



Expansion of Observation Networks in East Africa

Challenges and Opportunities

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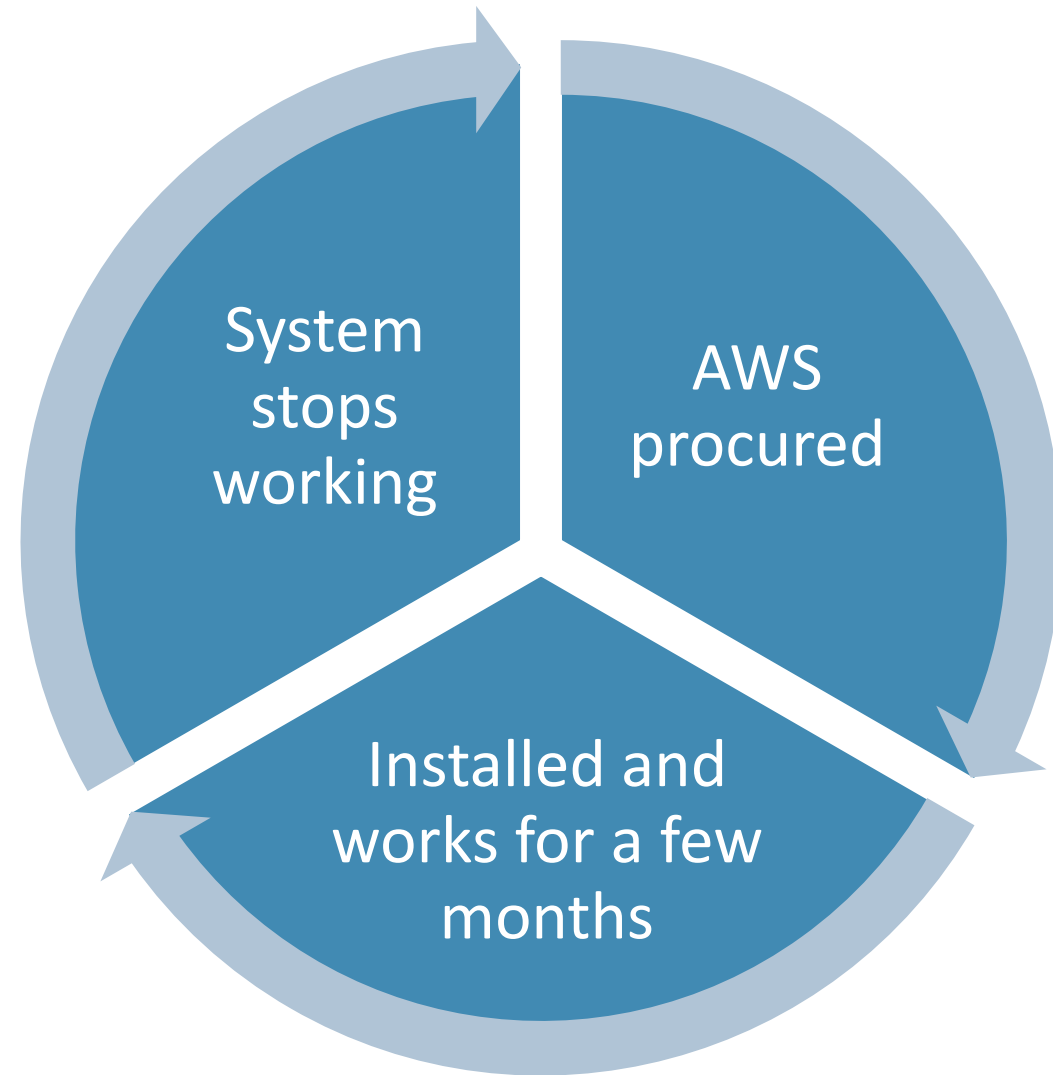


*“Man could hope to **understand** how the **world works**, and, moreover, that we could do this by **observing** the real world”*

Galileo Galilei

“One cannot predict future events exactly if one cannot even measure the present state of the universe precisely”

Stephen Hawking





Automation and digitization is the way to go; if a robust observation network is to be realized

Advantages of Automatic Weather Stations (AWS)

- AWSs are more consistent in their measurement
- They provide data more frequently (some can provide data every minute)
- They will provide data in all weather, day and night, through out the year
- They can be deployed anywhere, including in sparsely populated/remote areas quite easily



Advantages Cont

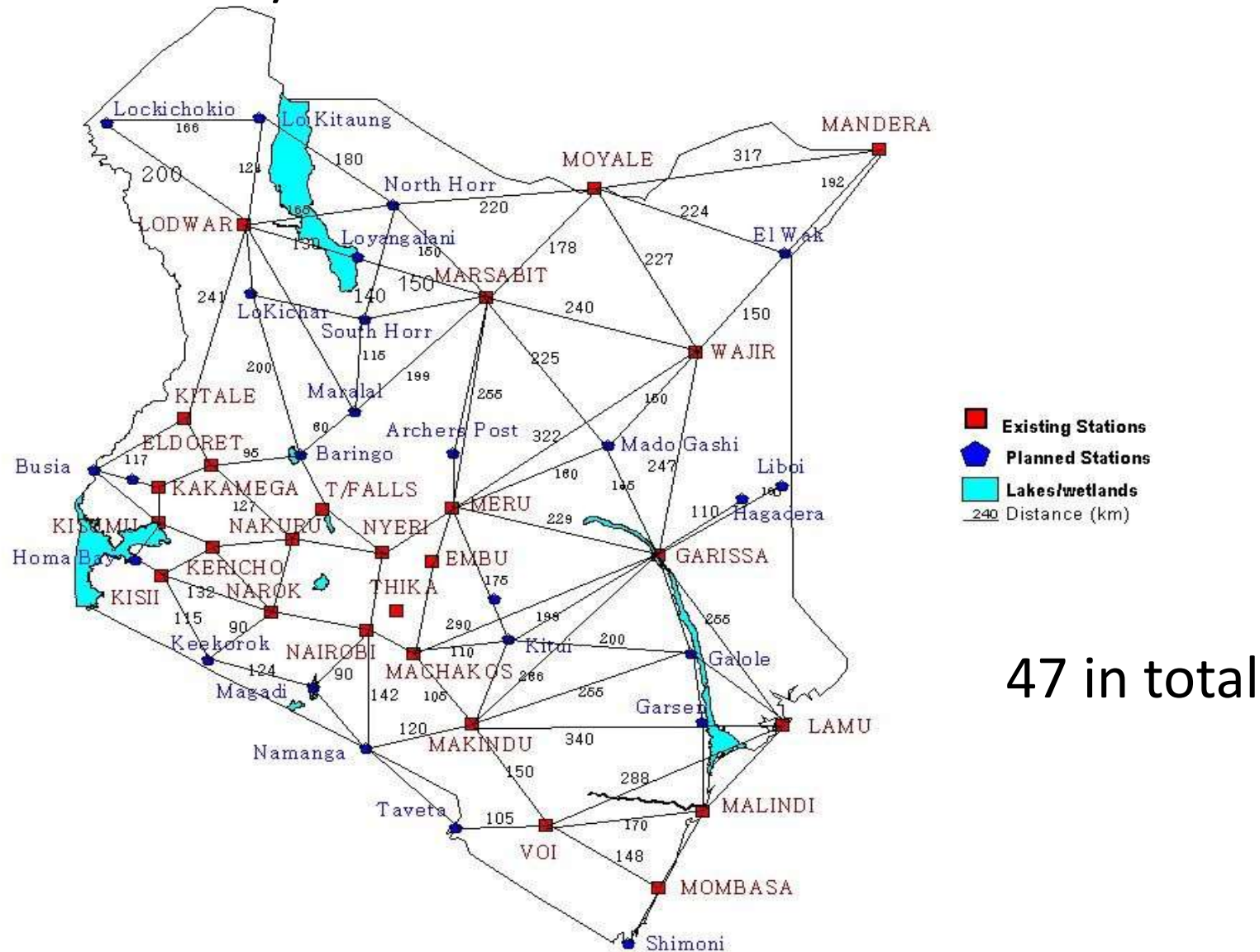
- Relocating a station is easy
- The systems are battery/solar powered.
- They are cost effective to maintain
- They are solar powered
- Availability of GSM network in many areas

Notable Disadvantages

- Some elements are difficult to automate (e.g. cloud cover, visibility)
- AWS are less flexible than human observers



Existing and Planned Manned Stations(County Climate/Weather Information centres





No. of AWSs in Kenya

Year/Period	No	Comment
2005	12	KMS
2010	34	KMS
2011-2013	36	KMS
2010-2012	80	Other Organizations
2005 to date	4	AWOS KMS
Total	160	

60% or less are operational at a given time



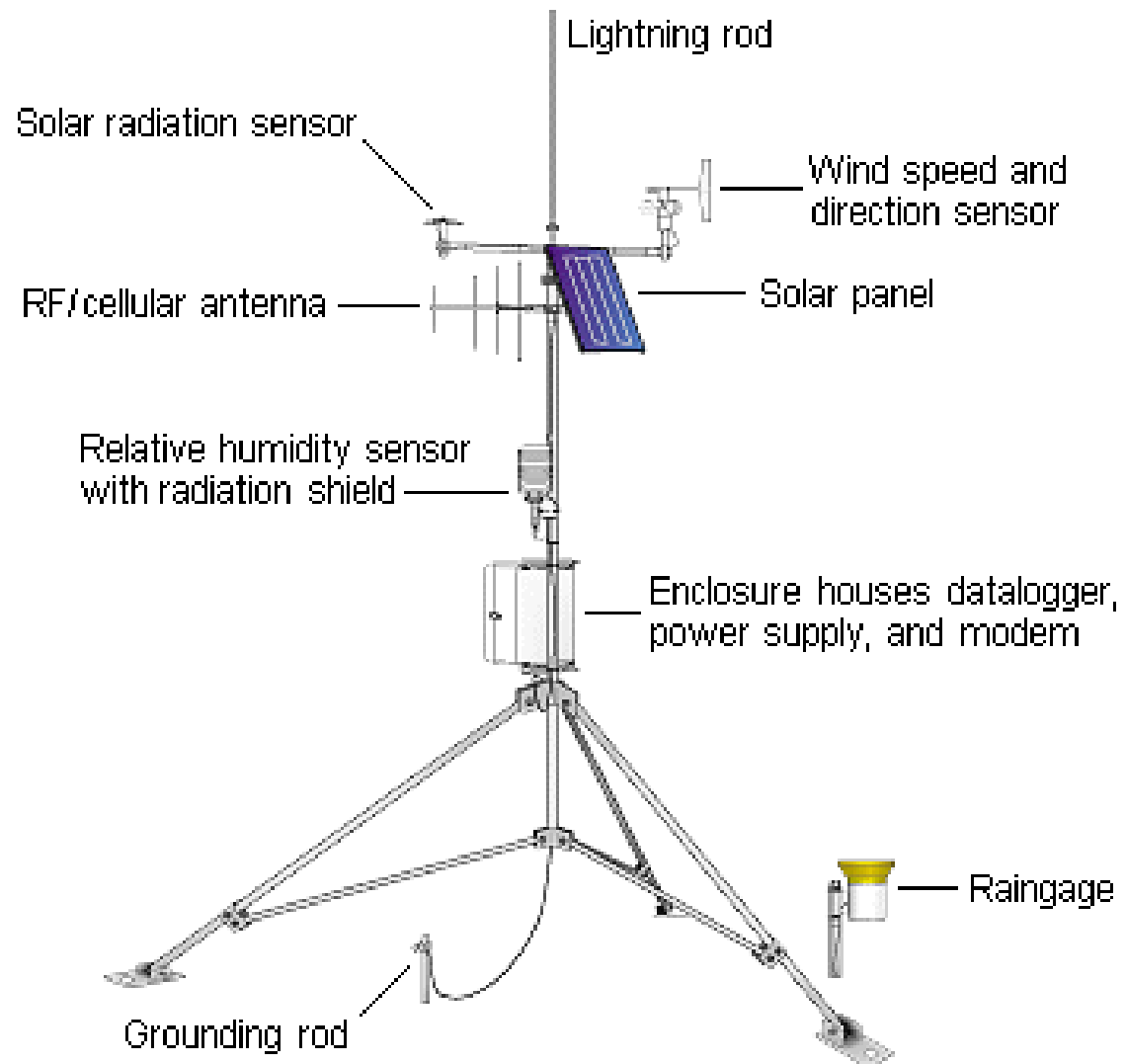
Numbers



- Optimum number of AWSs for Kenya is 2400
- To Achieve this by 2030, KMS must install 150 AWSs per year
- All the stations must be operated and maintained

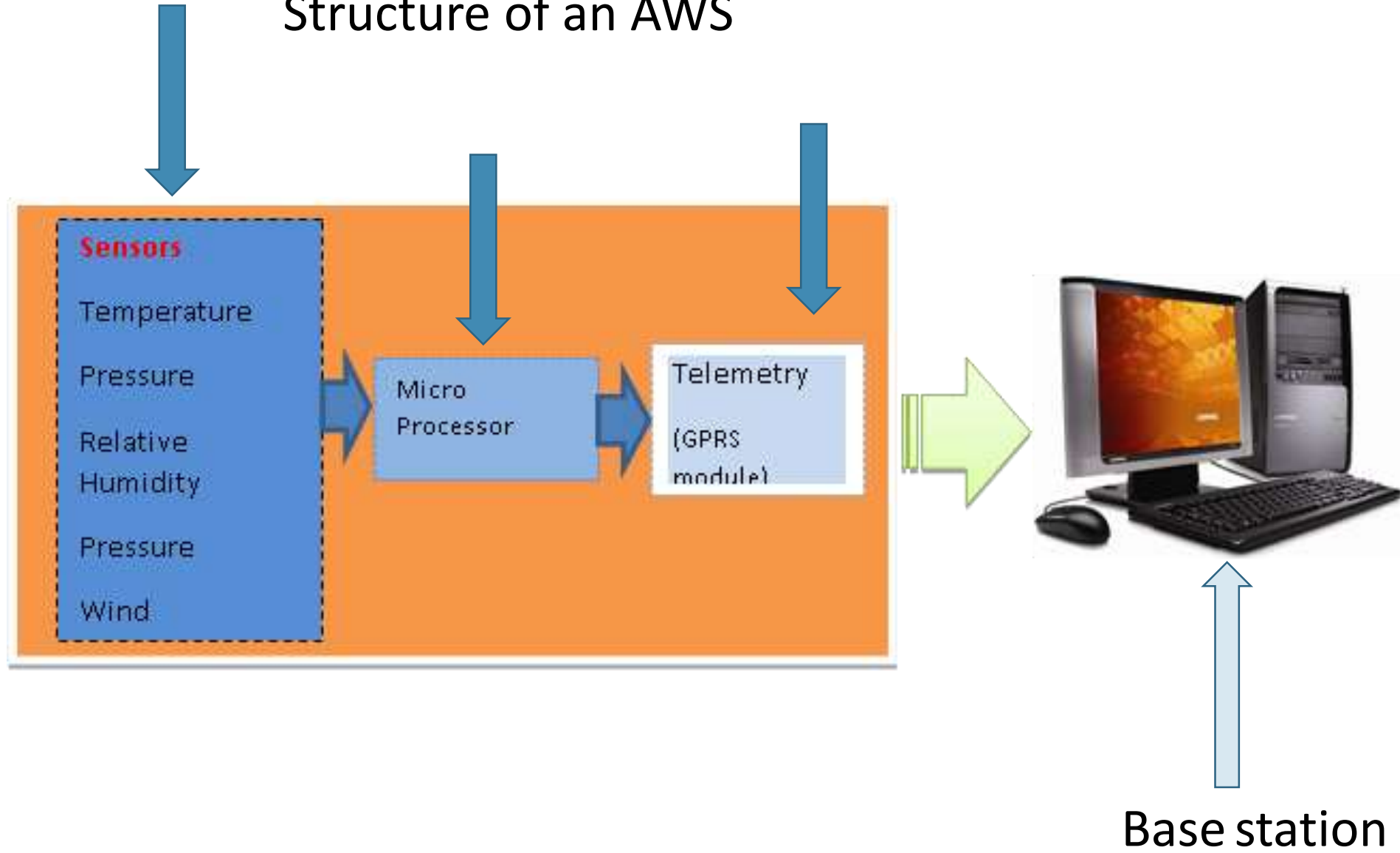


A Modular Automatic Weather Station





Structure of an AWS





Makes installed in Kenya

- I. Sutron
- II. Adcon
- III. Vaisala
- IV. Microstep
- V. Campbell Scientific
- VI. Fair mount



Challenges

Technical

- Data Integration, for different makes of AWSs
- Preventive Maintenance non existent
- Spare parts hardly in stock
- Inadequate field maintenance
- Little formal training for technical staff

Administrative

- Procurement process; one cannot specify make
- Little or no budgetary provisions for Operation and Maintenance
- No proper policy on migration from manned stations to AWSs



Opportunities

- Climsoft Data management System; developed by WMO, UK met office, Kenya Met Service and Zimbabwe met service
- KMS is working to integrate AWS' data by exporting to Climsoft
- KMS in conjunction with a private company is developing a solar powered Processor and Telemetry Unit (PTU) that can recognize and communicate with most sensors (see next slide)
- A base station that runs on climsoft
- Kenya Met Service/IMTR is offering training in Climsoft and AWS maintenance



What is Clomsoft?

Climsoft Data Management System

- **CL**imate **SOFT**ware
- **Specifically designed for climatic data**
- **Secure and flexible manner**
- **Obtaining useful Climate information**



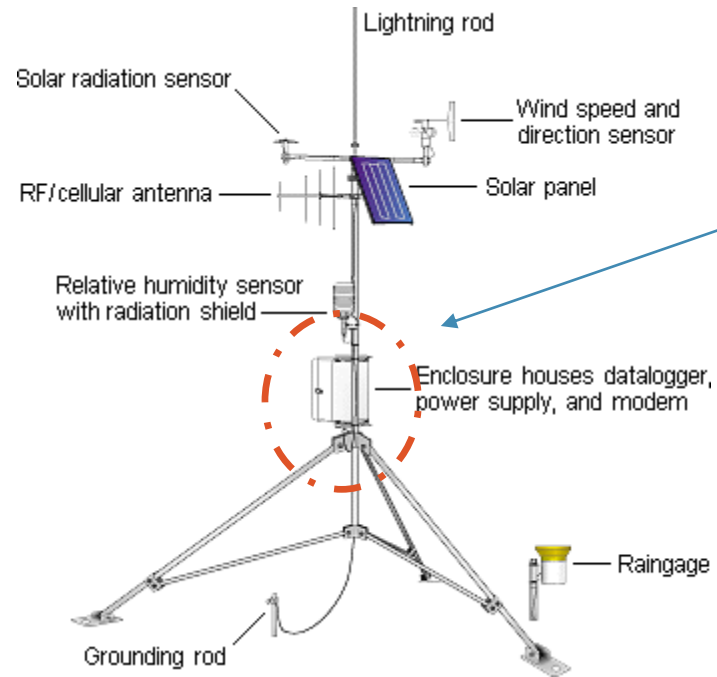
What is Climsoft?...Contd

What can CLIMSOFT do for you?

- Designed for organisations who store historical and new climatic data
- Can be used to produce summary reports, maps or diagrams, or subsets of the data can be extracted for further processing.
- For flexibility have its own structure and requirements
- Can be tailored to individual needs.



SENSORS



PTU



Recommendations

Operation and Maintenances

The NMHS should develop a policy and strategy for modernization

- Train People who are good in ICT; at national and regional level
- Train local partners on basic maintenance
- When procuring, be very clear on specifications (insist on remote configuration, reset capability)
- Have partnerships with other institutions in exchange for data/forecasts
- Development partners can assist in the Development of an **Automatic Weather Station** for the region
- NMHSs should create a budget lines for maintenance of AWSs



ASANTE SANA