

Dekedal Hydro Meteorology Bulletin



Forward

This Dekedal 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 Dekedal Bulletin reviews the March 21-30 2025-month climate condition and its impacts over the river catchment across the country and highlights the April 1-10, 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.



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.



1.2 Hydro Meteorological Impact Assessment March 21-31, 2025

During the 3rd eleven days of March, the weather conditions impact on the River basins most of Omo Gibe, Rift valley, Genale Dawa, Baro Akobo, Wabi shebele, upper and middle Awash, Abay, Upper Tekeze, experienced sub humid wet moisture condition, The wet conditions increased water availability, and the water supply in both natural and human-managed water reservoirs improved. This was a positive factor for the water sector, ensuring the availability of water for human consumption, agriculture, and livestock. Additionally over Omo Gibe, Rift Valley, Genale Dawa, upper Wabi shebele and upper Eastern Abay performed Very wet moisture condition. The remaining Basins such as Afar, Ogaden, Merab Gash, and Aysha, as well as lower parts of Abay and Awash were mostly dry condition in line with a day high maximum temperature increased evaporation therefore have had negative impact on water resource.

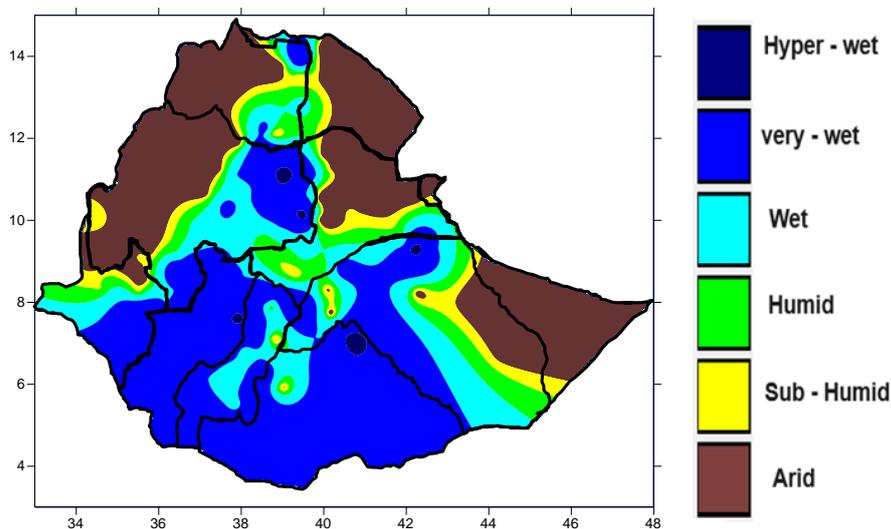


Figure 1 Dekedal Hydro Meteorological Assessments from March 21-31, 2025

1.2 Hydro Meteorological Impact Outlook for April 1-10, 2025

Over the next ten days, the weather conditions will lead to significant changes in water flow and availability. The impacts on various water-related systems are as follows:

1. Positive Impacts:

- Increased water flow will enhance the water supply in various regions, which will benefit water reservoirs and agricultural systems.



-
-
- There will be an increase in the available water levels in river basins and reservoirs, improving water availability for both urban and rural areas.

2. Negative Impacts:

- The rise in water levels may lead to localized flooding, especially in urban areas or regions with fragile infrastructure.
- Flooding risks may cause physical damage to settlements, particularly in areas near rivers with vulnerable banks.

3. Recommendation:

- It is crucial to monitor water levels closely during this period, especially in vulnerable areas.
- Local authorities and communities should prepare for potential flooding and water flow disruptions, especially in urban areas.





Ethiopian River Bains	Stream Flow Condition	Positive Impact	Negative Impact	Water Hydrometeorology Advisory
<p>Most of Omo Gibe, Baro Akobo, Rift Valley, and Genale Dawa</p>	<p>Sub humid to wet</p>	<p>- Improved water availability for surface and sub-surface and enhance hydropower production</p>	<p>- Potential flooding like flash flood in urban areas. Erosion risks, sedimentation in water storage areas. Traffic congestion</p>	<ul style="list-style-type: none"> • Monitor flow levels for flood risk management, especially during peak flows and seasonal changes in stream flow, • erosion control measures, and long-term water conservation strategies • to restore riverbanks and manage water runoff effectively to prevent soil erosion and protect ecosystems. • Collecting and managing rainwater to reduce water waste and maximize water use efficiency. • Prevent the accumulation of stagnant water, which can lead to disease spread, by using both manual and easy-to-use vehicle-based methods for water removal. • Continuously monitor flood-prone areas and share relevant flood warnings and advice to mitigate risks.
<p><i>upper and middle Abay, Wabi shebele, upper Tekeze</i></p>	<p>Moderate condition</p>	<p>- Consistent water supply during the wet season</p>	<p>- Low flow over surface and subsurface</p>	<p>Implement flow regulation and storage for seasonal water availability, considering on dry season water conservation strategies</p>



Ogaden, Aysha, Mereb Gash (Across All Sub-basins)	Dry Condition	- Adequate flow during the wet season, supporting agriculture and hydropower - Moderate to high flow during wet season for hydropower and irrigation	- Reduced flow during dry periods leading to water scarcity for surface and subsurface under the entire basin - Water scarcity issues due to low flow in dry season	<ul style="list-style-type: none"> • Enhance water storage techniques to manage dry season shortages, ensure irrigation efficiency • Implement water storage facilities and ensure efficient use for agricultural needs and dry season management • Optimize water resource management, focusing on sustainable supply and conservation strategies
--	----------------------	---	--	---

Summary

The weather over the next ten days will cause significant variations in water flow and availability, which are going to have the following effects on different water-related systems: Positive effects: More water flow is expected to enhance the water supply in various parts of the country, which will help water reservoirs and agricultural systems; river basins and reservoirs will increase their available water levels, improving water availability for both urban and rural areas; and negative effects: The rise in water levels may cause localized flooding, particularly in urban areas or regions with fragile infrastructure; flooding risks may cause physical damage to settlements, especially in areas near rivers with vulnerable banks. It is advised that water levels should be closely tracked during this time, especially in areas that are vulnerable.





[EMI]



Merib – Gash Catchment: -Northwestern tip of Tigray.

Atbara-Tekeze Catchment: -The Tekeze River basin is situated in the northwest of Ethiopia between 11° 40' and 15° 12' N, and 36° 30' and 39° 50' E. It is bordered by the Mere River basin and by Eritrea in the north, the Atbara River plains in Sudan in the west, the Abay River basin in the south and Danakil basin in the east.

Blue Nile/ Abbay Catchment: - Roughly 13° N South of Gondar to 11° 30' N, and west of 39° 45' E of Wollo, northwestern parts of Shoa; Gojam except the South Western and Western narrow area, Wellega and extreme Eastern tip of Illubabor together with a narrow northeastern strip of Keffa. It is the largest catchment that covers about 16 percent of the total area of Ethiopia. The Catchment that includes the Lake Tana, Upper Abbay (to Guder confluence), Middle Abbay (to didessa confluence), Didessa, Dabus, Lower Abbay, Dinder and Rahad Sub-basin.

Baro –Akobo Catchment: -The south western and western narrow strip of Wellega, except the eastern tip, the whole of Illubabor and southwestern tip of Keffa. The Catchment has upper and lower sub-basins along Baro River. The Catchment It is the wettest catchment because of the highest rainfall over the area.

Omo-Ghibe Catchment: -Southwestern narrow strip of Shoa, the whole of Keffa except the southwestern tip, southwestern tip of Wellega, Western half of northern Omo and northwestern tip of Sidamo. The upper part of the catchment starts from the plateaus in north part of Ghibe and extends southward to the lower part of it (known as Omo River).

Central Lakes-Rift Valley Catchment: - The whole of North and South Omo, west and southwestern narrow strip of Sidamo, southwestern portions of Shoa and western narrow tip of Bale and western part of Arsi. The catchment is found in the Great Rift Valley system and typically known by its lakes and streams. Lakes which adjoin the Awash catchment are found in its upper part, while Lake Awassa and Bilate in its central part and end to chamo bahr in its lower part.

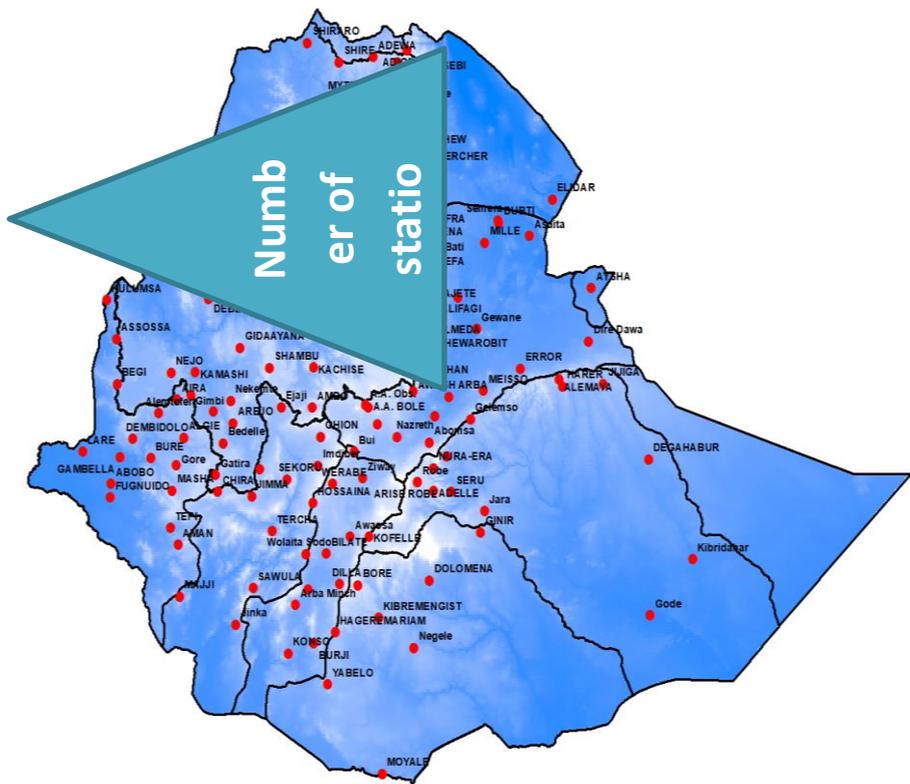
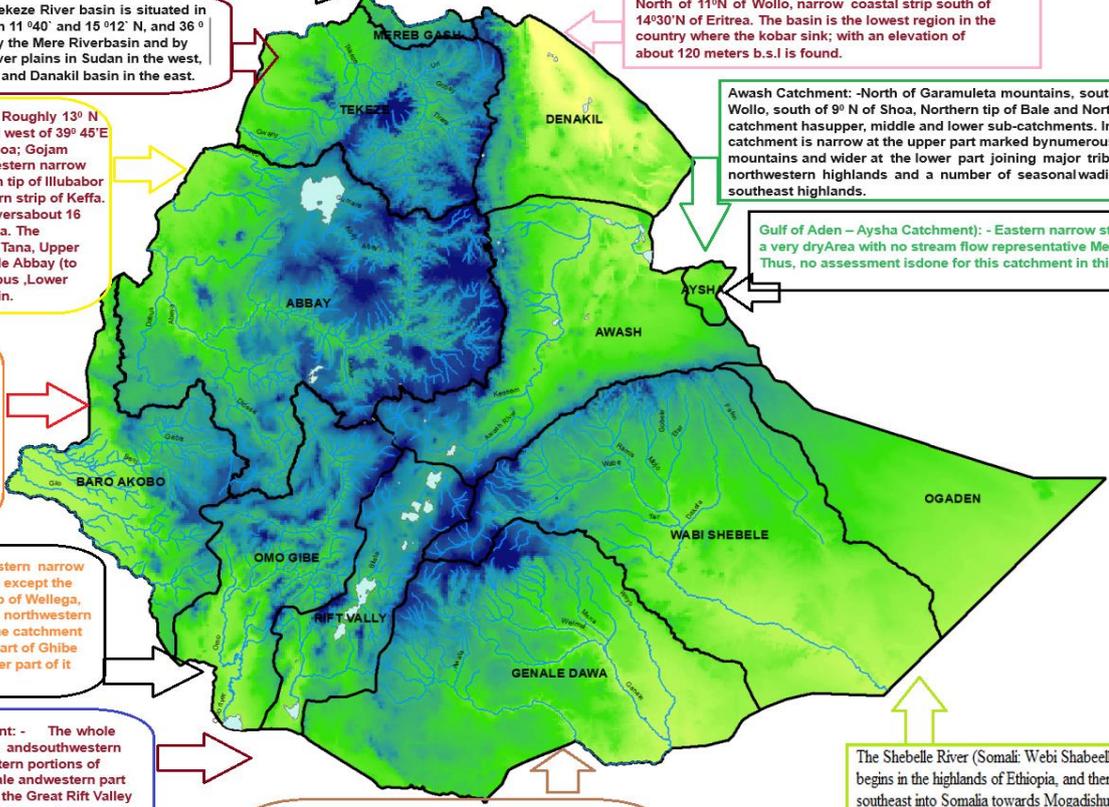
Genale Dawa Catchment: -The western half of Bale (South of Goba) and southeast, southwestern and northeastern parts of Sidamo. The catchment constitutes three rivers systems namely Dawa, Genalle and Wabi Gessaro that meet each other before they cross the Ethio- Somalia border.

Danakil – Afar Catchment: -East of 40° E of Tigray, North of 11° N of Wollo, narrow coastal strip south of 14° 30' N of Eritrea. The basin is the lowest region in the country where the kobar sink; with an elevation of about 120 meters b.s.l is found.

Awash Catchment: -North of Garamuleta mountains, south of 11° 40' Nof Wollo, south of 9° N of Shoa, Northern tip of Bale and North part of Arsi. The catchment has upper, middle and lower sub-catchments. In general, the catchment is narrow at the upper part marked by numerous volcanic mountains and wider at the lower part joining major tributaries from northwestern highlands and a number of seasonal wadies from the southeast highlands.

Gulf of Aden – Aysha Catchment): - Eastern narrow strip of Hararghe. It is a very dry Area with no stream flow representative Meteorological station. Thus, no assessment is done for this catchment in this publication.

The Shebelle River (Somali: Webi Shabeelle, begins in the highlands of Ethiopia, and then flows southeast into Somalia towards Mogadishu. Near Mogadishu, it turns sharply southwest, where it becomes seasonal. During most years, the river dries up near the mouth of the Jubba River, while in seasons of heavy rainfall, the river actually reaches the Jubba and thus the Somali Sea.



[EMI]





[EMI]

