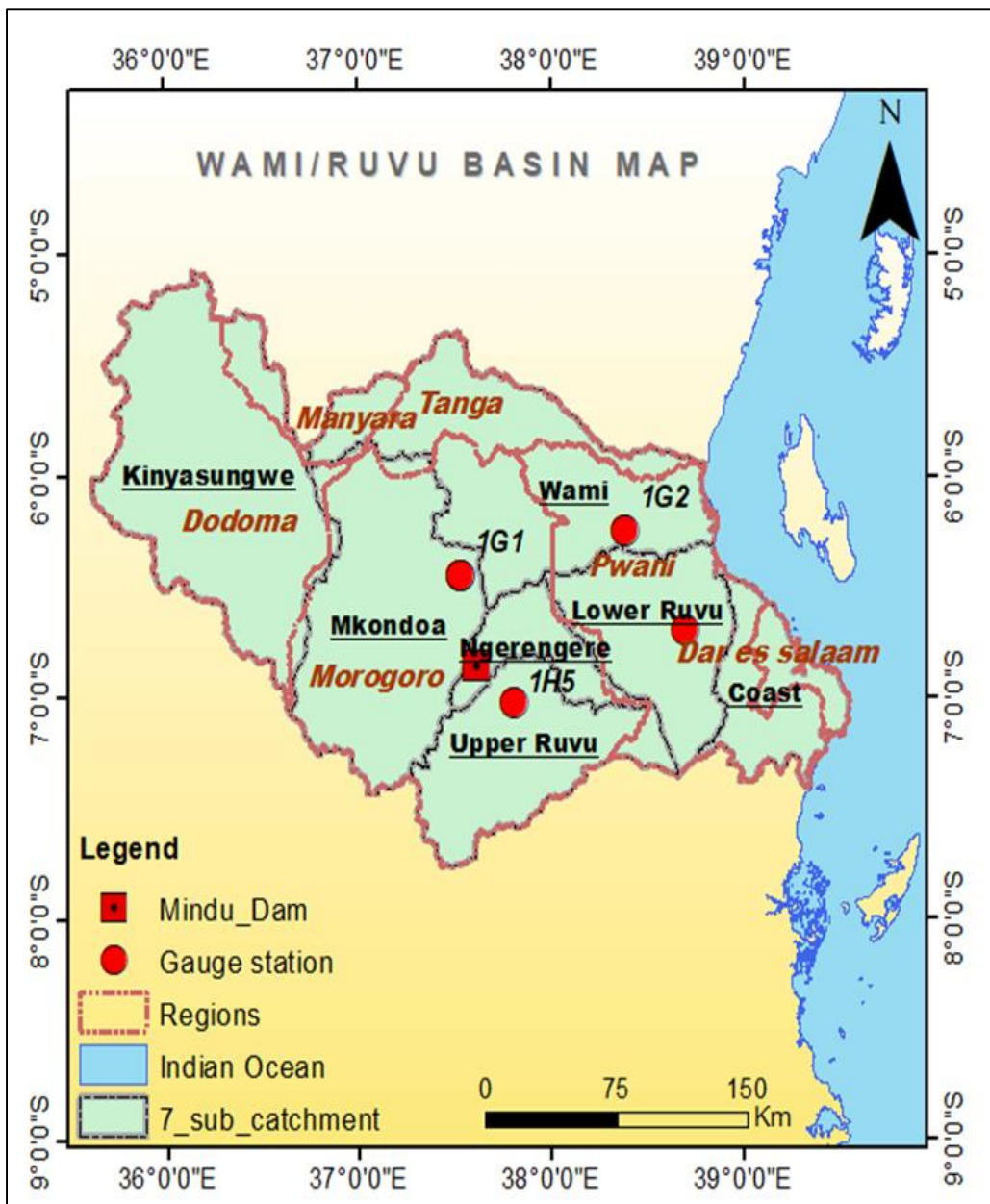


HYDROLOGICAL BULLETIN - FEBRUARY, 2020



WAMI/RUVU BASIN WATER BOARD

1. INTRODUCTION



Wami/Ruvu Basin covers an area of about 66,820 square kilometers. The Basin is located in the Eastern side of Tanzania which lies between Longitudes $35^{\circ} 30' 00''$ to $40^{\circ} 00' 00''$ E and Latitudes $05^{\circ} 00' 00''$ to $07^{\circ} 30' 00''$. The Basin is sub divided into three catchments known as Ruvu, Wami and Coast.

Hydrological flow situation in the Basin during the month of February was characterized by a continued increase of surface runoff due to high rainfall observed in most parts of the Basin. Furthermore, the flow analysis situation will be carried out based on rainfall trends, flow variations in rivers and water level in reservoir (Mindu Dam).

2. RAINFALL TRENDS AT SELECTED STATIONS

Generally, rainfall recorded in most of stations within the basin for Feb 2020 were above average in comparison to Long term average (LTA). This might result to high flows in streams and rivers as well as recharge of the groundwater aquifer within the basin.

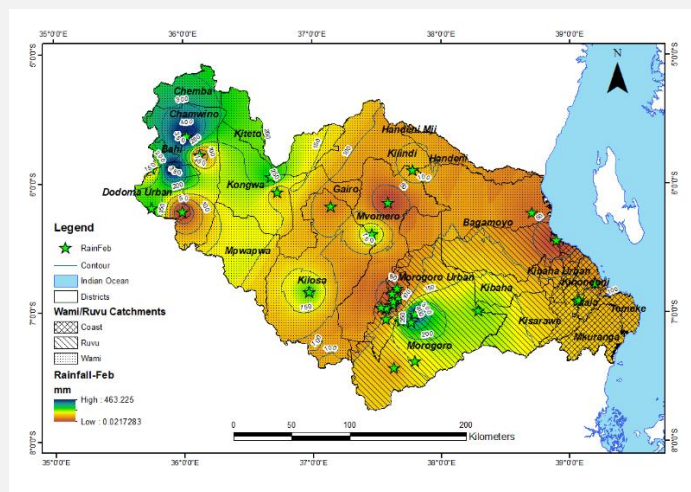


FIGURE 2-1: RAINFALL DISTRIBUTION IN THE BASIN FOR FEB 2020

The north west part of the basin which includes areas of Dodoma, Chamwino, Bahi and Chemba recorded received high amount of rainfall (**Fig 2.1**) compared to the other part of the basin. Less rainfall amount were recored in the north east and central part of the basin which include areas of Kilindi Handeni, Bagamoyo, Pangani, Gairo, Mvomero and Morogoro Municipal.

In the mountainous areas represented by Uluguru Mountains recorded rainfall were above average (**Table 2.1**).

Catchment	Station Name	Total Rainfall (mm)	LTA (mm)	Standard Deviation	Remarks
Wami	Milengwelengwe	99.2	82.8	11.6	Average
	Wami/Prison	200.1	122.9	54.6	Above average
	Mziha primary school	119.6	41.3	55.4	Above average
	Murad Sadiq	341.1	106.7	165.7	Above average
	Berega Mission	69.9	61	6.3	Average
	Kutukutu-Kilosa	205.5	78.8	89.6	Above average
	Wami Railway	52.9	56.8	2.8	Above average
	Dodoma-Maji	232.3	114.3	83.4	Above average
	Makutopora Maji	157.4	69.3	62.3	Above average
	Dabalo-dam	58.3	95.6	26.4	Above average
	Hombolo	436.6	73.5	256.8	Above average
	Njoge	255.2	74.7	127.6	Above average
	Pandambili	121.2	110.9	7.3	Above average
	Itiso	453.4	101.8	248.6	Above average
	Zanka	121.4	88.8	23.1	Above average
Ruvu	Morogoro Maji	54	86.3	22.8	Above average
	Morning side	67.7	138.4	50.0	Above average
	Mlali Malali	72.5	91	13.1	Average
	Langali Mgeta	138.6	124.5	10.0	Average
	Kibungo Kibungo	241	141.1	70.6	Above average
	Kibungo juu	463.9	173.5	205.3	Above average
	Matombo Mission	295.8	135.9	113.1	Above average
	Ngerengere-Utari	194.3	64.6	91.7	Above average
Coast	Kisarawe- Boma	128.3	50.4	55.1	Above average
	Kisarawe-FDC	128	45.7	58.2	Above average
	Ubungo- Maji	77.3	33.7	30.8	Above average

3. FLOW VARIATIONS IN RIVERS

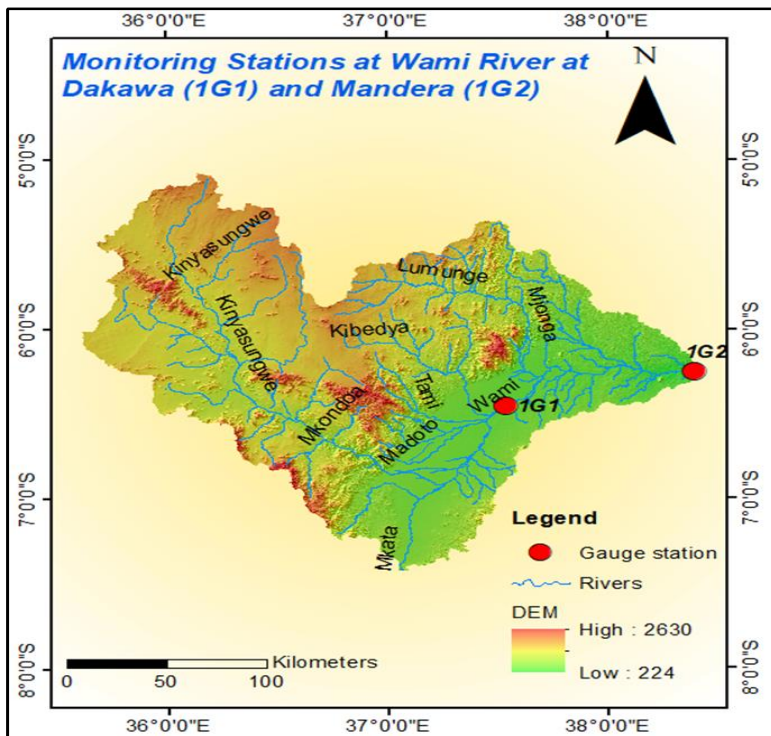


FIG. 3.1: Representative stations within Wami catchment

WAMI CATCHMNET

Wami river at Mander (1G2) station represent the Wami Catchment (Fig. 3.1). The peak flow recorded in February, 2020 was closed to flow recorded in February, 1979 (Figure 3.2), this implies the flow return of 41 years.

The average flow for Feb, 2020 was above compared to the long-term average values. Whereby the average flow value recorded was **291.31m³/s**. The maximum flow value observed was **556.330m³/s** on 05th of Feb, 2020 and Minimum flow value was **116.19m³/s** on 27th of Feb, 2020.

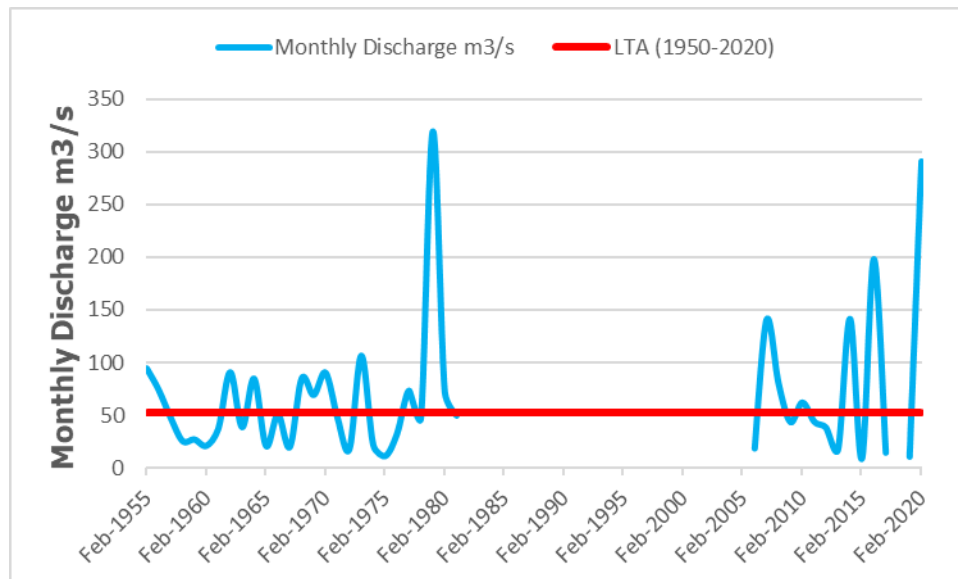


FIG. 3.2: FLOW VARIATIONS RECORDED AT 1G2 LAST STATION IN LOW REACH WITHIN WAMI CATCHMENT.

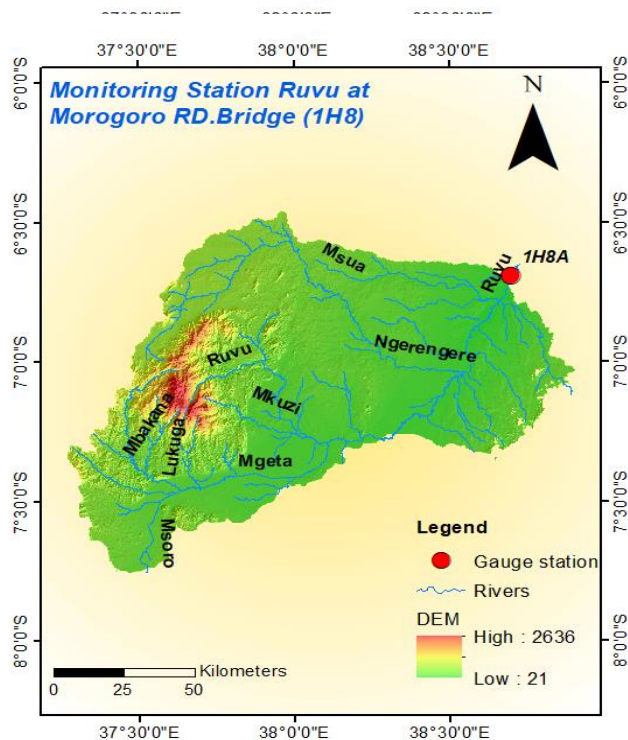


FIG. 3.3: Representative stations within Ruvu catchment

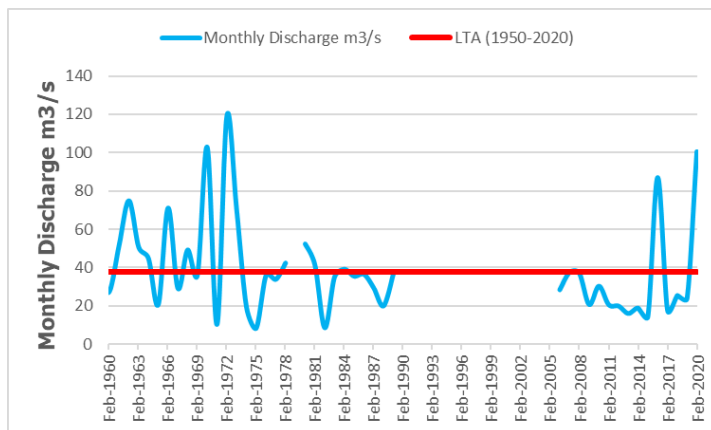


Fig 3.4; Monthly flow trend at 1H8A from Feb,1958 to Feb, 2020

RUVU CATCHMNET

Ruvu River at Morogoro road bridge station (1H8A) is the last station in the lower reach of the Basin and it is used for Catchment Surface Water Monitoring such as both DAWASA intakes (lower and upper Ruvu intakes); the station gives the whole picture of the Catchment.

Generally, the peak flow for February, 2020 was similar or closer to Feb, 1970 and 1972 (Fig 3.4) this implies the flow return of 50 years; the flow average for Feb, 2020 was above average compared to the long-term average values (1950-2010). The monthly mean flow which passes across the station was **100.6m³/s** which is much greater than the total abstraction upstream of the station as estimated from the water permits which is 13m³/s. The maximum flow observed was **150m³/s** on 01st of Feb, 2020 and the Minimum Value observed was **59m³/s** on 27th Feb 2020. This implies that there was no expected Water deficit for Environmental, Domestic and other users for this month.

4. WATER LEVEL IN RESERVOIR

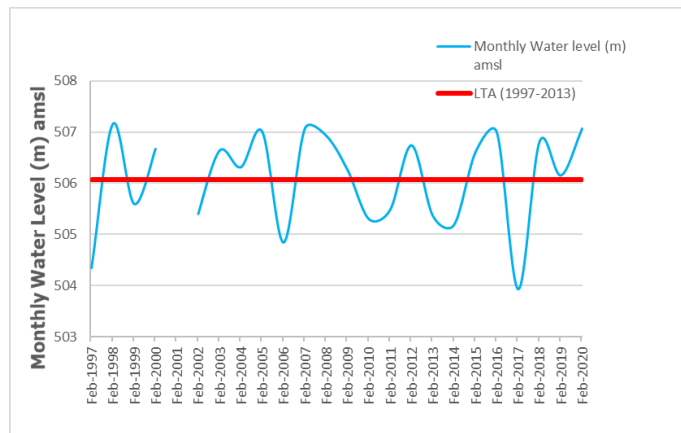
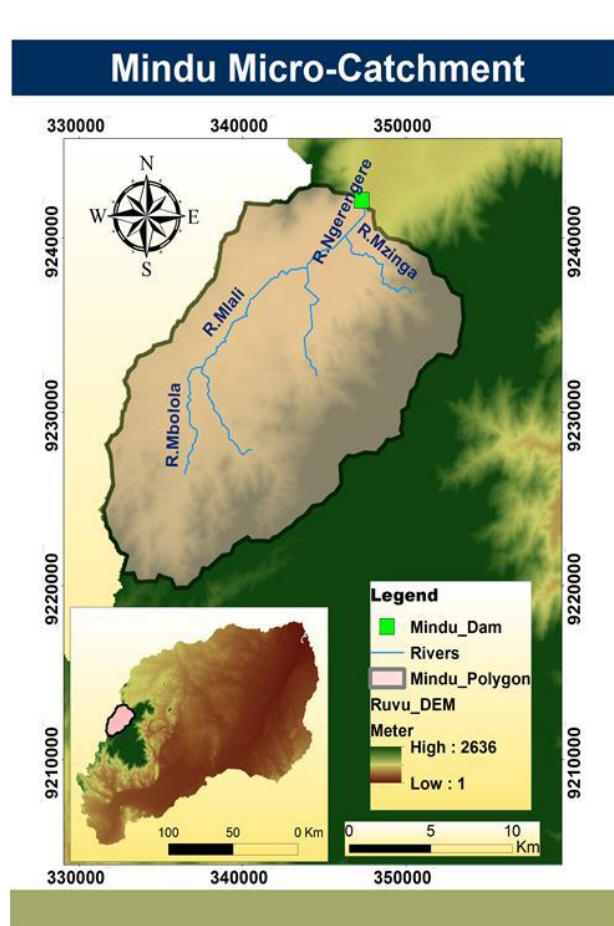


Figure 4.1; Water Level trend in Mindu dam from February 1997 to Feb, 2020

MINDU RESERVOIR

Always the month of February was the critical month in Morogoro whereby there was a water supply rational due to decreases of water level (water storage) in the Mindu dam but the situation was quit difference for this year whereby water level for Feb, 2020 was approximately closed to the year of El-Niño 1997/1998; whereby in the El-Niño year the Monthly average water level for month of Feb was 507.166masl while in Feb, 2020 water level was 507.075masl (Fig 4.1).

The maximum water level recorded this month was **507.100masl** on the 01st of February, 2020 and the minimum level was **507.000masl** on the 29th of February, 2020 as well as monthly mean water level was **507.075masl** which corresponds to fully supply of reservoir which is 12 million cubic meter.

5. IMPACTS OF FLOOD

As presented above, in Feb 2020 the basin received high rainfall especially in the north west part of the basin thus high levels in major rivers and streams. The flood events were observed in Kinyasungwe and Mkondoa rivers which caused damage of infrastructures like bridges, railways and roads.



FIGURE 5-1: DAMAGE OF RAILWAY AT MUNISAGARA VILLAGE

The impacts observed were;

- ✚ Collapse of river banks of Mkondoa River
- ✚ Damage of Railway about 300m between Munisagara, Mkadagi and Kilosa stations (Fig 5.1) and three houses were washed away.
- ✚ Various infrastructures were destroyed such as roads in Gulwe village.
- ✚ Gauging station of Mkondoa river at Kilosa (1GD2) was washed out.



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MOROGORO

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