Instituto Nacional de Meteorologia: Mozambique

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Workshop: "Climate Monitoring and Analysis of Climate Variability: Implementation of Climate Watch Systems in RA I with focus on Eastern Africa."

Brief History of Mozambique Met Service

- 1883 Beginning of Meteorological observations in Mozambique.
- 1908 **Mozambique Meteorological Service** was established (**SMM**).
- 1989 the **SMM** became the **National Institute of Meteorology** (**INAM**)

✓Subordinated to the Ministry of Transport and Communications.

✓Administratively autonomous Institutions but not financially.

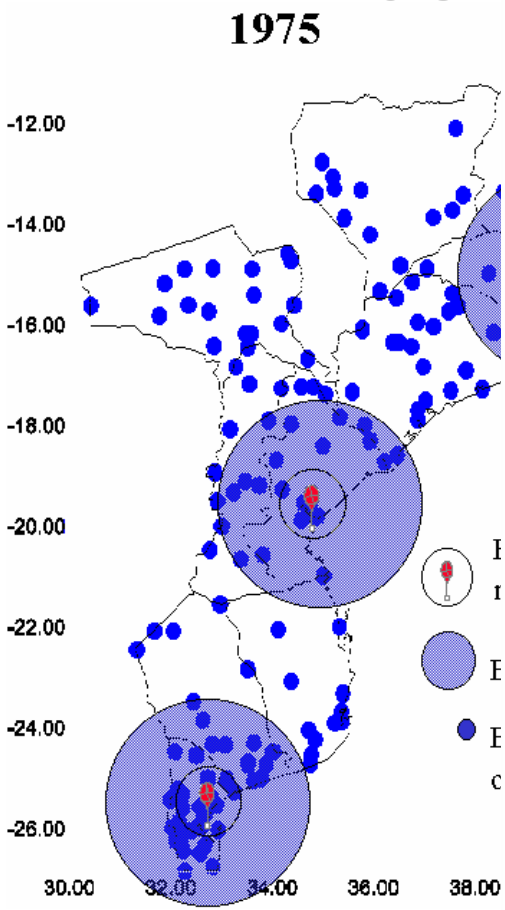
INAM main activities

- Weather and Climate Observations;
- Public Weather Forecast;
- Marine Weather Forecast;
- Aviation Weather Forecast;
- Seasonal Forecast;
- Research (**Ongoing….** & Focused on the application of Meteorology);

Climate data and Observation

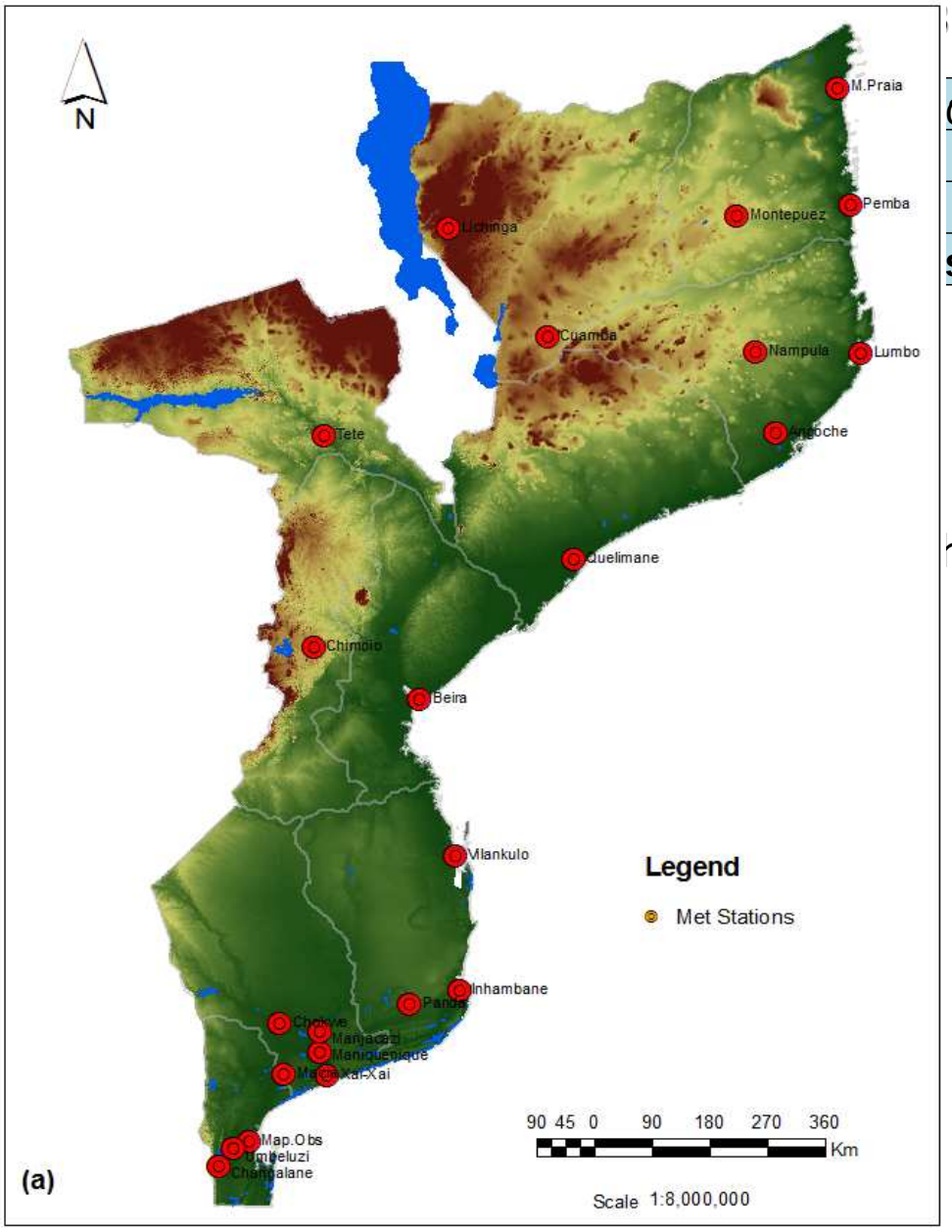
Near-continuous stations back to 1960s

Met-Service network stations in 1975



28 Synoptic stations
21 Agroclimtologcal stations
125 Climatological stations
3 Aerological stations
3 meteorological Radars
669 rain stations

Met-Service network stations in



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have near-continuous data back to 1960.

Climate data and Observation - Cont^{ed}

- The data are still centrally (Met-headquarter) digitized, validated and integrated into the data base management system (DBMS): **CLICOM**.

- Is ongoing a decentralization process on data di
the data flux.

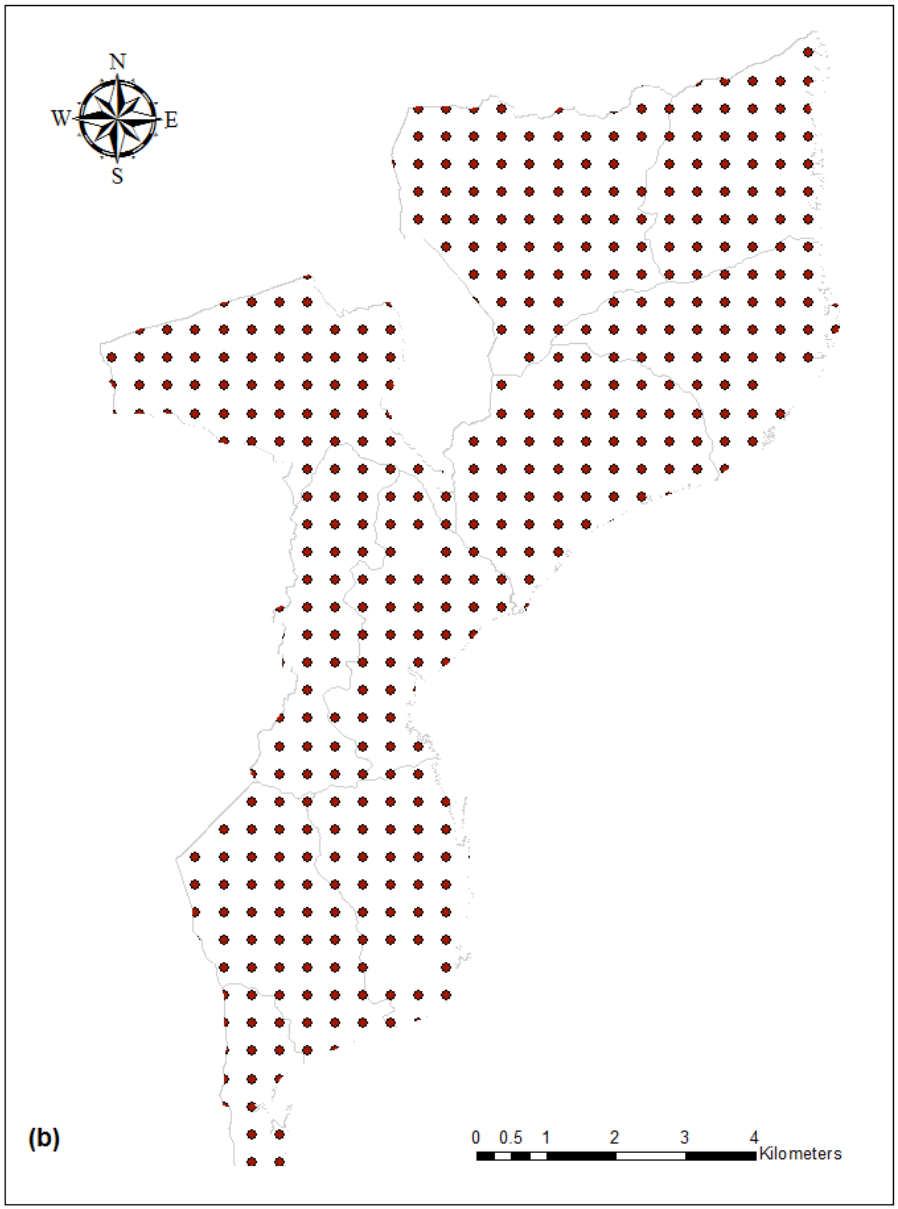
- The **data quality** still a concern (many **gapes**

- To minimize these gapes a **30 years (1979-2009) Gridded** data series was generated with a spatial resolution of 40 Km (can be used for research scientific purposes).

- In study the possibility of extending the **Gridded** time series datasets.

- In processes of identification of errors for correction of the data base

30 years Gridded data sets (1979 – 2009)



Climate Monitoring

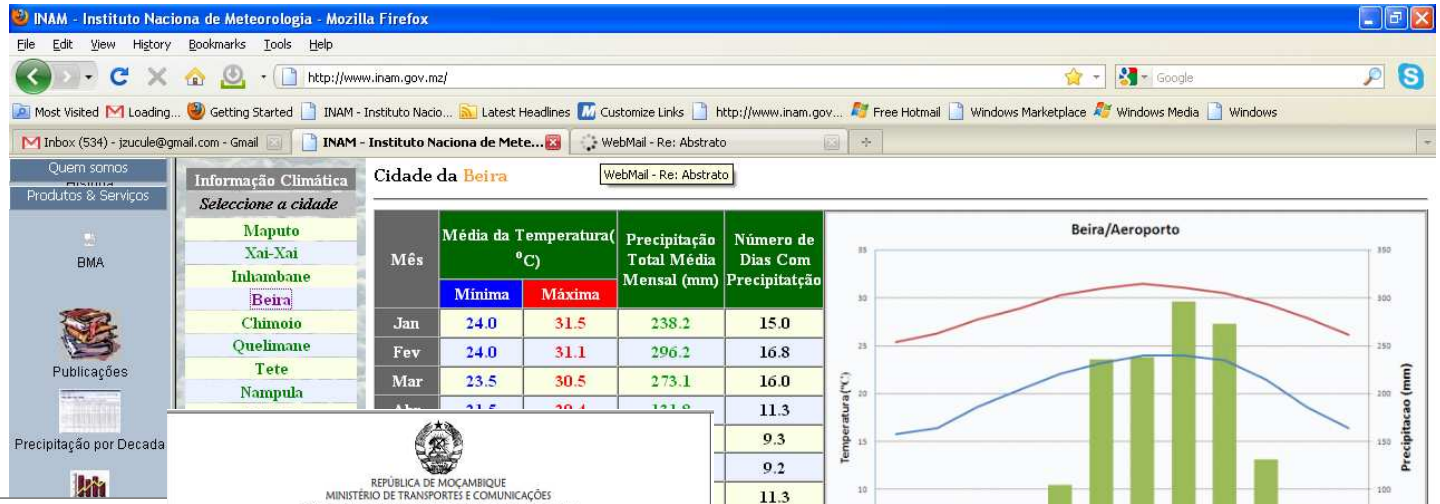
- A total of 15 Climats are elaborated and sent monthly and integrated into GTS system (only Beira and Quelimane, are directly sent to GTS via MESSIR).

- A rain **season monitoring bulletin** is elaborated.

- A **monthly meteorological bulletin** ongoing (to be released soon).

- **Regional** and **global** monitoring products are used for climatic seasonal Forecast (**long range**), 2 to 5 days forecast (**median range**) and daily forecast (**short range**).

Climate Monitoring



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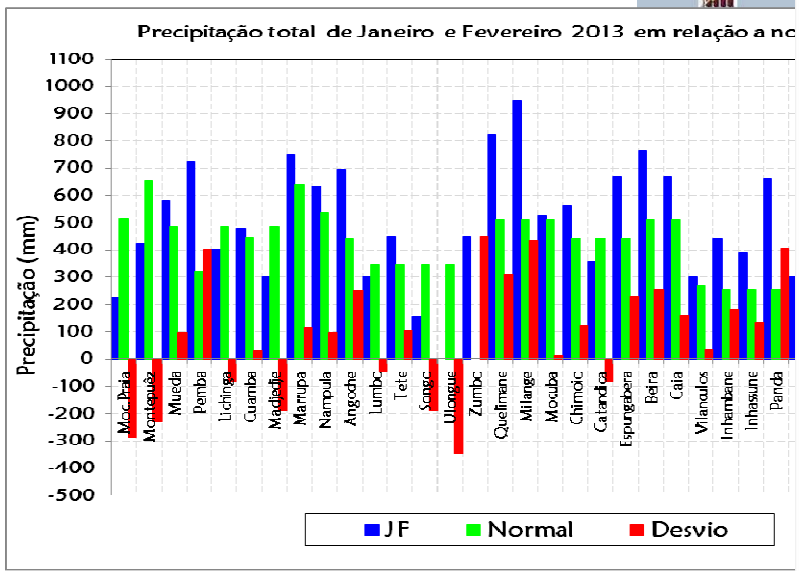

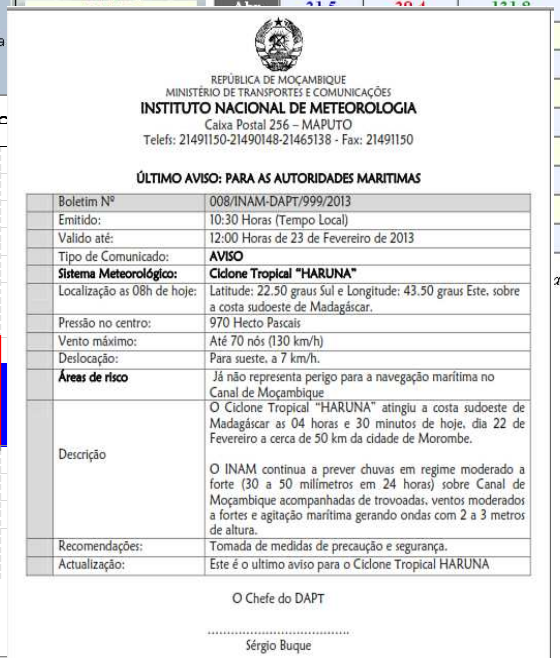

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ÚLTIMO AVISO: PARA AS AUTORIDADES MARITIMAS

Boletim Nº	008/INAM-DAPT/999/2013
Emitido:	10:30 Horas (Tempo Local)
Valido até:	12:00 Horas de 23 de Fevereiro de 2013
Tipo de Comunicado:	**AVISO**
Sistema Meteorológico:	**Ciclone Tropical "HARUNA"**
Localização as 08h de hoje:	Latitude: 22.50 graus Sul e Longitude: 43.50 graus Este, sobre a costa sudoeste de Madagáscar.
Pressão no centro:	970 Hecto Pascais
Vento máximo:	Até 70 nós (130 km/h)
Deslocação:	Para sueste, a 7 km/h.
Áreas de risco	Já não representa perigo para a navegação marítima no Canal de Moçambique
Descrição	O Ciclone Tropical "HARUNA" atingiu a costa sudoeste de Madagáscar as 04 horas e 30 minutos de hoje, dia 22 de Fevereiro a cerca de 50 km da cidade de Morombe. O INAM continua a prever chuvas em regime moderado a forte (30 a 50 milimetros em 24 horas) sobre Canal de Moçambique acompanhadas de trovoadas, ventos moderados a fortes e agitação marítima gerando ondas com 2 a 3 metros de altura.
Recomendações:	Tomada de medidas de precaução e segurança.
Actualização:	Este é o ultimo aviso para o Ciclone Tropical HARUNA

O Chefe do DAPT

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Sérgio Buque

Long Range Forecasting Systems and methods

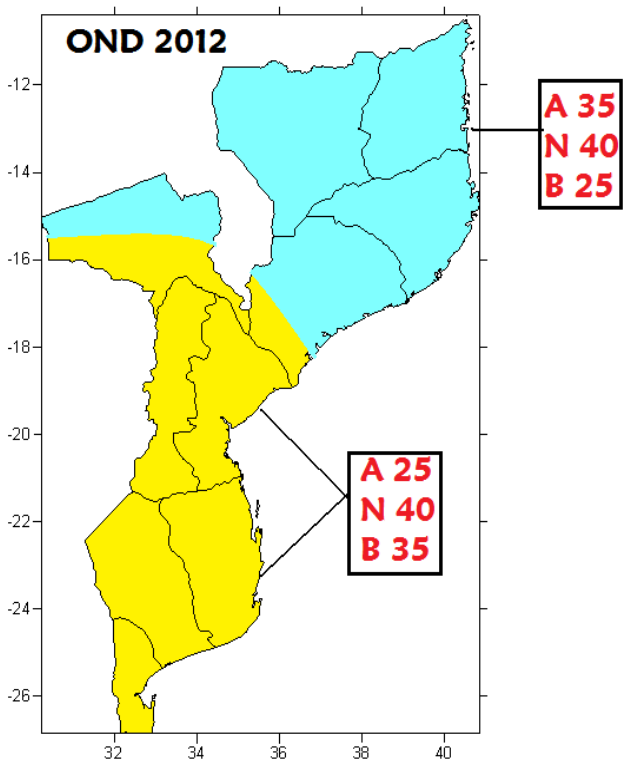
- Mozambique participates to the Southern African Climate Outlook Forum (SARCOF) since 1999.

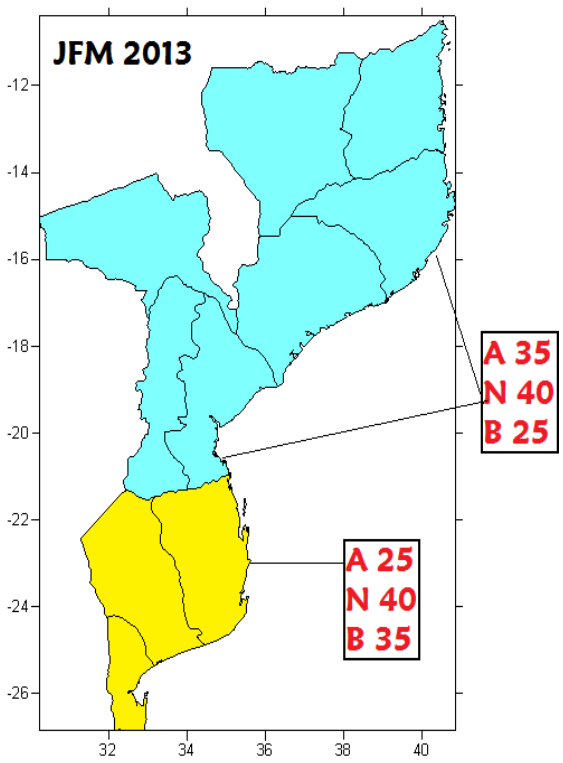
- The seasonal forecast in the country is made available in early September after the SARCOF.

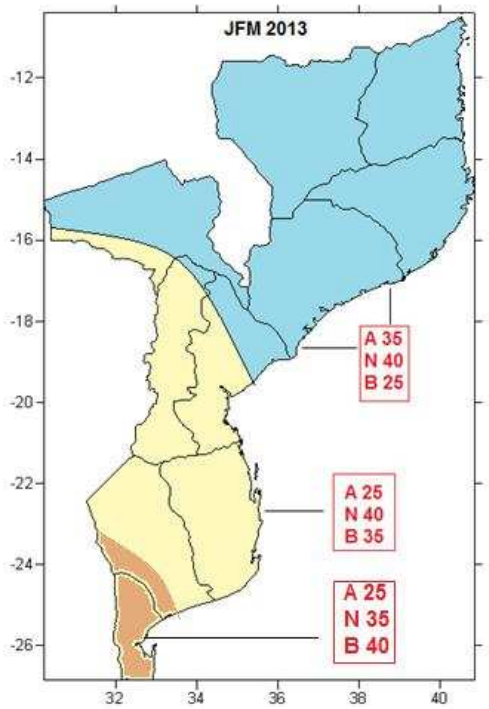
- The forecast is made by implementing the **SARCOF approach** which is **purely statistical analysis** based on the historical relationship between precipitation and preceding global Sea Surface Temperatures (SST).

- **Since 2010-2011** rain season INAM started implementing a **second forecast approach is being tested (**a canonical correlation Analysis, CCA) between Global Climate Models (GCM) outputs and precipitation

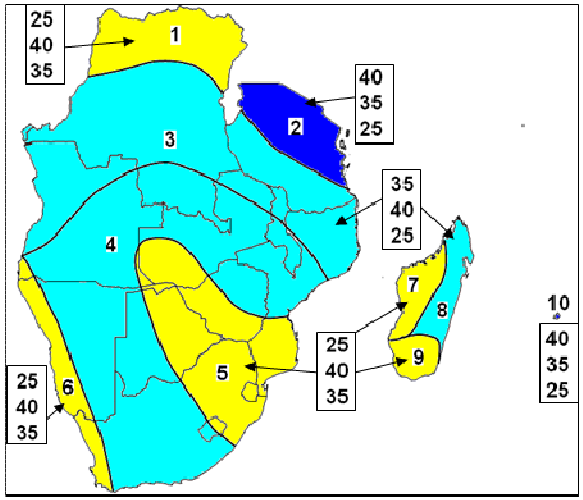
Long Range Forecasting Outputs

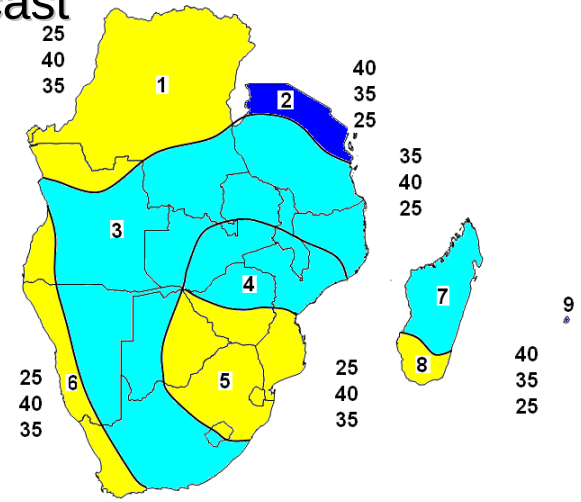


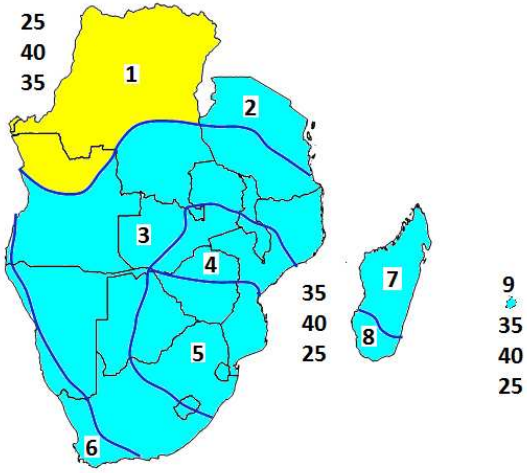




The SADC consensus Forecast







User Activity in support of climate Risk management and early warning systems including data base and, preparedness

Drought and **Flooding**:

➢In the Pre-rein season is elaborated the contingency plan to respond any contingency event due to aforementioned phenomena in collaboration of Water Division, Ministry of Agriculture, Minister of Environmental Affairs, Red Cross, Meteorological Services, Army and other institutions, NGOs (WFP, FEWSNET), under the coordination of Disaster Management Division.

Heat waves, Heavy precipitation (& Thunderstorm):

➢The meteorological service (INAM) produce and issue to the different users warning about the high chance of occurrence of heat wave, heavy precipitation or thunderstorms and advise to consider all the recommended procedures to avoid any risk.

Dry spells:

➢To that rain seasons that are likely late start, after the first rains, usually farmers are advise to plant little beat late than usually they do and using a recommended seed.

➢This warning are made by a specific department of the Ministry of Agriculture with the support of meteorological service and then broadcasted via Media.

Key Issues and Challanges

- Improve of the network stations.
- Data rescue, digitization and data quality control.
- Human skilled resources for data analysis and climate monitoring.
- Skilled human resources and improvement of Climate Seasonal Forecast by implementing other techniques and Global Models data outputs.

Thank you
For your attention