

# Resilience to Weather and Climate in SADC

**WMO Regional Office for Africa**

**Fourth Africa Climate Talks  
Maputo, Mozambique**

**Date: 27-29 July 2022**



**WMO OMM**

World Meteorological Organization  
Organisation météorologique mondiale



Flooding



Heat waves and Forest fires



Locust invasion



Storms

## Main Hydrometeorological Disasters in Africa (Past & Present)



Sand/Dust Storm



Drought



Coastal Inundation

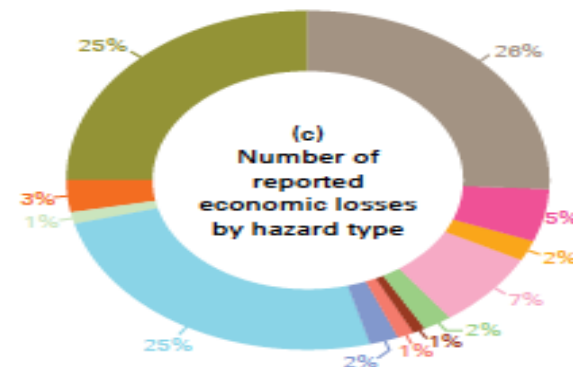
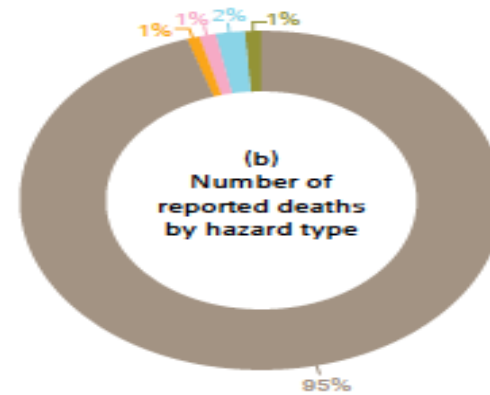
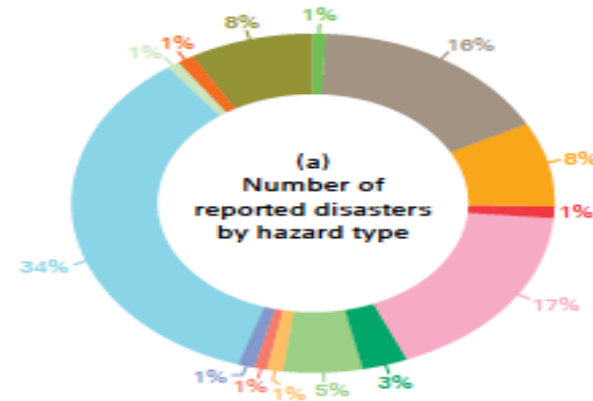


Landslide



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# Highlight of Main Hydrometeorological Disasters in Africa



- Cold wave
- Drought
- Extra-tropical storm
- Flash flood
- Forest fire
- General flood
- General landslide
- General storm
- General wildfire
- Heat wave
- Land fire (Brush, Bush, Pasture)
- Lightning/Thunderstorms
- Riverine flood
- Severe storm
- Tornado
- Tropical cyclone

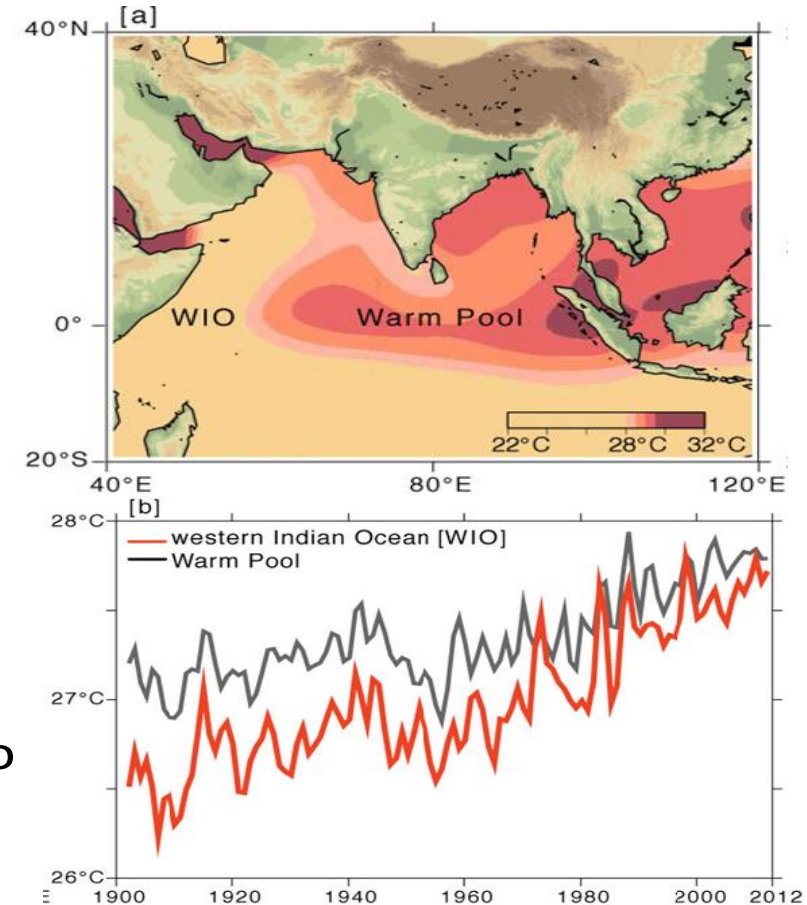


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## Drivers of the extremes: warming of the Indian Ocean

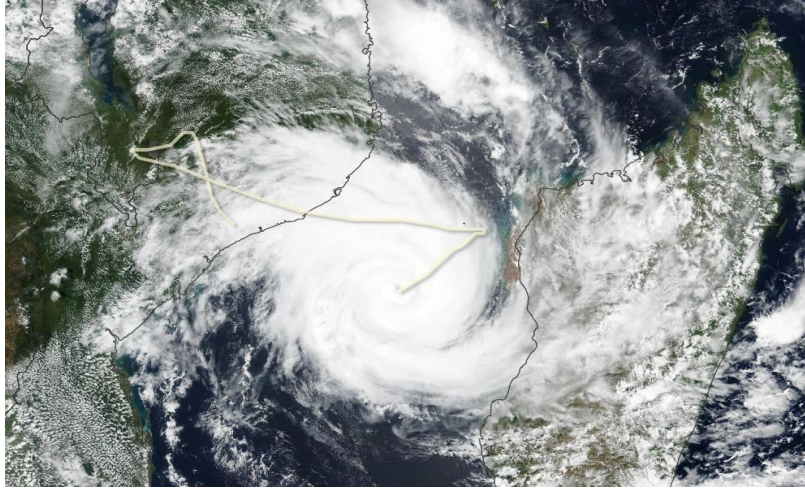
- The western part of the Indian Ocean has been warming rapidly during the past 100 years and it is affecting the frequency of extreme weather events like cyclones
- The rate of warming is 1.2 C compared to 0.7 in the eastern part of the Indian Ocean (and 0.95 warming of the global surface temperature).
- Warmer Ocean also imposes high risk to coral reefs, which plays a vital role for marine ecology and coastal protection.



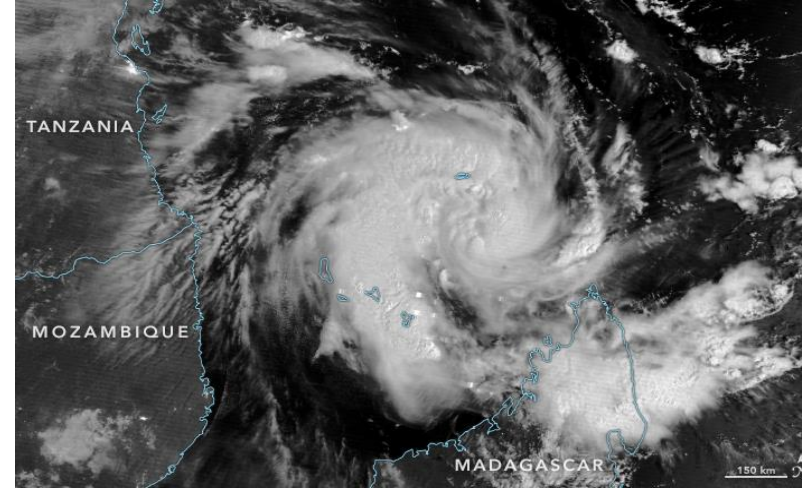
Paper by Roxy et. al. 2014

## Recent extremes: tropical cyclones Idai, Kenneth, Sagar

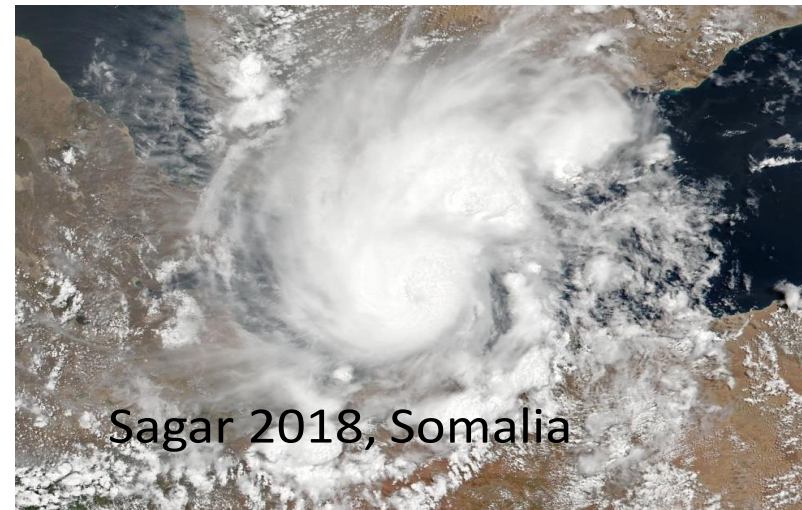
Idai 2019



Kenneth 2019



- Strongest TC on record
- Two TC in one season (rare)
- Impact reached inland countries
- Idai caused >1000 death, \$2.2 B



# Weather and Climate in SADC

- Extreme weather events have increased in frequency, severity and prolonged in SADC;
- These events are projected to increase and become the “new norm” quoting the WMO Secretary-General;
- Like the rest of the world, SADC is expected to experience unprecedented extremes in weather and climate, hence “climate crisis” and “climate emergency” by the UN Secretary-General;
- Hydro-meteorological disasters are forecast to be critical in determining the trajectory of socio-economic development, including attaining the SDGs, meeting targets in the Sendai Framework for Disasters and AU Agenda 2063;



# Impacts and Implications on SADC

- Rapidly rising sea levels, threatening coastal areas and SIDS, particularly in the Indian Ocean;
- Global warming is increasing sea surface temperatures in the Indian Ocean and so tropical cyclones there should develop quicker than before and even spread further to higher latitudes;
- Temperatures in landlocked countries are increasing faster than the global average and impact on many socio-economic sectors such as agriculture, health, energy, water, transport (aviation), infrastructure and tourism;
- Disasters are here to stay including those relating to storm surges (tsunamis), tornado-like violent winds and forest fires;
- SADC should expect increase in frequency, extent and severity of earthquakes along the Rift Valley;



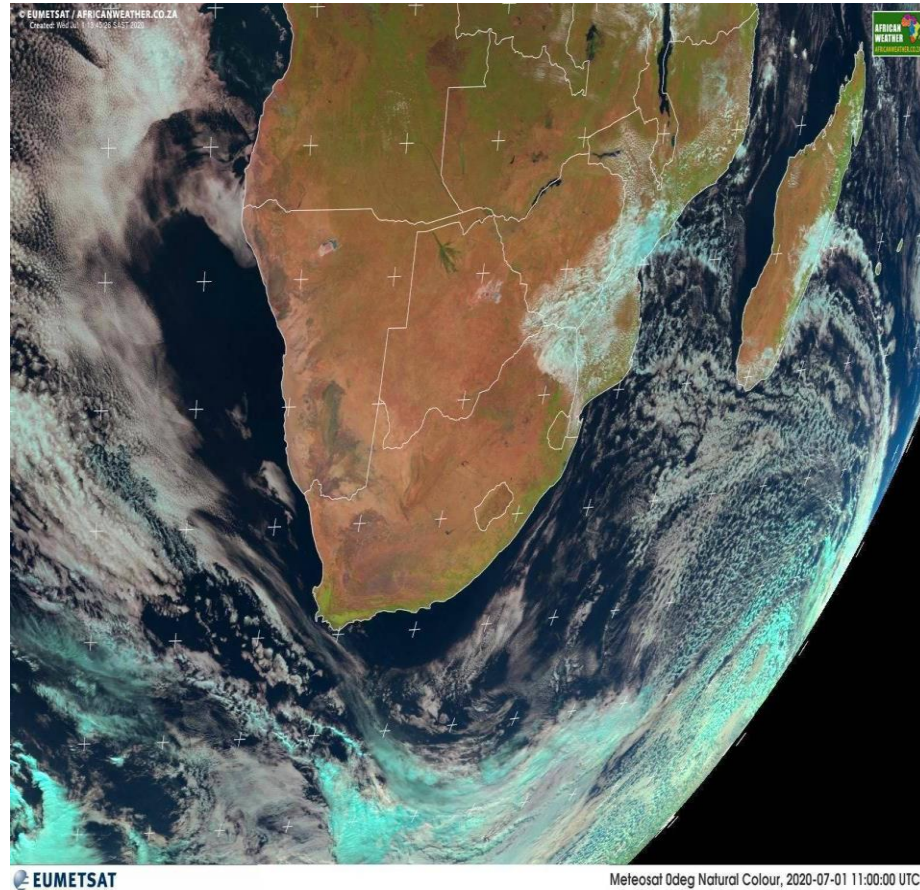
# Solutions/ Food for thought to consider

- Establish a SADC-owned One-stop Regional Warning Unit (REWO) and national early warning systems (NEWU);
- Commit Governments to bridge the gap between early warning and early action (to expedite declaration of states of disaster and allow quick humanitarian intervention);
- SADC to invest more on capacity development of institutions responsible for early warning of disasters and disaster management, particularly on weather radars, and automatic weather stations;
- SADC to prepare for more environmental refugees, relocation of people, review legislation and policies on landuse, local governance and urbanization;
- Craft a strategy and Programme of Action for SIDS and LDCs in SADC with respect to resilience to climate;
- Governments to expect and plan for disasters every year;
- Establish innovation hubs (e.g., digital transformation and solutions), Centres of Excellence in partnerships with the academic and research institutions) as well as the private sector;
- Include the diaspora when it comes to resource mobilization and Foreign Direct Investments;
- Invest more in communication to the last mile (e.g., community radio stations, gender consideration and ICT in service delivery such as mobile applications;

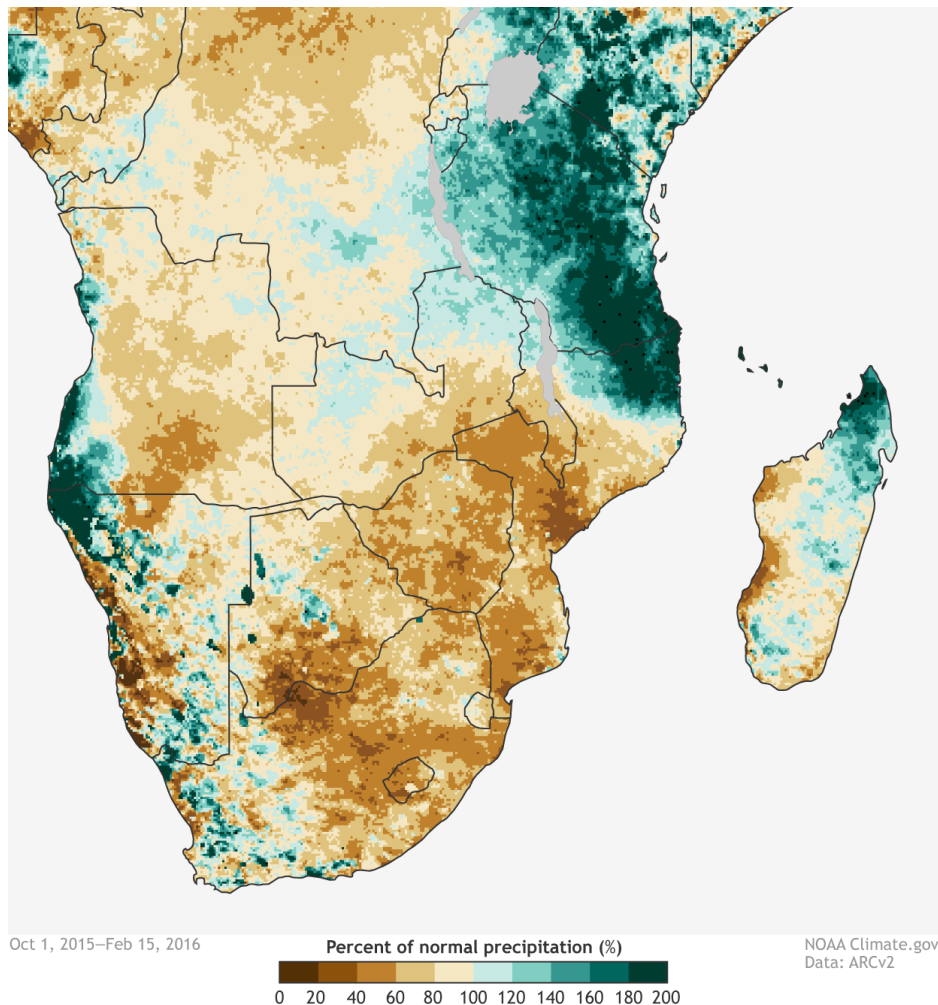




# Background



- According to the IPCC AR6 (assuming a global 2deg C increase):
  - ❑ Western Southern Africa- Observing: reduced rainfall, increase I heavy precipitation, increase in aridity, agricultural and ecological droughts
  - ❑ Projections: Increase in dryness, wind speeds and fire weather conditions
  - ❑ Eastern Southern Africa- Observing: reduced precipitation, increase in heavy precipitation, increase in meteorological drought
  - ❑ Projections: increases in mean wind speed, fire weather conditions, increased TC wind speeds and associated precipitation (More Cat 4-5 TCs)
- Currently facing *La Nina* conditions which are associated with above normal-rainfall in Southern Africa (consistent with the OND and JFM seasonal outlooks)
- Erratic behavior of weather patterns set to continue and increase with time-> calling for an enhancement of the EWS



## Strengths of existing systems in SADC

- Existing Regional Centres: SADC CSC (RCC) , RSMC Pretoria, RSMC La Reunion, Global Producing Centre for Long Range Forecasts
- Excellent track record of cooperation between SADC NMHSs in the Severe Weather Forecast Demonstration Project (SWFDP) & Southern African Regional Flash Flood Guidance System (SARFFGS) and National Disaster Management Centres (NDMC)
- SARCOF –Seasonal Forecasts and socio-economic applications (cooperation with regional stakeholders)
- Regional success and cooperation in Severe Weather Forecasting



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**GMAS- WMO framework mechanism which will enable NMHSs to make available and disseminate authoritative warnings and advice to all WMO Members and a global audience, including the general public, so that they can make better preparedness and response decisions. It is designed to comply with WMO regulations and standards, relying on wider training, partnerships, advocacy and the application of new technologies.**

## GMAS Activities

- Launch of the GMAS initiative –December 2021
- CAP Training occurring and using twinning approach all over the African region
- Require top cooperation with SADC, Member NMHSs, NDMCs and stakeholder groups
- Seek partnership with Stakeholders in the region particularly Humanitarian Agencies, NGOs – Last-mile (Communication)
- Cg-Ext currently discussing the Unified Data Policy to enhance global observations and enhance forecast quality-> views expressed by Members for mutual benefits and access to model products and Capacity Building (essential for sustainable development)





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## CENTRALITY OF THE NATIONAL METEOROLOGICAL & HYDROLOGICAL SERVICES

Key role across Disaster Risk Reduction, Climate Change Action and Sustainable Development through tailored services for all sectors adopting a whole of government and whole of society approach



## Recommendations

- Continuous improvement –modernization of tools and partnerships
- Integrated efforts and cooperation
- Capacity building (best practices, share experiences)
- Deliberate actions to focus on unique challenges of NMHSs in LDCs, SIDS etc.
- Communications- Last Mile (Partnerships)
- Resource Mobilization strategy (sustainability) and Improved awareness of relevance of hydro-meteorological services and products;
- Technical cooperation between Regional Centres (observations, data comms, modelling, training etc.), academia and research institutes;



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