



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

[EMI]



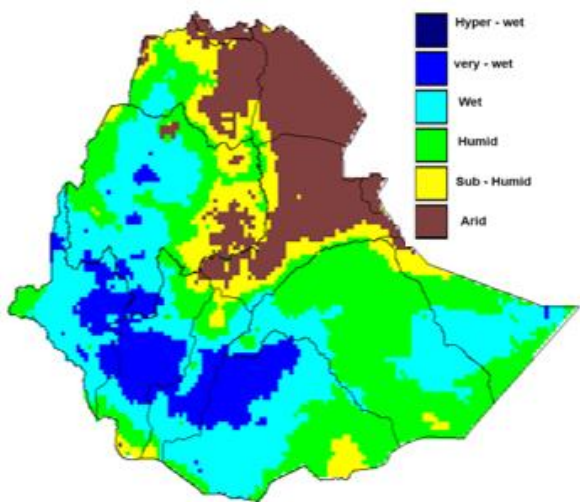


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1. Introduction

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 Monthly aridity Climatology over the Ethiopian River Basin

In the normal climate moisture condition of October in the western, northern, central and most of southern parts of the river basin have experienced **humid to very wet moisture condition**. In line with this, most parts of Abay, Baro Akobo, Omogibe, Rift Valley, Wabisheble Genale Dawa and Ogaden, receive significant amount of moisture that exceeding from the potential evapotranspiration of the areas.

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



1.1.2 October 2024 Rainfall Assessment over the River Basins

As can be seen in figure 2, better monthly rainfall distribution is observed across the western half basins of the country. According to this, most parts of Abay, Baro Akobo, Tekeze, Omo Gibe, Afar Denakile and Mereb Gashe, in the margin of upper Awash and Rift Valley, and most parts of Genale Dawa, Wabisheble and Ogaden got 30 -150 mm of rainfall. In addition to this most of middle Abay, upper Baro Akobo and Omo Gibe have experienced above 150 mm.

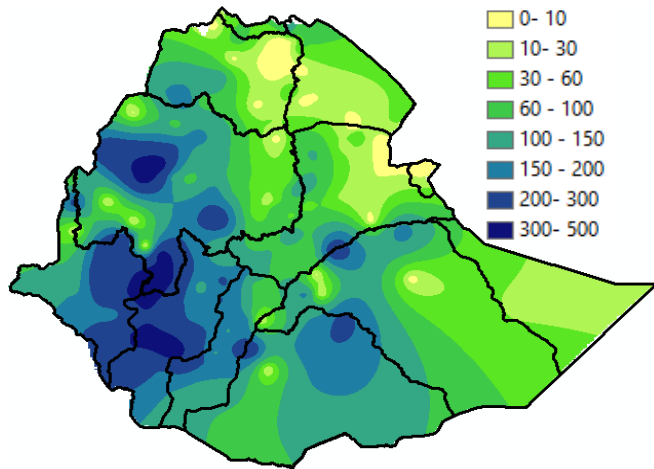
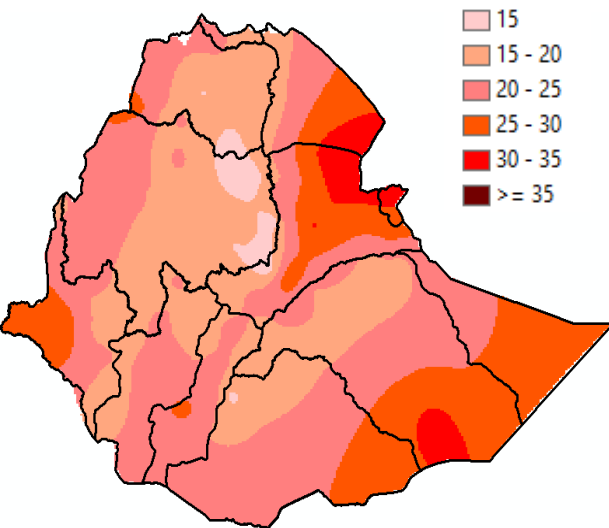


Figure 2 October monthly mean rainfall over Ethiopian River Basin.

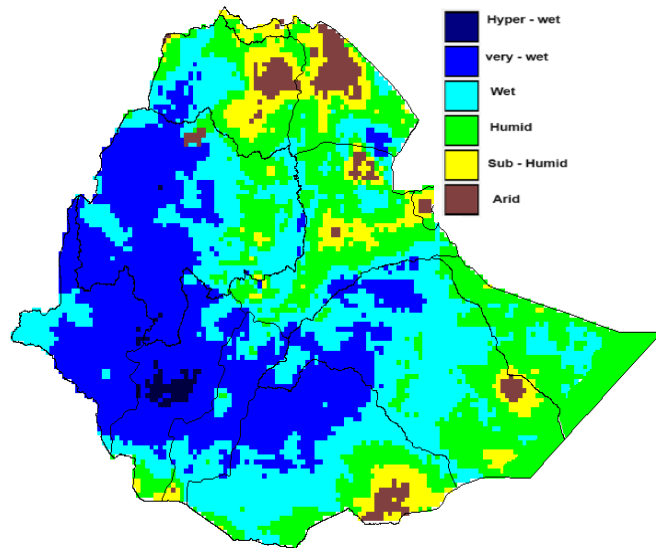


1.1.3 Monthly Mean Temperature over the River Basin

As we can see in Figure 3,

In October month daily average 15 °C performed few area of upper Tekeze and few area upper eastern Abay and also most of upper and middle Abay, upper Baro Akoobo, the margin and upper Omo Gibe, some pocket area of upper Rift Valley, upper Wabishebele, Awash and Genale Dawa, experienced monthly average temperatures **below 25°C**. However, the monthly average temperatures that were reported in the remaining catchments of some part of middle and lower BaroAkobo, Rift Valley, Afar Denakel, Awash, Abeay, Wabishebele, Genale Dawa and Ogaden were received above 25°C.

Figure 3 October monthly mean temperature over Ethiopian River Basin

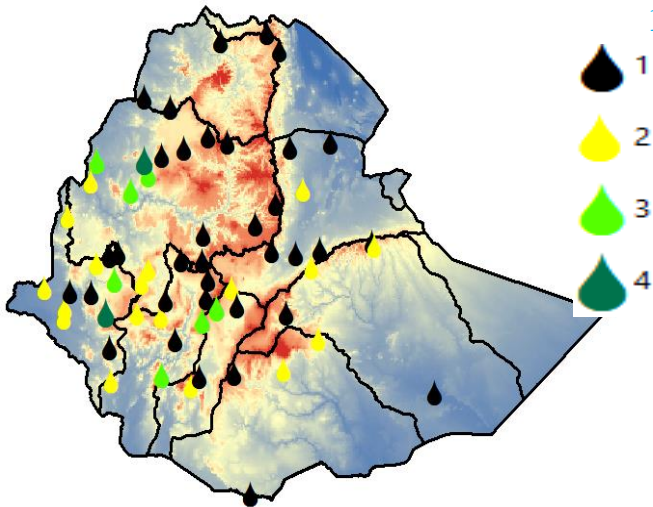


1.1.4 Assessments of Aridity Index during the month of October

During this month, most parts of Abay, Baro Akobo, Tekeze, Mereb Gashe, Afar Denakile, Omogibe, Rift Valley, the upper Genale Dawa, Wabisheble and Ogaden have experienced wet to very wet moisture condition Likewise, some part of Afar Denakel, Ogaden, lower part of Wabishebele and Genale Dawa received sub-humid to Arid moisture during the month of under review. Since the received moisture over most parts of Bega 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 eastern half river catchments.

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





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

As can be seen in the above figure 5, most of Abay, Baro Akobo, Tekeze, upper parts of Omogibe, Rift Valley, the upper Genale Dawa, and Wabisheble have received from one to four frequency of heavy fall in this month. This frequency of rainfall will be increasing water holding capacities for dams and basins.

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

2.1. Expected weather impact on water resource during the coming November 2024

The next November month regarding impact of weather condition on water resource will be humid to wet over most of the Baroakobo, OmoGibe, GenaleDawa, middle and lower central Rift Valley, Wabishebele and lower Abay basins. This situation will be great positive side in terms of enabling the irrigation and power generation dams to have a reliable and sufficient water supply during the dry months of the coming next summer. Inline to this recommended making initial arrangement to collect and store the available rain water, On the other hand, most of Afar Danakil upper Tekeze as well as lower Awash will be dry weather condition.



Number of weather stations used for Hydro Meteorological Analysis

