



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





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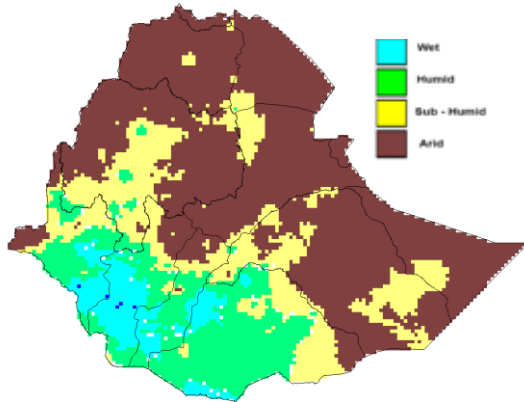
1. Introduction

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

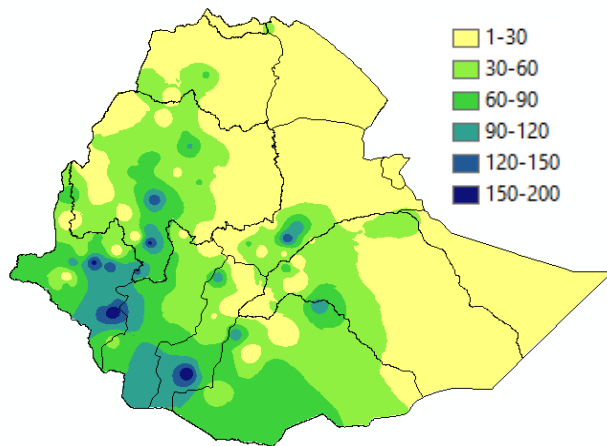
1.1.1 Monthly aridity Climatology over the Ethiopian River Basin



In the normal climate moisture condition of November in the western, south western, south and south eastern parts of the river basin have experienced **humid to very wet moisture condition**. In line with this, most parts of Baro Akobo, Genale Dawa, middle and lower Omo Gibe, Rift Valley, few place of upper and lower Wabi shebele receive sub humid to wet moisture that exceeding from the potential evapotranspiration of the areas.

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

1.1.2 October 2024 Rainfall Assessment over the River Basins

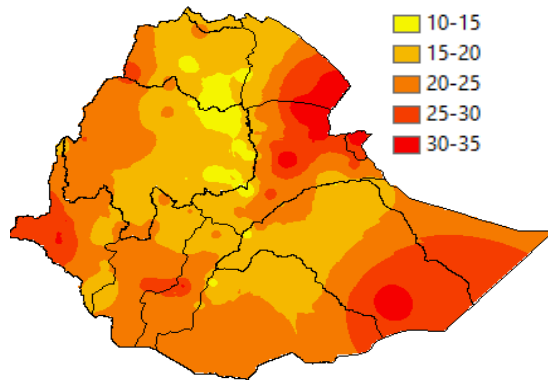


As can be seen in figure 2, better monthly rainfall distribution is observed across the south and south west basins of the country. According to this, most parts of Baro Akobo, Genale Dawa, Omo Gibe, rift valley, upper Wabi shebele, upper and middle Abay, 30 -150 mm of rainfall. In addition to this upper Baro Akobo, few place of middle Abay, Lower Omo Gibe, and Central Rift valley have experienced above 150 mm.

Figure 2 Noveber monthly mean rainfall over Ethiopian River Basin



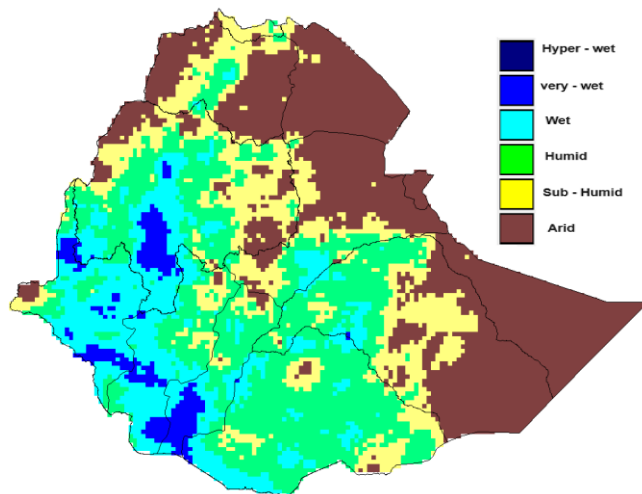
1.1.3 Monthly Mean Temperature over the River Basin



As we can see in Figure 3,

In November month daily average 10-15 °C experienced 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, performed 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 30°C.

Figure 3 November monthly mean temperature over Ethiopian River Basin



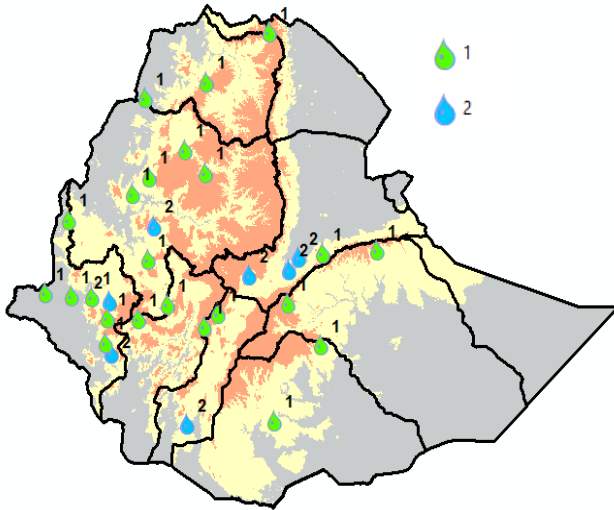
1.1.4 Assessments of Aridity Index during the month of November

During this month, most parts of Baro Akobo, Abay, Omo Gibe, Rift Valley, Genale Dawa, upper Wabi shebele, middle Awash ,and Tekeze have had wet to very wet moisture condition. The other hand most of Afar Danakil, Ogaden, upper and lower Tekeze, Lower Awash, and Wabi shebele basins were Arid moisture condition, inline to this favour to water sustainable especially south and south eastern basin of the country.

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



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



As can be seen in the below figure 5, Middle Abay, Genale Dawa Tekeze, upper Baro Akobo, Wabi shebele, parts of Omo Gibe, Rift Valley, the upper Genale Dawa, Wabisheble , upper and lower Central Rift valley have received from one to Two days frequency of heavy fall in this month.

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



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

The next December month impact of weather condition on water resource will be arid condition of the river basin but over south and south west some basins will have semi humid moisture condition such Baro Akobo, middle and lower Omo Gibe, rift valley and few Genale Dawa. This situation will leads to water insufficient. Therefore recommended to use in proper way and also arrangement to collect and store the available rain water, On the other hand, most of Awash, Abay, Tekeze, Afar Danakil, Ogaden, and Aysha will be dry weather condition.



Number of weather stations used for Hydro Meteorological Analysis

