

Southern Africa Regional Flood Update

20 January 2011

Highlights

- In Mozambique, a number of river basins have registered alert levels, and water levels are increasing;
- River levels in the upper Zambezi and the Okavango rivers are very high for this early in the rainfall season;
- Two spillway gates of Lake Kariba will be opened on 22 January 2011, which could in time lead to flooding downstream;
- In South Africa, 40 people have died and 6,000 displaced due to flooding. A National State of Disaster will be declared in 28 municipalities in 7 provinces.
- A map of the region is found on Page 7 in this Bulletin

Rainfall forecast

According to the regional rainfall forecast, all countries in contiguous southern Africa are expected to receive normal to above-normal rainfall between January and March 2011, specifically the regions of northern Zimbabwe, central Zambia, southern Malawi, central Mozambique and most of Madagascar, which are expected to receive above-normal rainfall. In the case of Mozambique and Madagascar, this rainfall could come in the form of tropical cyclones, which affect these countries every season.

Likely scenarios

Flooding along the major rivers of the region is an annual occurrence, and regularly affected communities, who depend on the floodplains for food production, usually move to higher ground well in advance of the floodwaters.

Meteorological and hydrological authorities are monitoring the situation and regular warnings are being issued. It should be noted that exchange of information between countries that share major rivers have improved significantly. All countries have contingency plans prepared with scenarios of what could happen and interventions needed.

However, considering the current rainfall pattern and looking at other regions of the world this rainfall season, unusual rainfall features could turn into disasters if preventative measures are not taken. Lessons from the Mozambique floods in 2000 are relevant, as most of those floods were caused by flash water released through the major regional rivers. Monitoring the situation and strengthening disaster prevention measures in the next six weeks is critical in order to prevent a possible escalation of floods into a regional disaster.

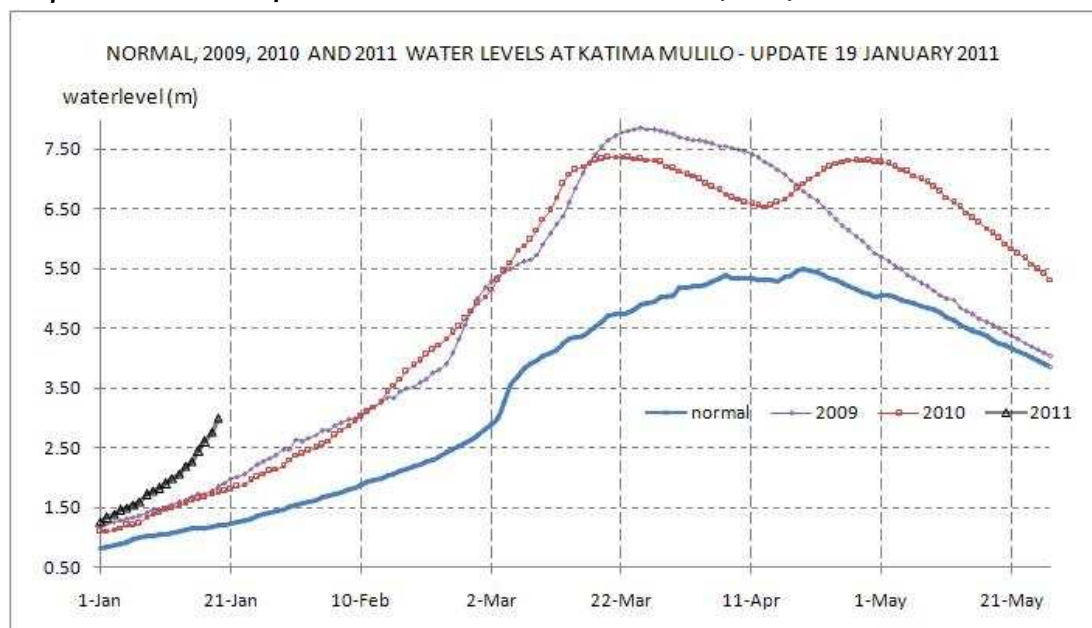
Historically, the rainfall will increase during the period of end-January to end-February (March in some countries), and this is when major rivers increase their levels and flood low-lying areas, mainly the most productive agricultural areas. In case of serious flooding virtually every country in southern Africa will be impacted. Tens of thousands of people could be displaced or evacuated, and hundreds of thousands more could be affected by damage to crops and shelter.

Country Situations

Namibia and Botswana

In north-east Namibia, the upper Zambezi River is very high for this time of year and rising rapidly. As at 19 January 2011, the Zambezi River at Katima Mulilo is at 3.01m, compared to the average level of 1.19m for this time of year, having risen 1.02m between 12 and 19 January 2011. As can be seen in the graphic below, water levels usually only reach this level around early March.

Graphic: Water Levels of Zambezi River at Katima Mulilo – 2009, 2010, 2011 and Normal



Source: Namibia Hydrological Service

Inundation of the Caprivi region usually starts when the Zambezi River reaches about 3.5m to 4m at Katima Mulilo. Such levels (3.5m-4m) are an annual occurrence and communities living in these areas are used to this pattern and move to higher ground that is often isolated. Flooding of the higher ground can only occur when the levels exceed 6m to 7m, which could potentially lead to a humanitarian situation. Considering the fact that water levels have already reached such a high level this early in the rainfall season, the flooding of higher ground could be a possibility in the next two months.

In the lower Orange River, which forms the southern border of South Africa and Namibia, a very high flood wave has been recorded, but river levels are subsiding. Local authorities have informed the Namibian Red Cross Society (NRCS) that an estimated 12,000 people were affected by the flood wave and are in immediate need of clean drinking water. NRCS are procuring water purification tablets to respond to this situation, and will be dispatching an assessment team to the affected areas on 20 January 2011.

The Namibian parts of the Cuvelai Basin had good rains over the past two weeks, and monitoring stations have transmitted the onset of flows in the Cuvelai Oshanas. The Namibian Metrological Service has issued a warning for widespread rains in northern and central Namibia (including Windhoek) over the course of the next few days, which could lead to flash floods.

The Okavango River is also high for this time of year and rising steadily. As at 19 January 2011, the Okavango River at Rundu is at 7.37m, compared to the average level of 4.68m for this time of year, having risen 47cm between 12 and 19 January. These high water levels appear to be due to catchment saturation from the 2009 and 2010 floods, as rainfall has been fairly normal in the upstream catchment area. Such saturation levels increase the risk of flash floods.

Namibian authorities have already issued early flood warnings to communities residing close to the Okavango River. Further downstream, Botswana authorities are expecting Okavango River levels to reach their first peak around February/March 2011, after which serious flooding is anticipated in low lying areas adjacent to the Okavango Delta in northern Botswana.

NRCS are putting in place measures to be able to respond to the first signs of flooding in northern Namibia, such as procuring a sufficient amount of relief items. By next week NRCS will start conducting assessments in Caprivi and Kavango to gain a clear picture of the situation and to mobilize communities to start moving to higher ground if required.

Graphic: Water Levels of the Okavango River at Rundu – 2009, 2010, 2011 and Normal



Source: Namibia Hydrological Service

Angola

In Angola, there have been reports that flash floods in early January 2011 killed 11 people in Luanda Province in northern Angola. However these reports could not be confirmed. Furthermore, the meteorological departments of Angola and Zambia have warned that heavy rains are expected over large areas of both countries over the next few days.

Zambia and Zimbabwe

Due to persistent rainfall in the Zambezi River Basin catchment area, water levels in Lake Kariba are already high for this time of year. River authorities consider the maximum level for this time of the year to be 485m, and the current level is around 484.8m. The Zambezi River Authority (ZRA) is planning to open two spillway gates of Lake Kariba on 22 January 2011, increasing its discharge to around 3,000m³/s. The ZRA will consider on 24 January 2011 whether to open additional spillway gates, depending on rainfall and inflows. This opening of the spillway gates may result in rising water levels and in time possibly flooding further downstream. The Zambian Government has already issued flood warnings to districts adjacent to the lower Zambezi River, and district disaster managers are alerting communities and preparing for possible flooding. Zambian authorities have informed those in Mozambique of this decision.

Nationally, Zambian authorities, through the Disaster Management and Mitigation Unit (DMMU), have undertaken a number of preparedness activities, including the stockpiling of relief items in districts likely to be affected, the clearing of waterways in urban areas, and strengthening transport infrastructure at critical locations. In Lusaka, authorities hope to prevent a repeat of last season's cholera outbreak by implementing the Lusaka District Disaster Risk Reduction Preparedness and Response Plan, which includes activities such as drainage digging and clearing, and mapping at-risk areas.

The Zambia United Nations Disaster Management Team met this week to discuss the flood situation, and will be providing a brief on preparedness activities shortly. These activities will include mitigating the chances of cholera outbreaks.

Zimbabwe has been receiving heavy rains over the past two weeks, and there are indications that water levels in most rivers and dams are rising, and that many dams, particularly in the north, are nearing capacity. There have been isolated reports of flash floods in some parts of the country, but no major floods as yet. According to the Zimbabwe National Water Authority (ZINWA), areas under threat due the current rains are Chidodo in the Muzarabani District and Mid-Sabi in Chipinge District. With persistent rains, other areas that could become at-risk include Tsholotsho (flash floods), the Beitbridge area along the Limpopo River, and parts of Gokwe North and South that could be affected at the confluence of the Sanyati and Mupfure Rivers. The critical flood period is from mid-January to end-February. Preparedness activities have

been undertaken, with the national contingency plan covering floods having been revised at the end of 2010.

Mozambique

Mozambique has been on orange flood alert since December 2010. This alert obliges the institutions involved in disaster management to monitor such phenomena as rainfall and winds, in preparation for possible flooding. The National Institute of Disaster Management (INGC) has mapped at-risk areas, and issued community flood warnings. The Kariba and Cahora Bassa dams have also been opened regularly over the course of 2010 to mitigate against the need for sudden discharge.

Over the past few days, the central and southern regions experienced heavy rainfall. As at 18 January, the following river basins registered alert levels:

River Basins above alert level in Mozambique, as at 18 January 2011

River Basin	Station	Water Level (m)	Alert Level (m)
Zambezi	Caia	5.00	5.00
	Marromeu	4.83	4.75
Púnguè	Púnguè Sul	6.73	6.5
	Inhazónia	6.84	5.5
Búzi	Dombe	5.64	5.5
Limpopo	Chókwè	5.98	5
Incomáti	Magude	5.98	5
Maputo	Madubula	4.16	3.5

Source: Mozambique National Water Directorate

The Limpopo Basin at Chókwè is already above alert level and is expected to rise due to local rainfall and tributary inflows. The situation in the lower Limpopo River (especially in the lowlands of *Guijá*, Chókwè, *Chiduto* and *Xai-Xai*) will worsen following the increased discharges from the Massingir Dam in the Limpopo Basin and the increasing inflows from South Africa. Over the next 48 hours, it is expected that the Limpopo Basin will remain above alert level, with upward trends at Combomune, Pafuri and Chókwè, which could affect the towns of Conhame, Chilucane and Marrambajane in *Chokwe* District, and Chibotane in *Massingir* District.

In the Zambezi Basin, upstream in Zumbo levels are still low but steadily increasing. Downstream in Marromeu, levels are also increasing and in Caia they are remaining stationary. The Cahora Bassa Dam is discharging at 1944 m³/s and stored volume is increasing. Again, forecast is essential for better decisions but the situation is still under the control of local authorities.

The situation in southern Mozambique remains the same with a tendency to worsen. Levels in the Incomáti and Maputo basins are still above the alert levels and localized inundations are occurring, affecting especially near-riverine crops. In some places roads are impassable. Flooding has already occurred in urban areas of *Maputo* and *Xai-Xai*, primarily in informal settlements close to river banks. Authorities and partners are responding to these impacts, and the provincial INGC are currently organizing an assessment to affected districts in *Gaza* Province, to which cluster members have been invited.

The Zambezi, Púnguè, Maputo and Incomáti Basins are all expected to remain above alert level. The Buzi Basin may record fluctuations in water levels, with a tendency to rise due to heavy rainfall recorded throughout the basin. The Lucite River in the Buzi Basin could reach alert level at Dombe in the *Sussudenga* District.

Preparedness measures for flooding are in place, and there is no need for regional support at this moment, although this situation may change on short notice. The national contingency plan covering floods was updated in November 2010, and the United Nations Humanitarian Country Team will conduct a further review at the end of January 2011. Simulation exercises were also undertaken in December 2010 to prepare for the flood season. The Logistics Cluster has further conducted detailed reviews of preparedness. Boats have been made available in case road networks are affected by flooding. Logistics hubs have also been established, and the Water, Sanitation and Hygiene (WASH) Cluster has reviewed and replenished food stocks in the Maputo and Zambezi river basins.

South Africa

According to the Department of Cooperative Government and Traditional Affairs (CoGTA), the latest information gathered by the National Disaster Management Centre (NDMC) indicates an estimated 40 people have lost their lives to flooding and incidents of lightning, thunderstorms and tornadoes between mid-December and 17 January 2011. Over 6,000 people have been displaced. Damage amounting to R356-million so far has been calculated for natural-disaster related damages in three of the seven affected provinces (Northern Cape, North West and KwaZulu-Natal).

Reports received to date indicate that funding will be required for the broad areas of humanitarian relief, repair and upgrading of public infrastructure, agricultural relief (infrastructure, livestock and crops), and repairs to damaged houses. Consolidated information from the provinces of the Eastern Cape and Western Cape is still outstanding. The Minister for CoGTA has recommended that a Gazette be issued to declare a National State of Disaster covering 28 municipalities in 7 provinces.

In order to ensure a coordinated response, an Inter-Ministerial Committee has been established. This Committee plans firstly to declare official disaster areas, and secondly to develop mechanisms to monitor weather patterns in South Africa so that in future loss of life and destruction to property is minimized.

Most of the operational issues such as assessing the immediate damage to houses, seeing to the needs of the affected people and rendering the necessary assistance like alternative accommodation, blankets and food parcels are being attended to by the local disaster management structures with oversight and assistance from provincial counterparts.

All disaster management structures in the country have been put on high alert and are working in conjunction with the South African National Defence Force (SANDF), the South African Police Service (SAPS), other government departments and civil society structures to deal with the devastation of the floods.

The NDMC, in liaison with the South African Weather Service, is monitoring the situation, and provincial disaster management structures that may be affected by possible further floods have been warned of the possibility of further heavy rains.

UNICEF will also be following up with WHO and the South African National Department of Health to reactivate the national cholera task force, as the national and provincial contingency plans for cholera need to be updated and provincial coordination mechanisms reactivated. UNICEF also noted that they do not foresee the need for a Protection response as there has not been mass displacement. IFRC have already indicated that they may make a Disaster Relief Emergency Fund (DREF) request for responding to the current floods in South Africa.

Lesotho

In Lesotho, heavy rains during the week of 03-09 January 2011 caused extensive crop and infrastructure damage. Disaster management authorities have embarked on a nationwide rapid assessment, which will be shared with humanitarian partners once complete. According to the IFRC, landslides occurred in the Berea District, killing four people and injuring two.

Madagascar

In Madagascar, heavy rainfall was recorded in the city of Tulear in southern Madagascar on 06 January 2011, killing two people. The BNGRC (the National Disaster Management Authority) has deployed to support local authorities.

Malawi

In Malawi, an estimated 3,640 households in 19 districts have reported some damage to their property due to rainstorms, hailstorms and strong winds. However, there have been no official reports of flooding.

Swaziland

Although river levels in Swaziland are high, there have been no official reports of flooding. According to the International Federation of the Red Cross (IFRC), heavy rains, landslides and flooding in Swaziland have affected an estimated 89 households, leaving many without basic necessities. Transport infrastructure has also been damaged. The Swaziland Red Cross Society, together with Government, is providing relief assistance to the affected communities.

Sources: Namibia Hydrological Service, Zambezi River Authority (ZRA) Zambia Meteorological Department (ZMD), Zambia Department of Water Affairs (DWA, Zambia Disaster Management and Mitigation Unit, SADC Secretariat, SADC Climate Service Centre, Angola National Directorate of Water Resources (DNRH), Southern African Regional Climate Outlook Forum (SARCOF), Angola National Institute of Meteorology and Geophysics (INAMET), South Africa Department of Cooperative Government and Traditional Affairs (CoGTA), South Africa Department of Water Affairs (DWA), South African Weather Services (SAWS), Mozambique National Water Directorate, National Aeronautics and Space Administration (NASA) of the United States of America, National Oceanic and Atmospheric Administration (NOAA) of the United States of America, relevant United Nations Country Teams. FEWS NET Country Offices, World Food Programme (WFP) Country Offices.

For comments or to provide additional information please contact:

Hein Zeelie zeelie@un.org

United Nations Office for the Coordination of Humanitarian Affairs (UNOCHA)
Regional Office for Southern & Eastern Africa, Johannesburg, South Africa
Tel: +27 11 517 1665 | Mob Tel: +27 82 328 3038

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