
**THE ESTABLISHMENT OF A UNESCO CHAIR ON
FLOOD AND DROUGHT RISKS IN THE
SOUTHERN AFRICA REGION**

AT

THE UNIVERSITY OF NAMIBIA

(WINDHOEK, NAMIBIA)



The specific objectives of this Chair are:

- (i) To map out flood and drought occurrences in Namibia, including recent historical data/information on floods and droughts in the country.
- (ii) To link the drivers of climate change (CC) and how they affect water resources (WR).
- (iii) To study cycles of flood and drought in the Southern Africa Region and Namibia in particular, especially the most vulnerable areas in North-Central Namibia.
- (iv) To raise public awareness of water research specific to the flood/drought cycles and adaptation to the challenges, as well as public engagement and possible use of indigenous knowledge on adaptations.

The specific objectives of this Chair are: Continued

- (v) To re-engineer water services (water reticulation, wastewater and storm water transportation, water re-use and disposal) mainly in urban and peri-urban centres where such services may not operate optimally.

- (vi) To study the use of alternative energies (biomass, geo-thermal, solar, wind etc.) in the provision of water services not only to urban populations but to the most vulnerable populations in rural areas.

- (vii) To educate and build knowledge-based communities and raise awareness of the issues of flood/drought cycles in the region.

Projects corresponding to the Sustainable Development Goals

- (1) **SDG6: Ensure availability and sustainable management of water and sanitation for all.**
- (2) **SDG9: Build resilient infrastructure, promote inclusive and sustainable industrialisation and foster innovation.**
- (3) **SDG12: Ensure sustainable consumption and production patterns**
- (4) **SDG 13: Take urgent action to combat climate change and its impact**

RECENT EXAMPLES OF FLOODS AND DROUGHTS IN SOUTHERN AFRICA

Northern Namibia Floods 2008, 2009 and 2017

Northern Namibia Floods - Context in brief

- Inconsistent annual recurring flood in Northern central and northern-eastern areas of Namibia - **Home to majority of rural and vulnerable people in Namibia**
- Average rainfall is 200-373 mm during poor rainfall years, and 500-830 mm during exceptionally wet years
- The flood results from (1) rainfall within Northern Namibia and (2) Water from highlands of Angola and Zambia
- Most recent severe flood events in the area were experienced in 2008, 2009, 2011 and 2017. Previous floods of comparable magnitude occurred during 1960s.

Northern Namibia Floods – 2009 flood impact in numbers

- Over **677 542** affected (directly and indirectly)
- Over **54 581** people displaced (up to 16 394 in relocation camps)
- **105** flood related deaths
- **10 393** livestock lost and over **3000** livestock trapped on islands
- **328** schools operation affected (about **93 700** learners affected)
- **1 066** SMEs closed
- **53 208** hectares of crop fields damaged (**70-80%** loss of crop production)
- **29** hospitals & clinics and **73** outreach services were cut off
- **1%** of GDP worth of damage and losses reported

Northern Namibia Floods



Learners on their way to school during flood periods in Northern-central in Namibia (photo: Shaamula et al. 2021)

Northern Namibia Floods



Flooded houses (photo: Informante)

Droughts in Namibia (2013 & 2016)

Droughts in Namibia

- The 2013 and 2016 droughts were recorded as the most severe droughts in the last 30 years in Namibia, declaring a national state of emergency.
- The droughts caused more than 3000 people being in a state of food insecurity and a 48% decrease in corn crops.
- In 2016, the main reservoirs were empty, and water availability could only be guaranteed until the end of 2016.
- The drought caused livestock deaths, loss of crops and economic consequences.
- Corporations and construction companies stopped their production in Namibia, leaving unemployed thousands of people.
- Water consumption restrictions affected a lot of businesses by having to reduce their consumption up to 30%.

Droughts in Namibia



Animals' carcasses that died due to drought

Photo source: <https://www.rosalux.de/en/news/id/45964/namibias-punishing-drought>

KwaZulu Natal Floods 2022 (South Africa)

KwaZulu Natal Floods - Context in brief

- Flood took place in **Durban area - South Africa's third populous city**
- The 2022 flood is the worst ever recorded - rainfall which triggered **flood was in excess of 300mm within 24 hours** (75% of country's average annual rainfall)
- Previous occurrence took place in **2019 & 2017** recorded **165mm & 108 mm** of rainfall, respectively.
- Scientists from South African Weather Services (SAWS) **believe extreme rainfall was a result of climate change**
- Residents put the **blame on poor infrastructure** for the scale of flooding (i.e., poor drainage systems, roads and poorly built housing and ageing infrastructure)
- Floods left hundreds of lost lives and major damage to infrastructure
- Government ***declared a national state of disaster***

KwaZulu Natal Floods- Numbers (by 18/04/2022)

- **200-400** mm rainfall received within 24 hours
- **443** people lost their lives, 48 unaccounted for (as of 18 April 2022)
- Nearly **4 000** homes destroyed
- Over **8 300** homes partially damaged
- Over **40 000** people have been displaced due to floods
- Extensive damage to Byhead Road which has capacity to handle **13 000** vehicle per day (Durban Port – Rest of country)
- Over **600** schools damaged, more than **270 000** learners affected (**16** schools inaccessible due to damaged roads/bridges)
- **66** public healthcare facilities affected
- **247** rescue operations
- **1 300** road repair projects identified
- **R1 billion** (Approx. \$63 million) immediately made available for relief and rebuilding

KwaZulu Natal Floods



Massive damage to infrastructure

KwaZulu Natal Floods



Shipping containers shifted by floods

KwaZulu Natal Floods



Massive damage to properties

Madagascar Drought 2021-Present (Madagascar)

Madagascar Drought- Context in brief

- Madagascar is susceptible to numerous disasters (disease outbreaks, droughts, floods, pest infestations, sandstorms and tropical cyclones)
- The 2021 drought is the worst drought since 1981
- Inconsistent rainfall over the last five of six years with rainfall below average
- Longer lean seasons (periods between harvests), resulting in rapid deterioration of food security and nutrition conditions
- UN Scientists believe the drought is driven by climate change
- First ever catastrophic acute food insecurity conditions in Madagascar experienced

Madagascar – Drought

SEPTEMBER 30, 2021

SITUATION AT A GLANCE

1.6 MILLION	1.1 MILLION	500,000	14,000	880,000
Estimated Population in Need of Assistance	Estimated Acutely Food-Insecure Population	Estimated Children Five Years and Younger Projected to be Acutely Malnourished in 2021	Estimated Population Experiencing Catastrophe—IPC 5—Levels of Acute Food Insecurity	Estimated Number of People in Madagascar Receiving Humanitarian Assistance in 2021
<i>UN – September 2021</i>	<i>IPC – July 2021</i>	<i>UN – September 2021</i>	<i>IPC – May 2021</i>	<i>UN – September 2021</i>

MADAGASCAR DROUGHTS



Underweight and malnourished children wait for treatment at a nutrition. Photo: WFP/Shelley Thakral

Other extreme rainfall events in SADC

Droughts in Zimbabwe

- Zimbabwe experiences frequent and severe droughts
- Severe drought episode observed in 1991-1992, 1994-1995, 2002-2003, 2015-2016 and 2018-2019
- Drought frequency may be increasing. There was one drought in the 1980s, two in the 1990s, two in the 2000s, and three in the 2010s (Table 1)

Year	Location	Affected Population
1981	Central, South, East and West	1.9 million
1990	No data*	110,000
1998	Southern (Matabeleland)	800,000
2001	Central, North, South and West	3 million
2007	Central and East	1.9 million
2010	Manicaland, Mashonaland Masvingo, Matabeleland, Midlands	254,000
2013	Manicaland, Masvingo, Matabeleland, Mashonaland Central, Midlands	3.7 million
2019	No data*	1 million

Major droughts in Zimbabwe (Source: EM-DAT, 2020)

Zimbabwe Floods & Storms 2022

- The 2021-22 rainy season is characterized by heavy rains, hailstorms, flash floods and lightnings
- Sixteen districts across six provinces affected by floods since October 2021
- Tropical storm Ana weather system caused heavy rains to Zimbabwe by late January
- By 3 Feb 2022: 10 deaths; 845 houses and 51 schools damaged; 30 roads and 15 bridges destroyed or damaged.

Mozambique floods and cyclones 2021-2022

- Tropical Cyclone Ana made a landfall in Nampula Province with wind speeds up to 130 km/h.
- The storm brought precipitation of 200mm in 24 hours leading to immediate flooding.
- Floods due to Cyclone Ana were also experienced in Madagascar and Malawi.
- Many of the same area were impacted in 2019 (Cyclone Idai and Cyclone Kenneth) and 2021 (Tropical Storm Eloise).

THANKS

