SEASONAL PASTORAL CLIMATE ADVISORY FOR ETHIOPIA

MAM SEASON (MAR-MAY 2025)

February 2025

ACRONYMS

BoM	Bureau of Meteorology
EIAR	Ethiopian Institute of Agricultural Research
ENSO	El Niño Southern Oscillation
HSI	Heat Stress Index
IOD	Indian Ocean Dipole
GCM	Global Climate Models
ITCZ	Intertropical Convergence Zone
IRI	International Research Institute
MAM	March, April and May
MME	Multi-Model Ensemble
NOAA	National Oceanic and Atmospheric Administration
THI	Temperature-Humidity Index
PCA	Pastoral Climate Advisory
PCoPs	Pastoral Community of Practice
WRSI	Water Requirement Satisfaction Index

Acknowledgment

This pastoral climate advisory was produced by the leadership of the team of researchers from the Climate and Computational Science Research Directorate(C&CSRD) of the Ethiopian Institute Agricultural Research (EIAR), in close collaboration with the Yabello Pastoral and Dryland Agriculture Research Centre, the Alliance of Bioversity International and Alliance |Bioversity and CIAT and Borana University.

Authors

Olika Dessalegn [1]
Liyuneh Gebre [2]
Dr. Girma Mamo1
Dr. Tewodros Sisay [1]
Abu Tolcha [1]
Chala Edao [1]
Jaldessa Doyo [3]
Lidya Tesfaye [2]
Dr Sintayehu Alemayhu [2]
Dr Sintayehu Workneh [2]
Dr. Getachew Tegegne [2]
Dr. Tadesse Terefe [2]
Dr. Numery Abdulhamid [2]

DISCLAIMER

The MAM seasonal pastoral advisory is developed with field experiment data, GCM outputs and reanalysis data from satellites. With the possibilities of the uncertainty in GCM and satellite outputs, a cascaded effect during the data assimilation is highly probable. In such cases, EIAR will not guarantee the seasonal pastoral outlook accuracy and neither accept any liability for any loss or damage resulting from its use. We also strongly advice users to reinforce their decisions with the **intra-season updates from Ethiopian Meteorological Institute**.

[1] Ethiopian Institute of Agricultural Research
[2] Alliance Bioversity and CIAT
[3] Oromia Agricultural Research Institute

Preamble

The March to May (MAM) 2025 seasonal climate forecast for pastoral regions considers the OND 2024 rainfall deficit impacts and the agropastoral activities of these areas.Most Southern, Southeastern, and Eastern regions of Ethiopia are expected to receive below- normal rainfall, except for the Southwest zones and Western woredas of Borana and Guji.

March is predicted to be particularly dry, exacerbating the dryness from the previous season. However, as the season progresses into April and May, rainfall distribution is likely to improve in southern agro-pastoral zones. Conversely, the Somali and Afar regional states are expected to continue experiencing below-normal rainfall, which could adversely impact pastoral activities.

To mitigate these challenges, local authorities and pastoral communities must promote and adopt proactive measures, including various water management practices, indigenous agroecological techniques, and sustainable soil and water conservation methods. Such strategies are essential to alleviate the adverse effects of the anticipated weather patterns.

In the meantime, pasture coverage during the MAM season is expected to be poor in Afar, Eastern Borana, South Omo, and Northeastern Somali regions. Moderate pasture availability is anticipated in southeastern Borana and larger areas of the Somali region. This disparity in pasture conditions is critical, as it directly influences livestock health and community livelihoods, leading to potential outbreaks of diseases like black leg following extended dry periods. Given the transportation difficulties for forage during drought, agropastoral communities should consider investing in forage crops rather than food crops, which are easier to transport.

Additionally, the risk of heat stress varies across regions; Borana Zone is likely to experience less heat stress than Afar and Somali regions, where heat stress levels may be mild to moderate throughout MAM. Communities in these areas should implement heat management practices, such as providing shade and reducing the risk of heat-related illnesses.

Finally, the anticipated drier conditions across most pastoral regions may increase the likelihood of resource-related conflicts and unintended migrations. Addressing these potential tensions requires proactive community dialogue through platforms like the Pastoral Community of Practice Alliance (PCoPs-Alliance). These discussions should focus on resource management, community awareness, and the establishment of early warning systems to navigate the challenges ahead effectively.

1. Background

The northward advance of the intertropical convergence zone (ITCZ) during the February, March, April and May carries the moisture laden winds; thus, producing the main rains (long season) in the east, southeast and southern parts of Ethiopia, whereas brining the short rains for southwestern, south-central, and east-central Ethiopia. (Segele, Lamb and Leslie, 2009). The seasonal influences are also shaped by large-scale climate drivers ENSO and IOD. The Bureau of Meteorology (BoM) has forecasted a 35% likelihood that La Niña will persist through March to May 2025, alongside a 65% chance for the return of ENSO-neutral conditions. Meanwhile, the IOD is expected to remain neutral which could lead to a delayed onset of rainfall with limited seasonal distribution. This seasonal forecast is crucial for understanding potential climatic conditions and preparing for their impact. The season have different local naming, "Gana" in Somali, "*Gena*" in Borana and "*Belg*" at broad level. For the context of this bulletin "MAM" is used.

2. Seasonal Rainfall Forecast

During MAM, the southern and southwestern Ethiopia expected closer to above normal rainfall in Southern Ethiopia and Southwestern Ethiopia. While most of the MAM rainfall beneficiaries expect the highest chances for very dry conditions, located across Northeastern, Eastern and Southeastern and Southern Ethiopia. This poses a significant negative impact on water-stressed pastoral areas.

Furthermore, these dry conditions are compounded by the poor performance of the second rainy season (October to December) 2024, exacerbating challenges for agricultural productivity and water availability in these regions

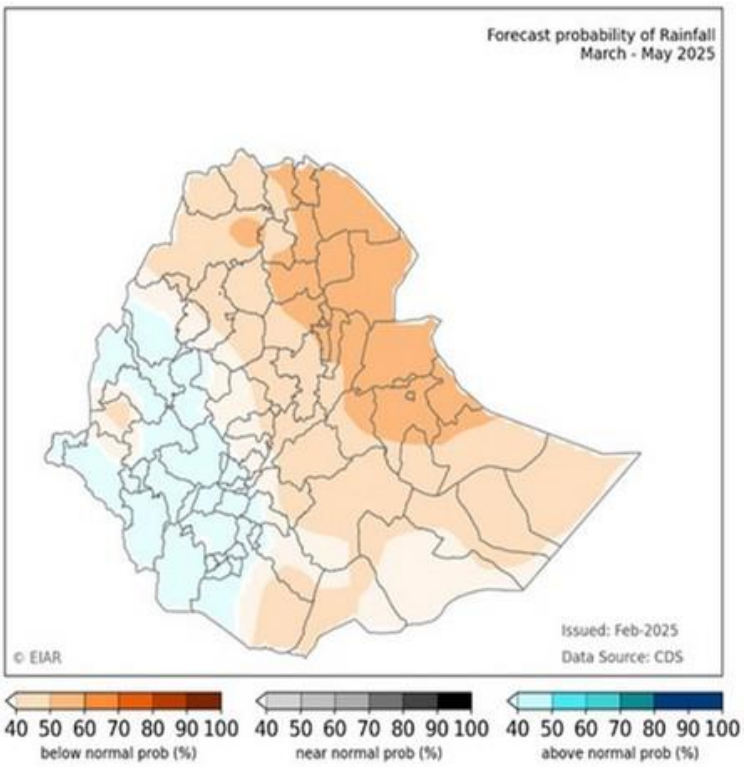

Figure 1: Multi-Modal ensemble dynamical seasonal forecast for March-May 2025

2.1 Sub-Seasonal rainfall forecast

- The month of March (Figure 2a) has a high likelihood of experiencing drier-than-normal conditions across Northern, Eastern and Central parts of the country while Western Amhara and Tigray, Benishangul Gumuz and Gambela, south and southeastern Somali region regions are expected to experience normal to above normal rainfall.
- In April (Figure 2b), the drier condition is supposed to continue in many parts of the country while southwestern Ethiopia is predicted to be wetter than normal and western parts will likely experience near-normal rainfall condition.
- As the season advances to May (Figure 2c), the rainfall distribution is expected to be improved to a slight above normal condition in southern region, western woredas of Borana zone.
- The onset is expected to start at about the last dekade of March and early April which is late onset for "Belg" growing and rangeland areas.

Therefore, despite this late-season improvement, overall seasonal conditions are likely to lead to drought-like situations affecting water supply in pastoral and central “Belg” rainfall beneficiaries. And all stakeholders are urged to act in order mitigate the potential drought risks and avail humanitarian aids to the communities.

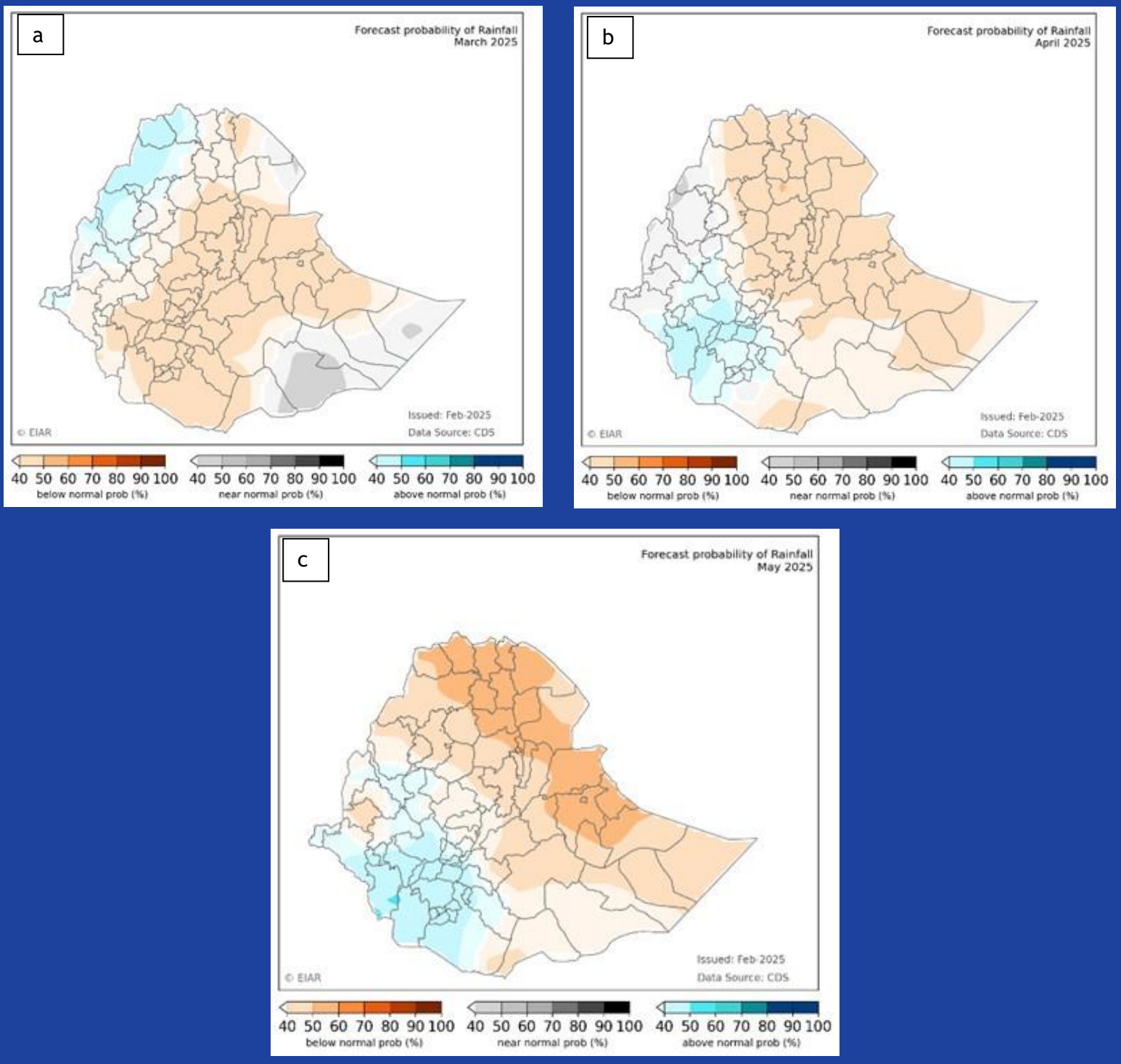

Figure 2: Sub-seasonal rainfall forecast for March, April, and May

3. MAM 2025 Rangeland WRSI (Water Requirement Satisfaction Index)

Most communities living in pastoral and agro- pastoral areas of Ethiopia, which rely on animal husbandry and mixed farming, benefit from the Belg season. Therefore, Rangeland WRSI is one of the indices showing whether the prevailing rainfall is satisfactory for pasture availability and performance of grazing land.

The rangeland WRSI outlook shows below normal to normal over most parts of Somali and Afar Regions and it is very poor over eastern and central parts of Afar, southern parts of south Omo and Borena zones in March (figure 3 a) and April (figure 3b).

However, the rangeland WRSI is expected to range good to very good performance over southern Guji, eastern and southern parts of Bale zone, and some zones of the Somali region in April and May (figure 3 c). Overall, average to good water requirement satisfaction will be expected in the coming MAM season over some parts of the rangeland areas.

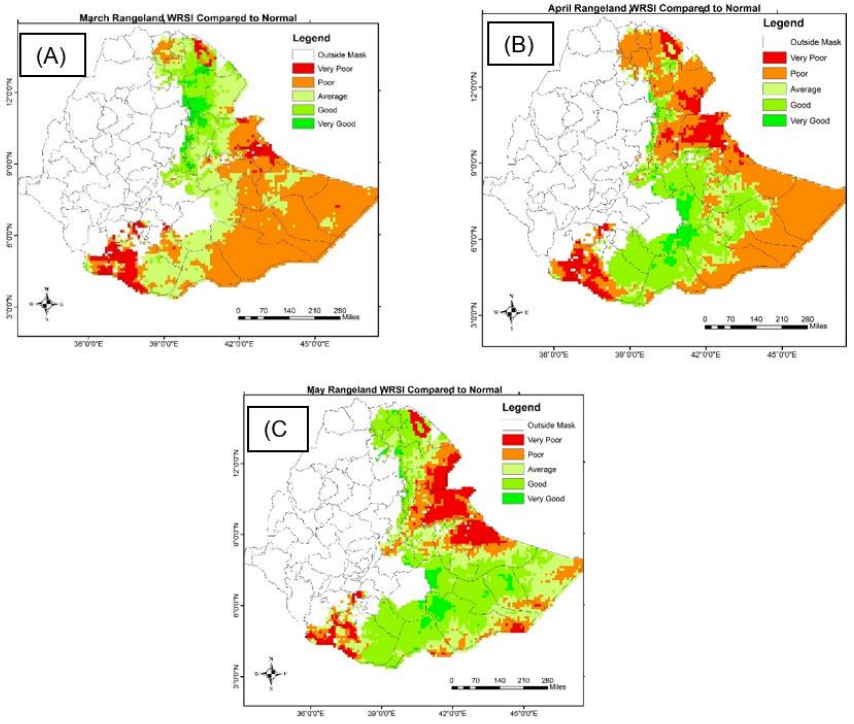

Figure 3. Regional WRSI sub-seasonal progress March-May

In contrast, poor to worst conditions are expected over eastern parts of Somali and Afar regions and Borena zone which indicates that the posture water satisfaction will not be met over these areas (Figure 3).

Advisory:

- It is advisable to implement seasonal bush control mechanisms such as controlled fires for pasture control and the development of new rangelands.
- Stakeholders are advised to initiate forage production in neighboring zones of southern Ethiopia, utilizing river water and available rainfall to support this effort.
- With the anticipated rangeland shortage pastoralists are advised to destock the livestock based on their feed capacity.
- Pastoralists are recommended to mobilize their livestock to where feed resources are available.
- Federal and regional research institutes (EIAR and IQQO) advised to provide input on early maturing and drought-tolerant forage varieties as well as crops such as teff and millet for forage purposes.

4. Livestock Water Point Advisory

Seasonal and sub-seasonal rainfall predictions indicate that they are expected to be drier than the normal conditions are expected over Dimtu, Jillo Dockicha, and Dembi Qorba waterpoints while Beke, Burra and Dingamo waterpoint have will experience deviation from the normal with equal likely chance of getting above normal rainfall and below normal in MAM. Figure 5 (screenshot of the platform page ET-Monitoring) illustrated that the red colored water points need timely intervention.

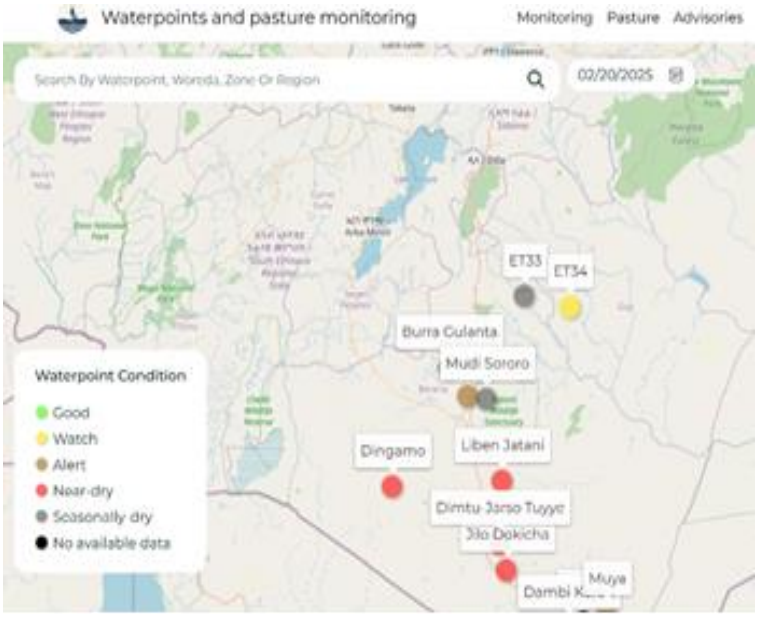

Figure 5: Waterpoint Monitoring Platform of pastoral communities

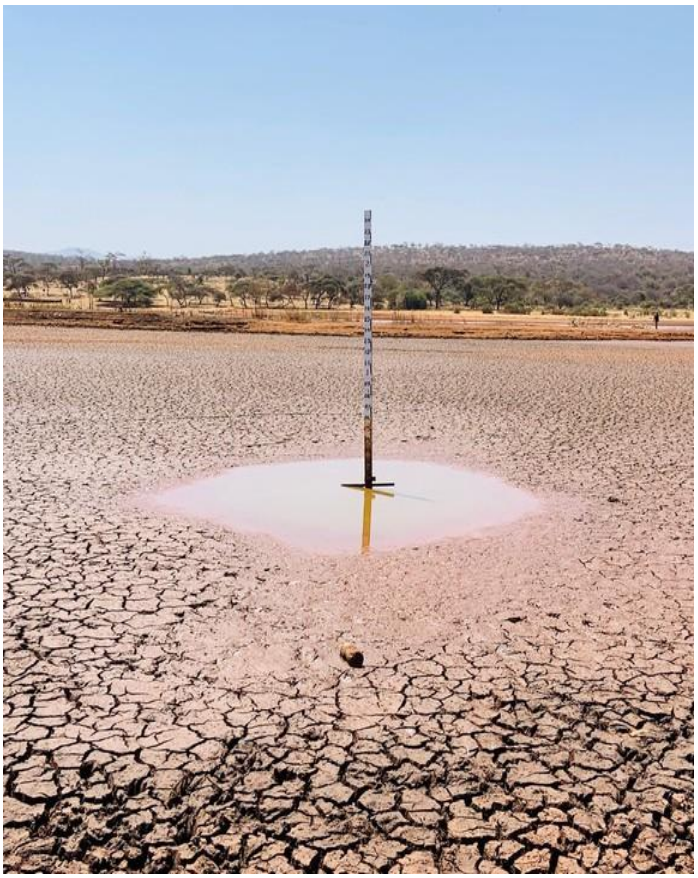

Figure 4 Beke Waterpoint status in February Beke,Yabello

photo curtesy @Numery Abdulhamid, CIAT

- "Abba_Herega" and NGOs should collaborate with communities to facilitate the diversion of floodwaters into the Liben Jateni channels prior to others.
- Sediment extraction should be conducted at Beke Pond to improve its water-holding capacity and enhance watershed protection for Dembi Korba waterpoint.
- Burra Waterpoint requires a designated area for livestock watering to ensure water quality standards to meet.
- Integrated rehabilitation efforts are needed for the waterpoints at Jillo, Dingamo, and Dimtu to improve their functionality and sustainability.
- It's advised to implement careful water management to reserve water resources, such as wells "*ellas*", [1]during the months of March and April.
- As the dry period continues into March and April, it is advisable to provide emergency water.
- Stakeholders are advised to closely monitor the integrated rangeland and waterpoint monitoring platform (ET-Monitoring) for planning and making informed decisions.

[1] *Elles* refers to water wells.

5. Temperature-Humidity Index (THI)

In Ethiopia, large parts of the rangelands are expected to experience mild to moderate heat stress during the upcoming MAM season. However, certain areas, such as parts of the Tigray region (eastern and southeastern zones), Oromia region (Borena, Guji, Eastern Hararghe, Western Hararghe, and East Shewa zones), Somali region (Fafan and Dawa zones), and southern Ethiopia (South Omo zone) are anticipated to experience no heat stress to mild heat stress (Fig3.d).

Regions which experience higher heat stress may face water shortage, livestock health, forage shortage, reduced dry matter intake and socioeconomic impacts.

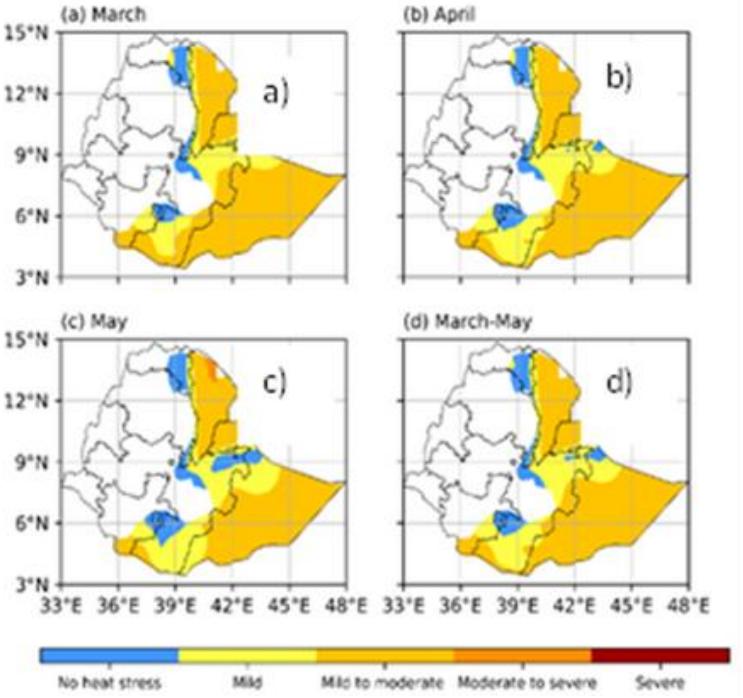

Figure 6: Livestock heat stress forecast for Mar, Apr & May

Advisory:

- For vulnerable animals, the risk of morbidity and mortality could rise as due to heat stress. Pastoralists are
- advised to prepare adequate shade, proper ventilation.
- Pastoralists are advised to conduct herd movements in the early morning or late afternoon when temperatures are relatively cooler.
- Veterinary support should be prepared to address and mitigate potential disease outbreaks.

6. Peace and Security Advisory

Resource-based conflicts: Anticipate heightened competition over water and grazing lands, particularly in cross-border pastoral zones (e.g., Somali-Oromia, Ethiopian Borana-Kenya). Thus, it is advised to strengthen early warning systems and local conflict-resolution mechanisms (e.g., Gada councils).
Moreover, it is important to establish or strengthen, if any exists, cross-border mediation committees that include elders, religious leaders, women and youth representative and government representatives to manage disputes swiftly.

Displacement risks: Monitor population movements from drought-affected areas to urban centers or neighboring regions, which could strain resources and spark tensions. Avail route advisory for community leaders and government leaders to facilitate safe and organized movement if it's necessary to relocate to another place. This proactive approach can help mitigate potential conflicts and support the integration of displaced individuals into new communities, fostering resilience and stability in the face of climate- induced challenges.

Cross-border coordination: IGAD could play role to enhance coordination among the Ethiopia, Kenya and Somalia boarders to harmonize transboundary resource management to ensure equitable access to shared water sources and grazing lands. (e.g., borehole access, livestock migration routes).

Figure 7: Community Information Centers in Borana Zone in collaboration with Borana University and IQQO

Conclusion

The March-May 2025 seasonal forecast indicates that most pastoral areas in Ethiopia will experience below-normal rainfall, leading to prolonged dryness in regions such as Afar, Somali, and parts of Borana. This situation is likely to worsen pasture shortages, livestock stress, and increase the risk of diseases among animals.

To protect their livelihoods, pastoral communities should focus on adopting water and soil conservation methods, invest in drought- resistant forage crops, and implement heat mitigation strategies, such as providing shaded areas for grazing. Leveraging early warning systems will enable pastoralists to anticipate weather shifts, optimize herd movements, and preemptively manage water and forage resources.

It is essential also for the communities to engage in proactive collaboration through platforms like the PCoPs- Alliance and other customer institutions to effectively tackle potential resource conflicts, guarantee fair water distribution, and enhance early warning systems.

By combining adaptive strategies with community-driven discussions, pastoral regions can successfully navigate the challenges of this season while building long- term resilience against climate variability.

References

Johnson, S. J., Stockdale, T. N., Ferranti, L., Balmaseda, M. A., Molteni, F., Magnusson, L., Monge-Sanz, B. M. (2019). SEAS5: the new ECMWF seasonal forecast system. Geoscientific Model Development, 12(3), 1087-1117.

Peter H, Sandro C (2012). LEAP (Livelihood, Early Assessment, and Protection) version 2.61 software user manual designedfor the calculation of water requirement satisfaction index. WorldFood Program, FAO, ItalyPlant Production and Protection. Paperno. 17 (Rome: FAO).

Senay BG, James PV, James R (2011). Developing an operational rangelandwater requirement satisfaction index. Int J Remote Sens 32:6047–605

Segele, Z. T., Lamb, P. J., & Leslie, L. M. (2009). Large-scale atmospheric circulation and global sea surfacetemperature associations with Horn of Africa June-September rainfall. International Journalof Climatology, 29(8), 1075.

Senay, G.B. and Verdin,J., 2003. Characterization of yield reduction in Ethiopia usinga GIS-based crop water balance model. CanadianJournal of Remote Sensing, 29(6), pp.687-692.