Monthly Hydro Meteorology Bulletin

Forward

This Monthly Hydro Meteorological Bulletin is prepared and disseminated by the Ethiopia Meteorological institute (EMI). The ultimate objective of producing and disseminating this bulletin is to inform all level decision makers with the updated and relevant hydro meteorological information. This monthly Bulletin reviews the March 2025-month climate condition and its impacts over the river catchment across the country and highlights the April, 2025 climate outlook along with the likely impact over the water dams and the rivers basins.

The information contained in this bulletin is believed to assist the water professionals for planning the capacity expansion of reservoirs, water supply, ecosystem restoration as well as rehabilitation of existing systems including dams, irrigation, canals, pumps, wetlands and the likes. In addition to the aforementioned benefit the bulletin also reveals the aridity levels of each basin, extremes heavy rainfall events and areas where significant amount of moistures loss through evapotranspiration. In the impact outlook section of the bulletin it provides the likelihood of the climate in the coming month and its potential impact over various aspect of the river basins including the hydraulic structures such as culverts, bridges, reservoir spillways, road embankments and dikes. It also indicates the measures need to be taken as the early actions so as to reduce the possible negative impact of the upcoming month climate condition. Meanwhile, your comments and constructive suggestions are highly appreciated to make the objectives of this bulletin a success.

[EMI]

1. Introduction

The provision of hydro meteorological services can contribute a significant role toward water resource management and socio-economic development. both surface water and groundwater management are essentially linked to climate variability. Therefore, the provided climate information and knowledge in this monthly hydro meteorological bulletin have a critical importance for efficient, equitable and sustainable development and management of the national water resources and for coping with any climate related risks. The information illustrates the impact of previous month climate on each and every water basins and the associated climate risks observed during the month under review. In addition to the previous month impact assessment, the bulletin also provided the expected climate condition for the coming months and its impact on the water resource. The design of water-use and flood-control facilities, mainly dams and reservoirs, is frequently based on these analyses. Estimating the likelihood of precipitation, the distribution of precipitation and the rate of evaporation in location and time, the heavy rainfall and the subsequent

Runoff, extreme temperature and wind are among issues that hydro meteorologists are concerned with.

1.1 Monthly Hydro Meteorological Assessments

1.1.1 Monthly aridity Climatology over the Ethiopian River Basin

In the normal climate moisture condition of March in the south, south west, central, south Eastern and Western half river basin will gets sub humid to very wet moisture condition. In line with this, most parts of, Omo gibe, Baro Akobo, Rift Valley, Genale Dawa, upper and middle Awash, upper Wabisheble, and upper eastern and middle Abay, upper Tekeze, and Afar Danakil receive significant amount of moisture. the rest most of Ogaden, Aysha, Mereb Gash, middle and lower wabi shebele, Tekeze, lower Genale Dawa, Abay, Awash and BaroAkobo basins will be Arid and semi-arid conditions.

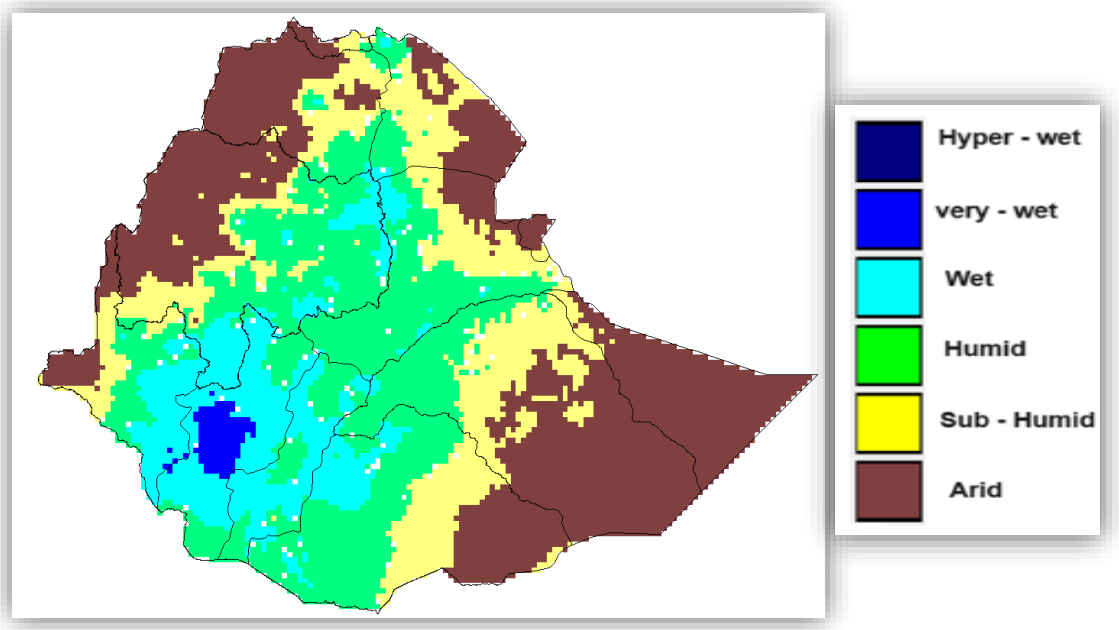


Figure 1. Monthly Moisture Climatology over the river basin during October

1.1.2 March 2025 Rainfall Assessment over the River Basins

March monthly rainfall distribution is observed across the south, south western, south Eastern and central half basins of the country. According to this, most parts of Omo Gibe, Central Rift valley, Genale Dawa, upper Eastern Abay and few part of upper Tekeze basins got 45-189 mm of rainfall. In addition to this Omo Gibe have experienced 190-288 mm. Therefore this situation positive impact for surface water specially belg benefiting River basins such as Omo Gibe, Rift valley, Genale Dawa, and wabi shebele.

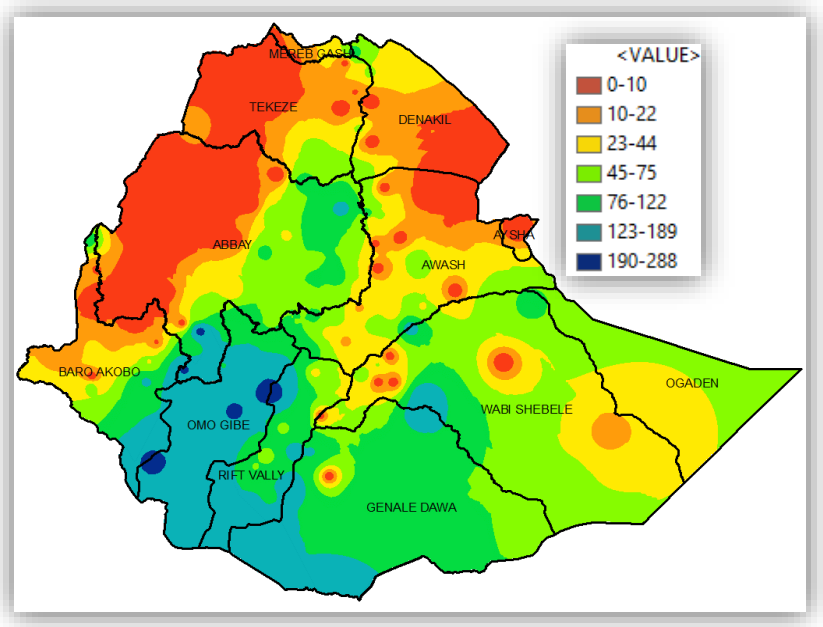


Figure 2 March monthly Total rainfall over Ethiopian River Basin.

1.1.3 Monthly Mean Temperature over the River Basin

In March month daily average temperature 10-15 oC performed few area of upper Tekeze and few area upper eastern Abay and also most of Tekeze, most of upper and middle Abay, upper Baro Akobo, the margin and upper Omo Gibe, some pocket area of upper Rift Valley, upper Wabi shebele, Awash and Genale Dawa, experienced monthly average temperatures were 15-21. Most of wabi shebele, Genale Dawa, Rift valley, Omo Gibe, Awash, Afar Danakil, Aysha, Ogaden basins were 21-27 oC daily Average Temperature, However Lower BaroAkobo, Few place of Lower Wabi shebele, and pocket area of lower eastern Awash and Afar Danakil were average daily temperature received 28-33oC.

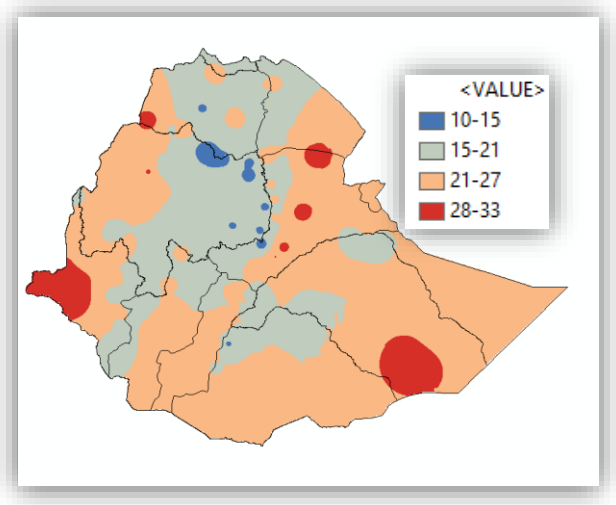


Figure 3 ***March monthly mean temperature over Ethiopian River Basin***

1.1.4 Assessments of Aridity Index during the month of March

- During this month, most parts of Abay, Baro Akobo, Omo Gibe, Rift Valley, Genale Dawa, upper and middle Wabisheble, Awash, and upper Tekeze have experienced humid to very wet moisture condition Likewise, Since the received moisture over most parts of Belg rain benefiting catchment are well exceeded from the potential evapotranspiration of the month, it favours the available of ample moisture on the surface and ground water. On the other hand, arid moisture condition was prevailed across most part of the north western half river catchments.

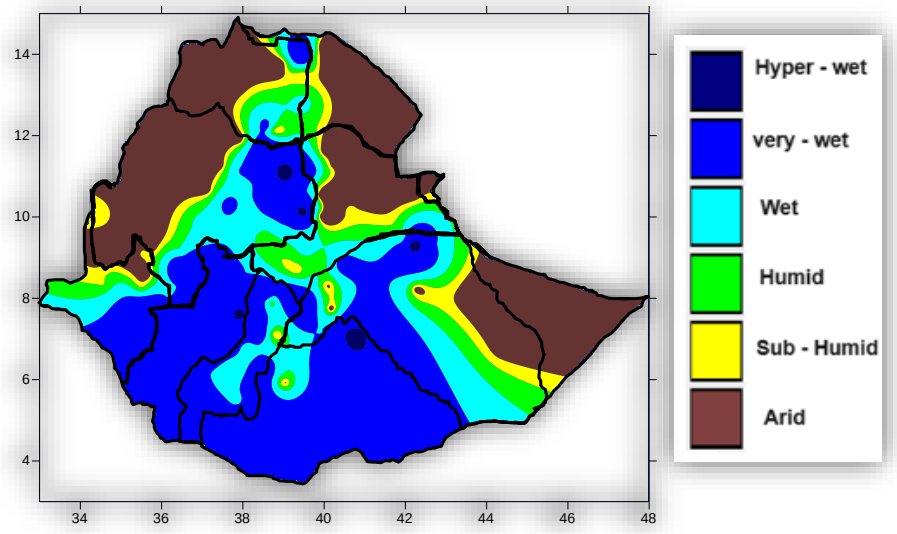


Figure 4. March monthly Aridity Index condition over the river basins

1.1.5 Distribution of Heavy fall (>30mm a day)

During March month observed heavy fall frequency over southern, central and south eastern few station observed one to three days in this month. Maximum frequency Hosanna and Ginnir station have recorded three day frequency, in this month maximum day heavy fall was 60.4 at BaroAkobo basin at Masha station. Hence increased water holding capacities for dams. Spatially belg rainfall benefiting areas.

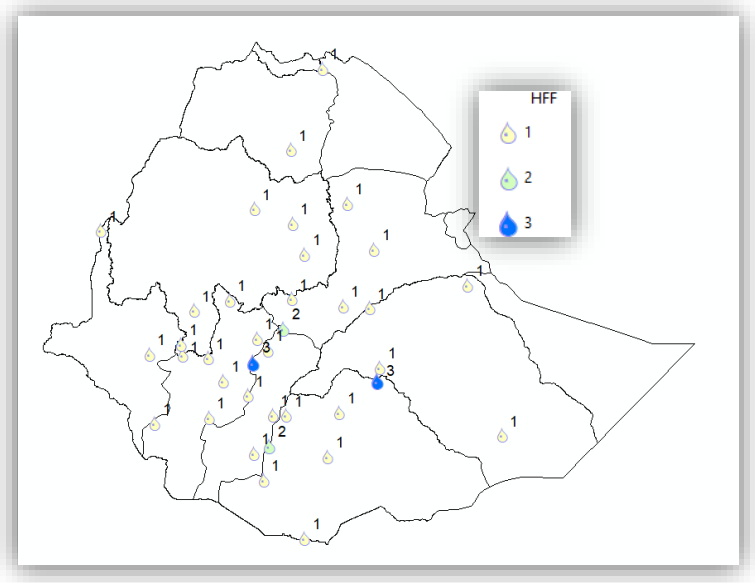
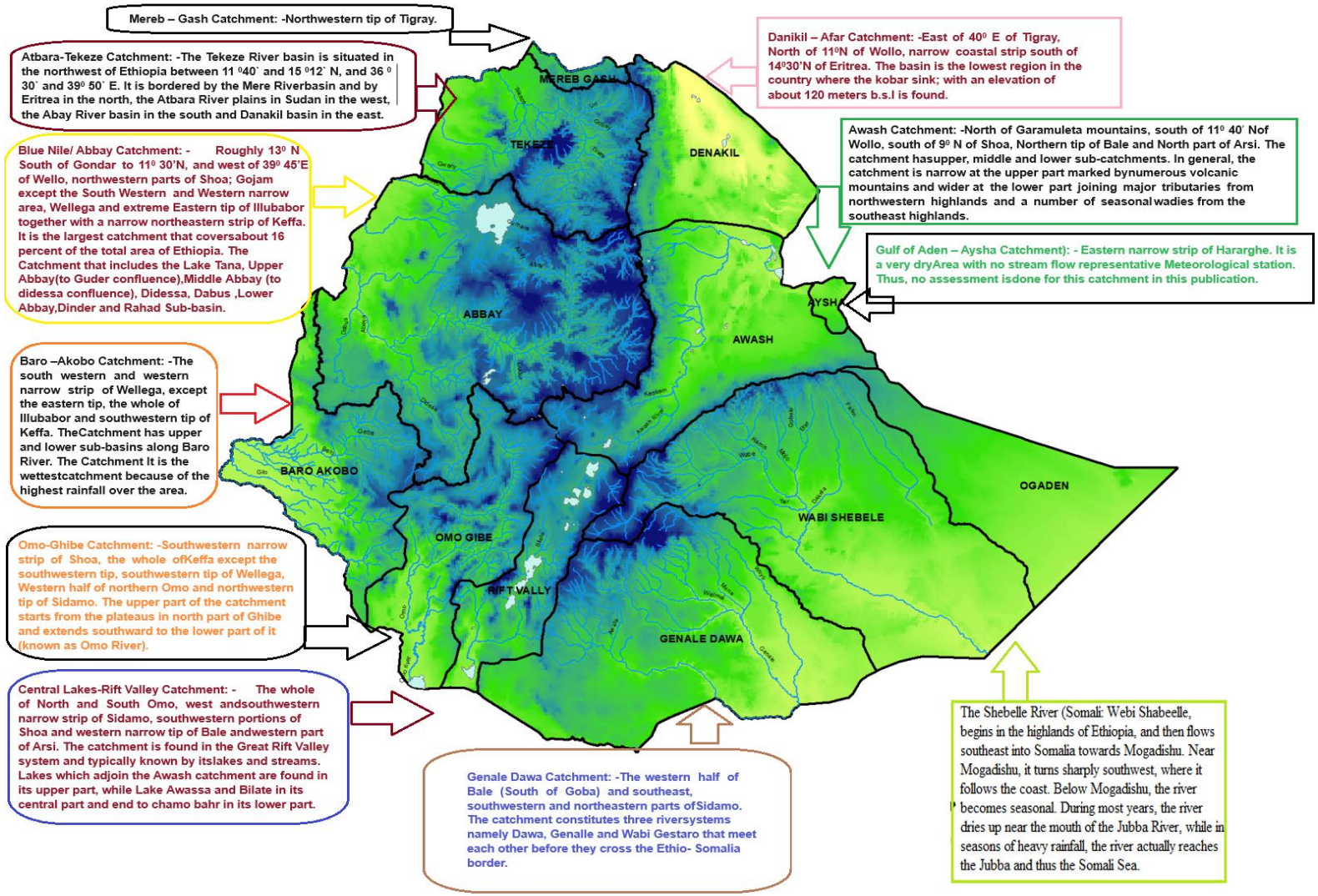


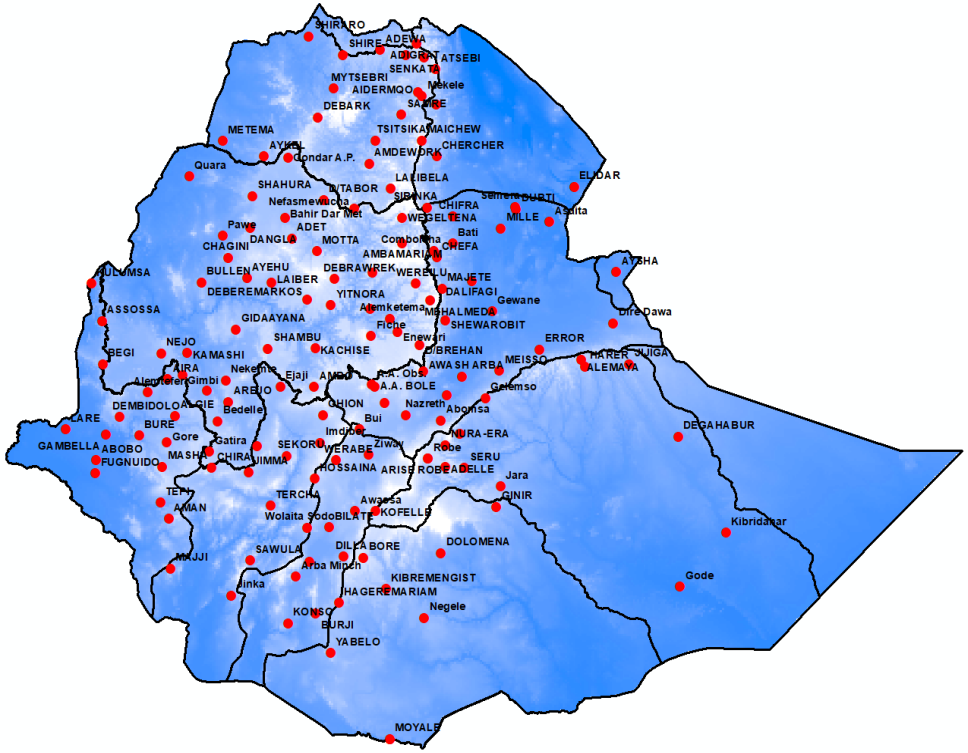
Figure 5 Heavy fall Frequency during the March month over Ethiopian River Basin

2.1. Expected weather impact on water resource the coming April, 2025

The next April month regarding impact of weather condition on water resource will be humid to wet over most of the Baro Akobo, Omo Gibe, Genale Dawa, central Rift Valley, upper and middle Wabi shebele and middle and upper Eastern Abay basins. This situation will be great positive side in terms of enabling the irrigation and power generation dams, Inline to this recommended making initial arrangement to collect and store the available rain water, On the other hand, most of Afar Danakil, Tekeze Aysha Mereb gash, and Ogaden will be dry weather condition.

APPENDIX **Major Ethiopian River Basin**





Number of weather stations used for Hydro Meteorological Analysis