



**National Climate Outlook Forum (NCOF)
Kiremt (June-September)
June 2021**

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Outline of the presentation

1. Introduction

1.1) Kiremt season climatology

1.2) Onset and cessation

1.3) Main climate systems prevailing during kiremt

2. Current and projected regional & Global Oceanic and Atmospheric states

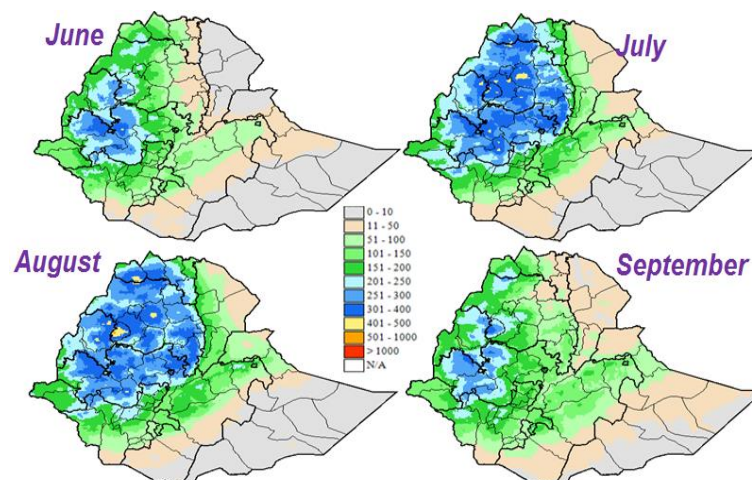
3. Analogue years and their rainfall performance.

4. Kiremt 2021 Climate outlook

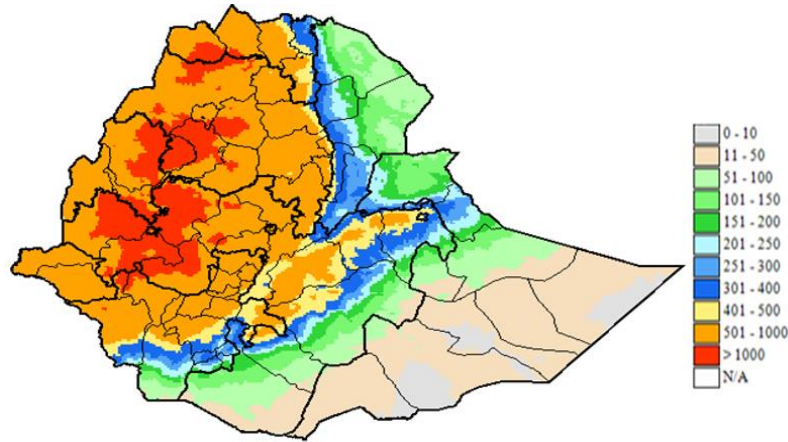
5. Conclusion

- The NH summer monsoon (Locally known as, Kiremt) typically lasts from June to September.
- The Main rainy season for northern half, southwest, central and eastern Ethiopia.
- Mainly dry season for parts of southern and southeastern lowlands of the country; namely: southern margins of SNNPR, southern half of Borena, southern margins of Bale and southern half of Somali Region.
- The season attains its peak in July and August.
- Rainfall is highly variable during June and September along northeastern, eastern, and the Rift Valley regions.
- The seasonal rainfall is stable over west, southwest and parts of central region
- Kiremt rains contribute 50% to 90% of annual rainfall totals over the regions having high agricultural productivity and major water reservoirs.
- Thus, the most severe droughts are usually related to a failure of the JJAS rainfall to meet Ethiopia's agricultural and water resources needs.

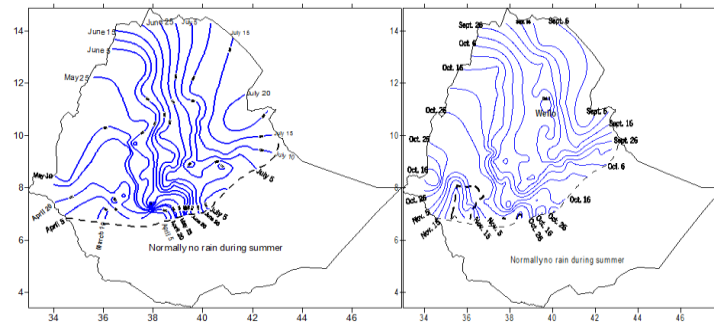
Kiremt Rainfall Climatology



Kiremt (June-Sep) Rainfall Climatology



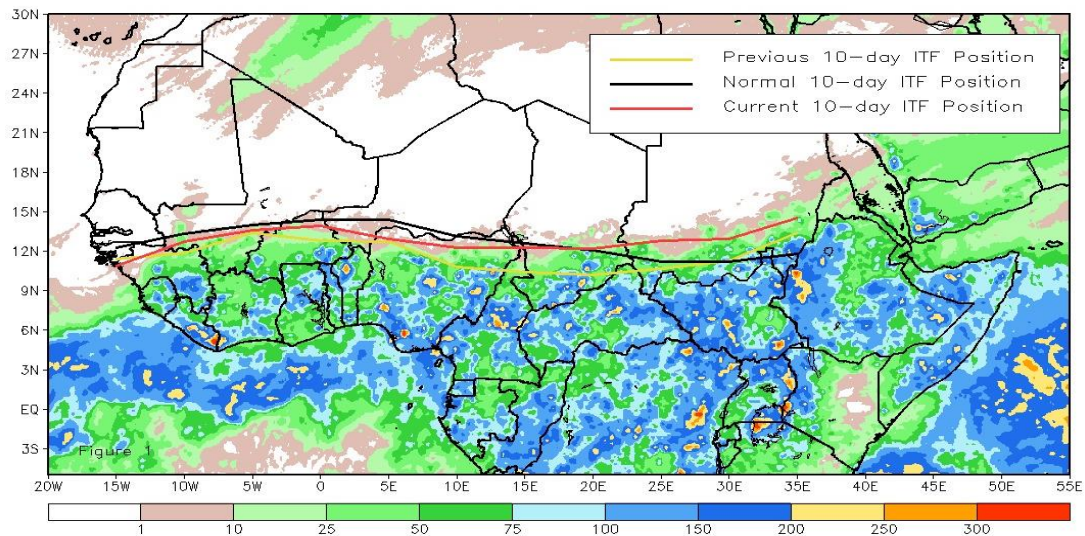
Onset and cessation climatology for the kiremt season



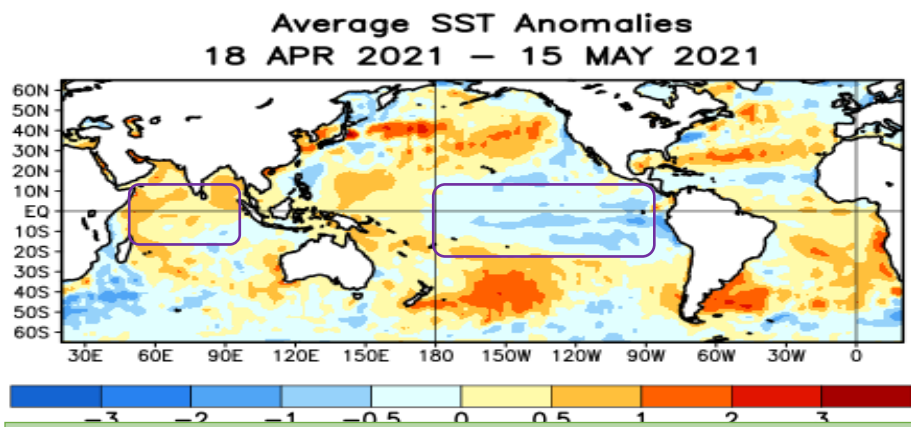
The atmospheric systems that are responsible for rainfall in Kiremt season

- *Mascarene and St. Helena high pressures over India & Atlantic Oceans*
- *Low level jet LLJ (Somali jet)*
- *Tropical easterly jet (TEJ)*
- *Inter tropical convergence zone (ITCZ)*
- *Monsoon clusters & associated trough*
- *Well established CAB*

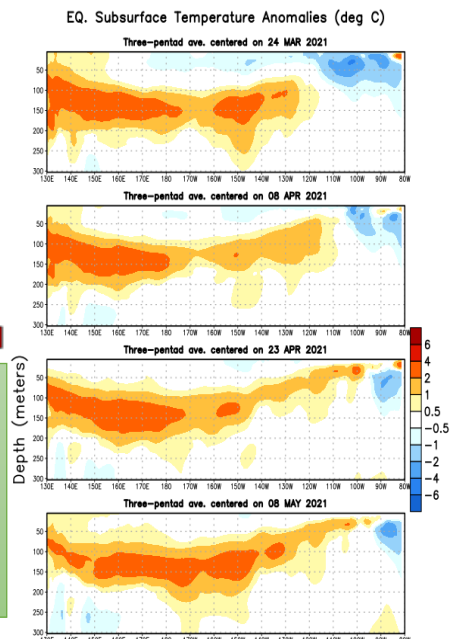
Current vs. Normal Dekadal ITF Position and RFE Accumulated Precipitation (mm) May 2021. Dekad 1



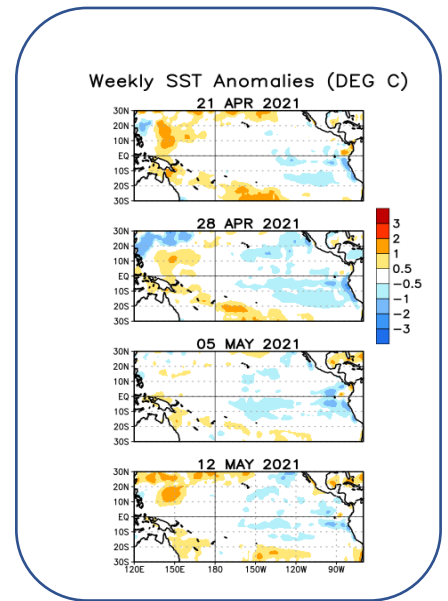
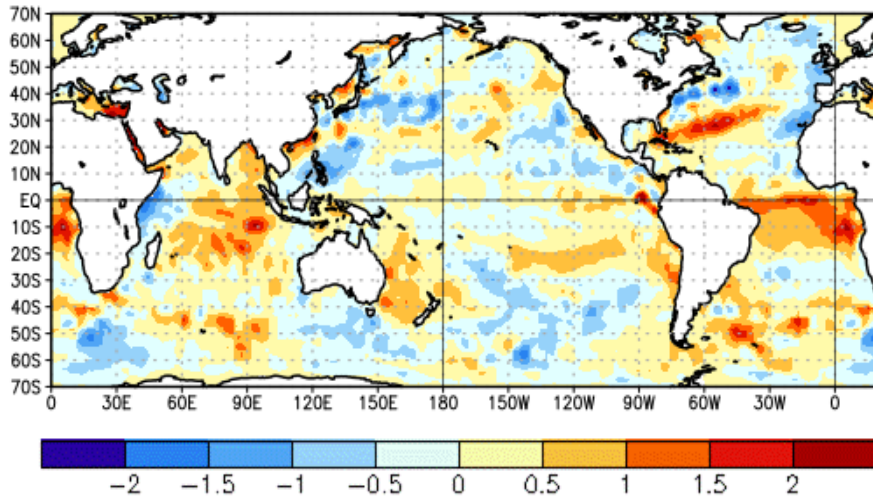
Current Global and regional systems



During the last four weeks, anomalies equatorial SSTs were decreasing in the eastern Pacific Ocean & Increasing in the northern Indian Ocean and parts of the Atlantic Ocean.

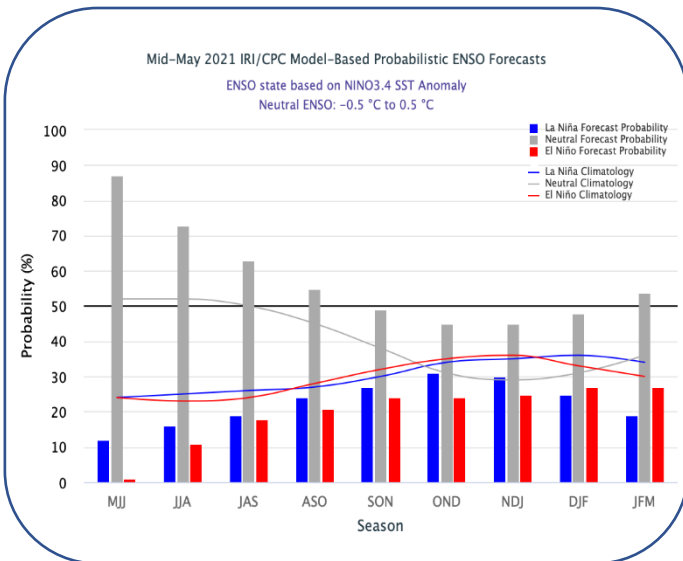


Change in Weekly SST Anoms (°C) 12MAY2021 minus 14APR2021



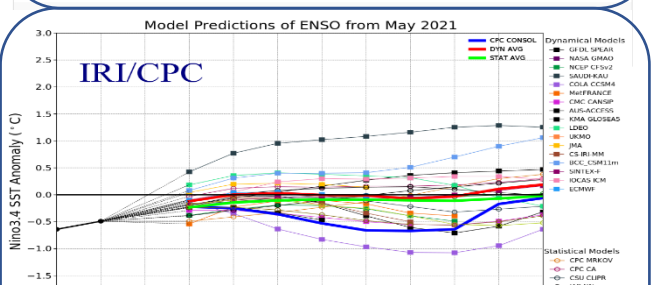
During the last four weeks, the changes in equatorial SST anomalies were positive in the eastern Pacific Ocean.

IRI/CPC Niño3.4 Forecast Published: May 19, 2021

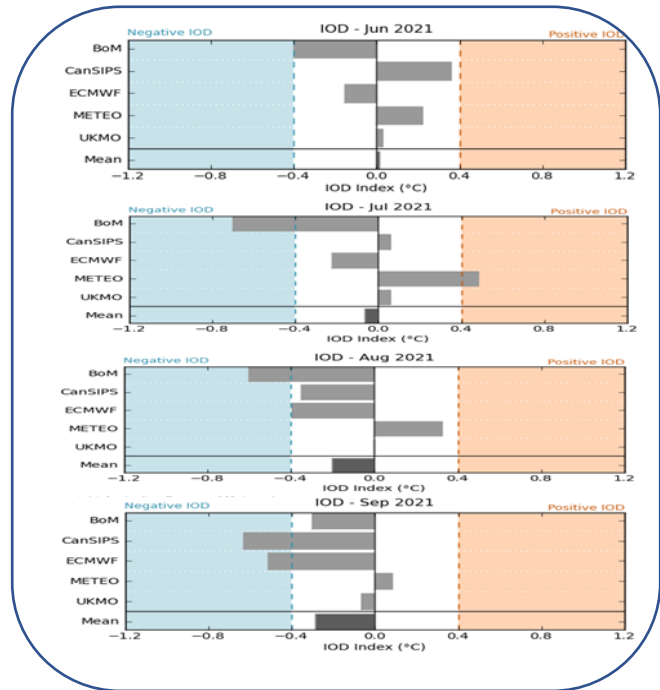
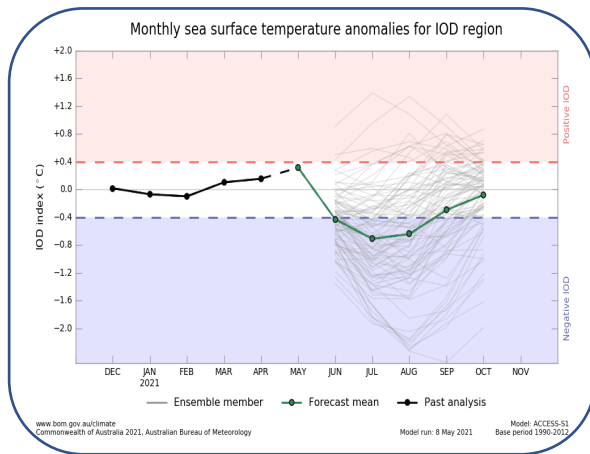


IRI/CPC Mid-Month Model-Based ENSO Forecast Probabilities

Season	La Niña	Neutral	El Niño
MJJ 2021	2%	87%	1%
JJA 2021	16%	73%	11%
JAS 2021	19%	63%	18%
ASO 2021	24%	55%	21%
SON 2021	27%	49%	24%
OND 2021	31%	45%	24%
NDJ 2022	30%	45%	25%



Monthly SST Index outlook for IOD region



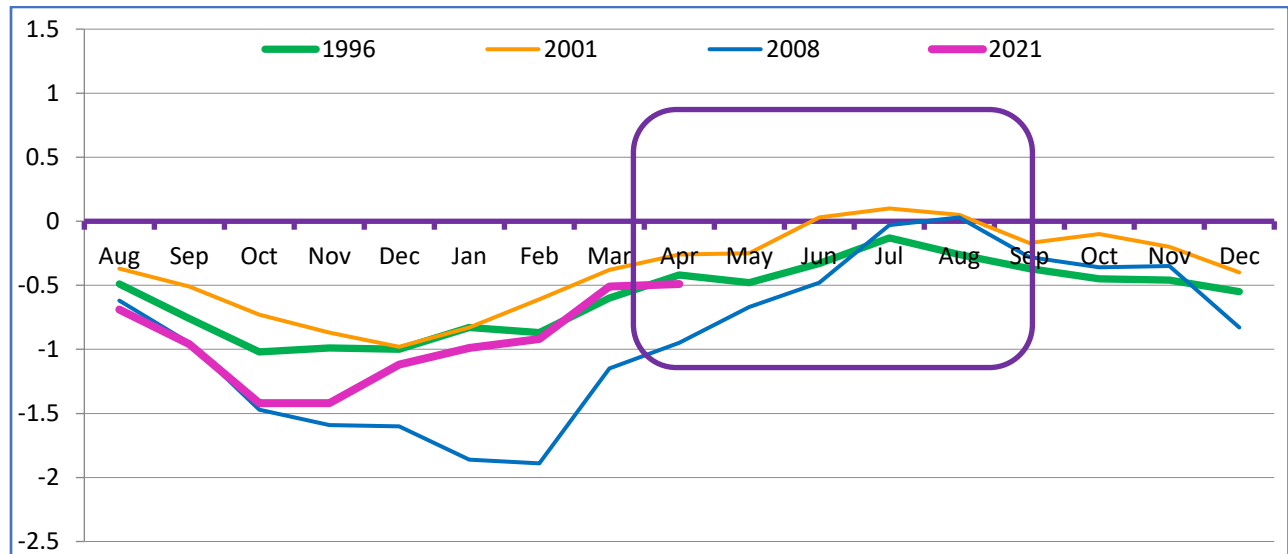
Current and projected Global meteorological systems

- ENSO neutral conditions are present. *
- Equatorial sea surface temperatures (SSTs) are near to below average over the east central and eastern Pacific Ocean.
- The IOD is currently neutral, (0.3 °C)

Expected

- ENSO-neutral likely to continue through the Northern Hemisphere summer (67% chance in June-August 2021).
- The Indian Ocean Dipole (IOD) index will remain neutral

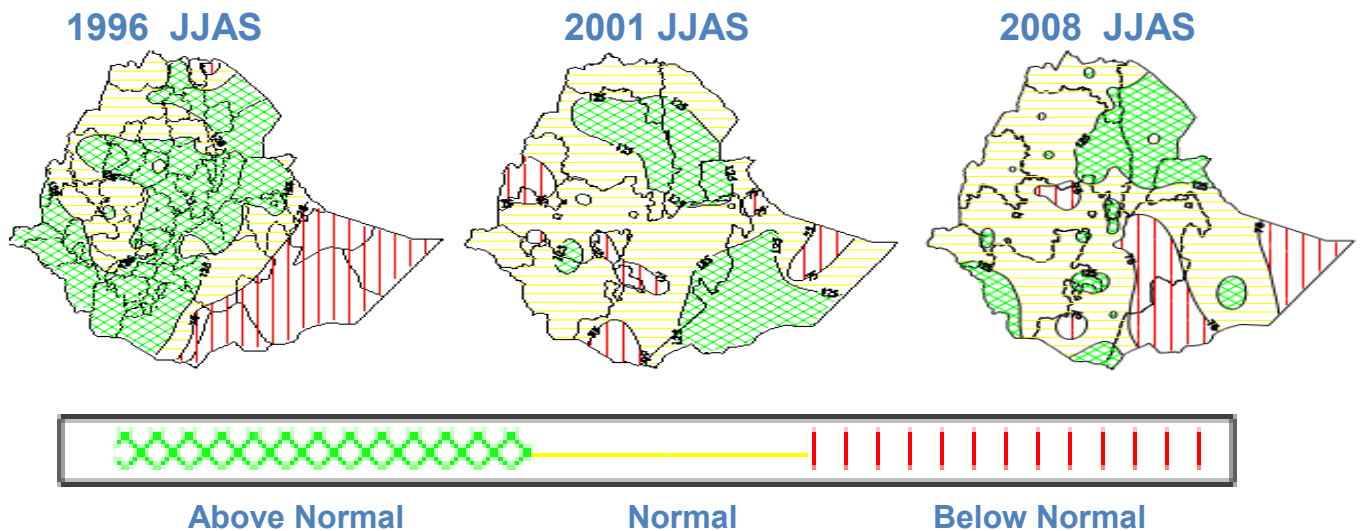
The Best Analogue Years for Kiremt 2021 is Selected analogue years based on Niño 3.4 SST trend



Analysis

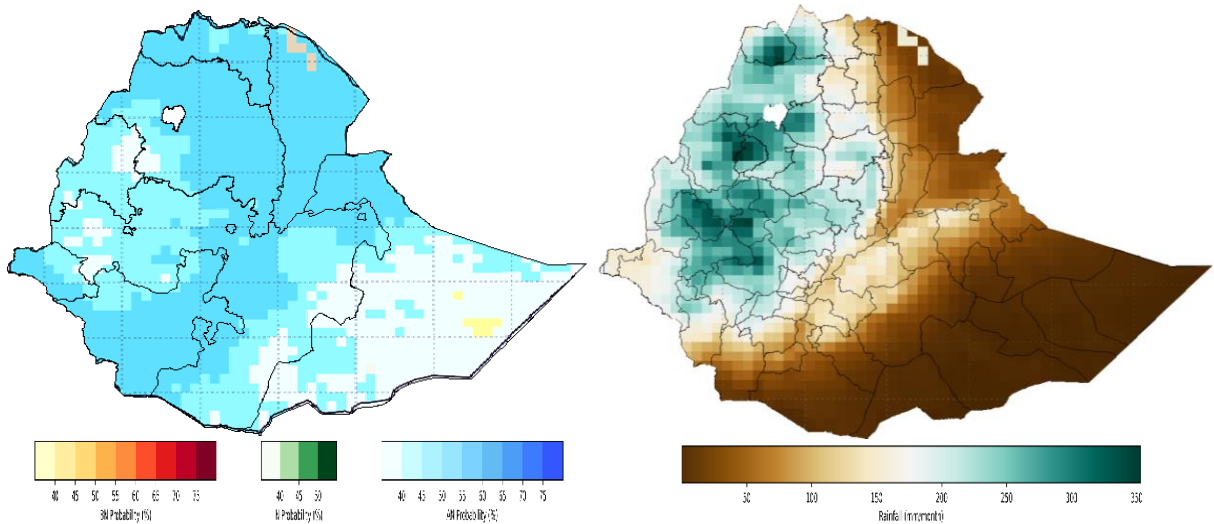
Percent of normal for selected analogue years for Kiremt 2021

Percent of normal for 1996, 2001 & 2008



Models Output of Probabilistic Forecasts for Kiremt 2021

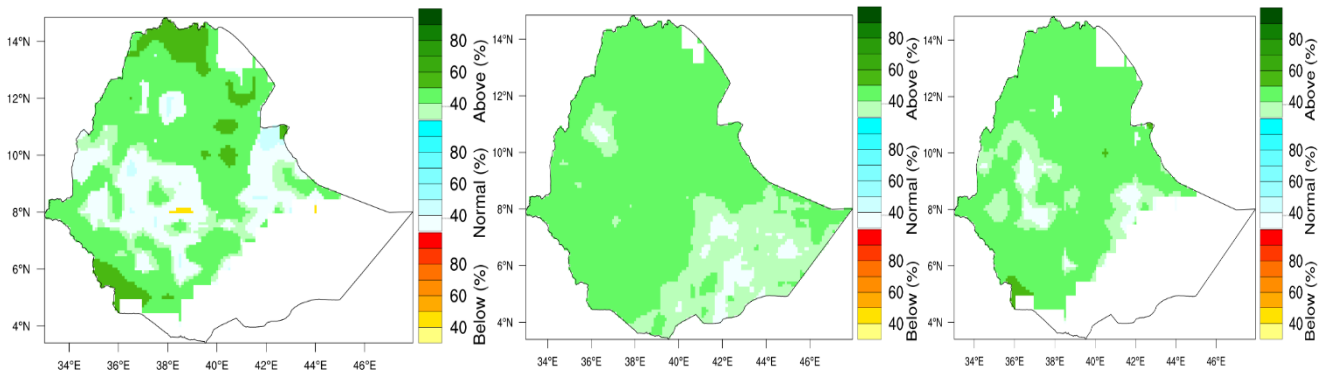
Forecast by py CPT Tool



JJAS 2021: Ensemble mean of Ens Regr+CPT

Ens Ens Rear

Ens CPT CCA:

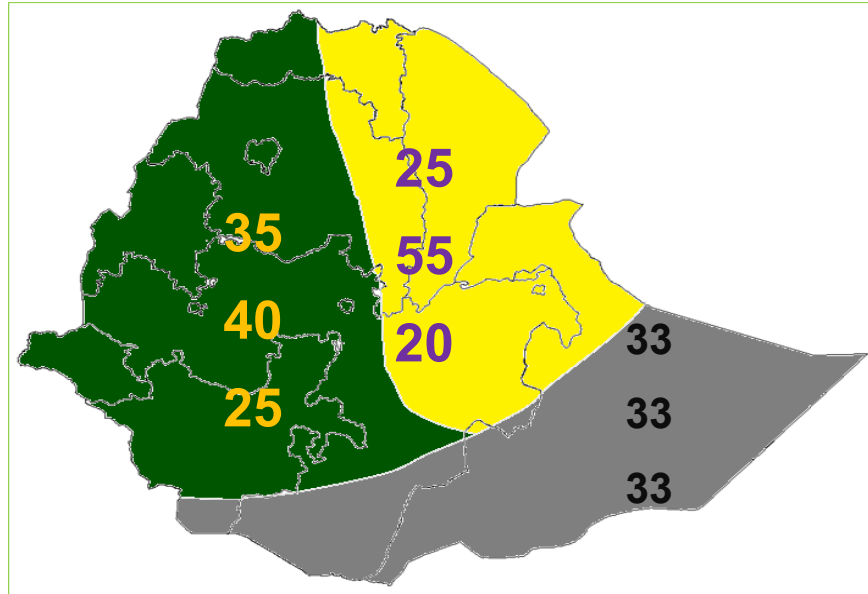


Information used for Consensus Forecast

- Current and futures Global and regional systems
- Projected scenarios of indicators by stastical as well as Dynamical models
- Analogue Year performance

- *Simulated forecast by Dynamical and statistical models/tools*

Rainfall Probabilistic forecast for Kiremt 2021



Conclusion

- *Northern-Western, Western, South-western and Parts of Central Ethiopia is anticipated to have normal to above normal rain.*
- *North-eastern and Eastern and southern high ground of the country will have tends to normal rain.*
- *The onset & cessation of the seasonal rain is expected to be within the normal periods across most parts of Ethiopia.*
- *Southern and southeastern will close to climatologically dry with occasional rainfall early June and late September*
- *Occasional heavy rains is expected during July and August, may cause of flood and occurrence of landslide across some places of flood prone areas.*
- *Erratic temporal distribution, with few prolonged dry spells during June and September.*
- *Overall, with the expectation of neutral IOD and ENSO Episode event for the upcoming NH summer monsoon season, it will have positive contribution for the wet performance in the Kiremt 2021 across most of the Kiremt benefiting areas*

- *The IOD and ENSO-neutral are expected to continue into winter 2021-22, hence, less likely near normal rain of upcoming Bega season across Southern Ethiopia.*



Agro-Meteorological Impact Outlook for Kiremt 2021

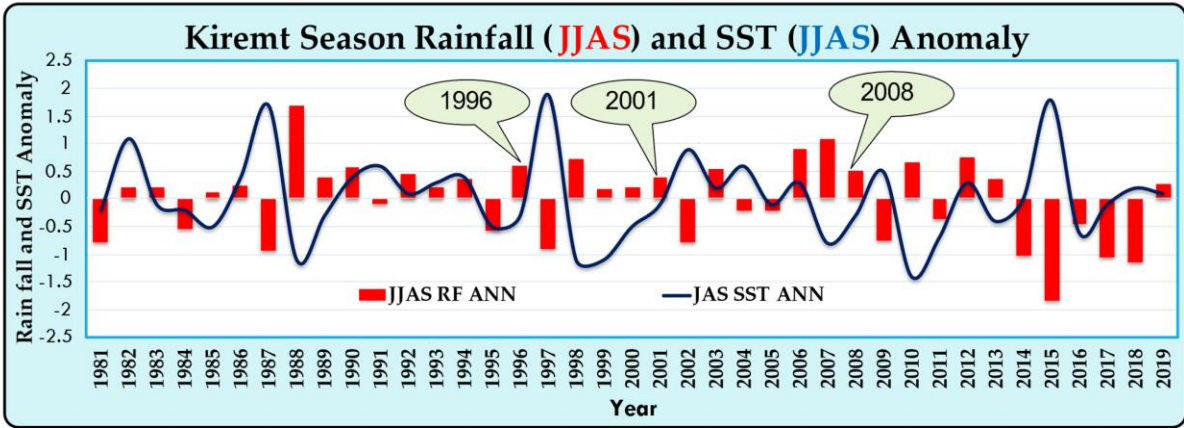
Presenter: - Yimer Assefa
National Meteorology Agency

Outline of Presentation

- Introduction
- Computed **Moisture status** (RF/PET) for analogue years **1996, 2001 and 2008**
- Computed **SPI** and **Rainfall Anomaly** for analogue years **1996, 2001 and 2008**
- Computed NDVI and **Rangeland WRSI** for analogue years **1996, 2001 and 2008**
- Impact of expected Seasonal Rainfall Probabilities for **Kiremt 2021** on Agriculture

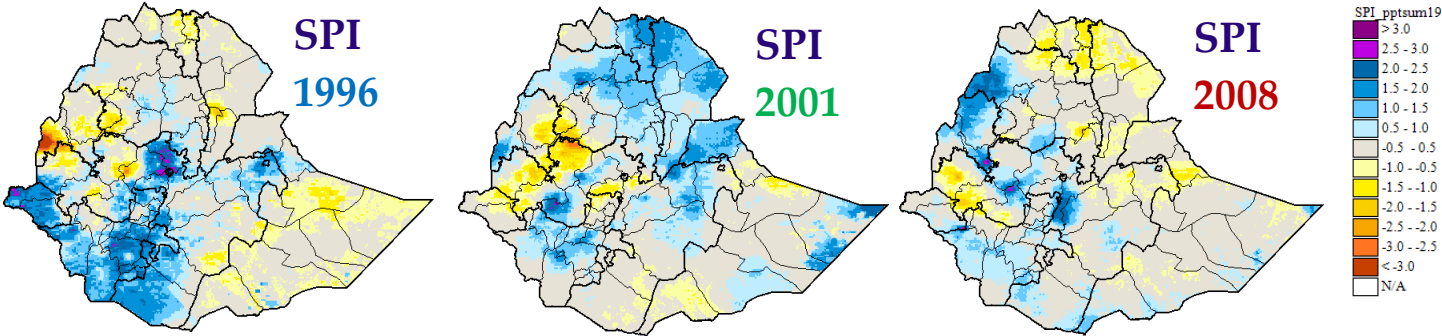
Kiremt Season SST and Rainfall Anomalies

Kiremt 2021 Analogue years → 1996, 2001 and 2008

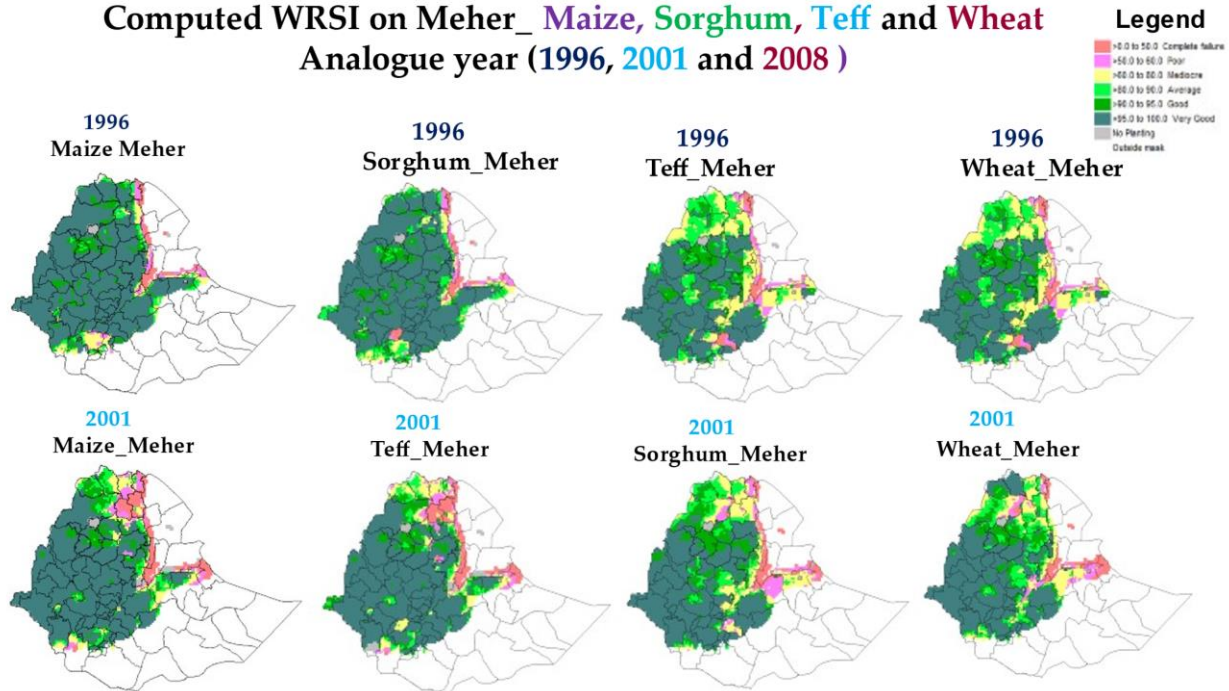


Standardized Precipitation Index (SPI)

Analogue years 1996, 2001 and 2008



Computed WRSI on Meher_ **Maize**, **Sorghum**, **Teff** and **Wheat** Analogue year (1996, 2001 and 2008)



Conclusion

- The analyzed Moisture Status, Standardized Precipitation Index (SPI) and Rainfall Anomaly of all analogue years JJAS shows good spatial and temporal moisture coverage.
- Spatial and temporal SPI analysis for each analogue year doesn't indicate significant drought signals in most Meher crops growing areas
- Total crops water requirement (WRSI) in all analogue years shows average to Very good WRSI condition.
- Month to Month improvement of NDVI and Range land WRSI expected to favor availability of pasture and drinking water over eastern and north-eastern Kiremt rain benefiting pastoral areas of the country.
- The expected normal periods onset across the southwestern and western Ethiopia will favor land preparation and sowing of Meher crops on time.
- The June rainfall would also favor the existing Belg crops that are not attaining maturity and the recently sown long cycle crops.
- The expected dominating normal rainfall at Northern and North-eastern and Eastern parts of the country, enable get good moisture which is conducive for Meher agricultural activities, perennial plants and availability of pastor & drinking water.

Recommendation

- The expected **Normal to Above normal** rainfall over North Western, *Western, South-western and Central* parts of the country, enable get good moisture which is conducive for Meher agricultural activities, perennial plants, for early planted long cycle Meher crops as well as to plant medium term Mehre crops and availability of pastor & drinking water over pastoral and agro pastoral areas.
- The probability of likely occurrence of heavy falls over flood prone areas, can lead to water logging along the river banks and low-lying areas in some places. Thus, farmers advised to make small water channel on their land plot and advised to strengthen soil and water conservation mechanism.
- On other hand, the humid and moist condition is suitable for weed infestation, intermittent moist condition might be favorable for pest and disease outbreak over moisture stress areas
- Hence it is recommended that farmers need to be ready for proper weeding and cultural or innovative weed management practices.
- Plant excess water tolerant crops are advised to be planted on places where Normal to **above normal condition** is predicted.
- Preparation should be made on establishing of new or rehabilitating the available drainage systems and diverting of flood and runoff to downstream.



Impact of climate Outlook for Kiremt 2021 on Agriculture Sector

Presenter: - Tolosa Demboba

Ministry of Agriculture

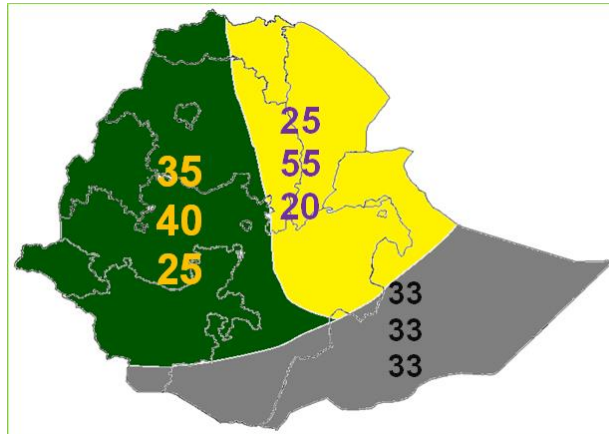
Introduction

- Most parts of our country are Meher growing areas.
 - 13.2 Mil. hectare land planned to cover by deferent crops,
 - 374 mil. quintals yield expected.
- Kiremt is the season that fulfills the water requirement of long cycle crops that are planted in Belg season and perennial crops like coffee, fruit crops etc.
- Meher crops that achieve maturity and harvested during the Bega season.
- Good condition for agricultural activates at both Pastoral and Agro-pastoral areas;
- Conducive for improve of pasture and drinking water at pastoral land.

As risk

- ❖ where above normal and normal condition of rainfall forecasted
- ✓ flood water logging and Pest for both crop and animal production;
- ❖ Under below normal condition
- ✓ dry spell, moisture stress and pest infestation

Tercile probability for kirmet 2021 out look



Where above normal rainfall is expected

- Strengthening watershed management with physical and Biological ways to conserve natural resources such as water and soil;
- Minimize the flood damage by controlling runoff from high land to low land areas;
- Establish water harvesting structures and collecting rainfall to use as supplementary irrigation during dry spell;
- Proper rain water harvesting at pastoral areas for livestock consumption and forage production;
- Remove excess water from the farmland to reduce water logging problems especially for vertisol by using IBBM;
- Awareness creation on landslide occurrence probability

Where normal rainfall is expected

- Selecting proper crop and pastures varieties;
- Determine date of planting;
- Proper application of agricultural inputs and Full packages to increase productivity;
- Use tie-ridge to conserve soil moisture;
- Apply animal waste(dug) and compost to increase the soil fertility and water holding capacity,

- Harvesting rain water using the techniques such as In-situ and Ex-situ to use during dry spell;
- Prepare a percolation pond at the top of the farmland to improve soil moisture;
- Intercropping to reduce crop and pasture yield losses.

Where below normal rainfall is expected

- Rain water harvesting In-situ and Ex-situ; .
- Diverting flood from high lands to low land areas of fields;
- Apply compost to enhance the soil fertility and water holding capacity;
- Implementing agronomic practices such as determine seed rate and time of sowing, row planting, tinning, weeding, mulching with crop residue cover etc;
- Use tie-ridge to conserve soil moisture;
- Minimizing tillage practices to reduce soil moisture loss and using hand weeding;
- Selecting early mature and moisture stress tolerant crops and pastures varieties;
- Use supplementary irrigation to satisfy crops and pastures water requirement.