



Monthly Hydro Meteorology Bulletin 2025

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 September 2025-month climate condition and its impacts over the river catchment across the country and highlights the October 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.

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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 September Monthly Climatology of the Ethiopian River Basin

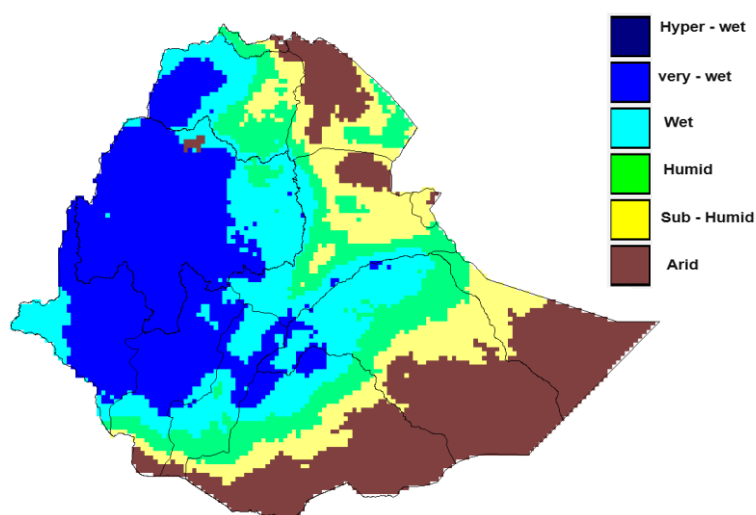
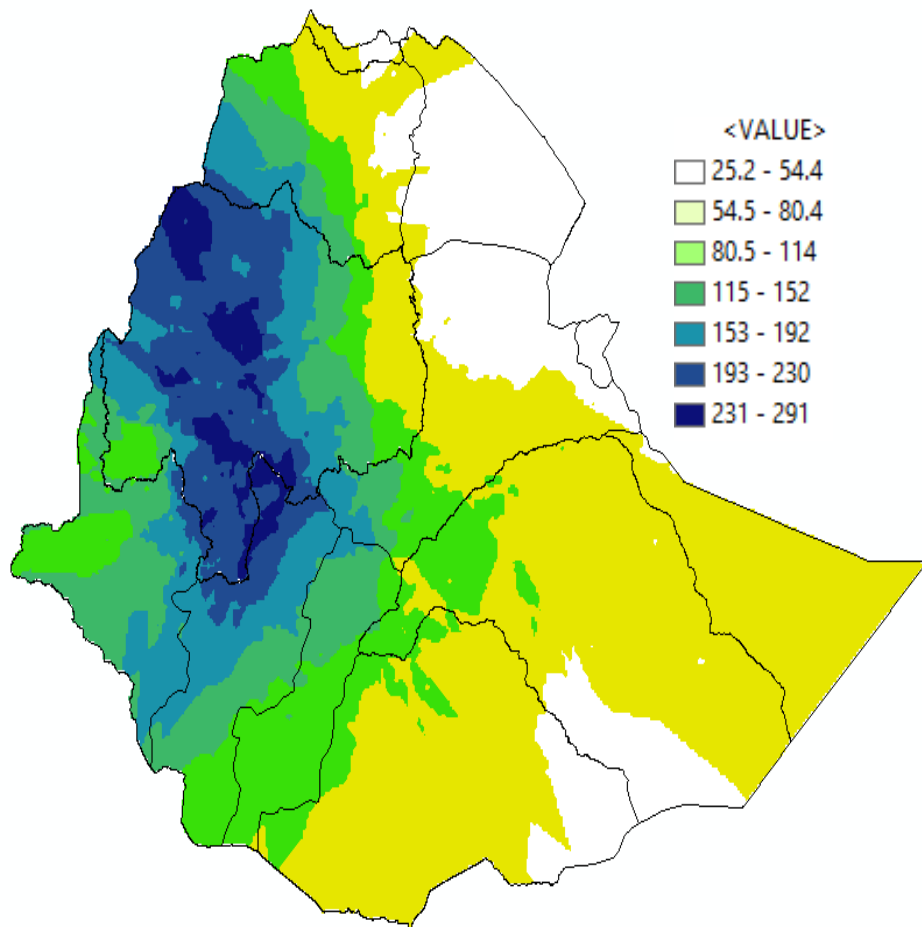


Figure 1 Monthly climatology of the Ethiopian river basin (September).

As can be seen in figure 1, most parts of Abay, Tekeze, Baro Akobo, Omo gibe, Rift Valley, Awash, Afar Danakil, upper Wabi shebele and Genale Dawa receive significant amount of moisture exceeding the potential evapotranspiration of the areas. In climatologically the western, south western, north, north western, north eastern and central basin experienced wet to very wet. And the rest south and south eastern climatological dry ,such as most of Ogaden, Genale Dawa, lower Omo gibe and rift valley.

1.1.2 September 2025 Rainfall Assessment over the River Basins



During September 2025, the observed rainfall over the basin illustrated in figure 2, a better monthly rainfall distribution is observed across the west, southwest, western and north west. The result shown over the most parts of Abay, Baro Akobo, Omo Gibe, 193-291 mm of rainfall and in addition lower Tekeze, BaroAkobo, Omo gibe, Rift valley, and upper Awash have received 115-192 mm. The other, most of Genale Dawa, wabi shebele, Ogaden, upper Tekeze lower Awash and few place of Afar Danakil basins have received 25.2-80.4 mm rainfall.

Figure 2 September monthly mean rainfall over Ethiopian River Basin

1.1.3 Monthly Mean Temperature over the River Basin

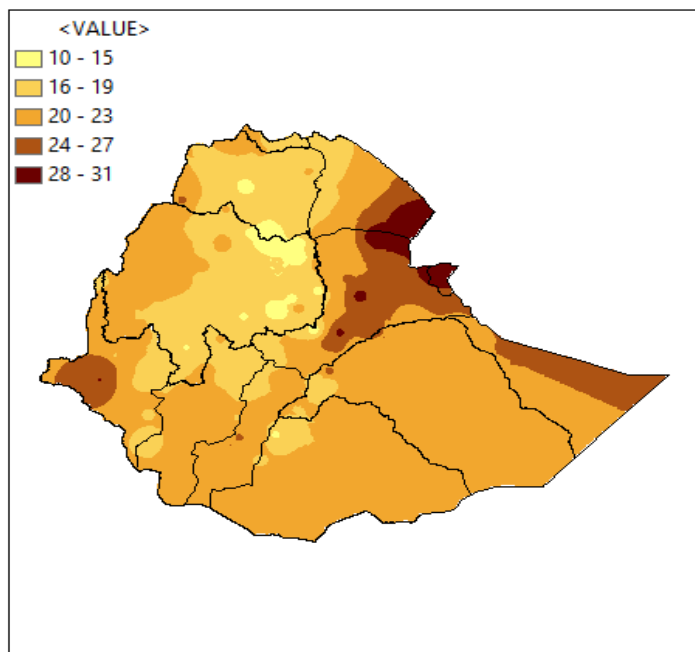
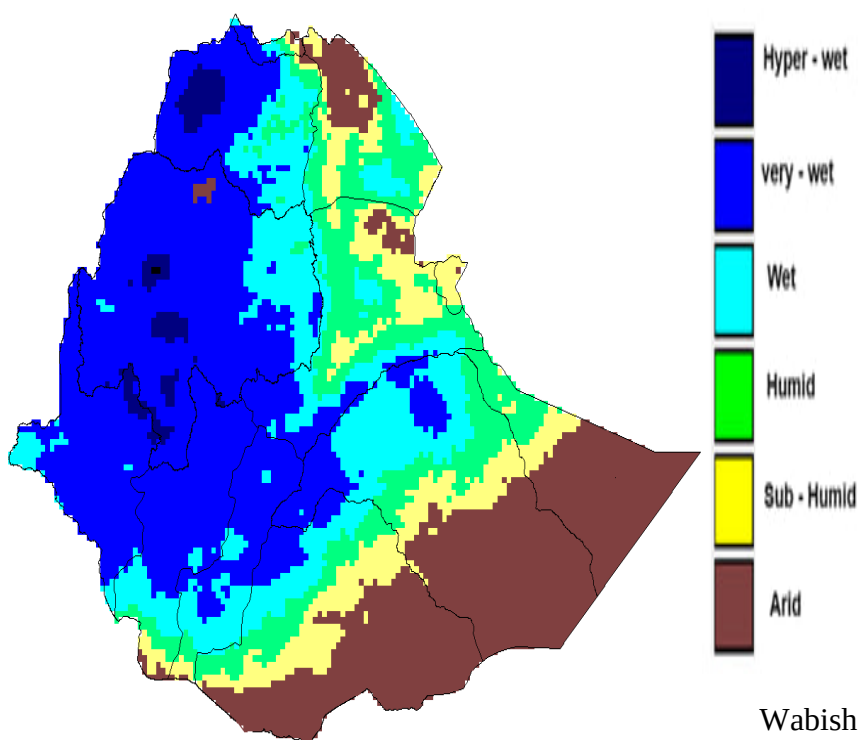


Figure 3 September, monthly mean temperature over Ethiopian River Basin

During September, 2025, 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 most of Abay, Omo-Gibe, Rift Valley, Wabisheble, Genale-Dawa upper and middle Awash, basins have lower evapo-transpiration. However, the monthly average temperatures reported in the Ogaden, Afar-Danakil, Lower Awash, Baro Akobo, catchments were above 25°C.

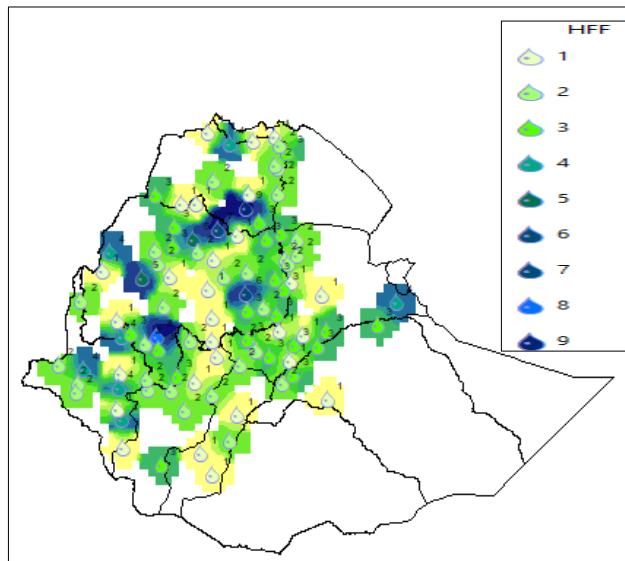


1.1.4 Assessments of Aridity Index during the month of September

During September 2025, the observed Aridity Index is shown in Figure 4. The results indicate that the Northern, western, north western and central, south western part of the basins have significant distribution of surface water. This is evidenced by the above-wet to very wet Index observed in the most of the Abay, Baro Akobo, Tekeze, Mereb Gash, Omo Gibe, Rift Valley and upper Genale Dawa, and Wabisheble .the rest most of Ogaden, middle and

lower wabi shebele, Genale Dawa, basins were under Arid conditions.

1.1.5 Distribution of Heavy fall



As can be seen in the above figure 4, most of Basin such as Abay, Baro Akobo, Omo Gibe, Rift Valley, Tekeze, upper and middle Awash, have received from one to nine days frequency of heavy fall in this month. This frequency of rainfall will be increasing water holding capacities for dams and basin.

Figure 4(a, b) September monthly Aridity index and Heavy Fall Frequency over Ethiopian River Basis

2. Hydro Meteorological Impact Outlook for October, 2025

2.1 Expected weather impact on water resource during the coming October, 2025

Next October, most of Baro Akobo, middle and lower Omo Gibe, middle and lower Rift Valley, Wabi Shebele, and Genale Dawa will receives medium to high surface water. The rest most parts of the River basis will be moderately dry such as most parts of Abay, Tekeze, Afar Danakil, and Awash, therefore we should uses water properly and saves from unnecessary wastage. Because of this the next Bega season most part of the river basis will be dry, so should be save water from to unnecessary wastage.



