

THE SUMMARY OF THE 2011 – 2014 HYDROLOGICAL YEAR BOOK

BACKGROUND

The Hydrological Yearbook contains in particular a brief summary with details on the significant events of the year and a list of operating gauging stations. Tables of the 365 or 366 daily flows observed on a subset of stations are also included.

The first Hydrological year book was published in 1963 covering the years from November, 1950 to October, 1959. The Second one was published in 1967 covering the range from November 1959 – October 1965. The third Hydrological Year book was covering the range since January 1965 – December 1970 with coverage of Pangani, Wami, Ruvu and Rufiji river basins. However the last one was published in 1980 covering from January, 1971 – December, 1980 whereby it is almost 36 years back to date in 2016.

There are missing data to most of the stations since 1980s and the major reason was inadequate fund and Institutional Reform of Hydro-works which led to different shortcomings as mentioned here below:

1. Flow measurements were not done frequently except for special cases
2. Damage of some stations without rehabilitation for a long time
3. Failure to develop any Hydrological Year Book to cover a suitable range of years due to lack of data collection

During the implementation of WSDP I the Ministry managed to rehabilitate and construct new stations for water resources monitoring. A total of 24 stations were used in the preparation of 2011 -2014 hydrological yearbook. The selected stations are illustrated in table 1 below, table 2 indicate availability of data for some stations.

CRITERIA USED IN SELECTION OF THESE STATIONS.

1. Availability of discharge measurements for producing rating curves.
2. Availability of water levels for required period.
3. Availability of Metadata. e.g Station Name and Number, Established date, Location of station in terms of Lat/Long, Altitude, Catchment area, Accessibility etc.

CONTENT OF 2011 – 2014 HYDROLOGICAL BOOK

- (a) Meta Data – A Description sheet which gives the basic information about data and the stations. Such as station location, catchment area, station details, duration of records and quality, extreme value and other notes where necessary. (Example of meta data sheet indicated below)
- (b) A map of the catchment area above the station with river tributaries and gauging station location.
- (c) Mean daily discharges for the period for which reliable data is available.

RUFIJI BASIN

River **GREAT RUAHA**
At **SALIMWANI**

Station No. **1KA8** Established **16/12/1964**
Coordinates Lat **8° 54' 00" S** Long **34° 7' 00" E**
Altitude **3795 Ft** Catchment Area **785 sq km**

Description of the catchment: **Scattered native settlement and cultivation u/s woodland and some wooded grassland d/s**

Station Details:

1. Staff Gauges:

Range **0.00 – 6.00 m** A.D.Z.R.L **0.00 m**

Type of gauges **Standard vertical**

Automatic Recorders- **Data logger pressure type**

2. Bench Mark **Nail in concrete beacon** **B.M.** Assumed Datum 7.690..m

B.M.M.S.L. Datum -

Control **Permanent consists of rock boulders across the stream**

3. Access

Records:	Period	Quality
Water Levels	from 2011- 2014	2.2.3
Discharge	from 2011- 2014	1.3.2

Extremes:

Max. Recorded Discharge 367.345 on Dec 2011 W.L 3.850

Min. Recorded Discharge 1.585.on October 2011 W.L 0.299

Remarks: None

Table 1. Station selected for 2011 -2014 HYB

No	BASIN	STN ID	STATION NAME
1	PANGANI	1DD55	Kikuletwa at Karangai,
		1D14	Pangani at Korogwe,
		1DD1	Kikuletwa at TPC,
		1C1	Zigi at Lanconi
		1D10	Pangani at Buiko
2	Wami/Ruvu	1GD36	Mkata at Mkata
		1G1	Wami at Dakawa
3	Rufiji	1KA2A	Little Ruaha at Ndiuka,
		1KA8A	Great Ruaha at Salimwani,
		1KA9	Kimani at GNR,
		1KA11A	Mbarali at Igawa, Ndembera at Ilongo,
		1KA22	Mtitu at Mtitu,
		1KA37A	Lukosi at Mtandika
		1KB32	Kihansi at Lutaki
4	Ruvuma Basin and Southern Coast	1Q7	Ruvuma at Muhiga,
		1Q10	Likonde at Logowonga
		1Q16	Ruvuma at Litapwasi
5	Lake Nyasa	1RC3A	Mbaka at Mwaya,
		1RC1A	Lufirio at Ipinda
		1RB2	Ruhuhu at Masigira
6	Internal Drainage	New	Kou at Darakuta Ranch
7	Lake Victoria	5H2	Mara at Mara Mine

NB: Lake Rukwa and Lake Tanganyika Basins were omitted from the hydrological year book because they had no enough data for the reporting period. (2011 – 2014)

Table 2: Data availability

S/N	STATION NAME	STATION ID	ESTABLISHED DATE	DATA AVAILABLE(YRS)	
				WATER LEVEL	FLOW
1	Great Ruaha at Salimwani	1KA8	16/12/1964	1965-2016	1998-2016
2	Kihansi at Lutaki	1KB32	20/11/1984	1984-2016	1984-2016
3	kimani at Great north road	1KA9	Nov-54	1971-2016	1971-2016
4	Little Ruaha at Makalala	1KA32	14/12/1964	1965-2016	1971-2015
5	Little Ruaha at Mawande	1KA31	21/11/1956	1957-2016	1957-2015
6	Little Ruaha at Ndiuka	1KA2A	1/12/1964	1960-2016	1971-2015
7	Lukosi at Mtandika	1KA37	25/11/1959	1960-2016	1980-2015
8	Mbarali at Igawa	1KA11A	November, 1954	1960-2016	1960-2016
9	Mtitu at Mtitu	1KA22	May, 1957	1957-2016	1960-2016

S/N	STATION NAME	STATION ID	ESTABLISHED DATE	DATA AVAILABLE(YRS)	
				WATER LEVEL	FLOW
10	Ndembera at Ilongo	1KA15	16/10/1960	1961-2016	1961-2016
11	Ruvuma at Muhiga	1Q7	23/10/1971	1972-2014	1972 - 2014
12	Likonde at Ligowonga	1Q10	9/11/1971	2009-2014	2009 - 2014
13	Ruvuma at Litapwsi	1Q16	8/9/1999	1999-2014	1999-2014
14	Mkata at Mkata	1GD36	20/03/1974	1973-1978,2007	1973-1978,2007
15	Wami at Dakawa	1G1	14/11/1953	1954-1988,2007	1954-1988,2007
16	Kou at Darakuta	Unregistered	11/1/2013	11/1/2013-31/12/2014	11/1/2013-31/12/2014
17	Rufirio at Ipinda	1RC1A	28/5/1954	1958 - 2014	1958 - 2014
18	Mbaka at Mwaya	1RC3A	2/10/1961	1956 - 2014	1956 - 2014
19	Ruhuhu at Masigira	1RB2	28/10/1971	1971 - 2014	1971 - 2014
20	Pangani at Buiko	1D10	14 /4/ 1958	1959-2016	1964-2015
21	Pangani ata Korogwe	1D14	23/4/1995	1997-2016	1995-2015
22	Pangani at Mnyuzi	1D17A	10/11/1967	1968-2016	1994-2014
23	Sigi at LanconiSisal Estate	1 C 1	1/5/1957	1962-2016	1971-2014
24	Kikuletwa at TPC	1DD1	28/10/1971	1952-2016	1982-2015
25	Kikuletwa at Karangai	1DD55	1/12/1975	1975-2016	1989-2015
26	Mara at Mara Mine	5H2	15/08/1969	1969-2016	1972 - 1981, 2013- 2016
27	Kagera at Kyaka Ferry	5A9	1/1/1940	1950-2016	1950- 2016
28	Simiyu at Main Bridge	5D3	3/1/1969	1969-2016	1969 -1978 , 2011 - 2016
29	Mori at Utegi	5J1	8/1//1969	1969-2016	1970 - 2016
30	Kagera at Nyakanyasi	5A13	4/1/1969	1970-2016	1970-2016

CHALLENGES ENCOUNTERED DURING THE PREPARATION OF HYDROLOGICAL YEAR BOOK

1. Some of stations had no enough data for the reporting period.
2. Inadequate capacity to prepare maps in the basins.
3. Data collection procedures were not followed e.g. season for measuring low, medium and high flows of rivers, check surveys were not done for water levels correction.

RECOMMENDATION

Flow measurements, water levels collection and regular check survey of gauges should be a sustainable process so as to enable preparation of hydrological year book become easier.