



Tanzania Meteorological Agency



“COUNTRY PRESENTATION”

UNITED REPUBLIC OF TANZANIA

Dr. Pascal Waniha

(Director of Infrastructure and Technical Services – TMA)

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The Physical Context of Tanzania

OBSERVATION STATUS - TANZANIA

Types of Observations Station

Tanzania Meteorological Agency has two types of observations,

- These are Manned stations and
- Unmanned stations.



Synoptic weather stations



Automatic Weather stations

Observation Stations

The manned stations includes;

- Synoptic weather stations,
- Climatological weather stations,
- Agrometeorological stations,
- Marine Briefing stations,
- Voluntary rainfall stations.

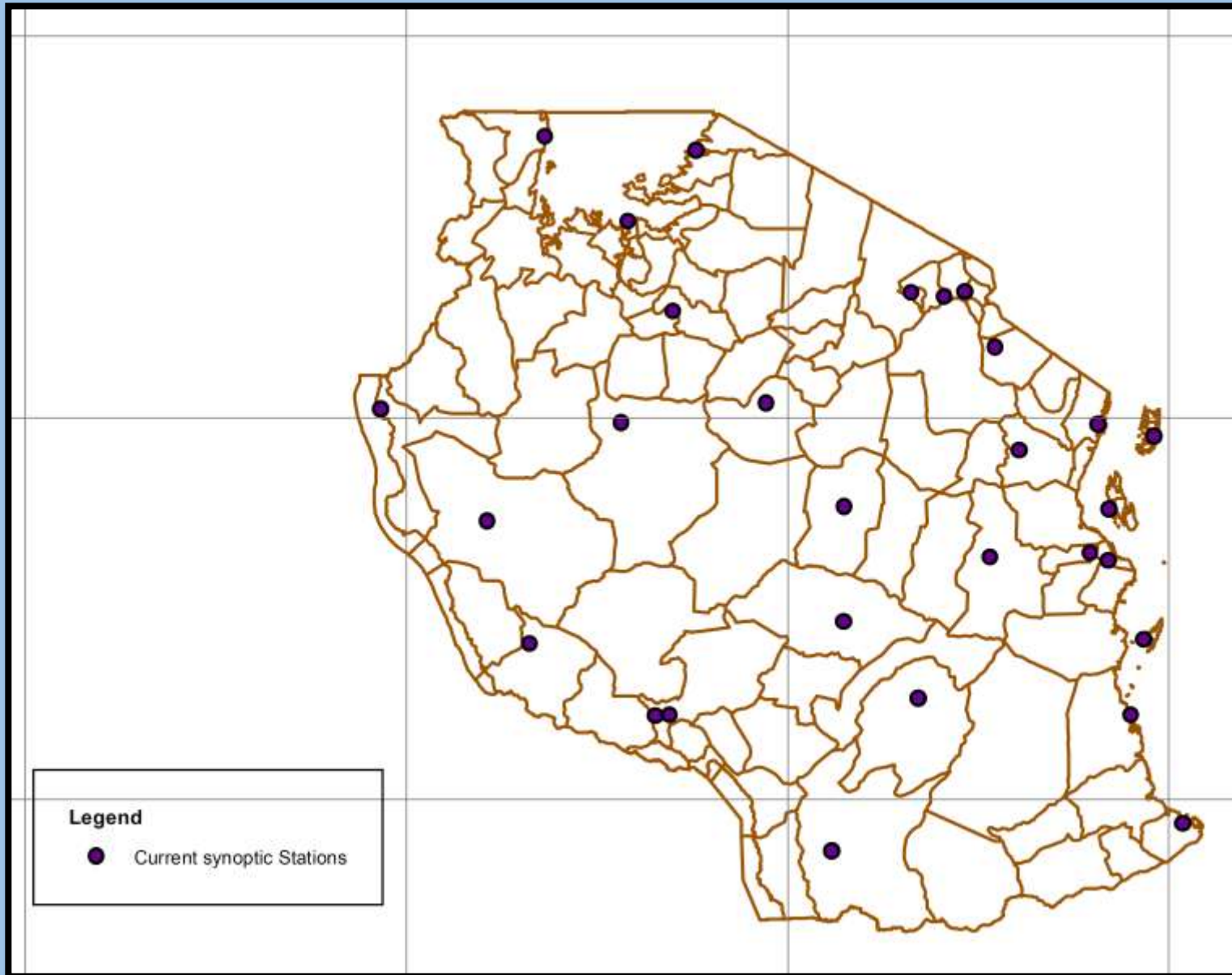
Unmanned Stations includes;

- Automatic weather stations,
- Upper Air Stations
- Weather radars

Other Source of Observational data

- GTS
- MSG
- Aerometweb
- Synergies
- 4 Stations

Synoptic weather stations



27 SYNOPTIC STATIONS

Mode of Operation

- 19 – Stations hourly Observations 24/7
- 8 – Stations hourly Observation 12hrs

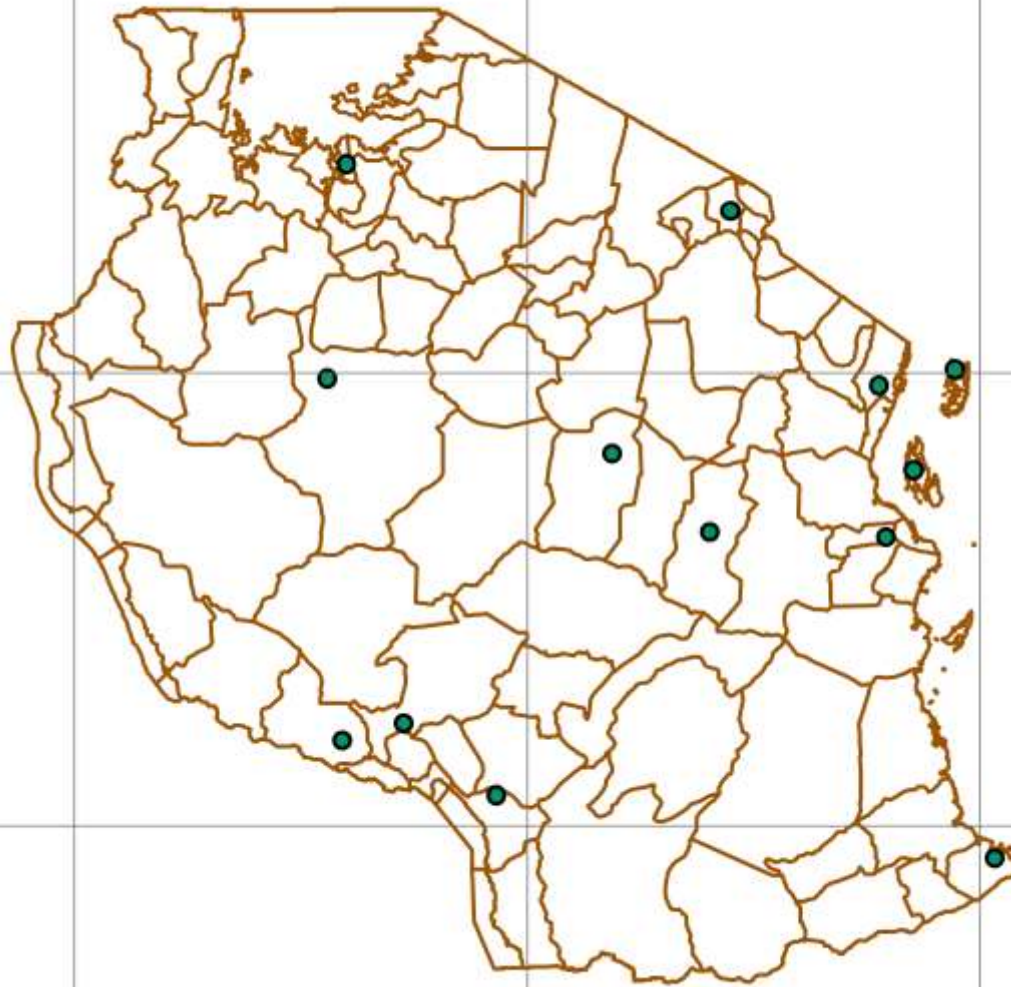
What do they measure

- Air Temperature (Wet, dry, Max, Min)
- Pressure
- Wind (Speed and Direction, Windrun)
- Evaporation
- Rainfall
- Radiation

Other computed and estimated parameter

Relative Humidity, Vapor Pressure, Visibility, Cloud amount and height

Agro meteorological Stations



13 AGROMETEOROLOGICAL STATIONS

Mode of Operation

- Twice a day

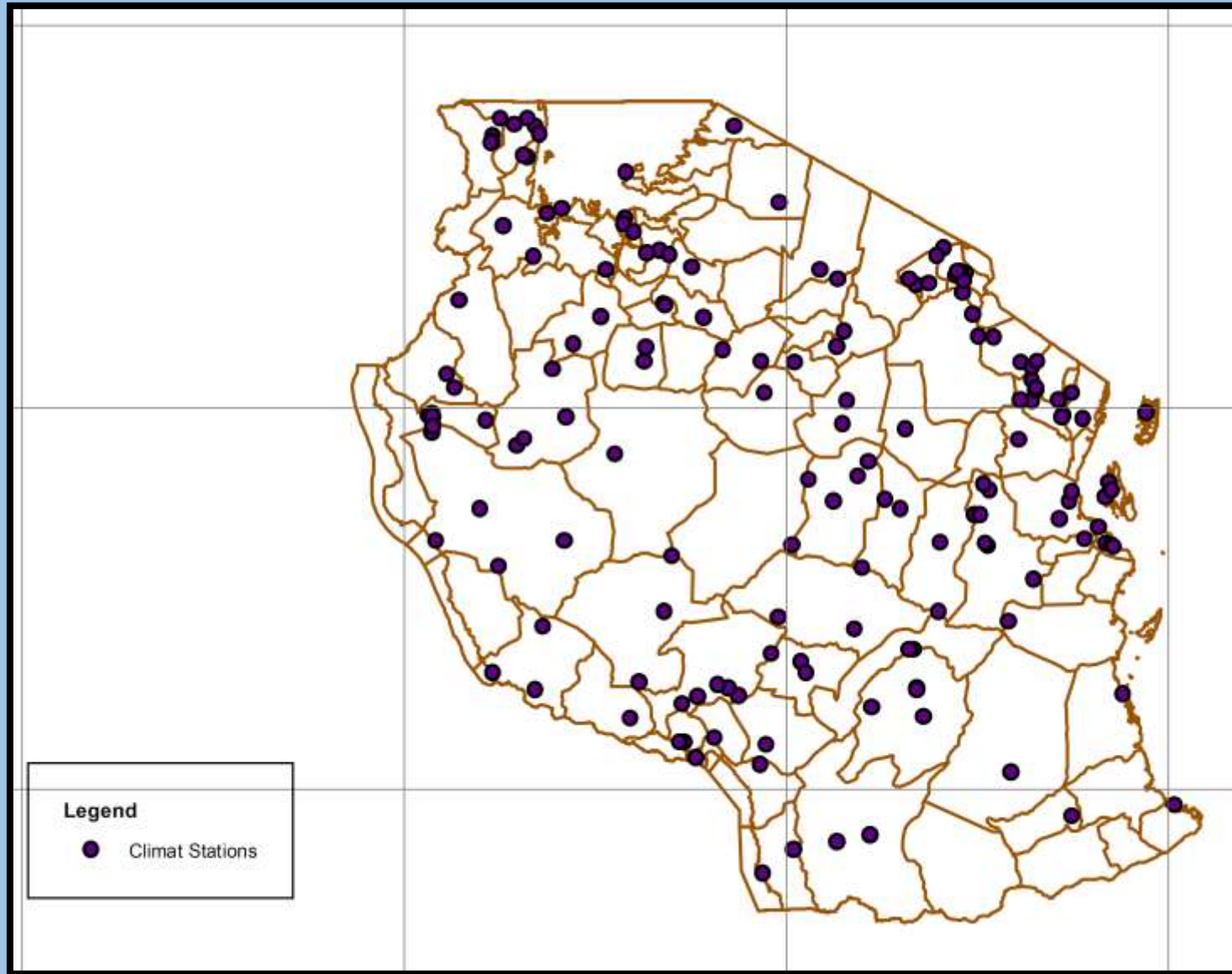
What do they measure

- Air Temperature (Wet, dry, Max, Min)
- Soil Temperatures (Grass, 5, 10, 20, 50 and 100cm)
- Wind (Direction and Wind run)
- Evaporation
- Rainfall
- Radiation

Other Non-Routine Observations

Phenological phases, Soil Moisture Observations

Climatological Stations



139 Climatological Stations

Mode of Operation

- Once a day

What do they measure

- Air Temperature (Wet, dry, Max, Min)
- Rainfall
- Evaporations (in some stations)

Frequency of Transmission

Once a month

Network of AWS



48 AUTOMATIC WEATHER STATIONS

Mode of Operation

- Automatic Observation and transmission (30 interval)

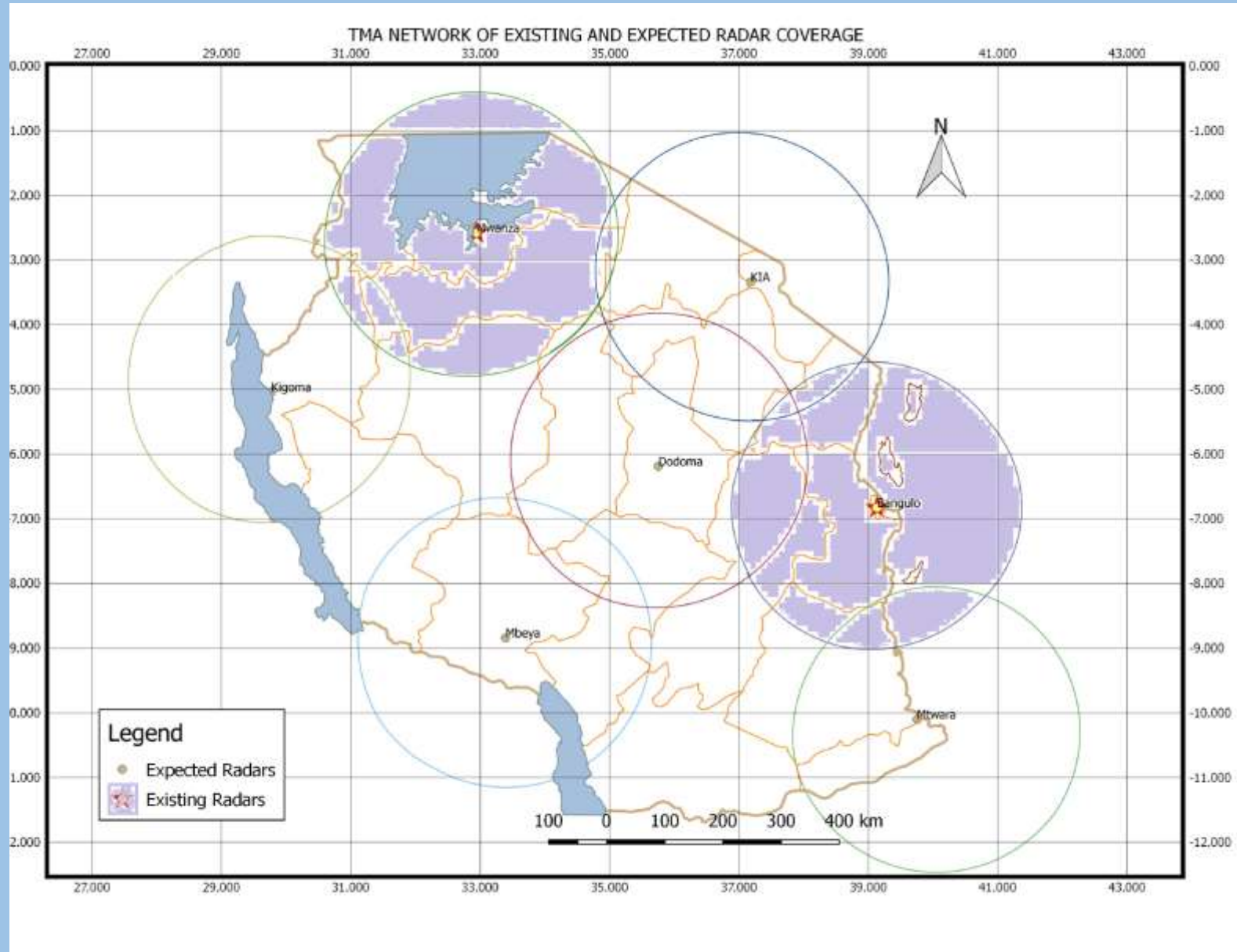
What do they measure

- Air Temperature (Wet, dry, Max, Min)
- Pressure
- Wind (Speed and Direction)
- Evaporation
- Relative Humidity
- Rainfall
- Radiation
- Relative Humidity

Future Plans

Increase sensors and introducing Real Time Monitoring system for integrating all AWS

Network of existing and Expected Radars



Weather RADAR

Number of stations: 2

Type of RADAR: S-Band RADAR

Radius of Coverage: 150-250 km

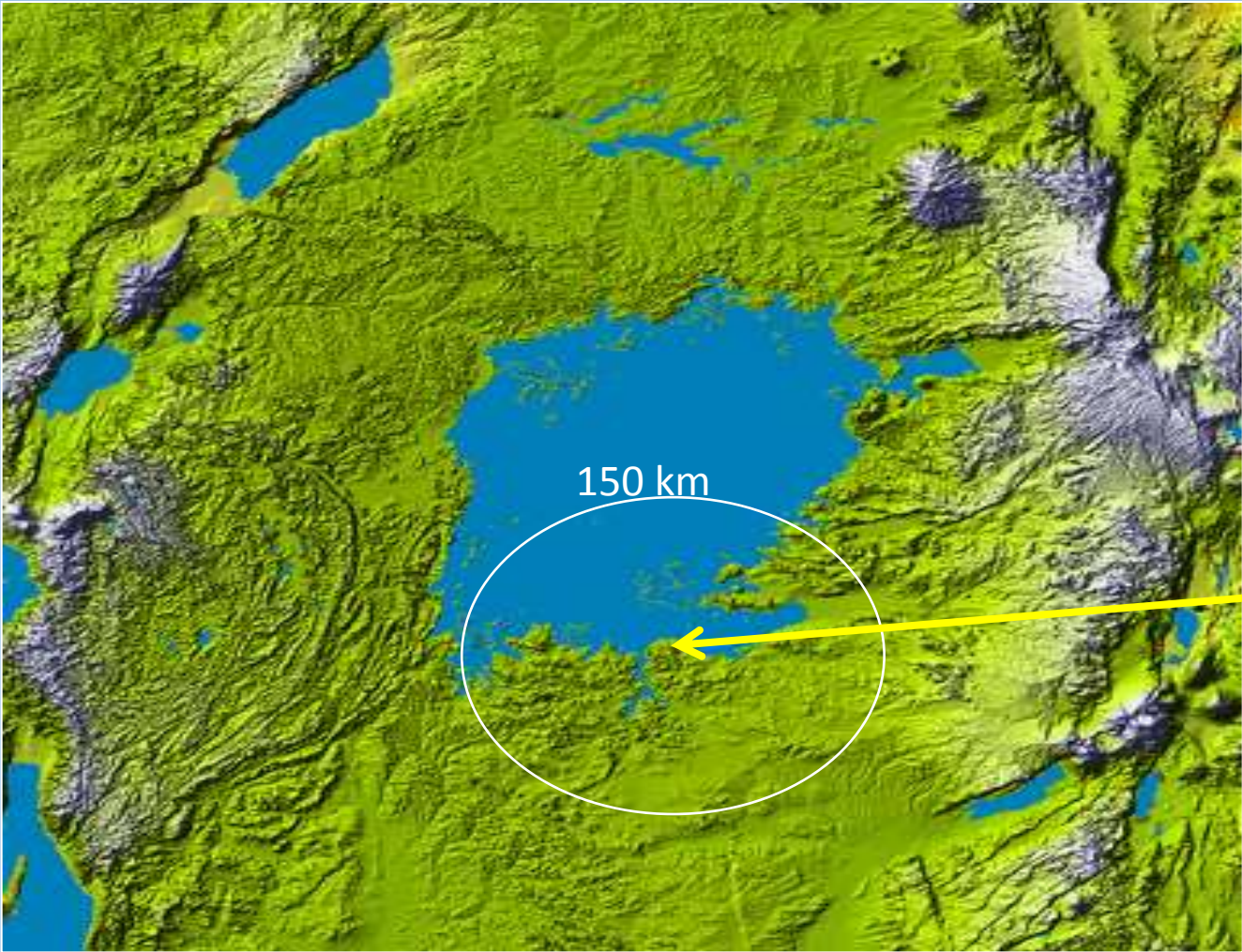
Mode of Operation

- 24/7 During Rainfall Season
- 3 days a week off Season

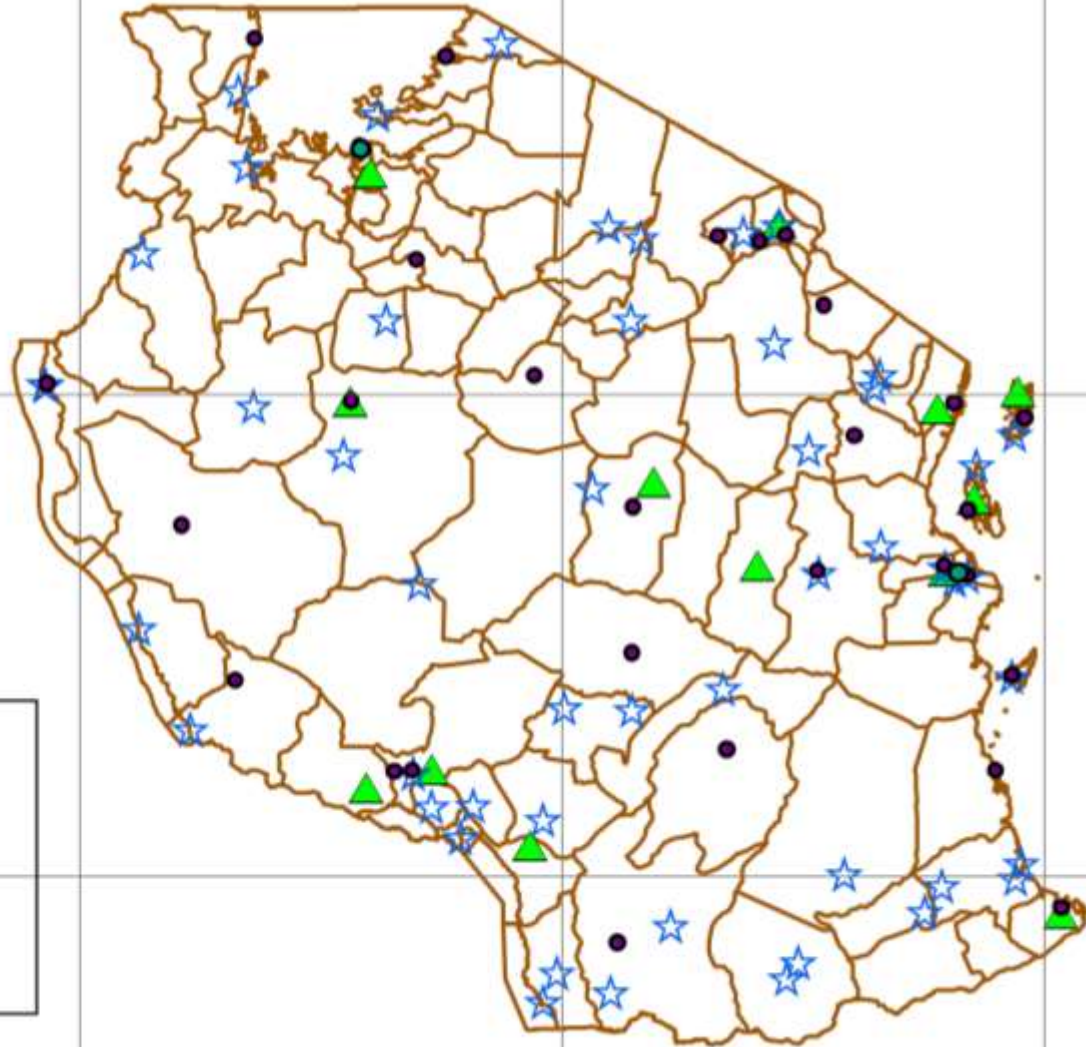
Future Plans

- Procurement of more 5 RADARS
- Integrating All Observation network for real time Observation and Alert System

Mwanza Radar on South End Lake Victoria



All main Meteorological Stations



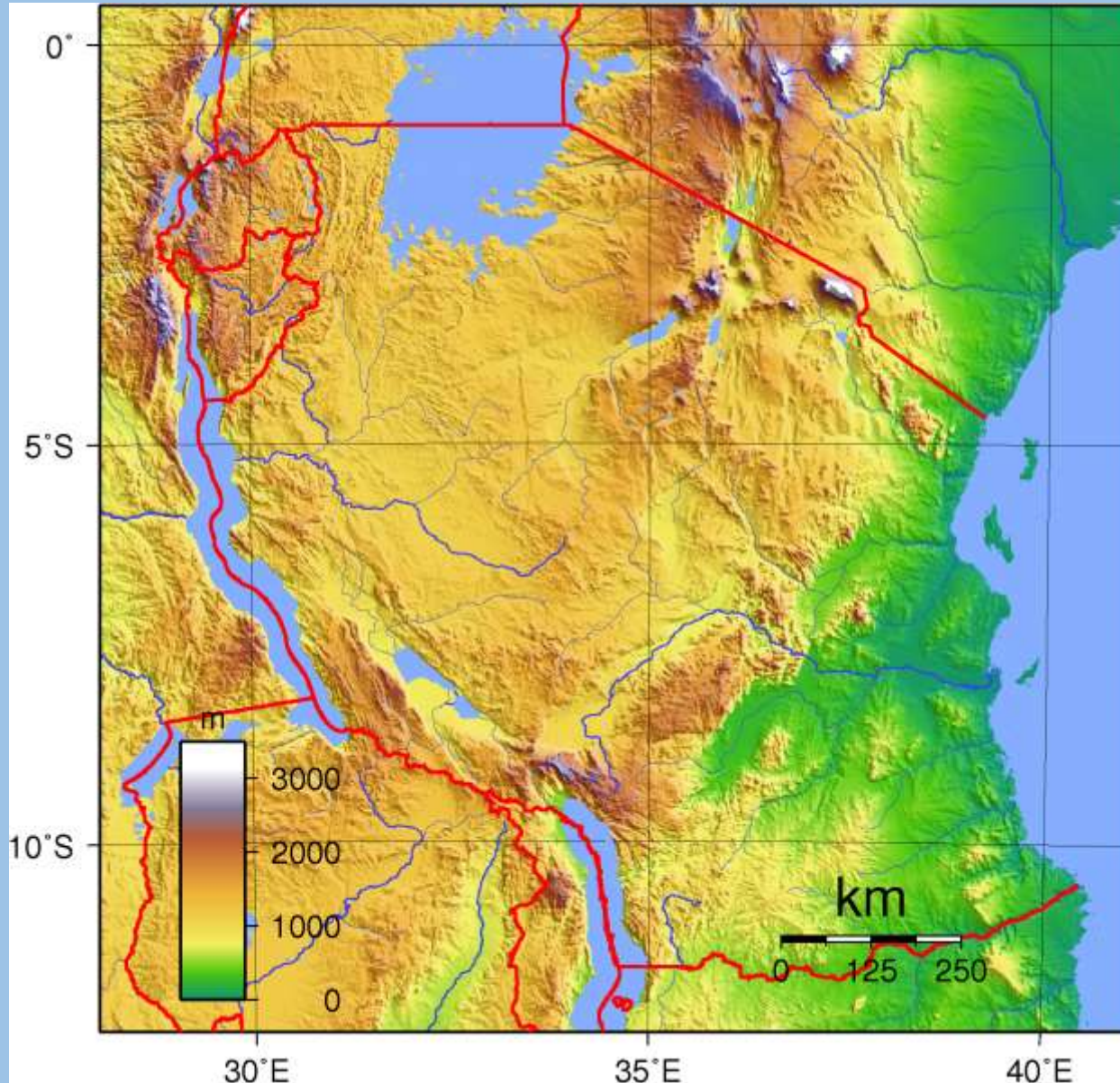
Legend

- Current Radars 2
- Current synoptic 28
- ★ Current Aws 48
- ▲ Current Agro stations 13

- **52 - AWS**
- **28 - SYNOPTIC STATIONS**
- **13 - AGROMETEOROLOGICAL STATIONS**
- **2 - WEATHER RADARS**
- **2 - UPPER AIR STATIONS**
- **139 – CLIMATOLOGICAL STATIONS**
- **1000+ - RAINFALL STATIONS**

Challenges ...

CHALLENGES



The terrain is complex

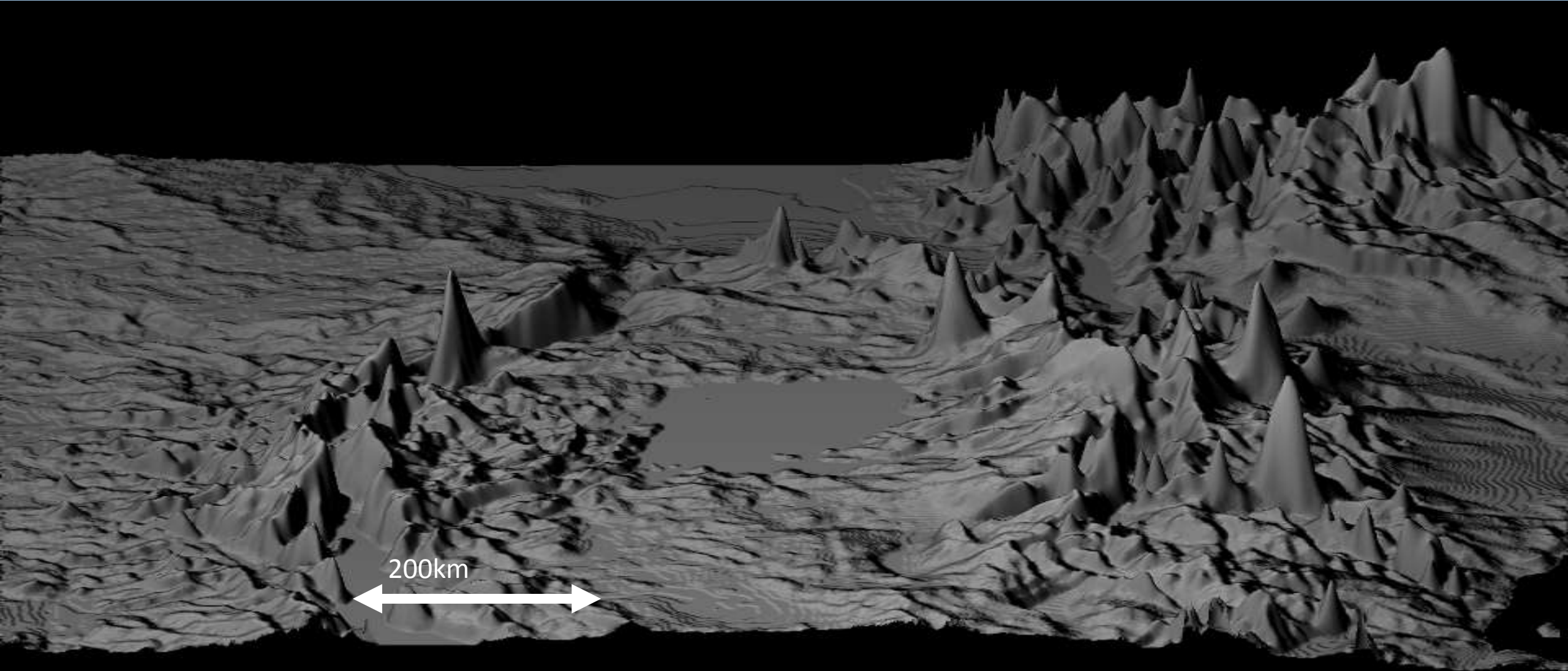
Physical Features

topographical features of Tanzania extends from a narrow coastal belt of western Indian Ocean to an extensive plateau with altitude ranging from Sea Level to 6,000m. Above Sea Level

Highest Point is Mt Kilimanjaro 5,895m

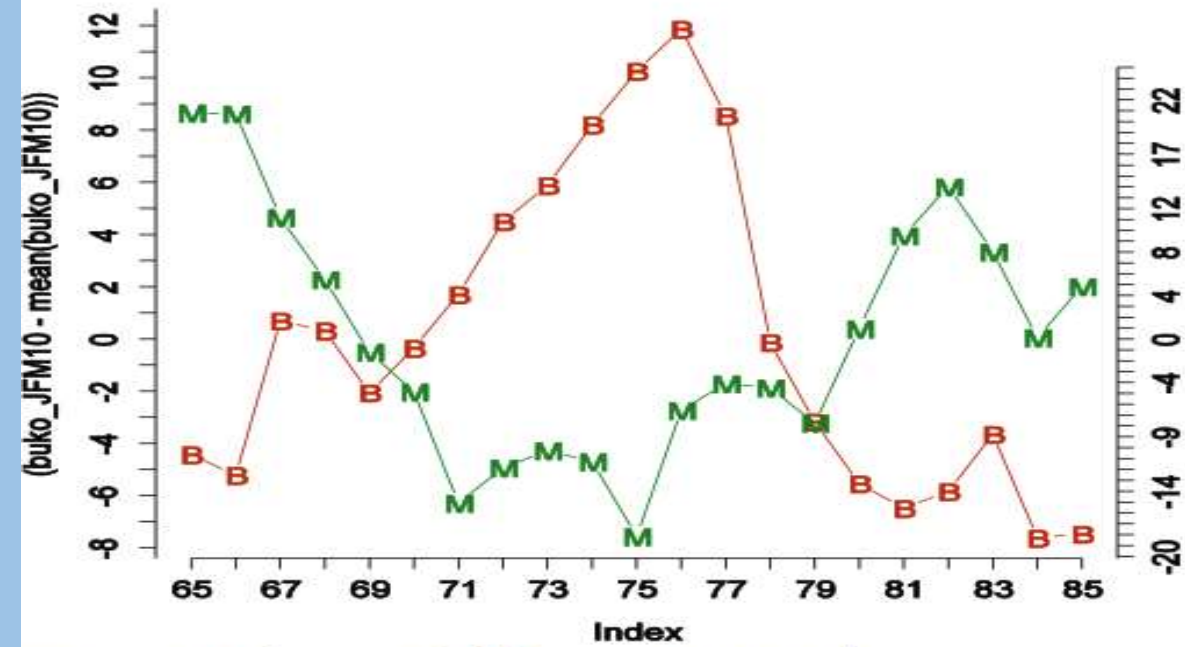
CHALLENGES

The terrain is complex

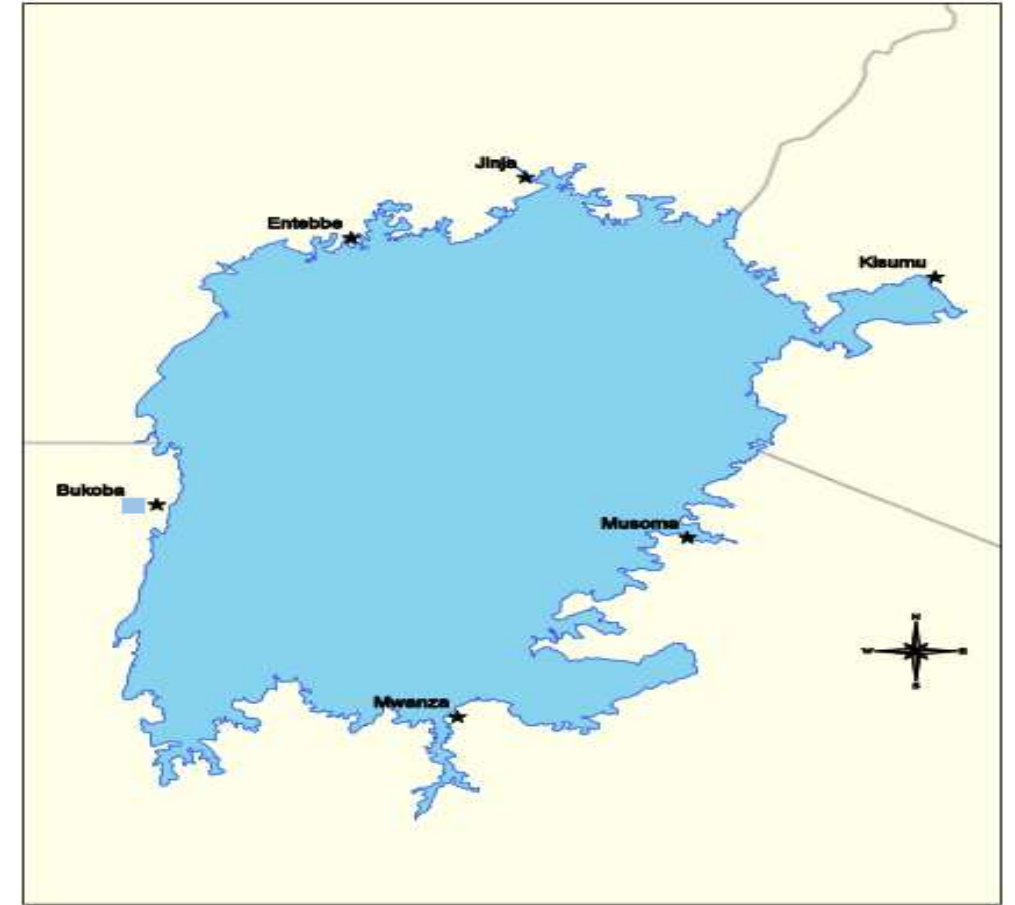


CHALLENGES

Unevenly Rainfall distribution over the lake (dipole)



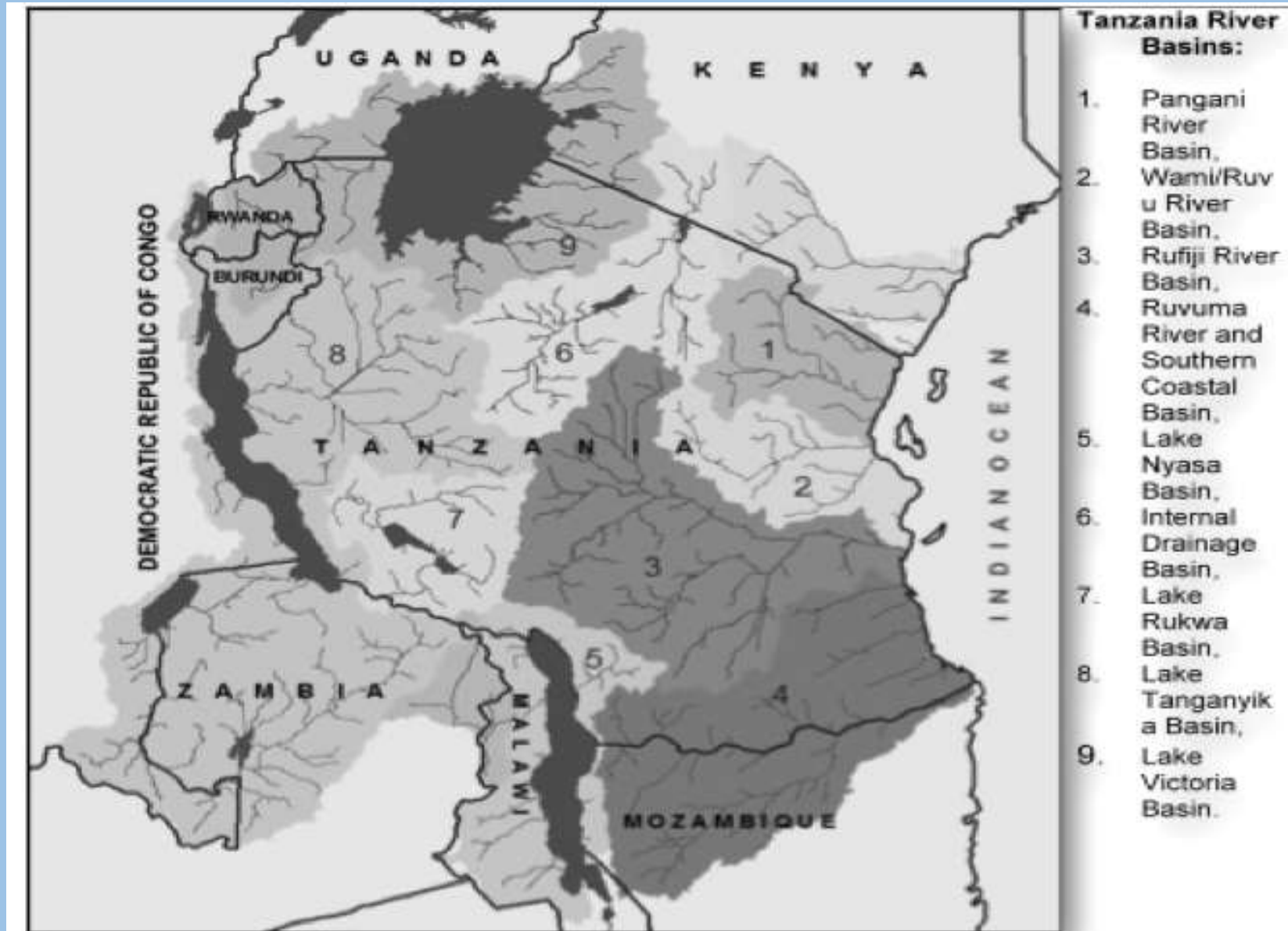
Comparison of 10-year running mean rain gauge time series for Musoma & Bukoba located on opposite sides of the lake.



Semazzi et. all 2012

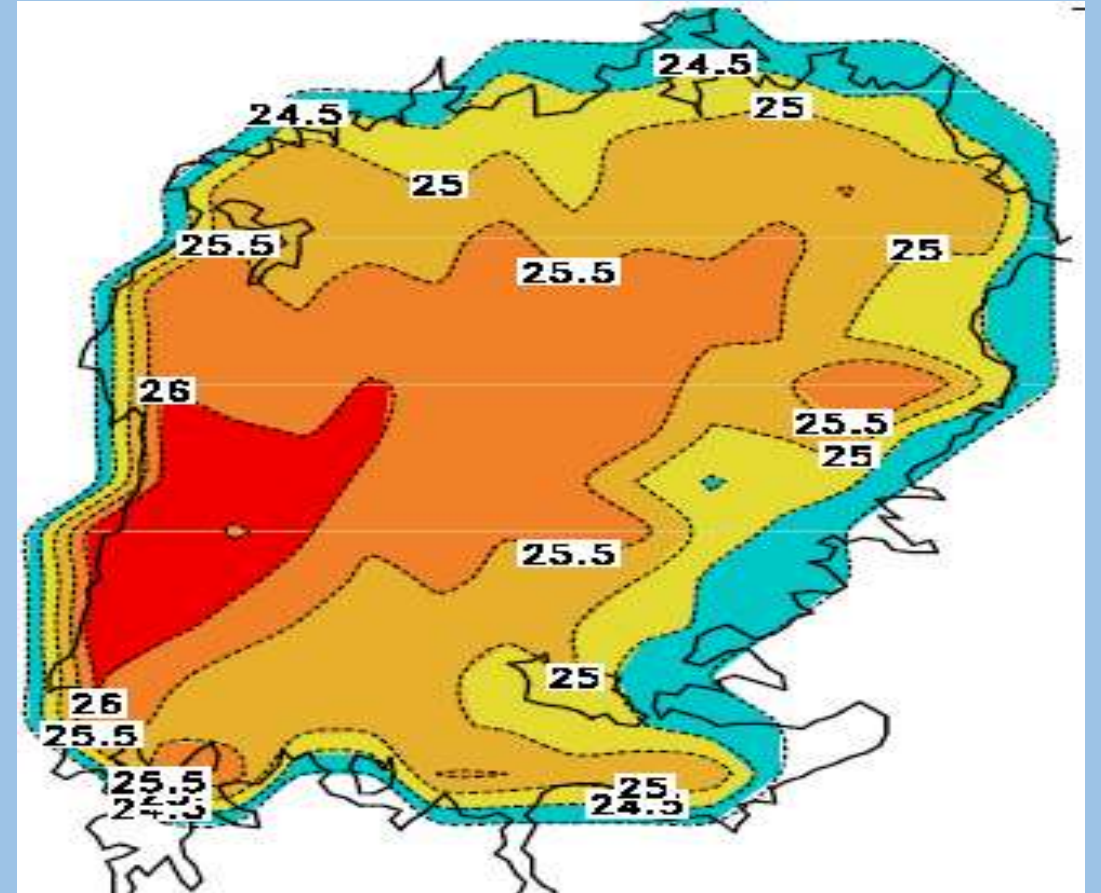
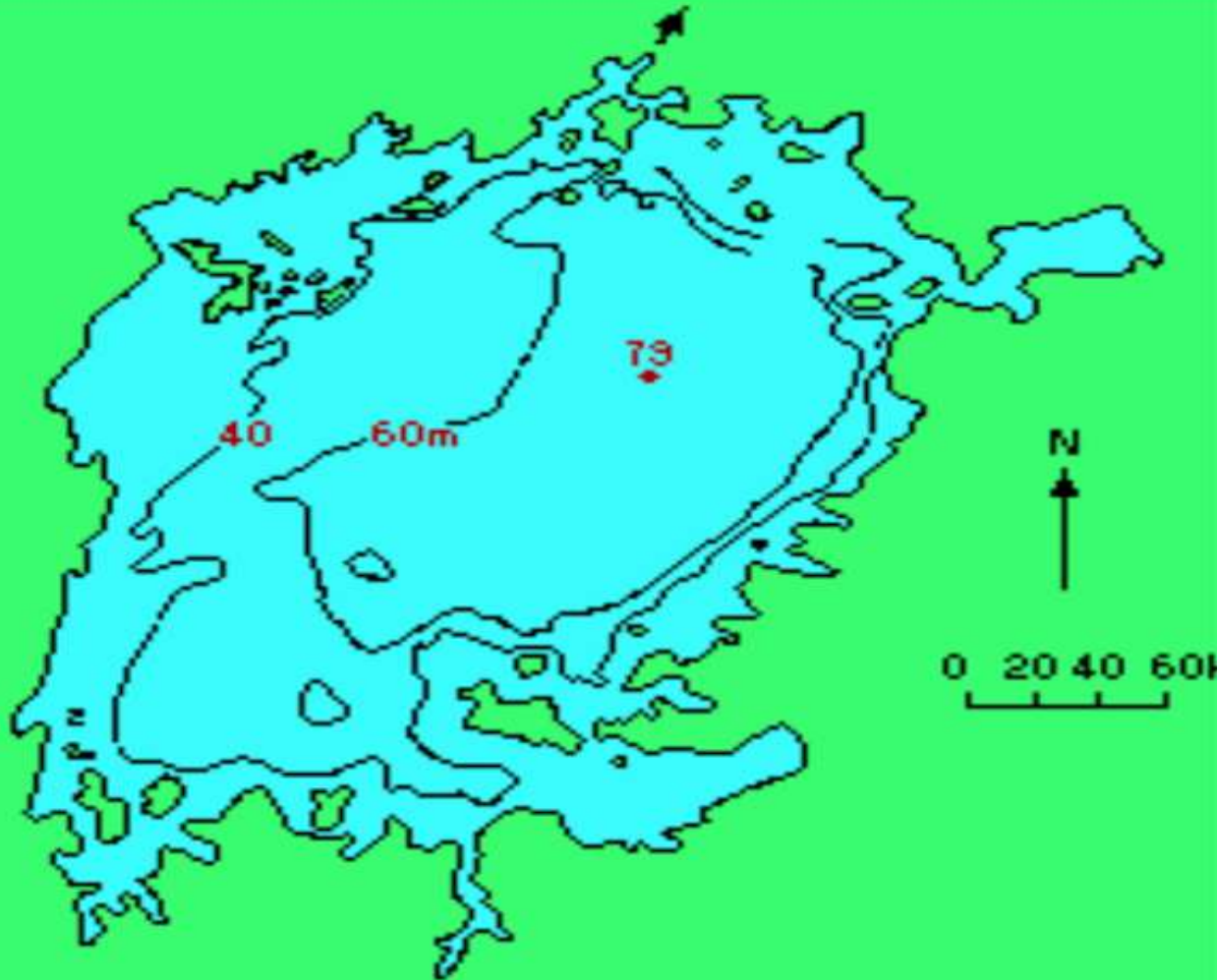
CHALLENGES

Inland Water Bodies



CHALLENGES

Complexity of the Bathymetry of the Lake



Climate Model, Semazzi et. all 2012

TANZANIA OSERVATION STATUS AND GAPS

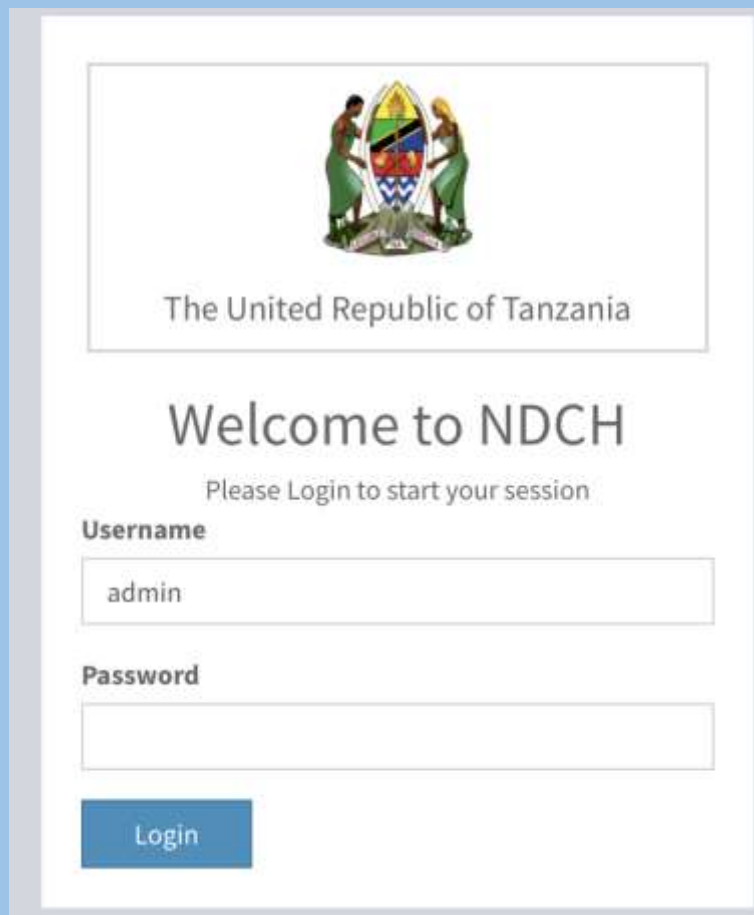
S/N	STATION TYPE	EXISTING	GAP
1	SYNOPTIC	29	15
2	AUTOMATIC WEATHER STATIONS (AWS) (Target 0.75sq.deg)	49	111
3	AGRO-METEOROLOGICAL STATIONS	13	7
4	CLIMATOLOGICAL STATIONS	150	100
5	RAINFALL STATIONS	2056	-
6	AUTOMATIC RAINFALL STATIONS (20km x 20km)	0	2500
7	MARINE STATIONS (BUOYS)+ HF RADAR	0	12+9
8	UPPER AIR STATIONS	1	3
9	PILOT BALOONS STATIONS	1	5
10	RADAR STATIONS	2	5
11	LIGHTING DETECTORS	0	10

Other Data source: National Database for Climate and Hydrology (NDCH)

Tanzania has developed a well designed database for climate and hydrological use.

The database is called National Database for Climate and Hydrology.

TMA hosts the NDCH, where data from all registered Meteorological Station in the country are collected and stored. (All registered station must comply with WMO standards)



The United Republic of Tanzania

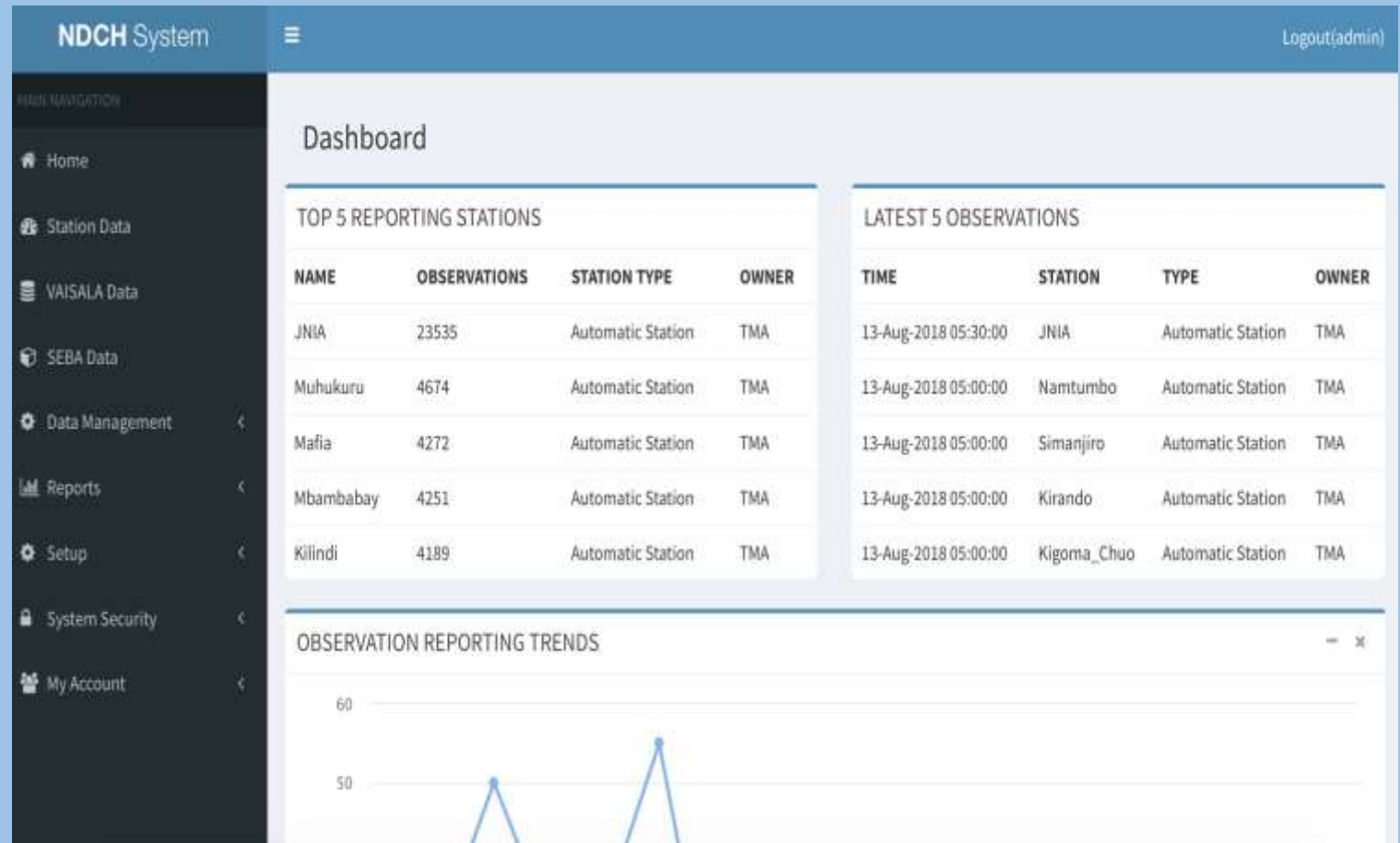
Welcome to NDCH

Please Login to start your session

Username

Password

Login



NDCH System Logout(admin)

Dashboard

MAIN NAVIGATION

- Home
- Station Data
- VAISALA Data
- SEBA Data
- Data Management
- Reports
- Setup
- System Security
- My Account

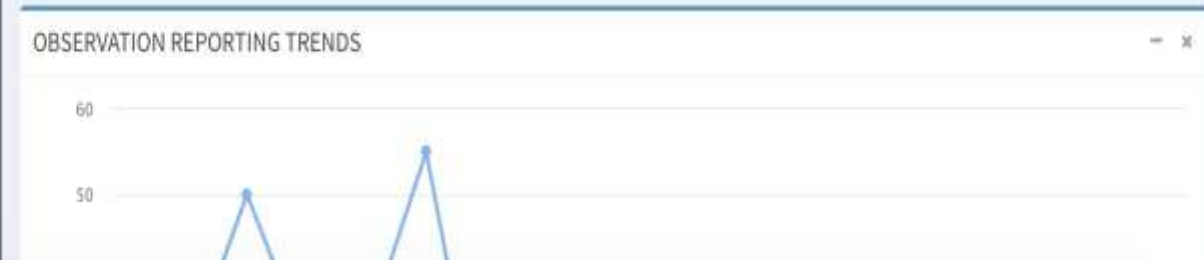
TOP 5 REPORTING STATIONS

NAME	OBSERVATIONS	STATION TYPE	OWNER
JNIA	23535	Automatic Station	TMA
Muhukuru	4674	Automatic Station	TMA
Mafia	4272	Automatic Station	TMA
Mbambabay	4251	Automatic Station	TMA
Kilindi	4189	Automatic Station	TMA

LATEST 5 OBSERVATIONS

TIME	STATION	TYPE	OWNER
13-Aug-2018 05:30:00	JNIA	Automatic Station	TMA
13-Aug-2018 05:00:00	Namtumbo	Automatic Station	TMA
13-Aug-2018 05:00:00	Simanjiro	Automatic Station	TMA
13-Aug-2018 05:00:00	Kirando	Automatic Station	TMA
13-Aug-2018 05:00:00	Kigoma_Chuo	Automatic Station	TMA

OBSERVATION REPORTING TRENDS



Future Plans

- Introduce Real Time **Observation** and **Alert** System
- Strengthen RADAR network
- Reviving Upper Air Stations
- Use of AWS and RADAR products in Data Assimilation (3-DVar and 4-Dvar) Operationally
- Strengthen the AWS network by:
 - Introduce more AWS Stations
 - Improve and Introduce Manned Stations for comparison and verifications of AWS network
 - Capacity Building in Maintenance and Calibration of AWS sensors
- Enhance Marine Observations by
 - Introducing Observation platforms for Wave height and Period over Indian
 - More briefing offices



Tanzania Meteorological Agency



ASANTE SANA

