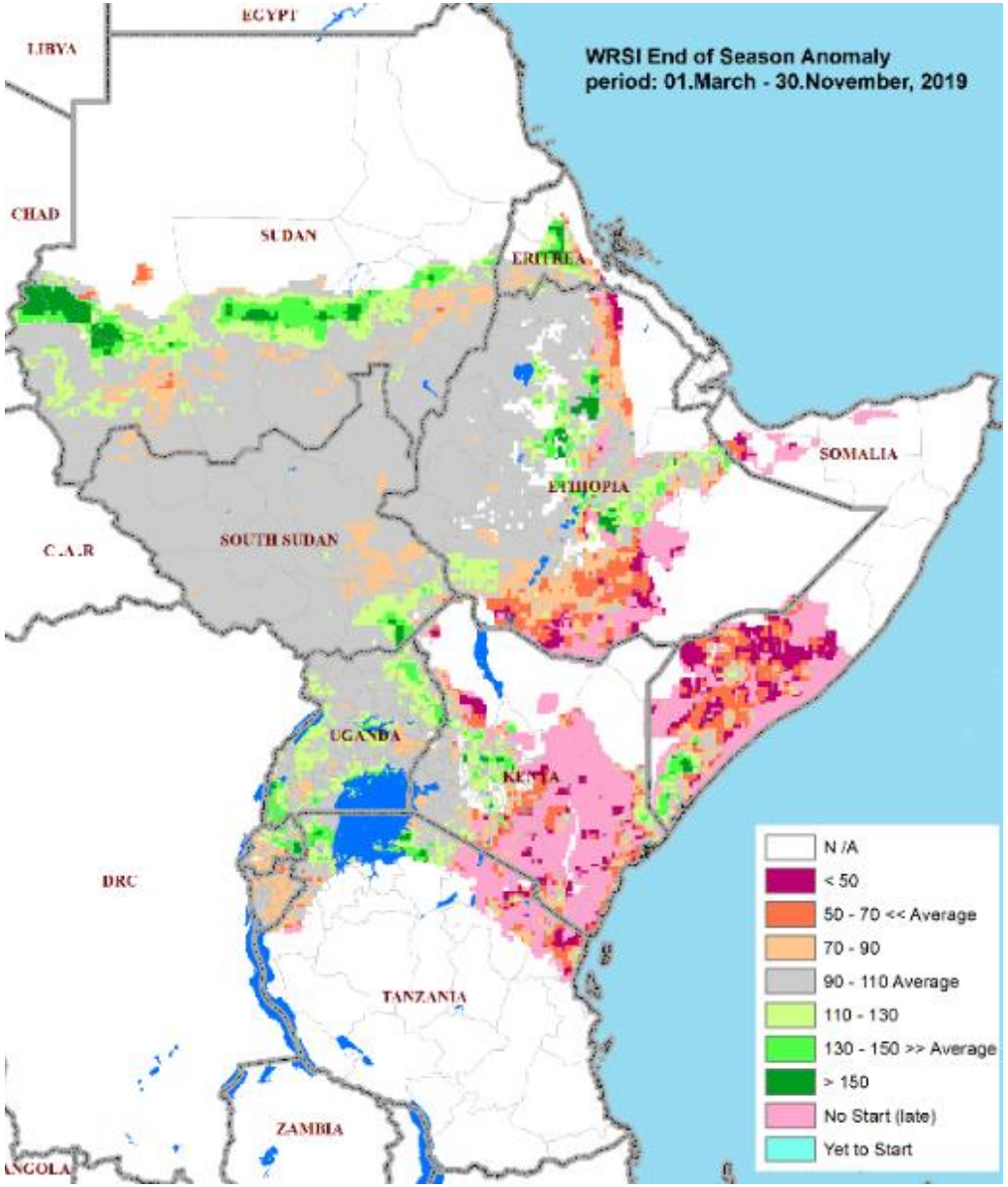
June-Sep 2019 Rainfall Performance

- Average to above average precipitation over the northern and western sectors
- Isolated areas of below average rainfall over northeastern Ethiopia and southern Somalia

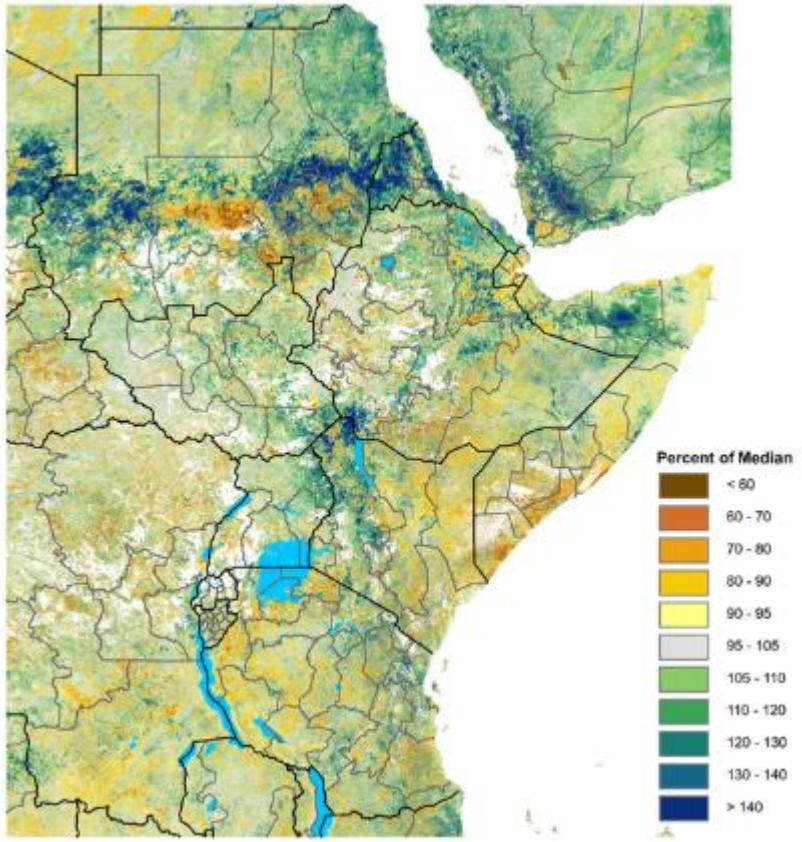


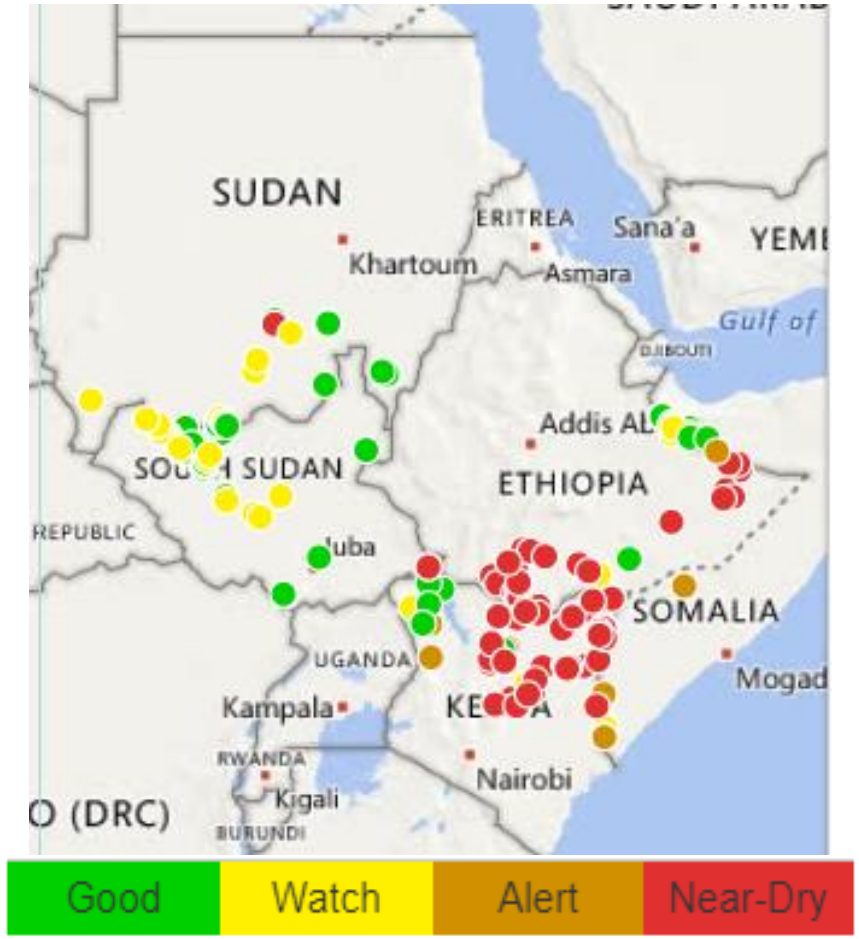
Maize/Grains Production Prospects

- Favorable cropping conditions with largely average yield prospects at the end of season over northern and western sectors of the region
- Significantly reduced yields to total crop failure over much of eastern Horn

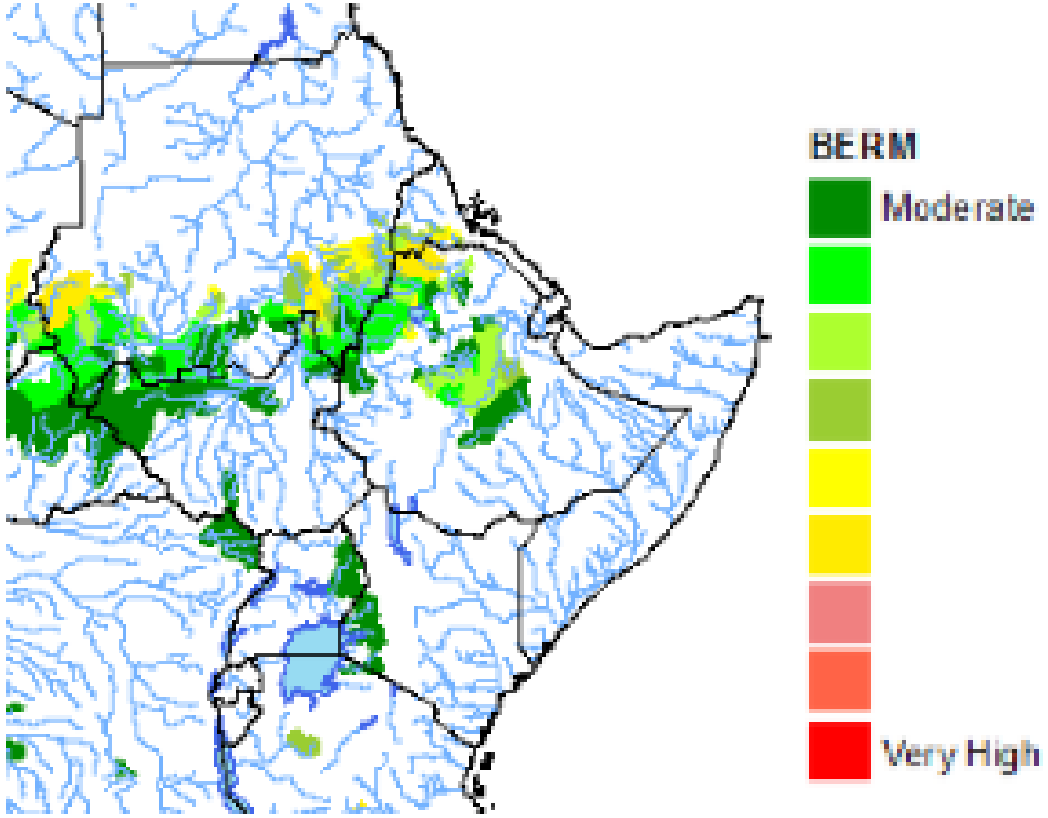


Rangeland Prospects

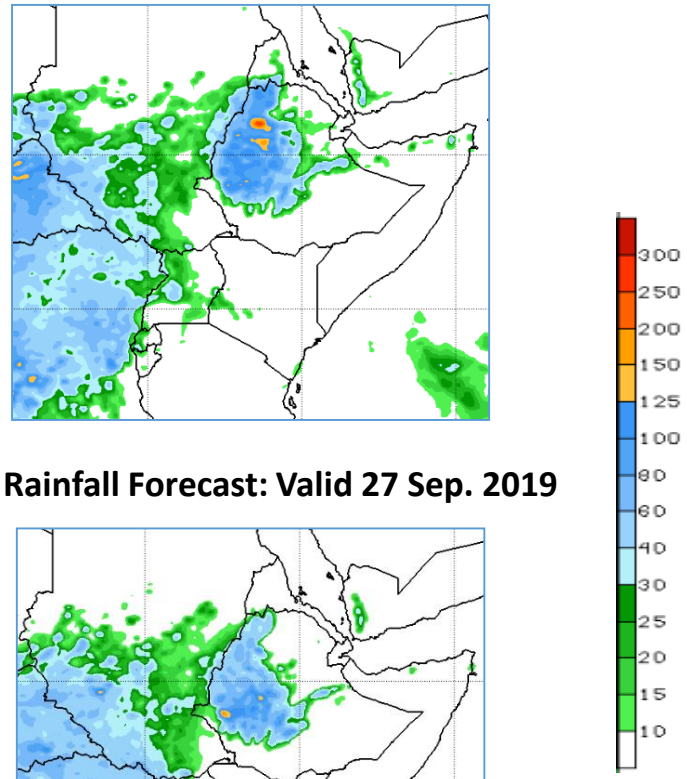




Elevated Flooding Risk in the Northern Sector

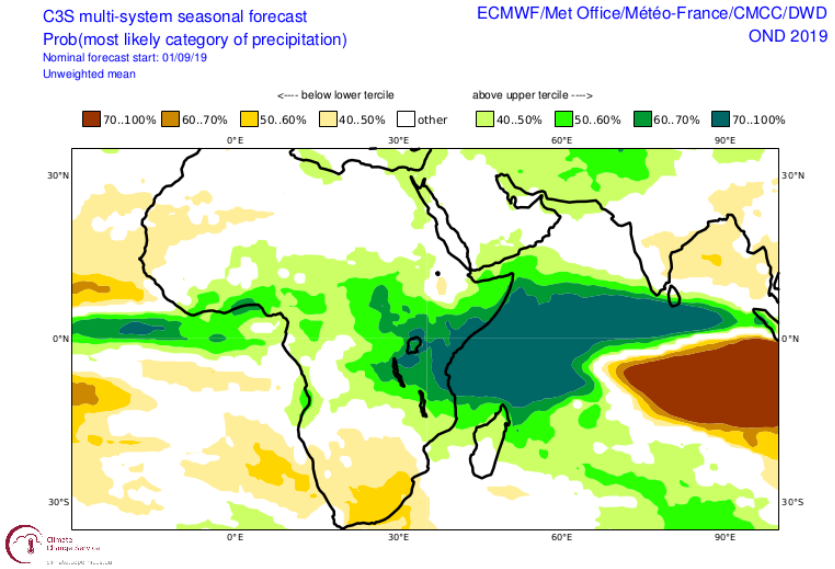


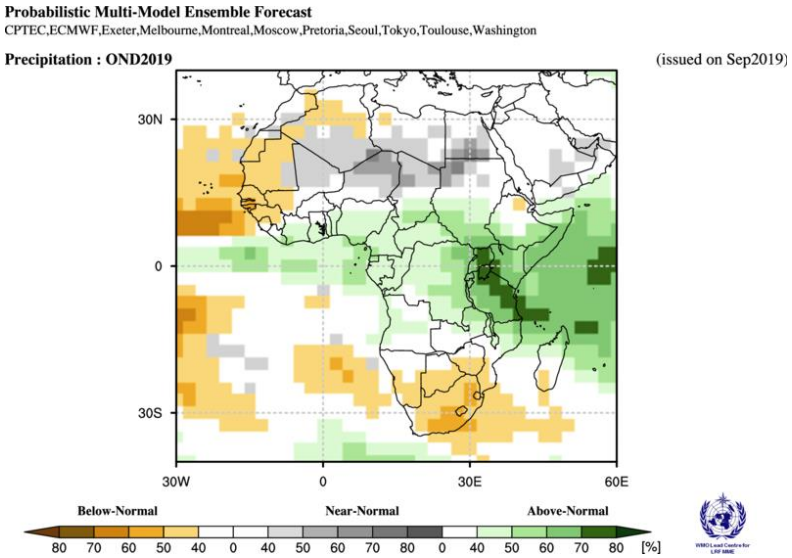
GFS Rainfall Forecast: Valid 20 Sep. 2019

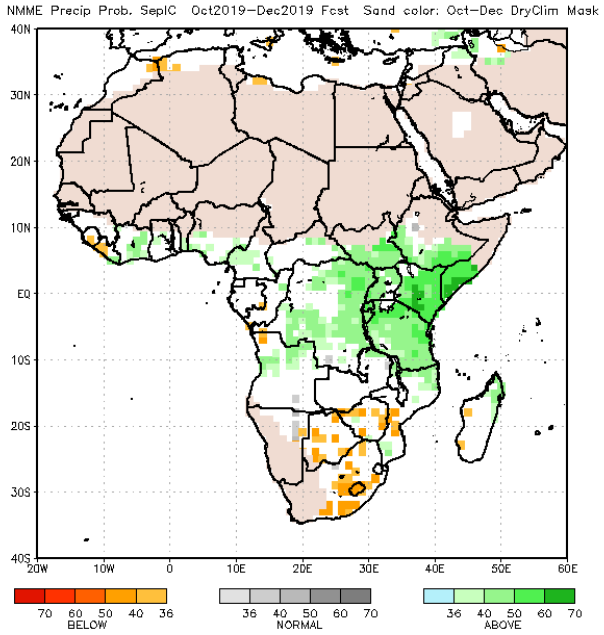


GFS Rainfall Forecast: Valid 27 Sep. 2019

Oct-Dec 2019: Elevated probability of above average precipitation over East Africa

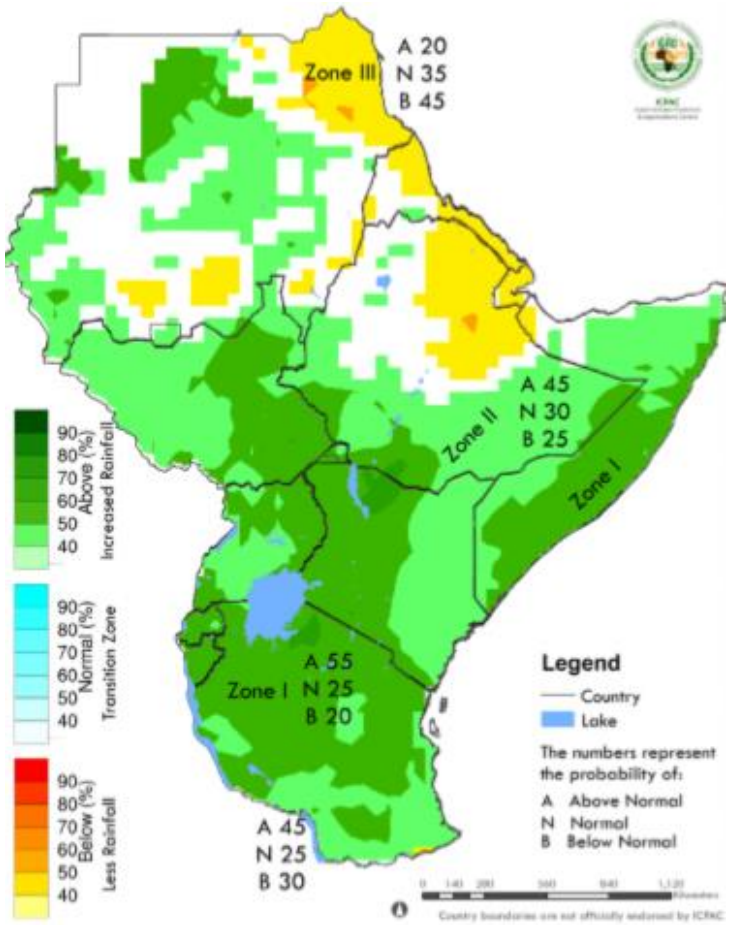




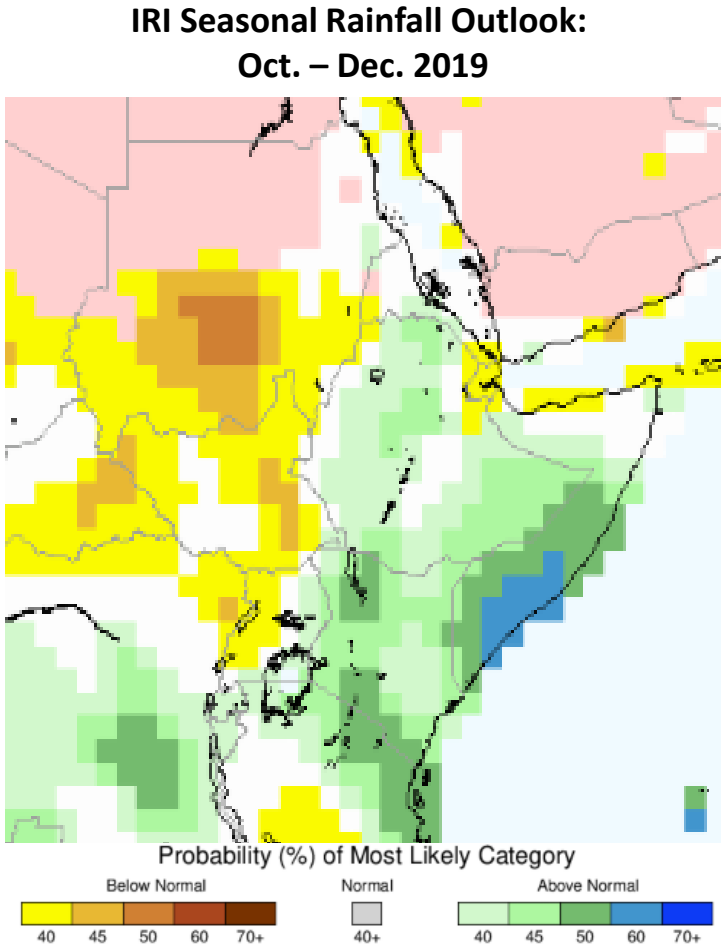


Oct-Dec interpreted forecasts largely favorable, with mixed outcomes in western sectors of the region

ICPAC Probability



IRI Probability



East Africa – Assumption 1 of 5

Conclusion of June to September 2019 rainy seasons

a) The remainder of the April to September 2019 **main rainy season** in **unimodal Uganda** (Karamoja sub-region) is most likely to be above average. Total cumulative rainfall is most likely to be above average.

b) The remainder of the June to September 2019 ***Kiremt*** **rains** in **Ethiopia** are most likely to be average. Total cumulative rainfall is most likely to be above average in central and southern regions and below average in localized areas of the northeast.

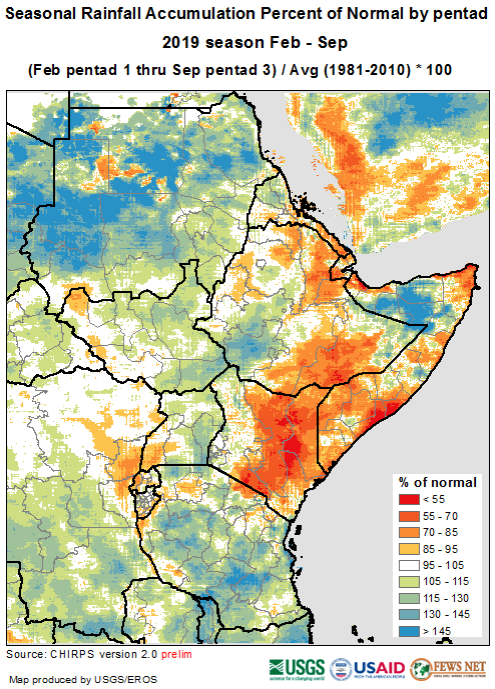
c) The June to September 2019 **main rainy season** in **unimodal South Sudan** is most likely to be above average in central and eastern areas and near average in western areas.

d) The June to September 2019 **main rainy season** in **Sudan** is most likely to be above average.

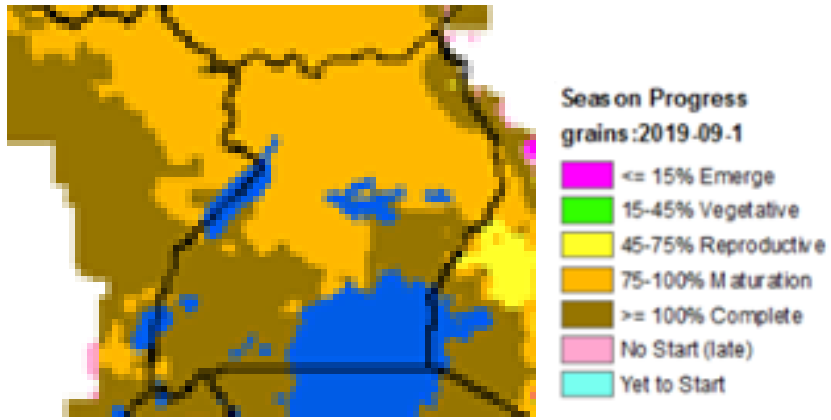
e) The remainder of the July to September ***Karan/Karma*** **rains** is most likely to be average. Total cumulative rainfall is most likely to be average in **northern pastoral Ethiopia** and above average in **northwestern Somalia,** with localized areas of below average in northeastern **Ethiopia**.

f) The remainder of the June to September ***Xagaa*** **rains** in **southern coastal Somalia** is most likely to be below average. Total cumulative rainfall is expected to be below average.

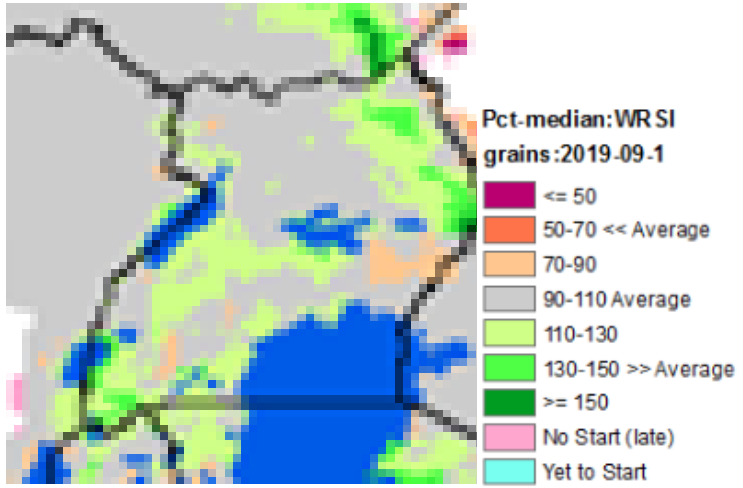
a) The remainder of the April to September 2019 main rainy season in unimodal Uganda (Karamoja sub-region) is most likely to be above average. Total cumulative rainfall is most likely to be above average. With slightly above average maize yield prospects, as most grain crops are currently in maturity to almost harvesting stages.



Season Crop Progress
As of 10 Sep. 2019



WRSI/EOS Maize Anomalies
As of 10 Sep. 2019

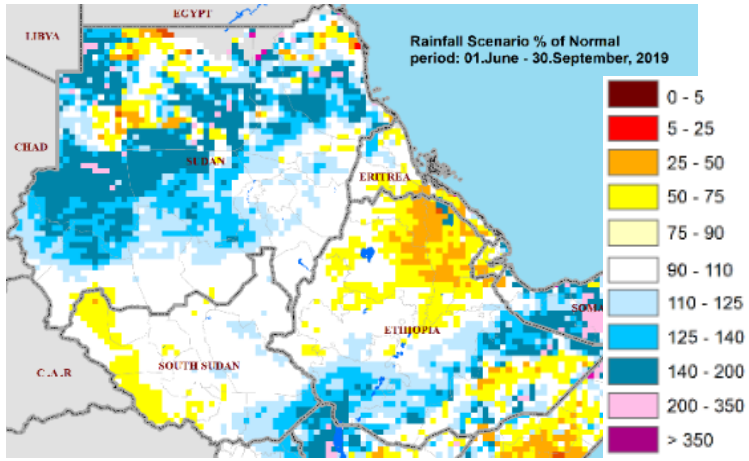


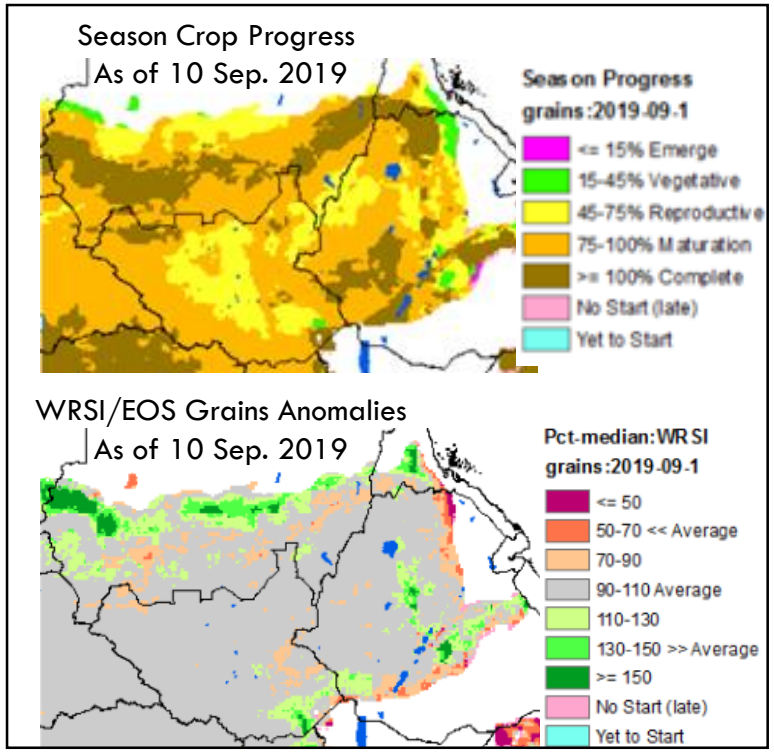
b) The remainder of the June to September 2019 ***Kiremt* rains** in **Ethiopia** are most likely to be average. Total cumulative rainfall is most likely to be above average in parts of central and southern regions, average over western regions and below average in ~~localized areas of the~~ northeast. Average yield prospects likely for much of Kiremt grain growing areas, which is in current crop maturation stage.

c) The June to September 2019 **main rainy season** in **unimodal South Sudan** is most likely to be above average in central and eastern areas and near average in western areas. Average yield forecast for crop planted zones.

d) The June to September 2019 **main rainy season** in **Sudan** is most likely to be above average. Average to above average yield expected for much of Sudan, however, there is increased likelihood for localized areas of slightly below average due to on-going rainfall performance.

2019 Kiremt Rainfall Scenario:
Jun. – Sept. 2019

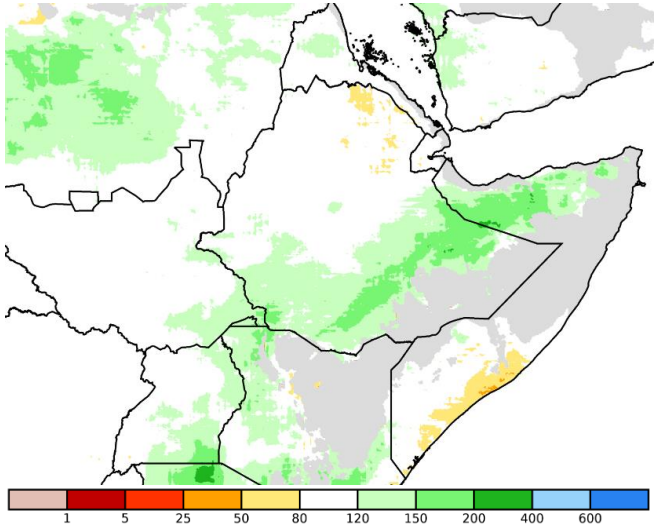




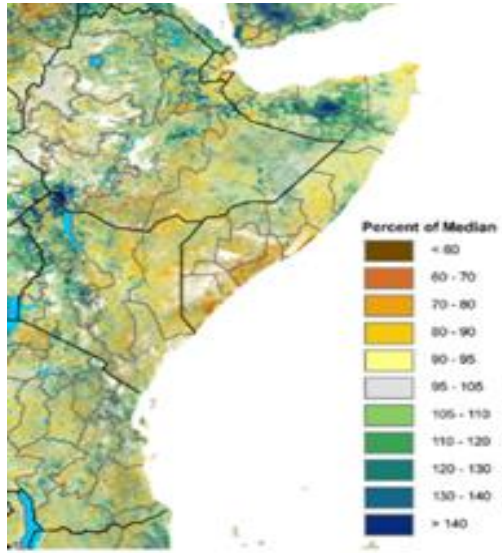
e) The remainder of the July to September ***Karan/Karma* rains** is most likely to be average. Total cumulative rainfall is most likely to be average in **northern pastoral Ethiopia** and above average in **northwestern Somalia,** with localized areas of slightly below average in northeastern **Ethiopia**. Near average rangeland conditions likely, with localized areas of drier-than-normal vegetation conditions.

f) The remainder of the June to September ***Xagaa* rains** in **southern coastal Somalia** is most likely to be below average. Total cumulative rainfall is expected to be below average. Rangeland conditions are likely to be worse-than-normal, exacerbated by forecast hotter-than-normal Land Surface Temperatures conditions.

2019 Kiremt Rainfall Scenario:
Jun. – Sept. 2019



eMODIS/NDVI Vegetation Anomalies
As of 10 Sept. 2019



East Africa – Assumption 2 of 5

August to December 2019 rainy seasons

a) The **August to November 2019 second rainy season** is most likely to be average in **bimodal South Sudan. In bimodal Uganda**, rainfall is most likely to be above average in northern and eastern regions and average in western and central regions.

b) The **September to December 2019 DRC bimodal rainy season** is most likely to be average with localized areas of above average.

c) The **September to December 2019 *Vuli* rains** in **Tanzania** are most likely to be above average.

d) The **September to December 2019 small rains season** is most likely to be above average in Burundi and average in Rwanda.

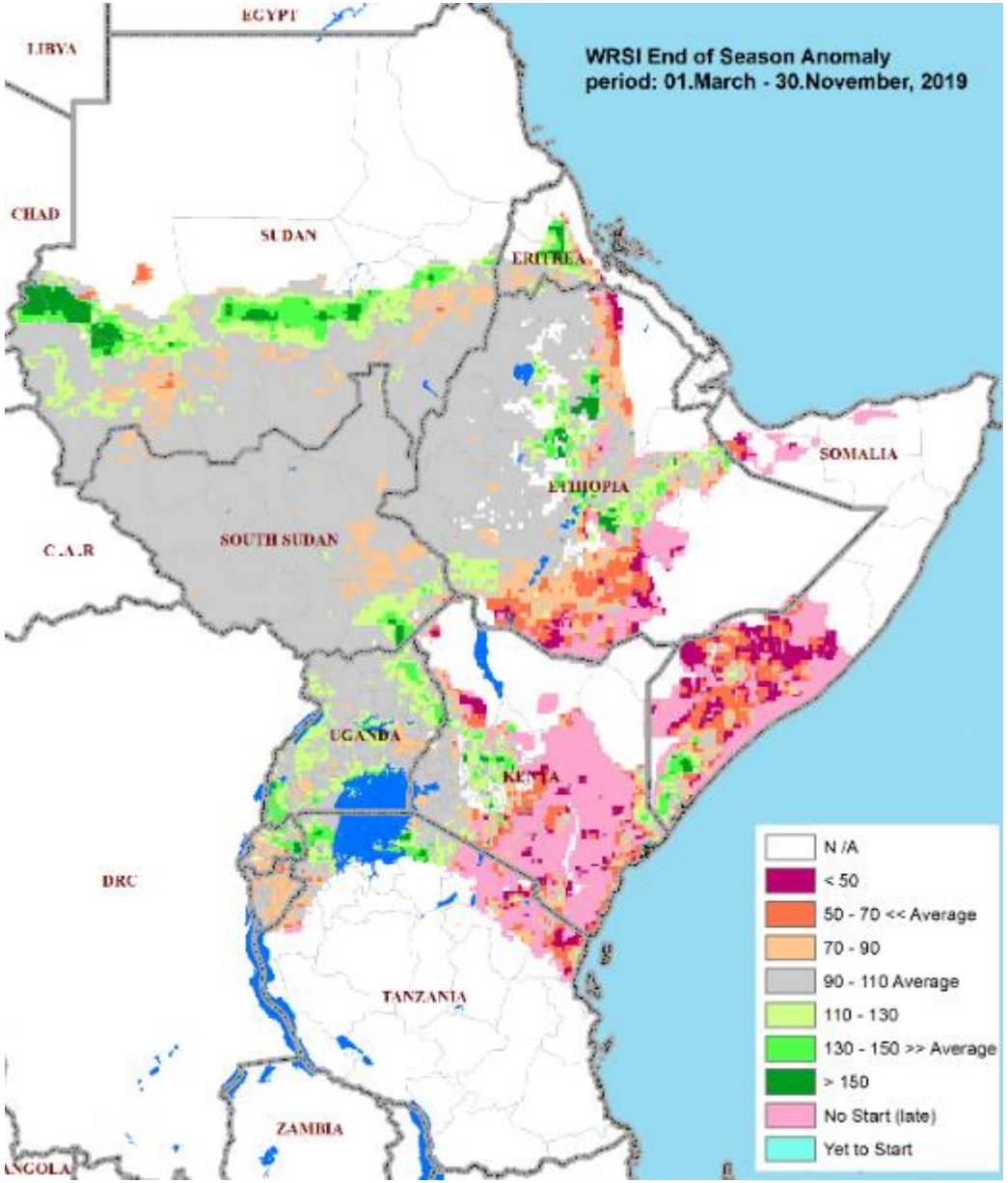
e) The **October to December 2019 Deyr/Hageya/short rains** season is most likely to be above average in **bimodal Kenya, Somalia, and southern/southeastern Ethiopia**.

a) The **August to November 2019 second rainy season** is most likely to be slightly above average in bimodal South Sudan**. In bimodal Uganda**, rainfall is most likely to be slightly above average in northern and eastern regions and average in western and central regions. With very early indications of average to above average yield prospects.

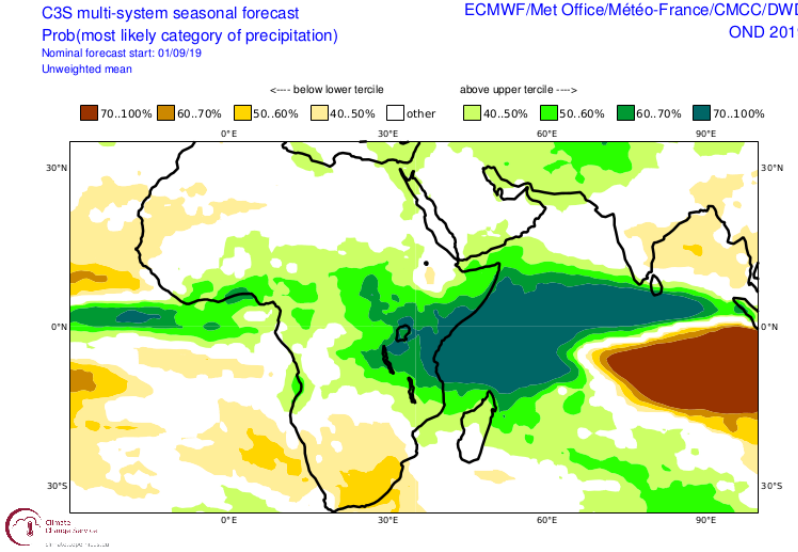
b) The **September to December 2019 DRC bimodal rainy season** is most likely to be average with localized areas of above average. Average yield likely at the end of the season.

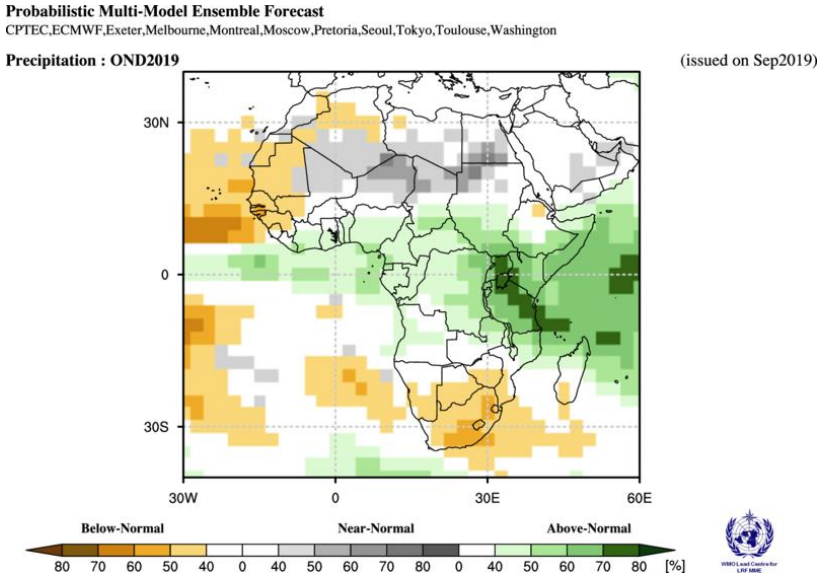
c) The **September to December 2019 *Vuli* rains** in **Tanzania** are most likely to be above average. Yield is likely to be affected by forecast by erratic rainfall distribution (long-dry spells) during the season.

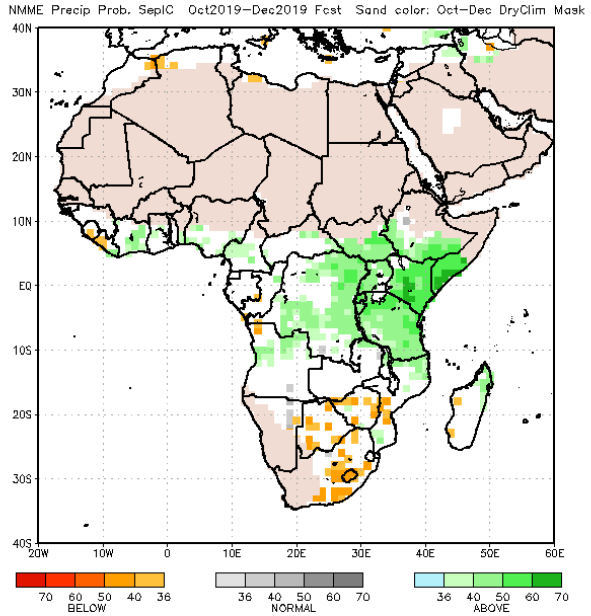
d) The **September to December 2019 small rains season** is most likely to be above average in Burundi and average in Rwanda, with favorable yield prospects



e) The **October to December 2019 Deyr/Hageya/short rains** season is most likely to be ~~slightly~~ above average in **bimodal Kenya, Somalia, and southern/southeastern Ethiopia**. Above average cropping conditions likely over southeastern lowlands of Kenya and much of southern Somalia**.**







East Africa – Assumption 3 of 5

2020 rainy seasons beginning in February

a) The **February – April 2020 *Msimu* rains** in **Tanzania** are most likely to be above average.

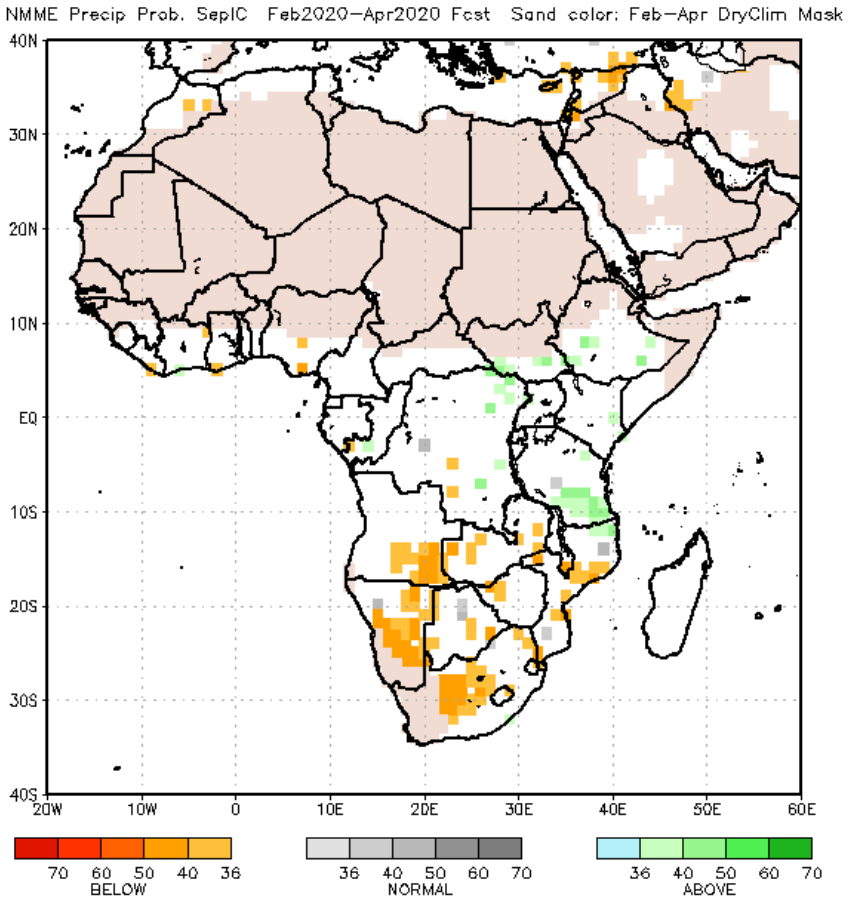
b) The start (Feb-April) of the **February – June 2020 *Belg* rains** in **Ethiopia** is most likely to be average.

c) The start (Feb-April) of the **February – August 2020 long rains season** in **western unimodal Kenya** is most likely to be average.

a. The **February – April 2020 *Msimu* rains** in **Tanzania** are most likely to be ~~above~~ average, with mixed yield prospects, but, mostly average to slightly above for western and central Tanzania.

b. The start (Feb-April) of the **February – June 2020 *Belg* rains** in **Ethiopia** is most likely to be average. Average yield likely over SW Belg cropping areas, based on the rainfall forecast holds.

c. The start (Feb-April) of the **February – August 2020 long rains season** in **western unimodal Kenya** is most likely to be average. Average yield likely dependent on rainfall distribution.



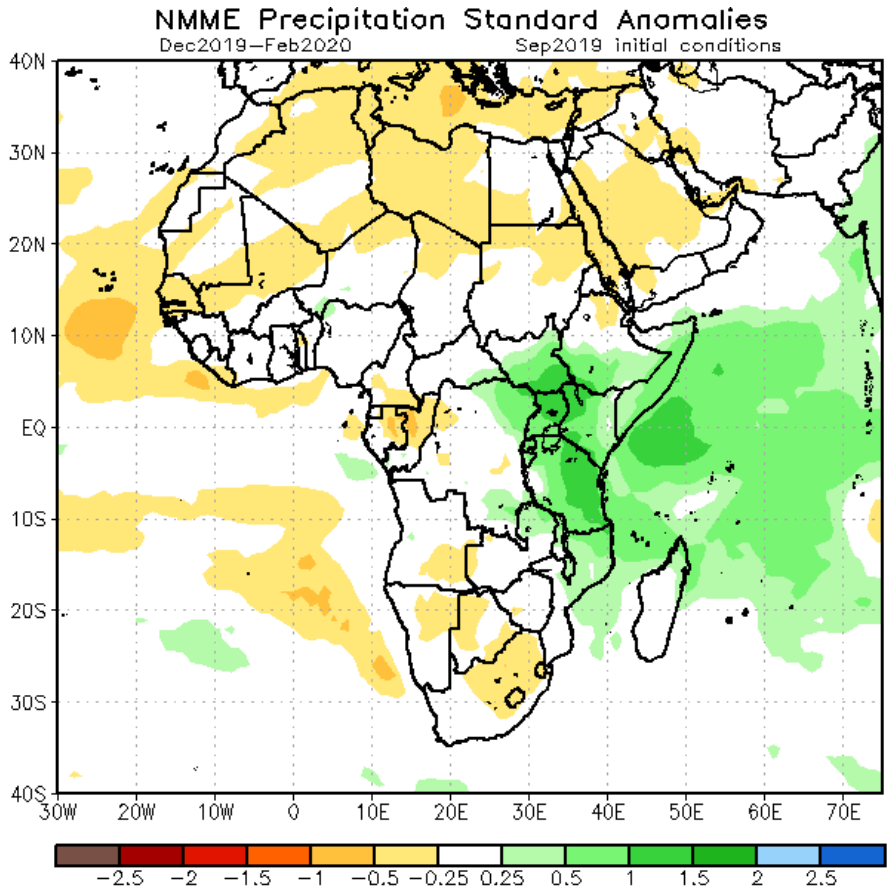
East Africa – Assumption 4 of 5

December 2019 – January 2020 Xays season in Somalia

The December 2019 – January 2020 *Xays* rains are in northwest

Somalia are most likely to be average.

a. The December 2019 – January 2020 *Xays* rains are in northwest Somalia are most likely to be average.



East Africa – Assumption 5 of 5

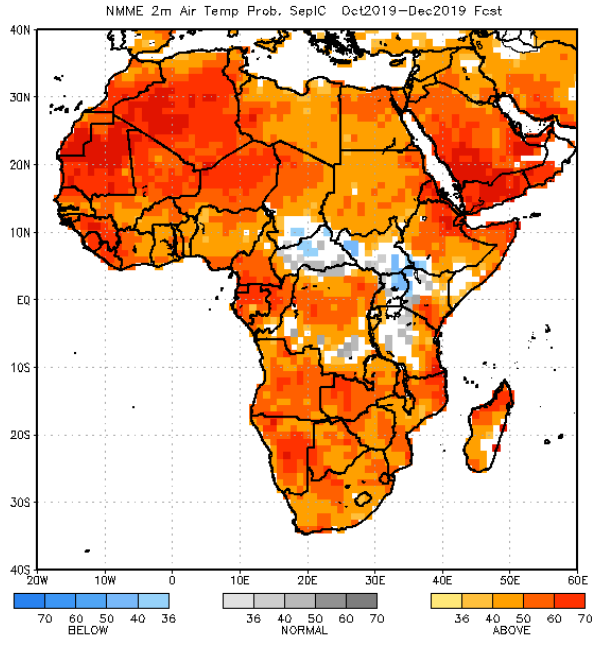
Temperature anomalies

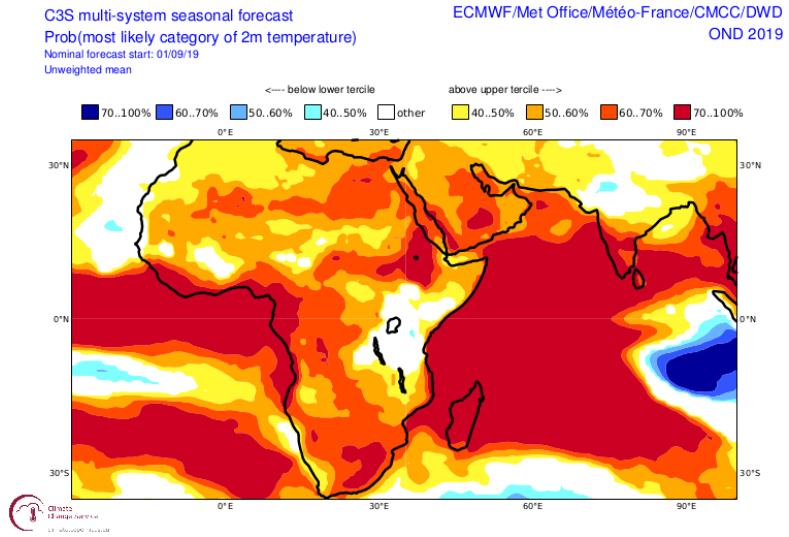
a. Yemen is most likely to most likely to experience hotter-than-normal land surface temperatures (0.5 – 1.0 C° above average) from September to December 2019.

b. Much of the Horn of Africa is likely to experience hotter-than-normal LST (0.5 – 1.0 C° above average) in September and October, prior to the Oct-Dec rainy season period, and warmer-than-normal LST (0.2 – 0.5 C° above average) in November and December 2019.

a. Yemen is most likely to most likely to experience hotter-than-normal land surface temperatures (0.5 – 1.0 C° above average) from September to December 2019.

b. Much of the Horn of Africa is likely to experience hotter-than-normal LST (0.5 – 1.0 C° above average) in September ~~and October~~, prior to the Oct-Dec rainy season period, and ~~warmer-than-~~ normal LST (0.2 – 0.5 C° above average) in October and December 2019.



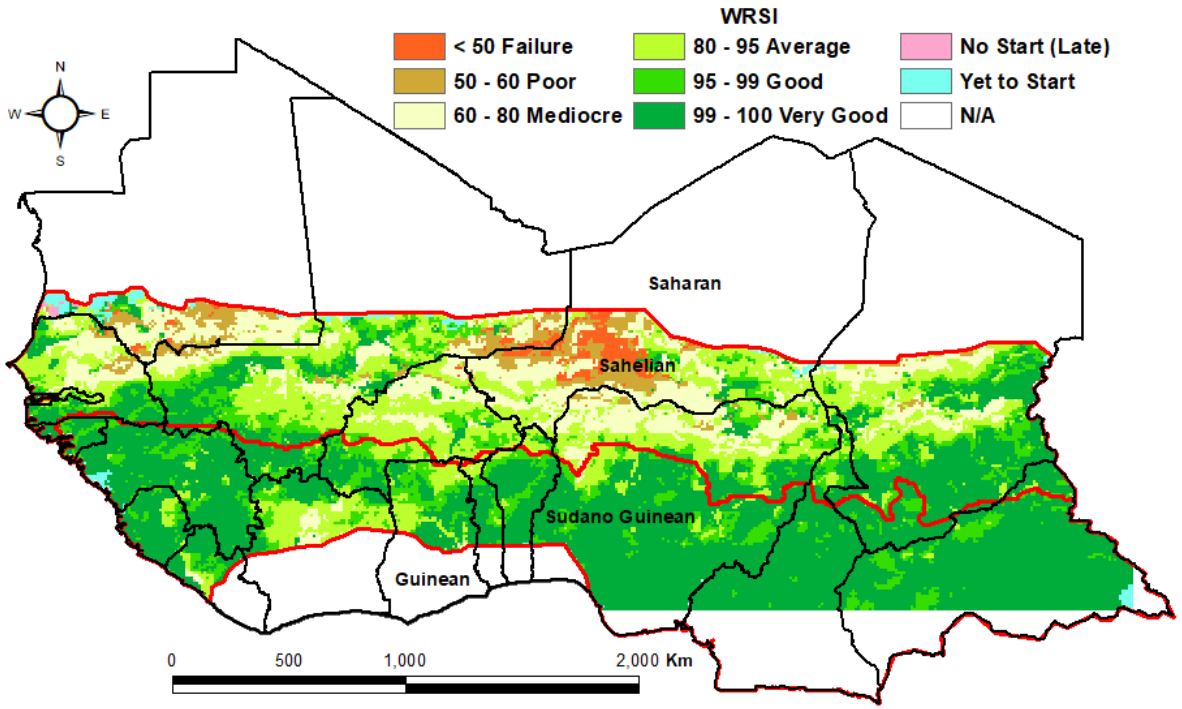


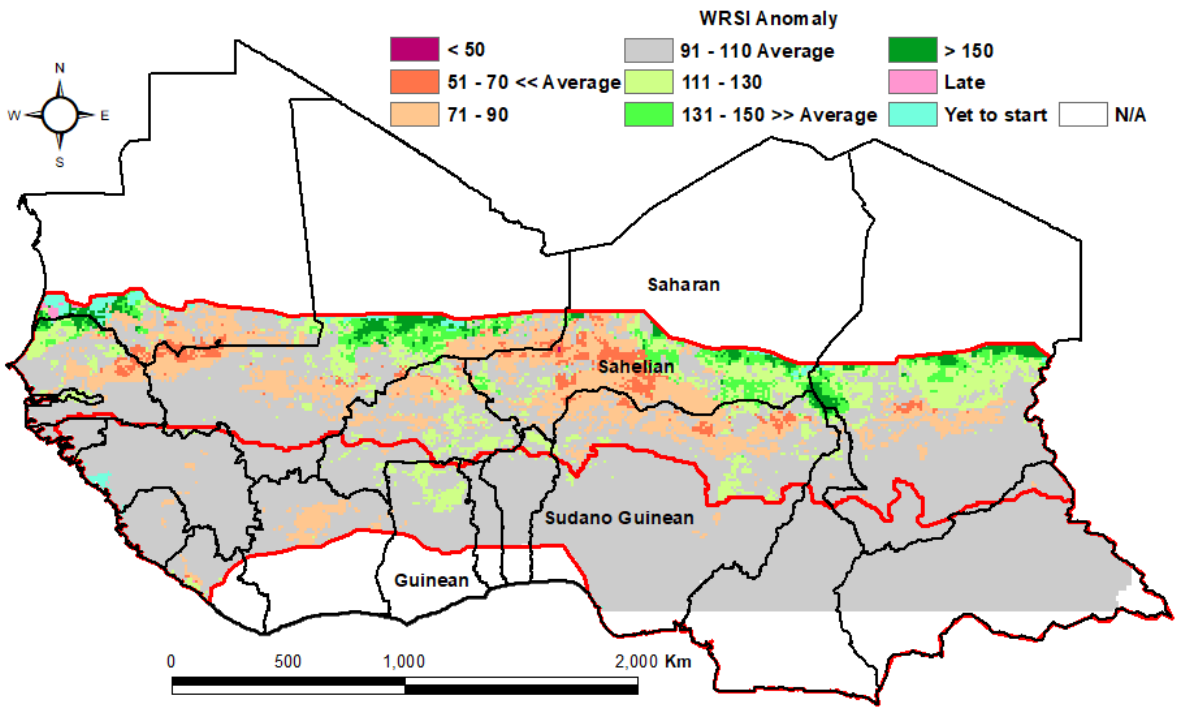
West Africa

Summary of Season's Progress

- Average to above average and well distributed rainfall over most of the region
- An average to above average harvest expected
- Rainfall deficits are isolated, and vary from light to moderate except in the western Sahel (Senegal, southwestern Mauritania)
- There is still hope in Senegal for an average harvest, but pasture production has been compromised in the north

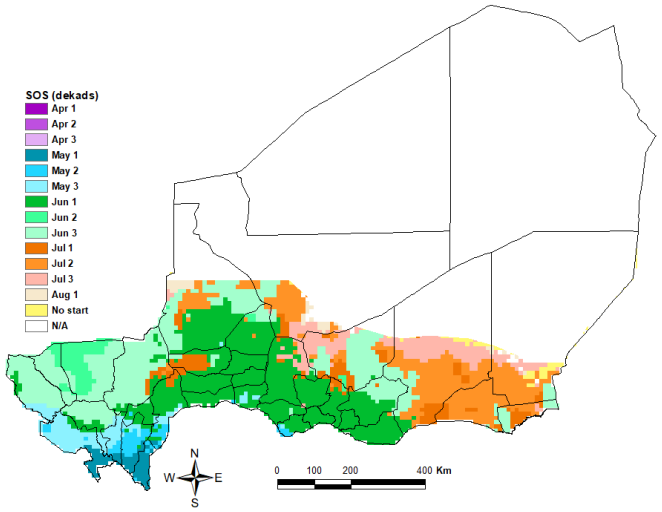
Seasonal progress in terms of WRSI



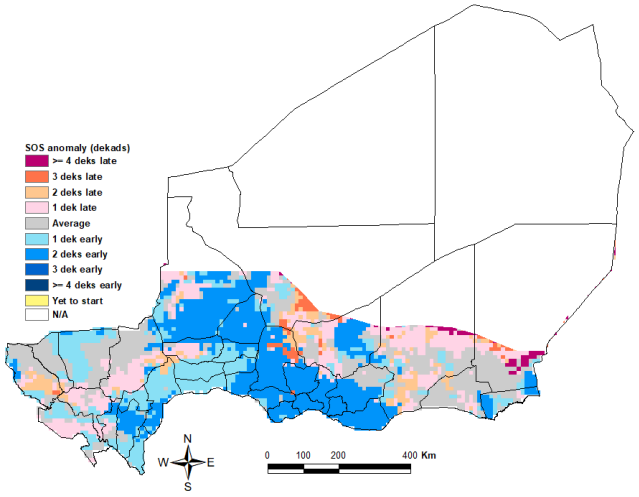


Back to areas of concern - Case of SouthernTahoua, Niger

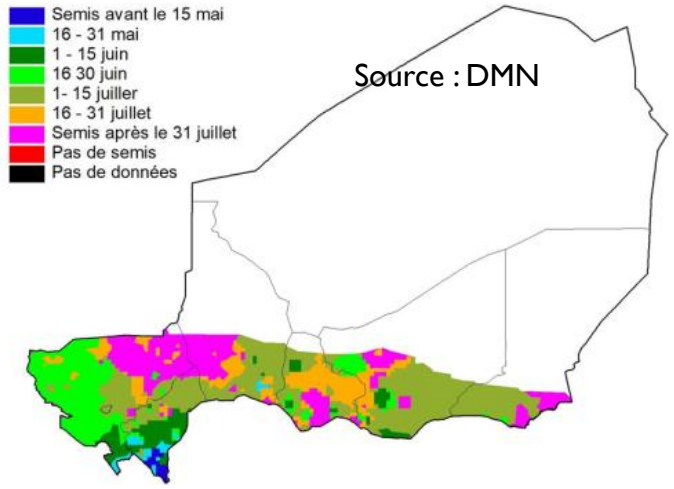
SOS – August 2019



SOS Anomaly/Median (2007 – 2016)

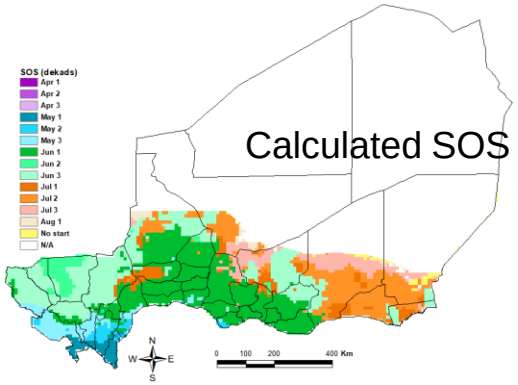


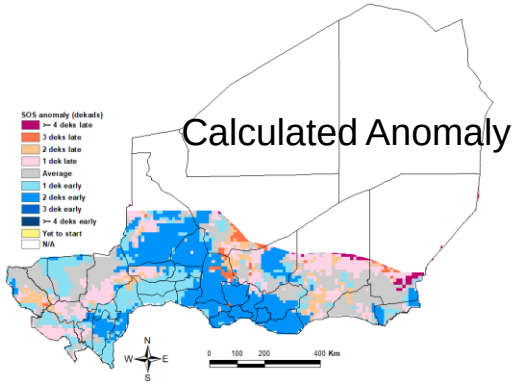
Simulated Sowing Dates, Aug. *2019*

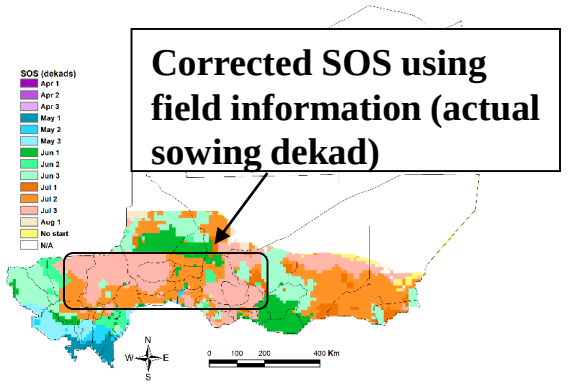


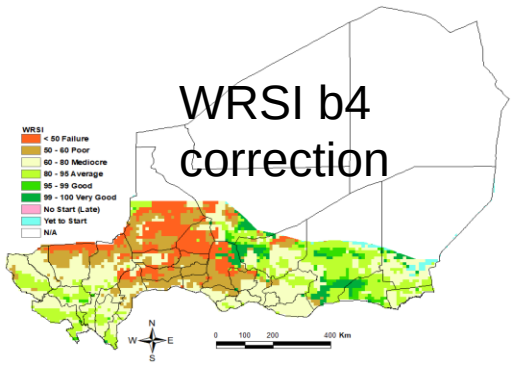
- FEWS: SOS first dekad of June
- DMN: Sowing first and second half of July

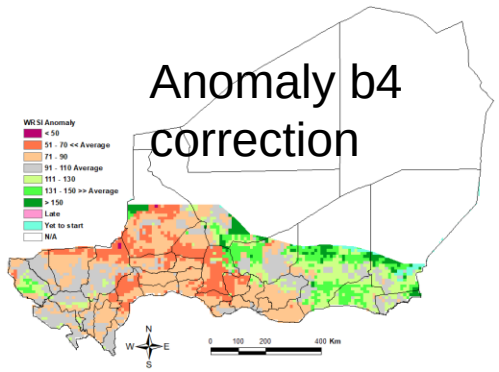
WRSI & Anomaly before and after SOS correction

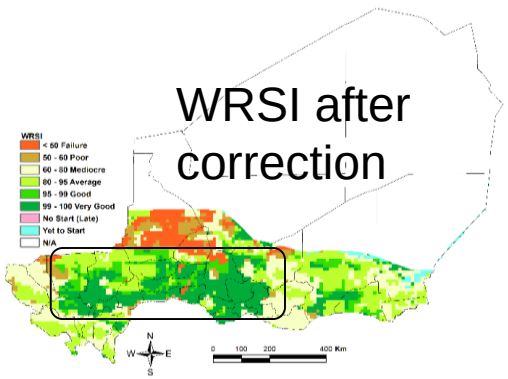


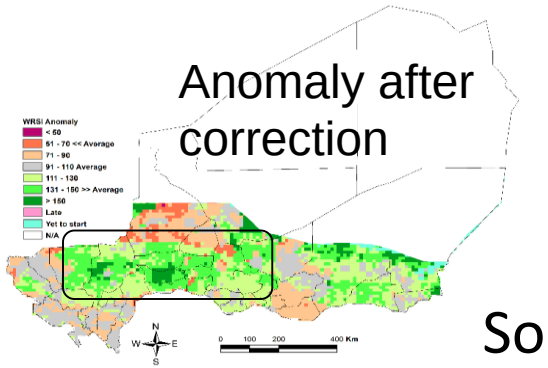








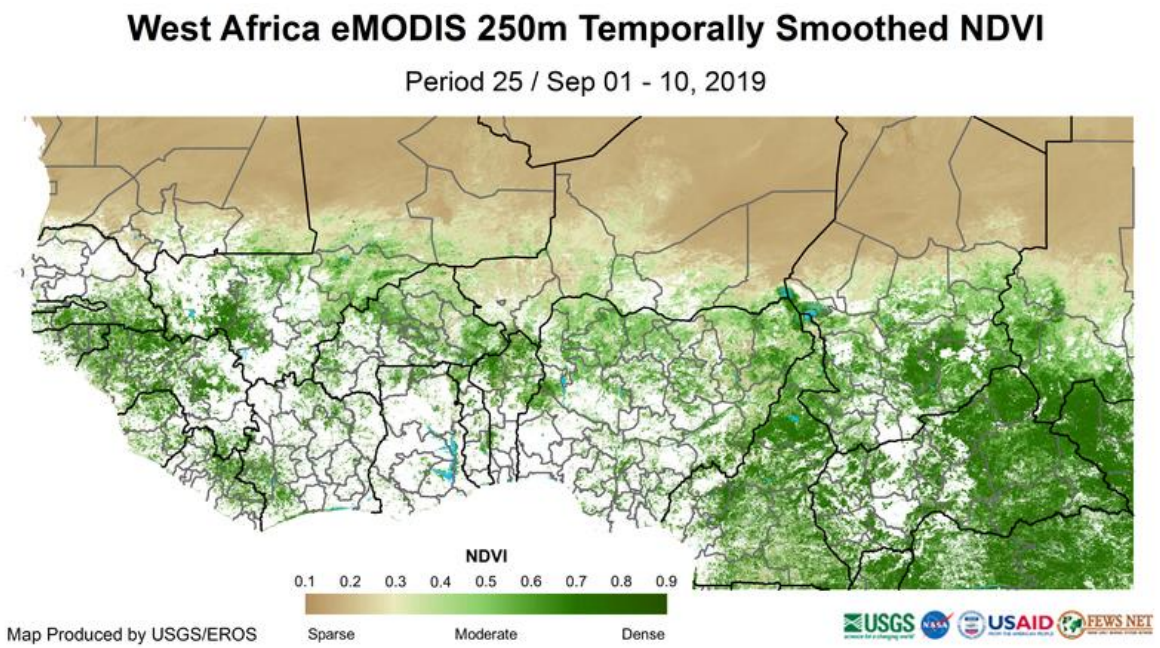


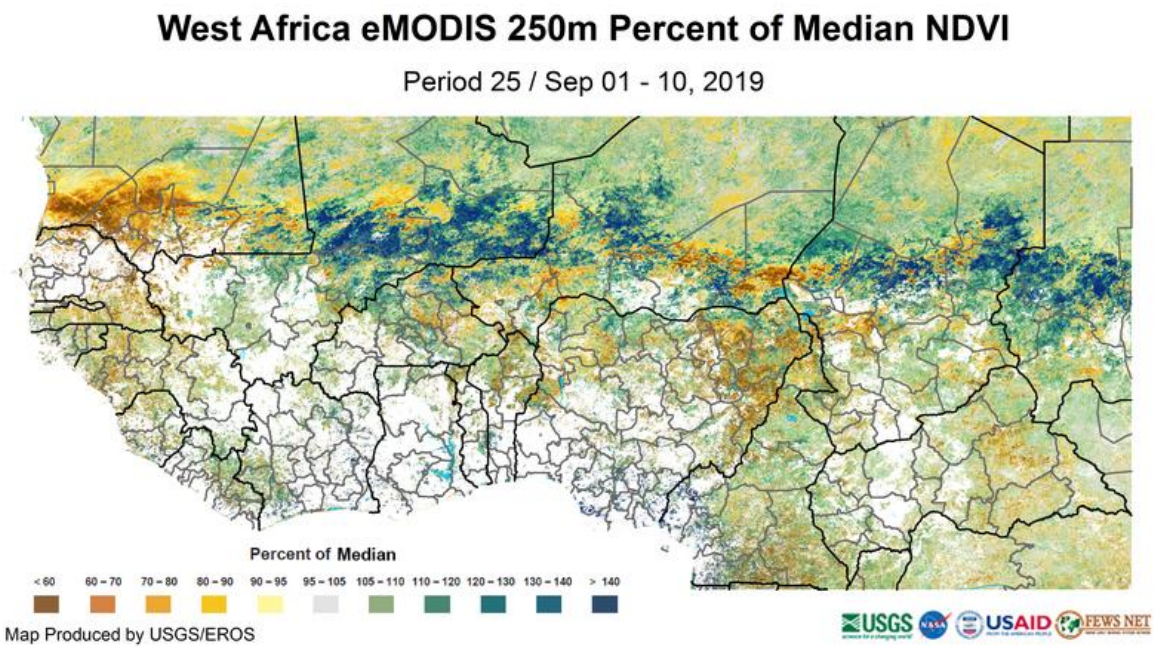


- **Early SOS over arid areas to be dealt with care**
- **Often followed by long dry spells**
- **Simulated crop older than what it is, with higher water requirements when dryness hits**
- **Simulation results in worse conditions than what is observed**

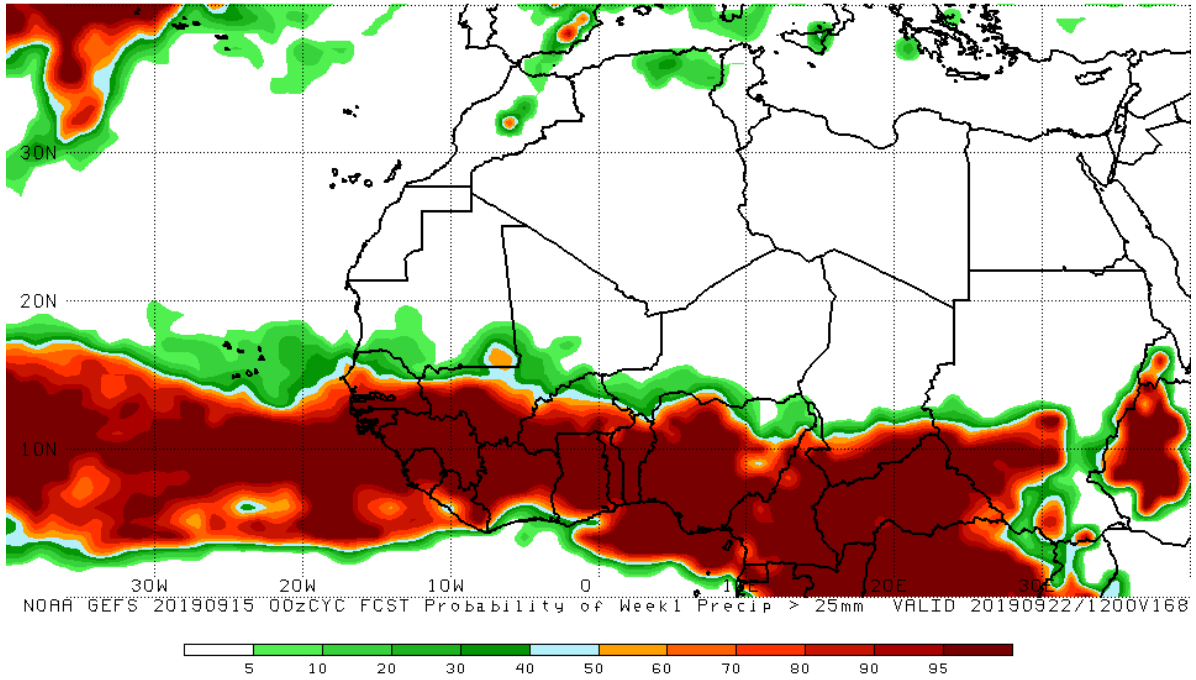
Southern Tahoua, no problem

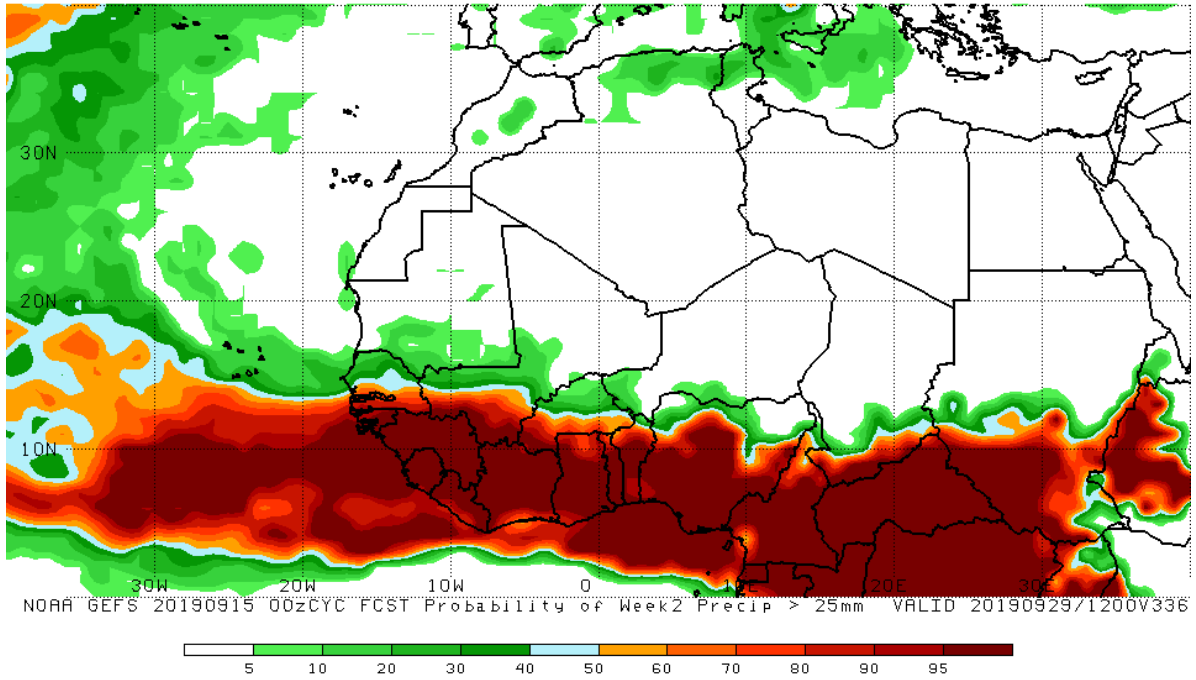
Vegetation health in terms of NDVI



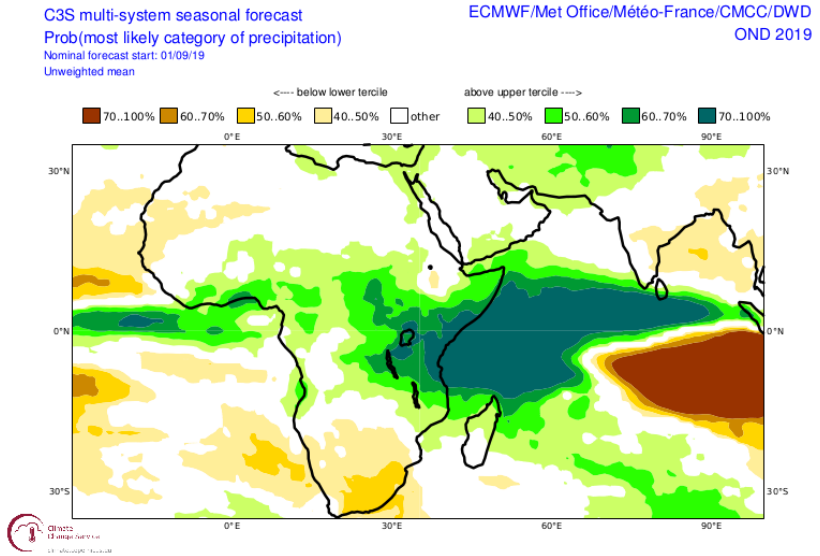


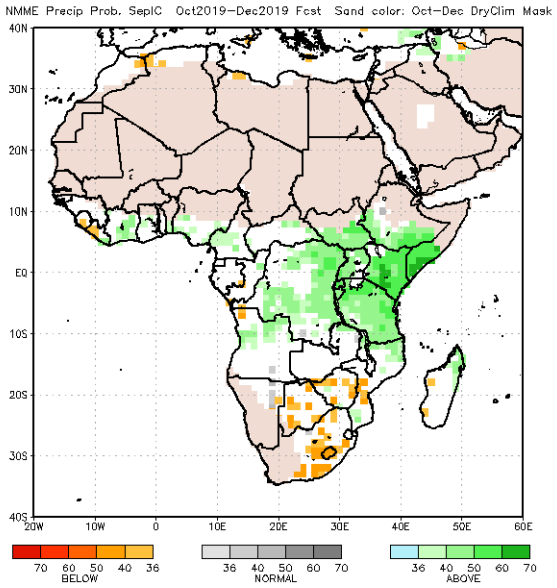
Adequate rainfall anticipated in next two weeks

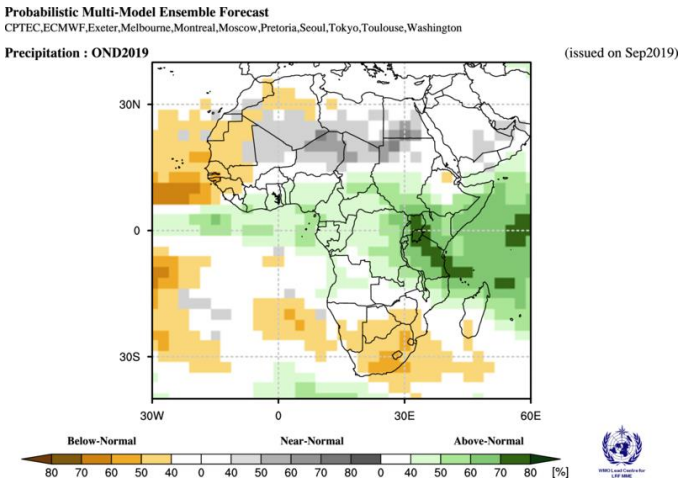




Forecast for the remainder of the season







West Africa – Assumption 1 of 3

Average to above average rainfall is likely in September 2019 rainy season across most of the Sahel. Cumulative rainfall totals are also likely to be average with areas of above average.

West Africa – Assumption 1 of 3

Average to above average rainfall is likely in September 2019 rainy season ~~across most~~ over portions of the Sahel. Cumulative rainfall totals are also likely to be average with areas of above average. An average to above average harvest is most likely.

West Africa – Assumption 2 of 3

Cumulative seasonal rainfall is most likely to be below average over portions of Nigeria, Ivory Coast, portions of Senegal and southwestern Mauritania.

West Africa – Assumption 2 of 3

Cumulative seasonal rainfall is most likely to be below average over portions of Nigeria, Ivory Coast, portions of Senegal and southwestern Mauritania.

However, crop performance won't be affected over Nigeria and Ivory Coast because of nicely-distributed rainfall in time. However, in Senegal and southwestern Mauritania the onset delays were too long, which combined with the rainfall departures, will adversely affect pasture production.

West Africa – Assumption 3 of 3

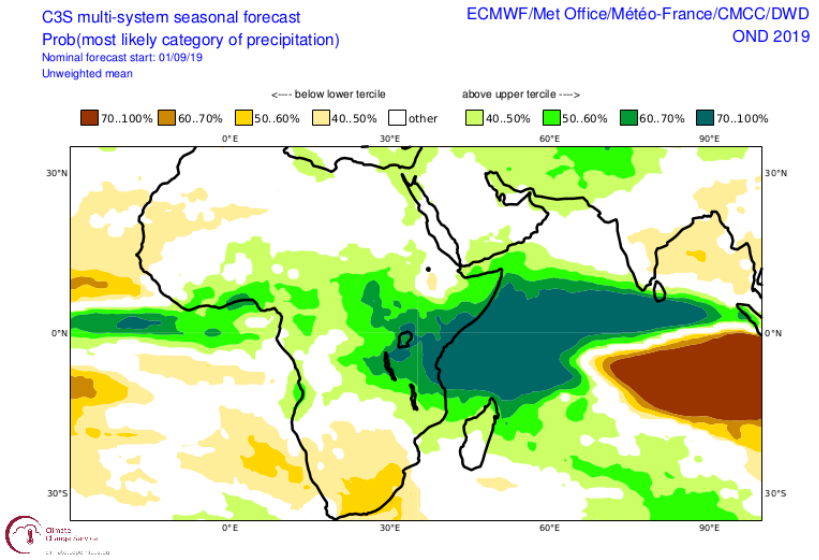
The most likely scenario is for above-average rainfall through September in the Sahelian parts of West Africa, particularly Mali and Niger, and parts of Chad and Nigeria. This will continue to increase the risk of flooding.

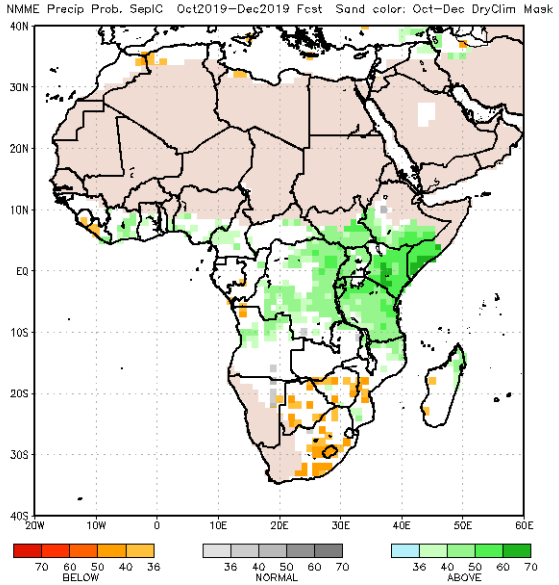
West Africa – Assumption 3 of 3

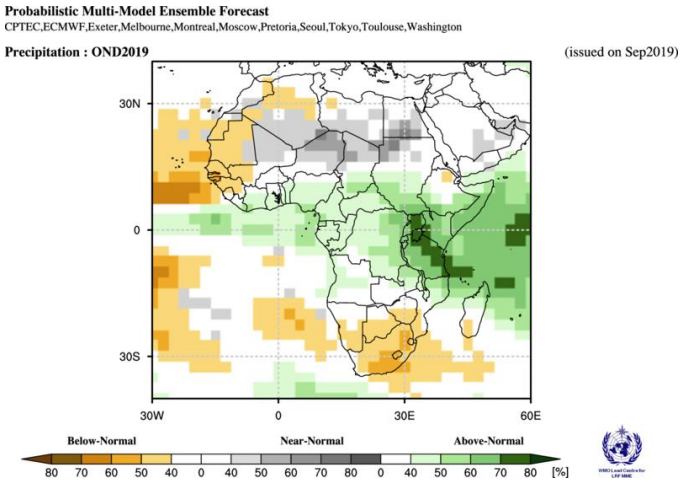
~~The most likely scenario is for above-average rainfall through September in the Sahelian parts of West Africa, particularly Mali and Niger, and parts of Chad and Nigeria. This will continue to increase the risk of flooding.~~

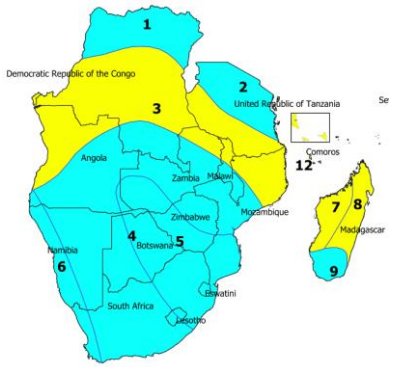
Southern Africa

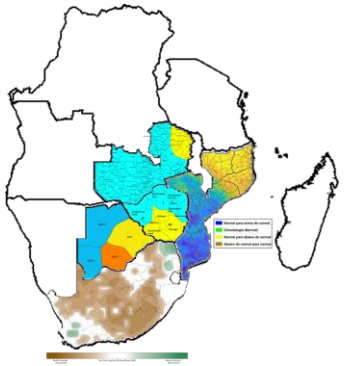
Oct-Dec precipitation forecasts do not paint an optimistic picture over Southern Africa and differ from SARCOF and country forecasts



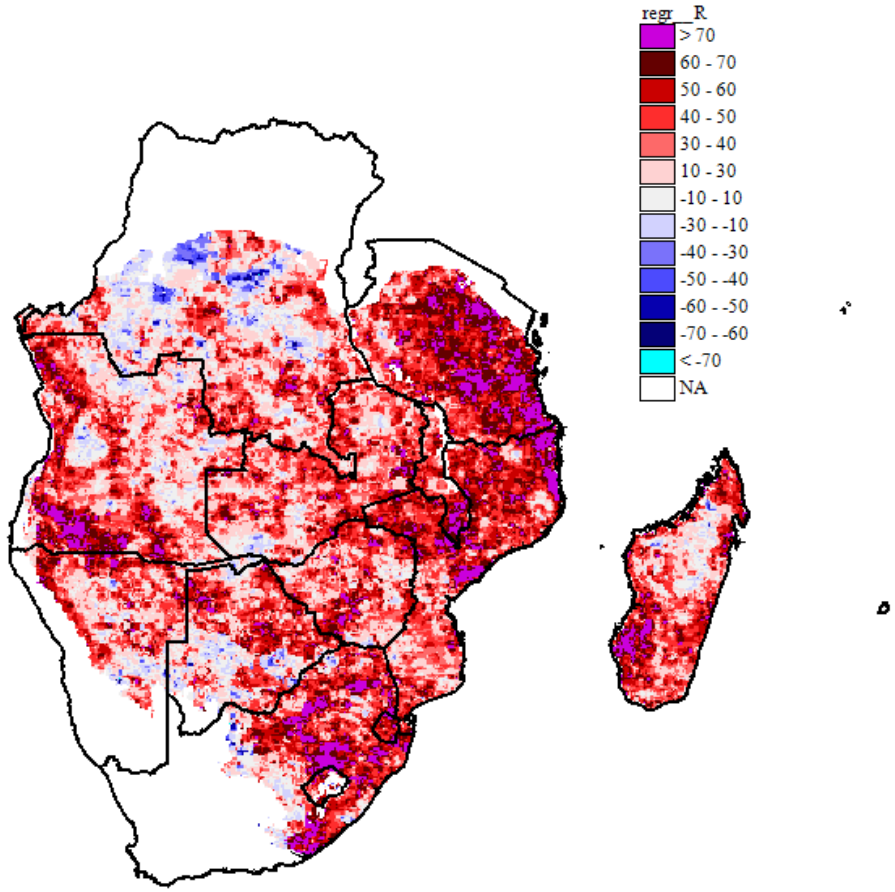




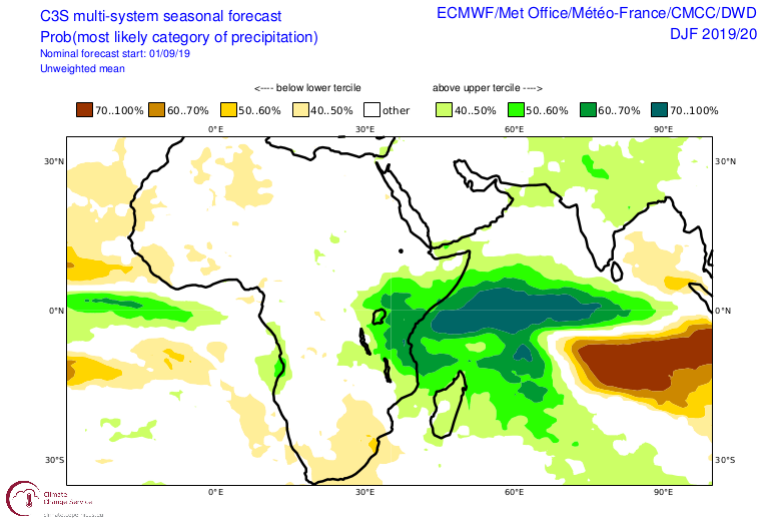


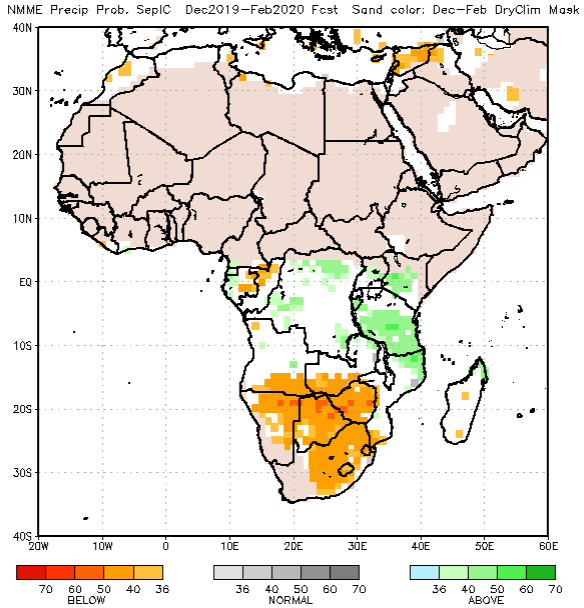


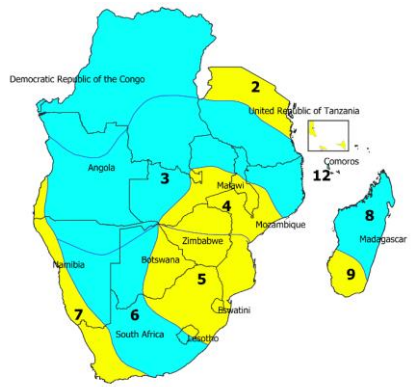
Onset of precipitation and seasonal performance are related: Below average precipitation suggests a late start

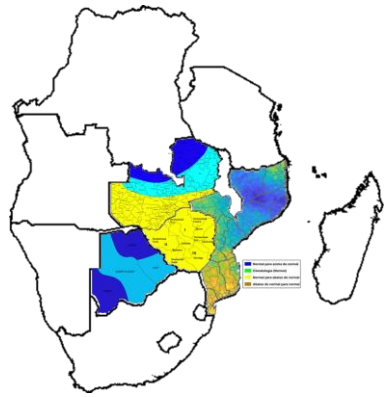


Dec-Feb precipitation forecasts do not paint an optimistic picture over Southern Africa and differ from SARCOF and country forecasts









January SIOD and ENSO comparison with total MG/MZ storm/cyclone strikes

	La Nina	ENSO Neutral	El Nino
-SIOD	24	11	18
SIOD-Neutral	11	12	0
+SIOD	24	6	15

January SIOD and ENSO comparison with total num of seasons with > 1 MG/MZ storm/cyclone strikes

	La Nina	ENSO Neutral	El Nino
-SIOD	6	2	4
SIOD-Neutral	3	3	0
+SIOD	6	2	3

Southern Africa – Assumption 1 of 3

The start of the 2019/2020 rainy season in Southern Africa is most likely to start on time with average rainfall.

Southern Africa – Assumption 1 of 3

The start of the 2019/2020 rainy season in Southern Africa is most likely to ~~start on time with~~ be below average ~~rainfall~~, with a potentially late and erratic onset in central and southern areas. Extensive delays in start of rainy season may result in reduced area planted and affect likelihood of crops to reach maturity during rainy season

Southern Africa – Assumption 2 of 3

Cumulative rainfall for the October to March 2020 period is most likely to be above average in northern Mozambique, Malawi, and northern Madagascar; however, in parts of South Africa, southern Mozambique and Zimbabwe, and Lesotho rainfall will most likely be below average due to the negative SIOD. The rest of the region is expected to have average rainfall.

Southern Africa – Assumption 2 of 3

Cumulative rainfall for the October to March 2020 period is most likely to be average to above average in northern Mozambique, Malawi, and northern Madagascar; however, in parts of South Africa, southern Mozambique and Zimbabwe, and Lesotho rainfall will most likely be below average according to most forecasts ~~due to the negative SIOD~~. Depending on rainfall distribution, this may negatively impact crops in areas if extensive dry spells are experienced. The rest of the region is expected to have average rainfall.

Southern Africa – Assumption 3 of 3

Between December 2019 and March 2020, there is an increased likelihood of a near average number of cyclone strikes in Madagascar and Mozambique.

Southern Africa – Assumption 3 of 3

Between December 2019 and March 2020, there is an increased likelihood of a near average number of cyclone strikes in Madagascar and Mozambique. **No Change**

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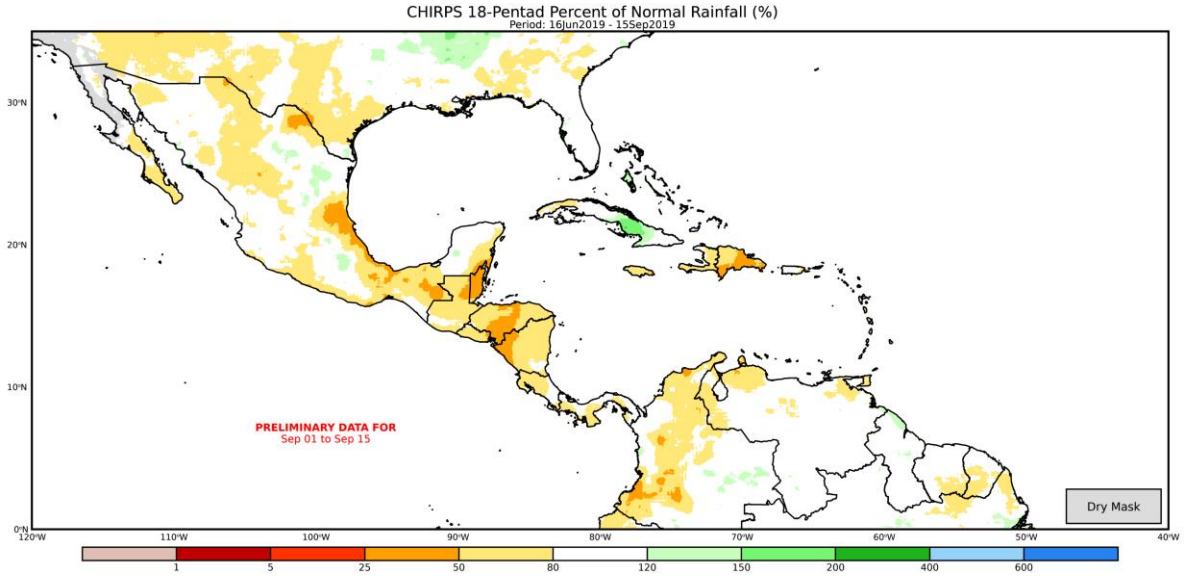
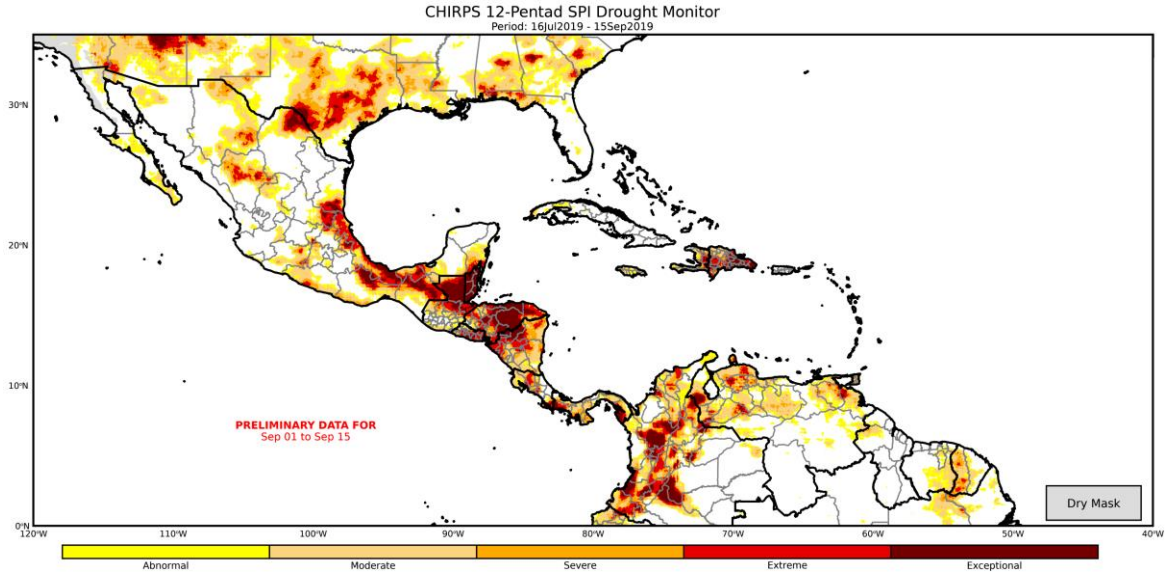
NASA

USGS
science for a changing world

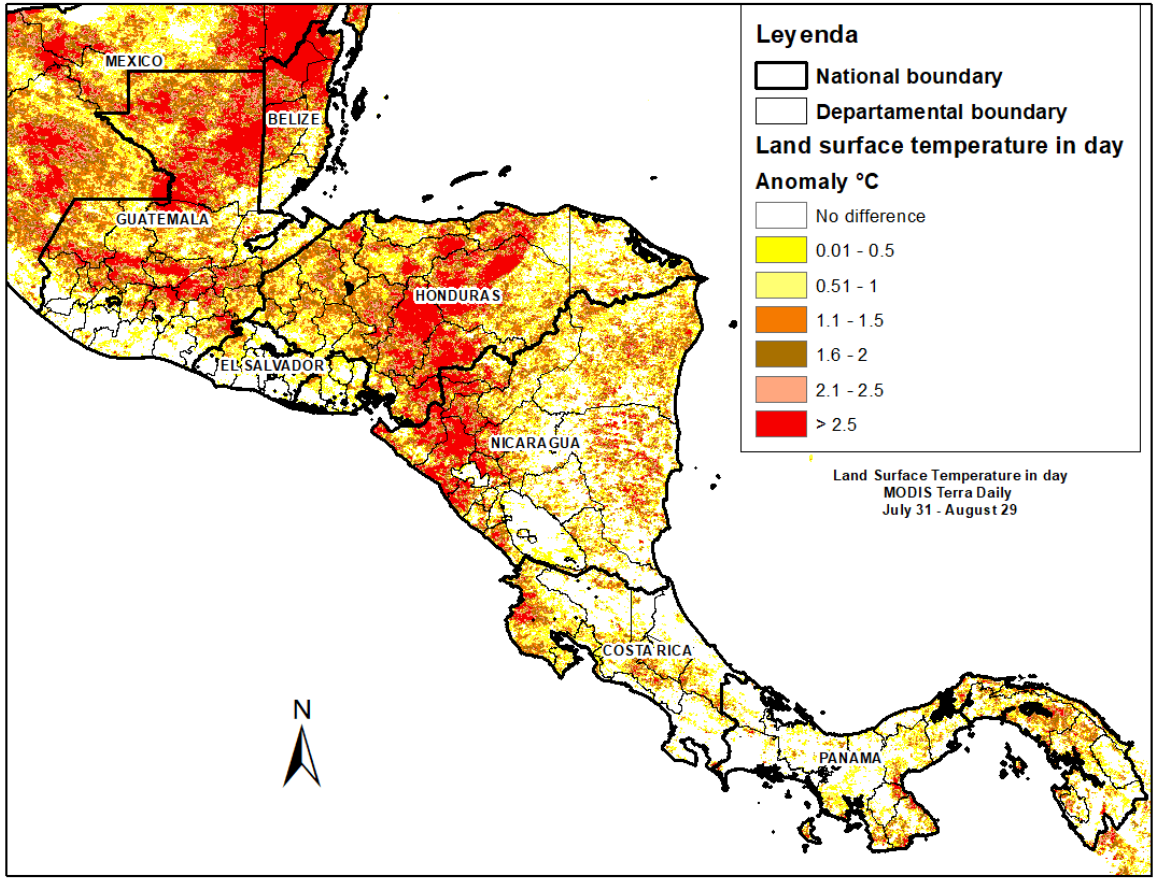
Central America and Haiti

Below average precipitation has led to extreme and exceptional drought





Temperatures have also been very warm

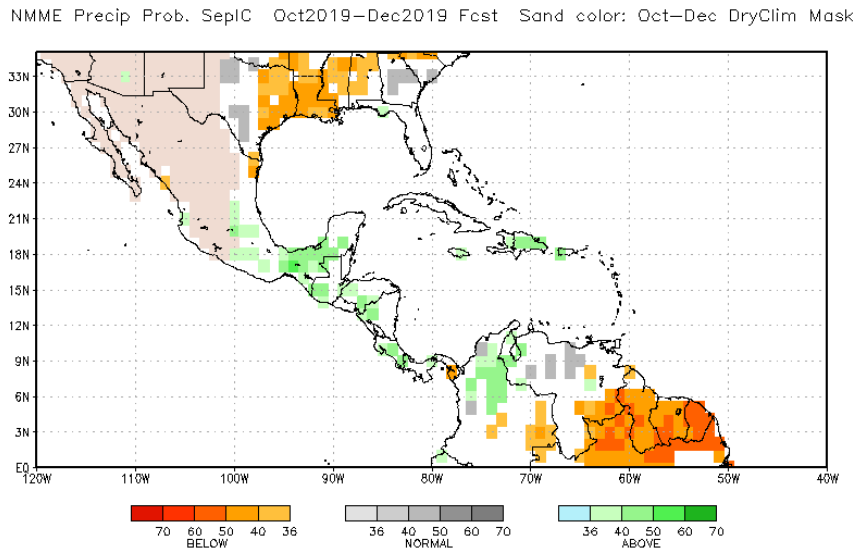


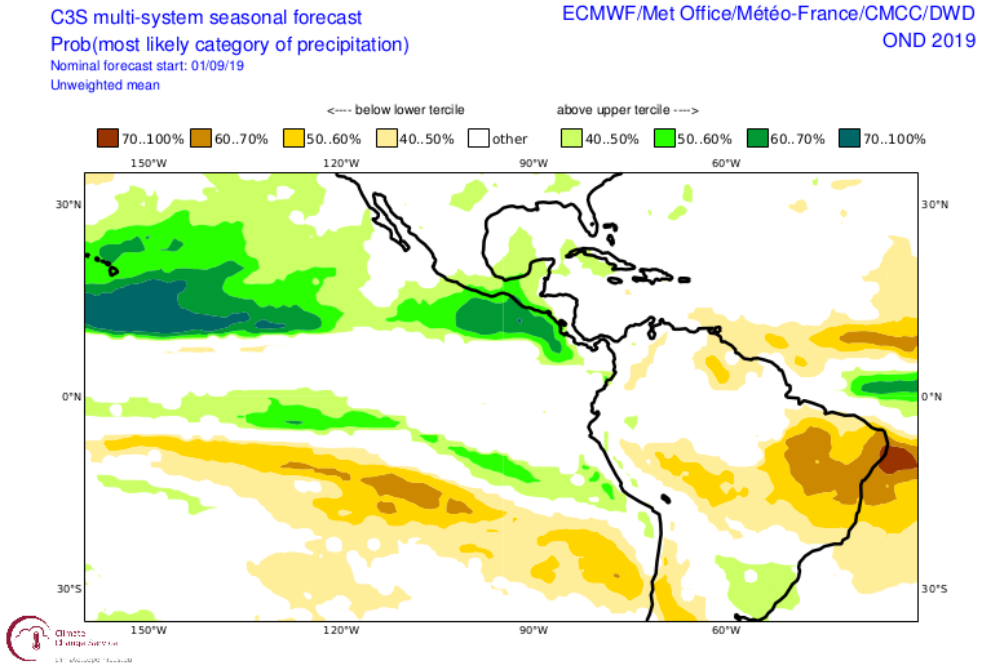
Central America & Haiti – Assumption 1 of 6

Central America

Regular rainfall distribution during the second rainy season (September – November)

Regular rainfall distribution during the second rainy season (September – November) is most likely





Central America & Haiti – Assumption 2 of 6

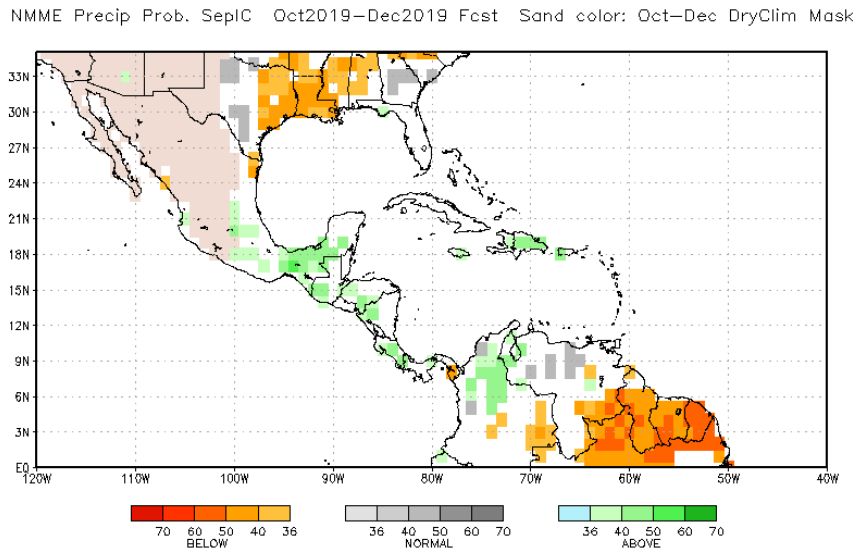
Central America

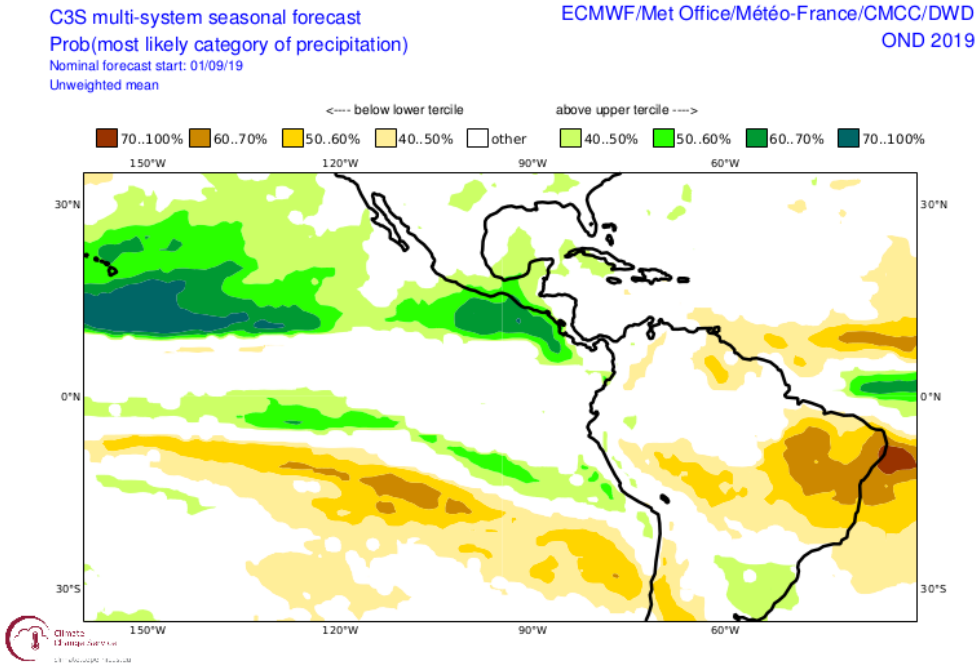
Average to below average rainfall during the second rainy season

(September – November)

Average ~~to below average~~ rainfall during the second rainy season

(September – November) is most likely



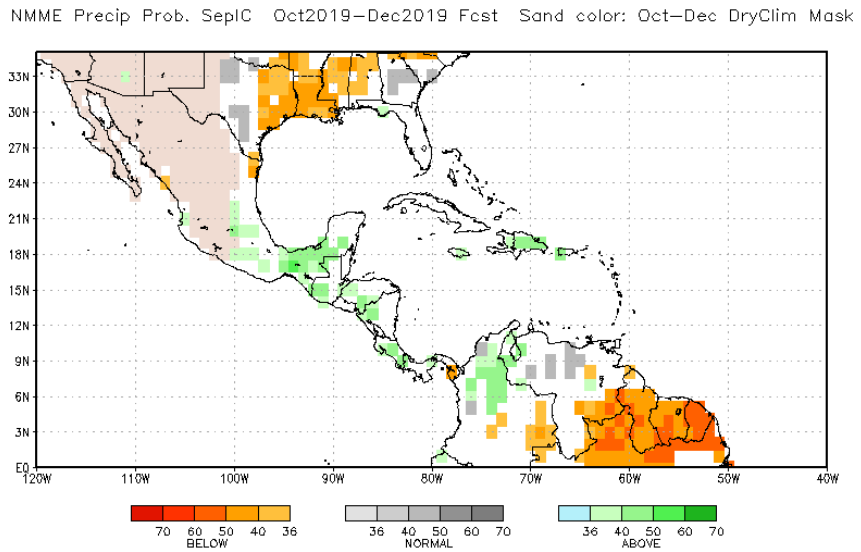


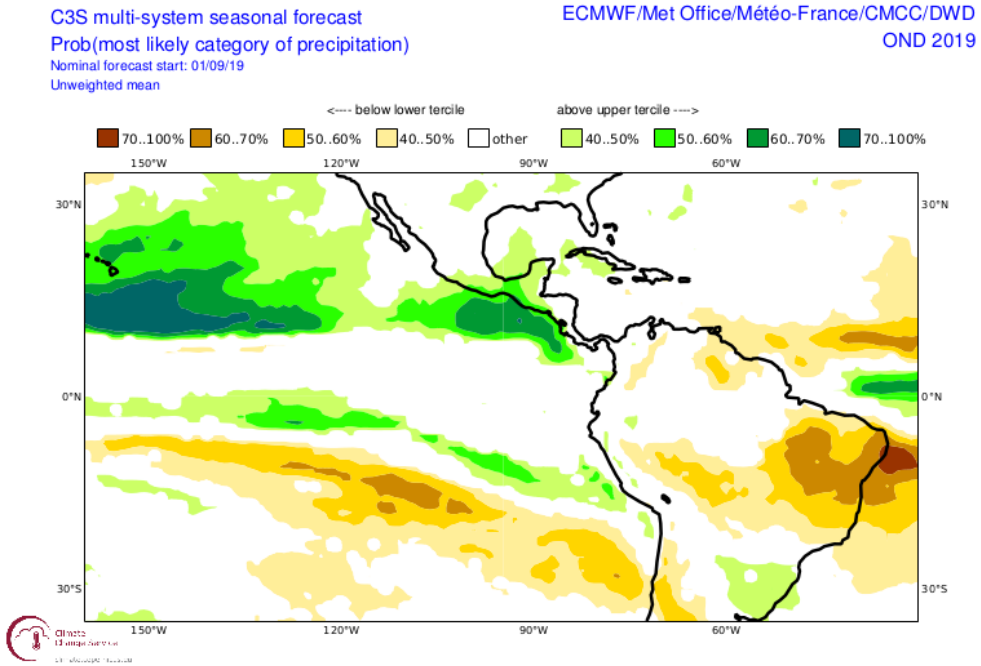
Central America & Haiti – Assumption 3 of 6

Central America

Average to below average rainfall and regular rainfall distribution during the second rainy season (September – November) in the Dry Corridor across Central America

Average ~~to below average~~ rainfall and regular rainfall distribution during the second rainy season (September – November) in the Dry Corridor across Central America is most likely



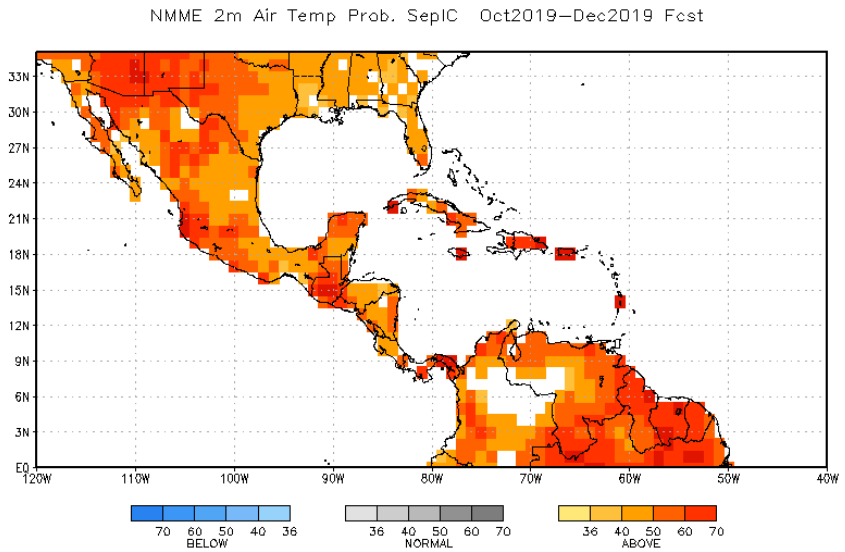


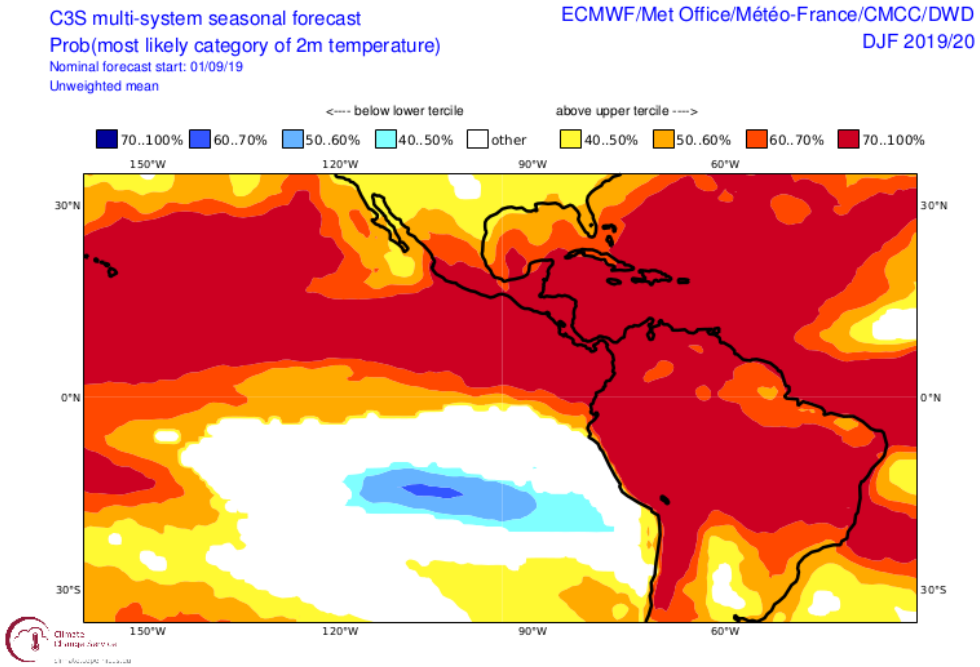
Central America & Haiti – Assumption 4 of 6

Central America

Temperatures above average between the months of September and November.

Temperatures are most likely to be above average between the months of September and November.





Central America & Haiti – Assumption 5 of 6

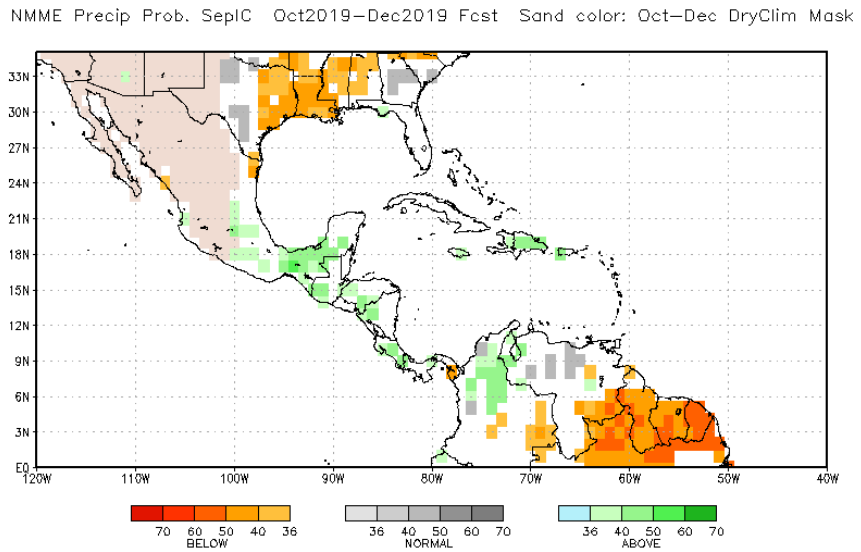
Haiti

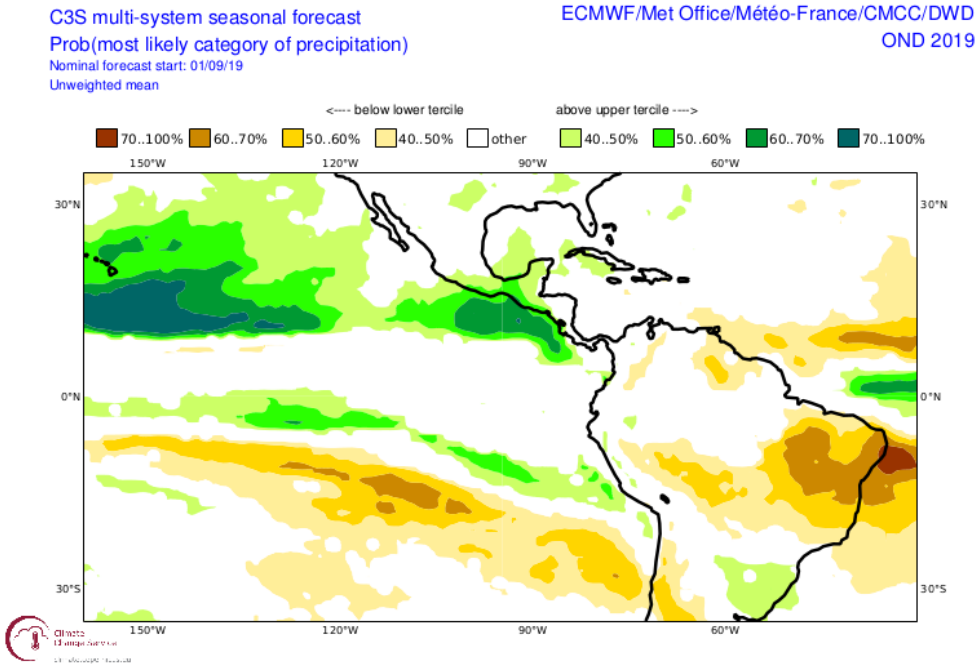
Average to below average rainfall during the remaining of the second

(September to November) rainy season

Average ~~to below average~~ rainfall during the remaining of the second

(September to November) rainy season is most likely

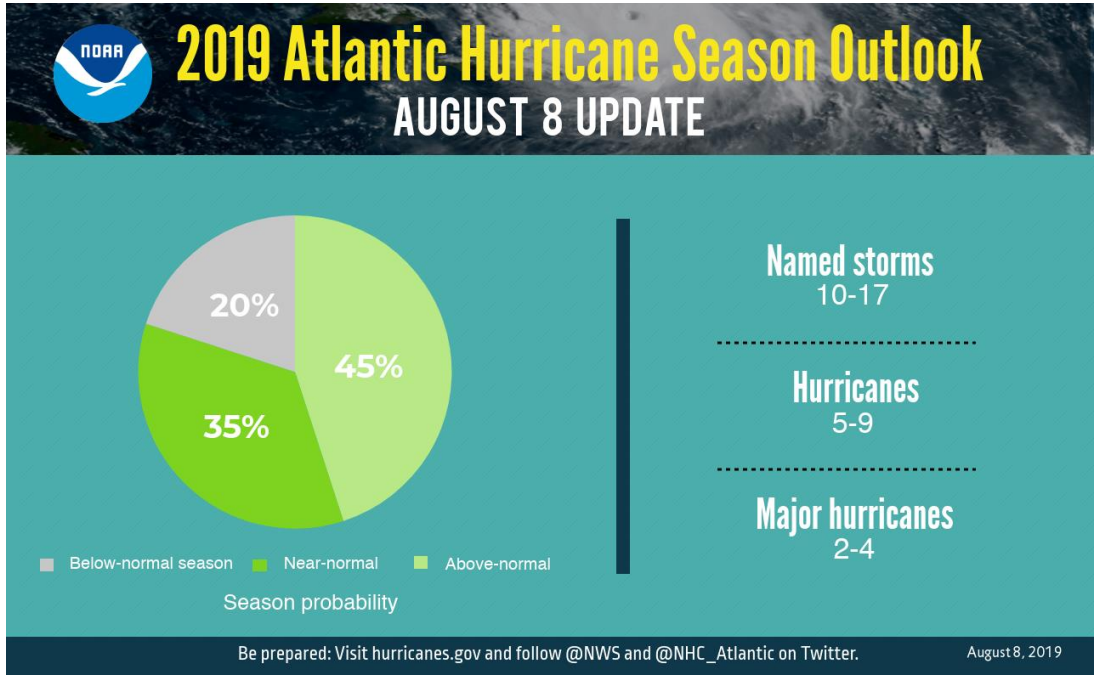




Central America & Haiti – Assumption 6 of 6

Average hurricane activity during the cyclonic season

Average hurricane activity is most likely during the cyclonic season.
Please note the differences in in the forecasts from NOAA and Colorado State.



FORECAST OF ATLANTIC SEASONAL HURRICANE ACTIVITY AND LANDFALL STRIKE PROBABILITY FOR 2019

We continue to predict a near-normal 2019 Atlantic hurricane season. The forecast number of hurricanes has increased slightly to account for short-lived Hurricane Barry which formed in July. Sea surface temperatures in the tropical Atlantic remain near average. While the odds of a weak El Niño persisting through August-October have decreased, vertical wind shear in the Caribbean remains relatively high. The probability for major hurricanes making landfall along the United States coastline and in the Caribbean remains near its long-term average. As is the case with all hurricane seasons, coastal residents are reminded that it only takes one hurricane making landfall to make it an active season for them. They should prepare the same for every season, regardless of how much activity is predicted.

(as of 5 August 2019)

By Philip J. Klotzbach[1], Michael M. Bell[2], and Jhordanne Jones[3]

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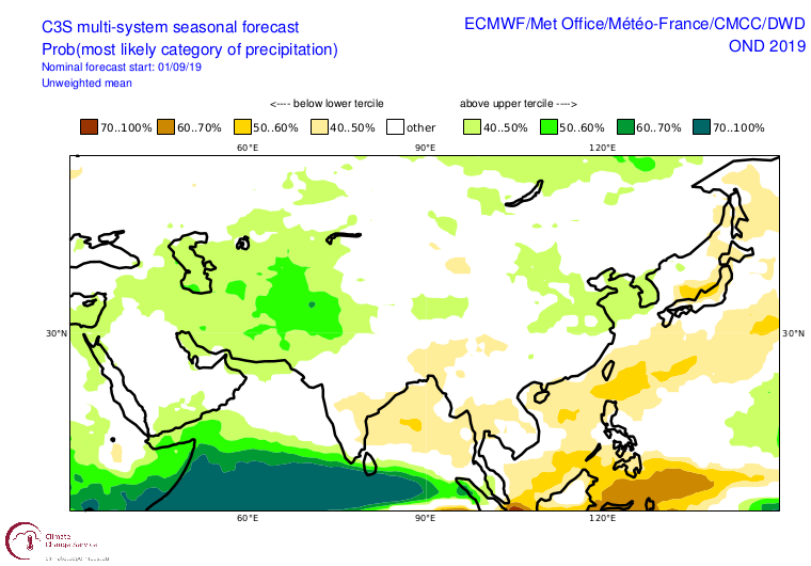
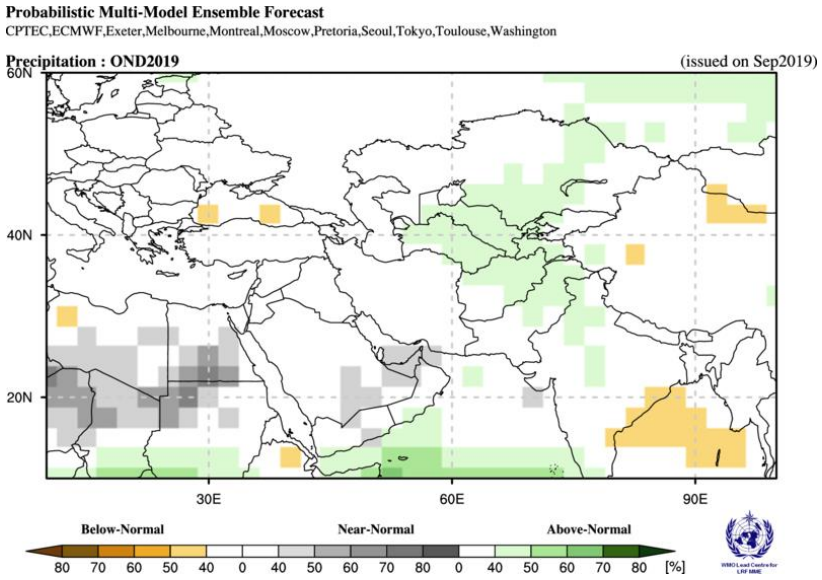
Central Asia

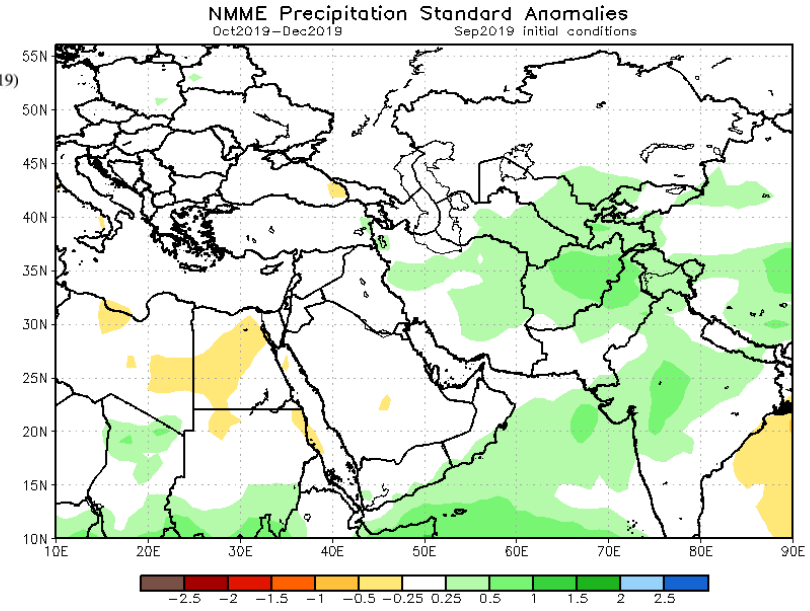
Central Asia – Assumption 1 of 3

Precipitation during the first months of the 2019/2020 wet season from October 2019 to January 2020 is most likely average across Afghanistan. However, there is a wide range of possible outcomes during this part of the wet season, which has relatively lower precipitation totals, with cumulative precipitation outcomes highly dependent on regional storm patterns.

Precipitation during the first months of the 2019/2020 wet season from October 2019 to ~~January~~ December 2019 ~~2020~~ is most likely to be above average across Afghanistan. However, there is a wide range of possible outcomes during this part of the wet season, which has relatively lower precipitation totals, with cumulative precipitation outcomes highly dependent on regional storm patterns.







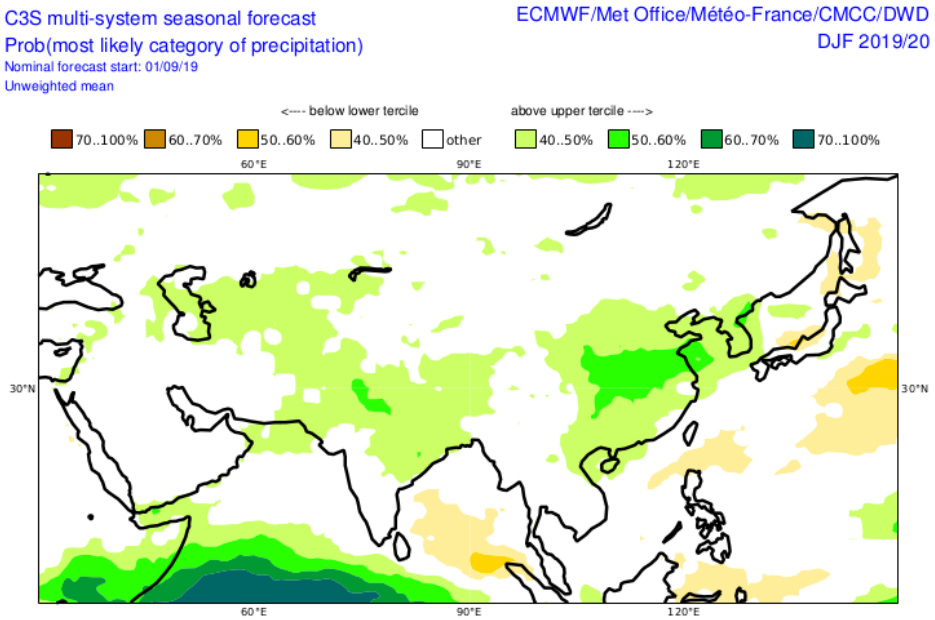
Central Asia – Assumption 2 of 3

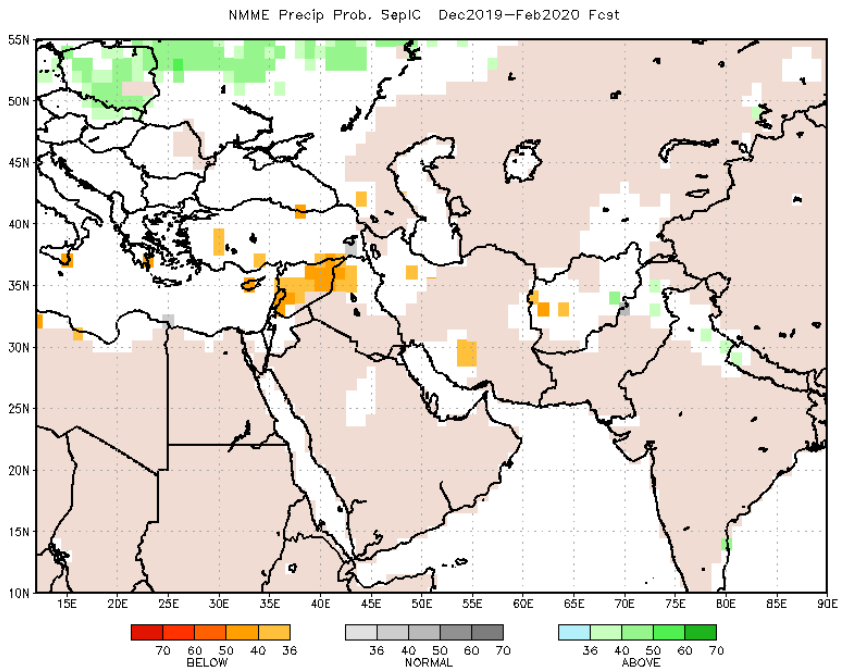
With expectations for ENSO neutral conditions, cumulative precipitation

Cumulative precipitation for the 2019/20 wet season is anticipated to be

average.

With expectations for ENSO neutral conditions, cumulative precipitation ~~Cumulative precipitation~~ for December-February and the 2019/20 wet season is ~~anticipated~~ most likely to be average. Agricultural production is also most likely to be near average.



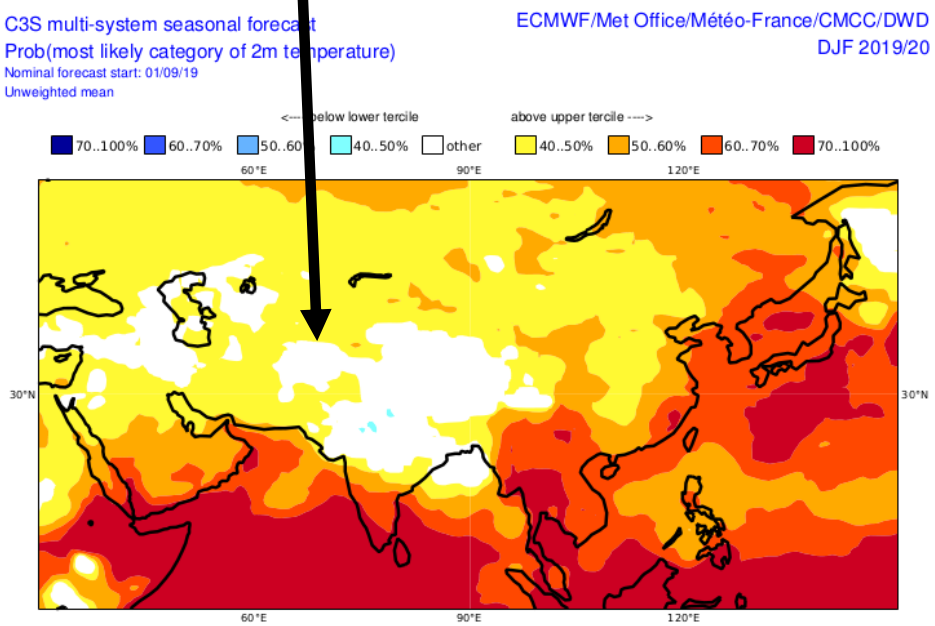


Central Asia – Assumption 3 of 3

Compared to the short-term mean above average temperatures are anticipated throughout most of the country through February 2019.

Compared to the ~~short-term~~ post 1995 mean ~~above~~ near average temperatures are anticipated throughout most of the country through February 2019.

<40% Probability



36-40% Probability