



Ethiopian Meteorology Institute (EMI)



Monthly Hydro Meteorology Bulletin 2024



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 July 2024-month climate condition and its impacts over the river catchment across the country and highlights the July 2024 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.



1. Introduction.....	3
1.1 Monthly Hydro Meteorological Assessments.....	3
1.1.1 Monthly Climatology of the Ethiopian River Basin	3
1.1.5 Distribution of Heavy fall	5
2. Hydro Meteorological Impact Outlook for August 2024.....	2
2.1 Expected weather impact on water resource during the coming August, 2024	2
.....	3



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 Climatology of the Ethiopian River Basin

As can be seen in figure 1, most parts of Abay, Baro Akobo, Western Tekeze, Omogibe, Mereb Gashe, marginal part of upper Awash, Rift Valley, some parts of upper Ogaden, Genale Dawa and upper Wabisheble receive significant amount of moisture exceeding the potential evapotranspiration of the areas. In climatologically the western, central, southern and southwester, northern, north eastern, eastern parts of the river basin experienced wet to very wet moisture on this month. In line with this, On the other hand, most of eastern half parts of the river basins remain in arid moisture condition during July.

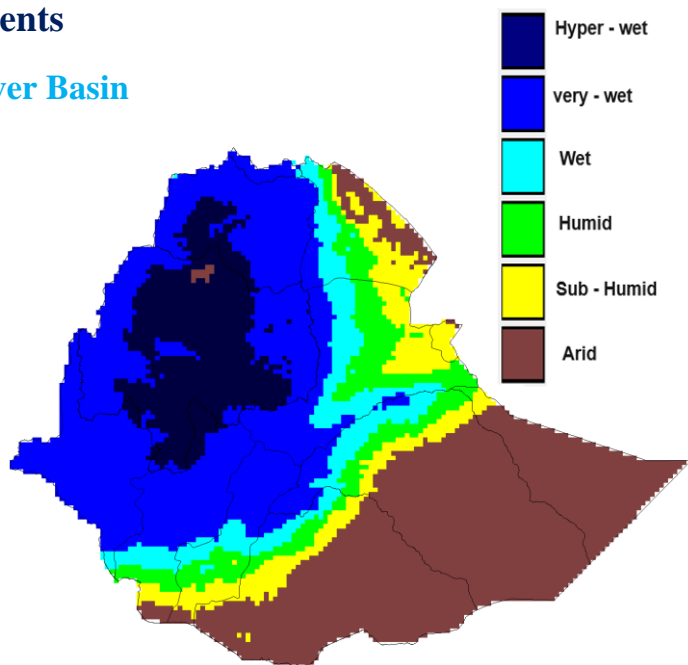


Figure 1 Monthly climatology of the Ethiopian river basin (JULY).



1.1.2 July 2024 Rainfall Assessment over the River Basins

During July 2024, the observed rainfall over the basin illustrated in figure 2, a better monthly rainfall distribution is observed across the western half of the country's basins. The result shown over the most parts of Abay, Baro Akobo, Western Tekeze, Omogibe, and Mereb Gashe, along the margins of upper Awash and Rift Valley, and some parts of upper Genale Dawa and Wabisheble received above 150mm of rainfall. Secondly, most of Afar Denakel, Ogaden, the lower part of Wabisheble and Genale Dawa, lower Awash, and lower Rift Valley received below 100mm of rainfall.

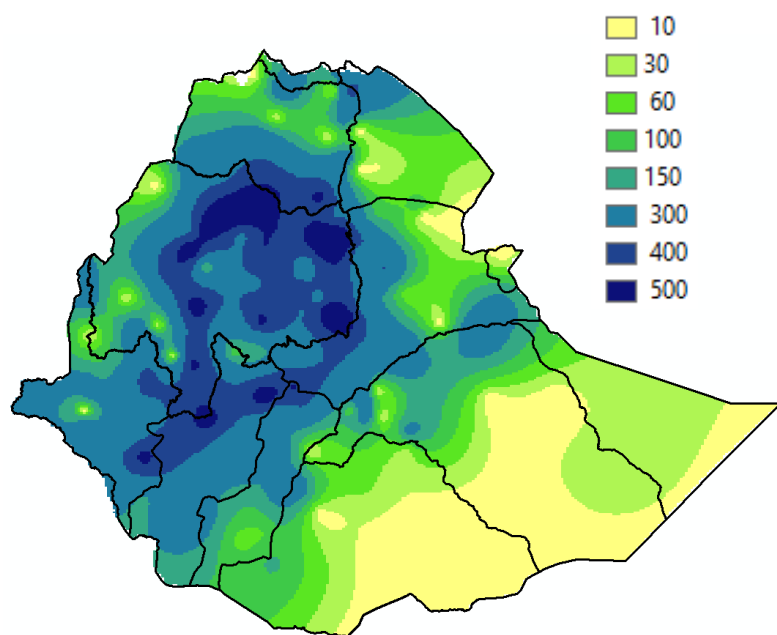
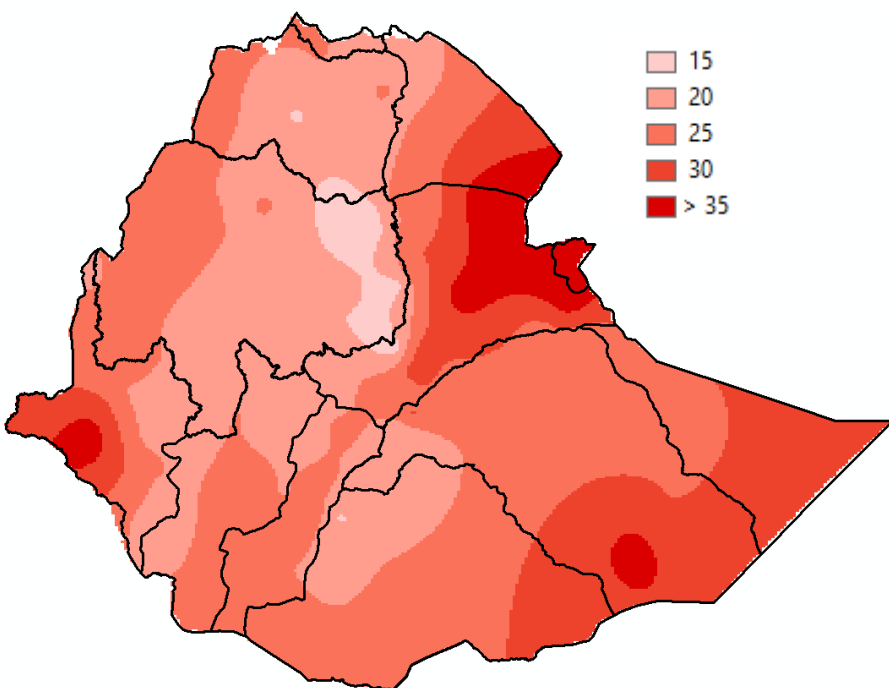


Figure 2 July monthly mean rainfall over Ethiopian River Basin



1.1.3 Monthly Mean Temperature over the River Basin

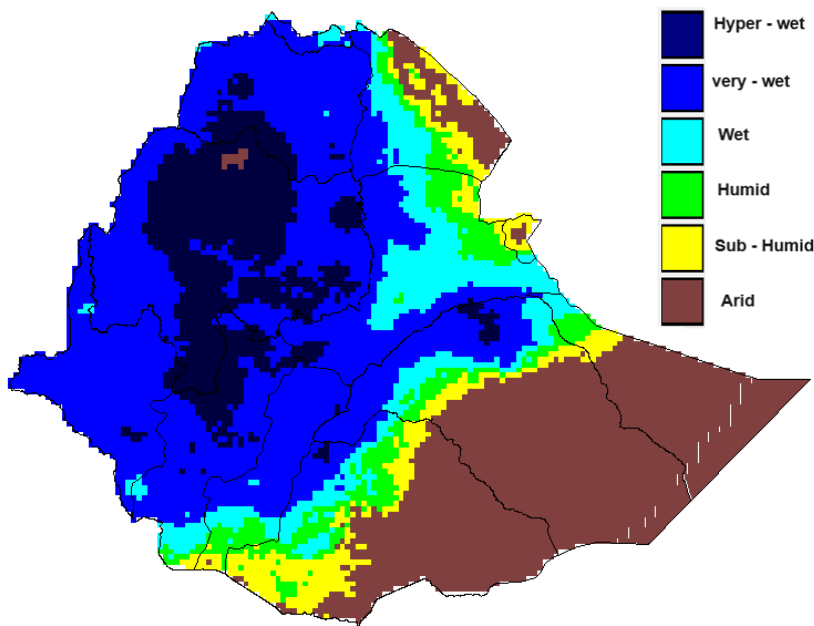
During July 2024, the observed mean temperature, as shown in Figure 3, was below 25°C in the majority of the central catchments, including in some part of upper Abby, Baro, OmoGibe, Rift Valley, Wabisheble, Awash, and Genaledawa basins have lower evapotranspiration. However, the monthly average temperatures reported in the Ogaden, Lower Wabisheble, Baroakobo, Awash,

OmoGibe, Rift Valley and Afar Denakil catchments were above 25°C.

Figure 3 July monthly mean temperature over Ethiopian River Basin



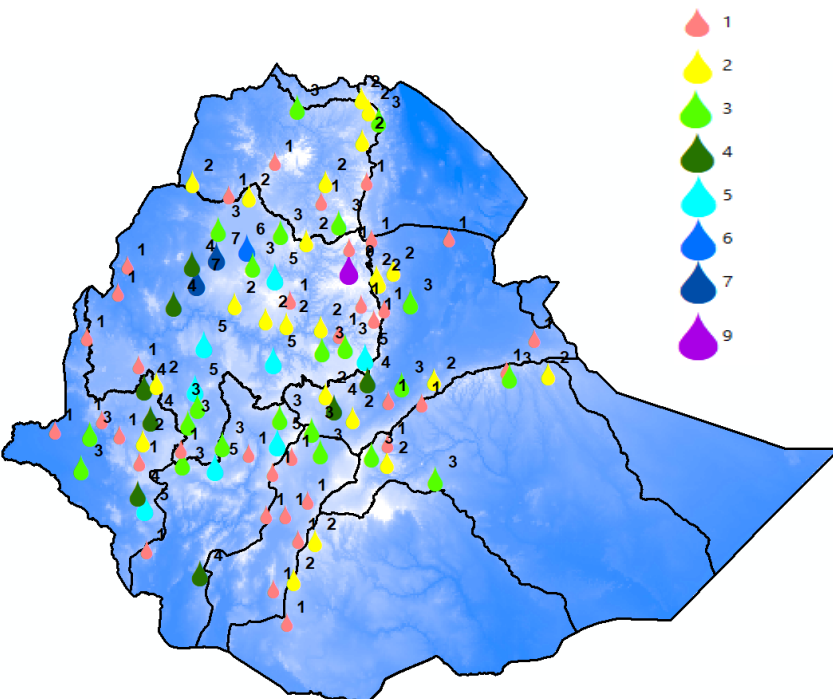
1.1.4 Assessments of Aridity Index during the month of July



During July 2024, the observed Aridity Index is shown in Figure 4. The results indicate that the western, northern southern, south western eastern and north eastern part of the basins have good monthly moisture distribution. This is evidenced by the above-wet to hyper-wet Aridity Index observed in the majority of the Abay, Baro Akobo, Tekeze, Mereb Gashe, Omogibe, Rift Valley and the upper Genale Dawa, Ogaden and Wabisheble border,

as well as in certain areas of the upper and middle Omogibe and upper Wabisheble and humid to sub-humid Aridity Index was observed in most Afar Denakil, Ogaden, lower Awash, lower Rift Valley, and the lower parts of Wabishebele and Genale Dawa

Heavy fall Frequency



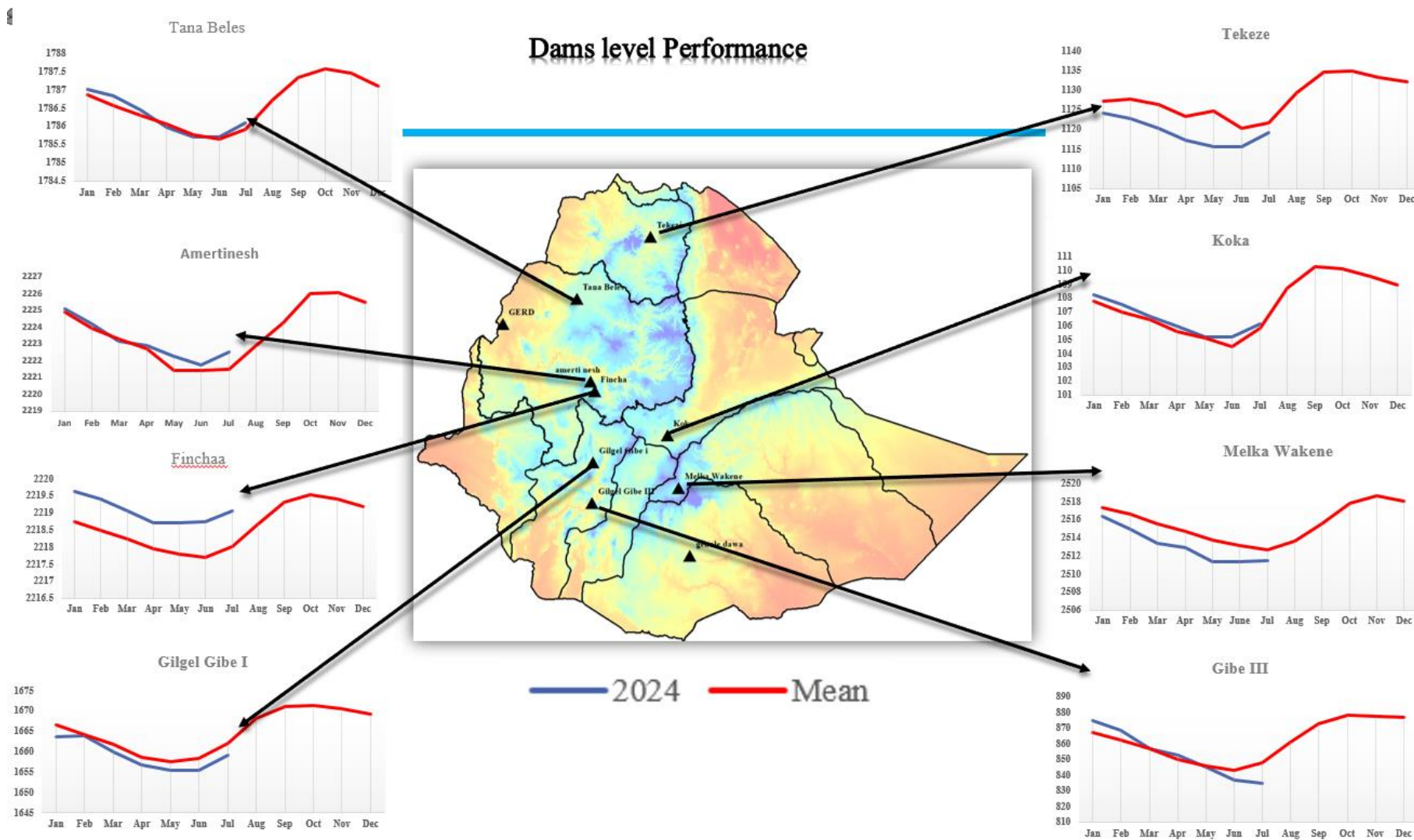
1.1.5 Distribution of Heavy fall

As can be seen in the above figure 4, most of Abbay, BaroAkobo, OmoGibe, Rift Valley, and upper Awash have received from one to nine frequency of heavy fall in this month. This frequency of rainfall will be increasing water holding capacities for dams and basins.

Figure 4(a, b) July monthly AI and Heavy Fall Frequency over Ethiopian River Basin



Figure 55 July monthly DAM level status over Ethiopian River Basin



As can be seen in figure 4 most of Kiremt benefiting catchments have good moisture and the dam the found in those catchment have good water holding capacity. Specially Tana Beles, Tekeza Koka and Melka Wakene shows start rising to above mean, ' Amertinesh have good water holding capacity, Finchaa rally have good water and it needs watch and also those the reaming dams have the same good water holding capacity and this is used for different applications that used for power generation, irrigation and different agricultural purposes.

2. Hydro Meteorological Impact Outlook for August 2024

2.1 Expected weather impact on water resource during the coming August, 2024

During the coming month of August, most of Tekeze, Abay, Mereb Gashe, Awash, Baroakobo, Omogibe, Afar Denacle, Upper and Middle Rift Valley, Upper Wabe Shebele, and Genale Dawa basins are likely to have wet to very wet moisture condition. The anticipated moisture during August is expected to favour to the availability of water in the natural and artificial reservoirs which in turn enhance the dam inflow and of energy production in one hand and sufficient moisture for both large and small scale irrigation applications on the other hand. To the contrary, the expected heavy rainfall may trigger flash as well as riverine flood over urban and rural flood prone areas which may cause considerable damage on human life, property and infrastructure. Therefore, the concerned water professionals and the wider community are advised to make the necessary preparation to reduce the likely potential risk of flood, including cleaning drainage structures. In General, all Residents at flood prone areas are advised to be on the lookout for potential floods, flash floods and poor visibility. Since the water levels in rivers, lakes and dams are expected to be high the community are advised to avoid driving through, or walking in moving water to minimize the risk of damage on life and property. In addition, people in landslide prone areas, especially over hilly areas, are strongly advised to be watchful.



