



# "FLOODS IN THE SAHEL"

"The week of August 11 to 18, 2024, was extremely wet with heavy rainfall that caused devastating floods in many regions of the Sahel."

Information note / 23 August 2024

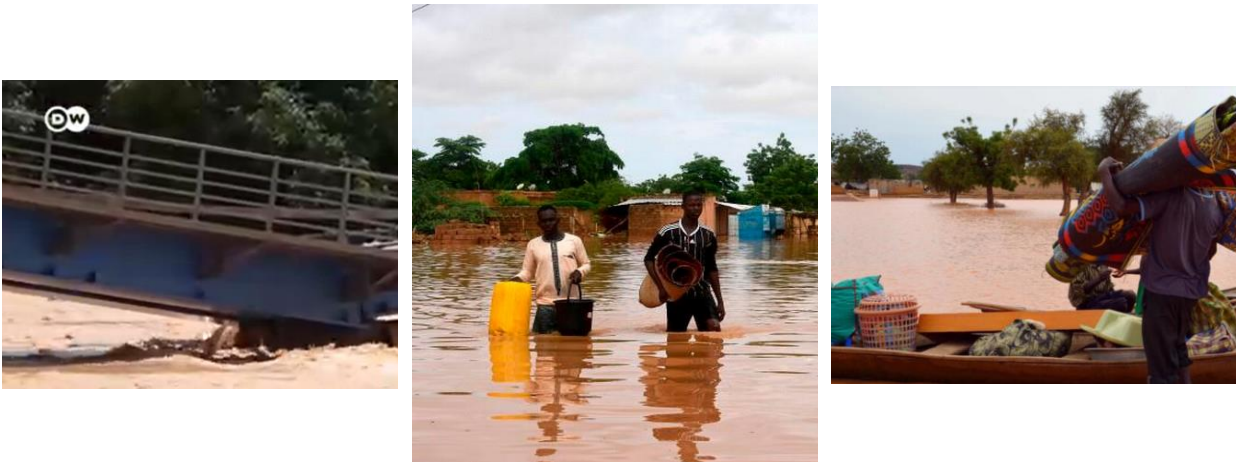
## 1. Devastating Floods in the Sahel: Entire Regions Isolated and Considerable Human and Material Losses Recorded

For several weeks, the Sahel has been hit by heavy rains and floods. The week of August 11 to 18 was particularly wet, with abnormally high rainfall across the entire strip from Sudan to Senegal. Even the northern regions of the Sahel, which usually receive little rainfall, were very affected. As a result, many towns and villages are under water, and hundreds of people have lost their lives, either by drowning or as result of homes collapse.

The material damage is considerable: bridges have collapsed, roads are completely flooded and impassable, hundreds of houses have been destroyed, health centers ravaged, fields damaged, hundreds of tons of food washed away by the waters, as well as thousands of herds of cattle carried away by the currents. Populations, already vulnerable due to the climate and security crisis, find themselves destitute and in mourning.

According to civil protection reports, several towns and villages are isolated from the rest of the country. This is the case, for example, of Gao in Mali, which was cut off from the rest of the country after the flood of August 16, 2024. In Niger, national road RN1 in Soray, about fifteen kilometers from Niamey, was damaged and flooded on August 16, isolating the capital from six regions of the country, a vital route for the supply of fuel and food to the city.

The most affected areas include northern and central Chad, northern Niger, Mali and Burkina Faso, as well as western Burkina Faso and southwestern Mali, where very high rainfall amounts been recorded. **The extent of the damages across some Sahelian Countries are illustrated on the following pictures (see Figures 1 to 4).**



**Figure 1:** impacts of flooding from August 12 to 14, 2024 in Tillabéri, Niger. More than 16,982 affected households numbering 129,718 people, 15,139 houses collapsed, 45 deaths including 2 in Diffa, 14 in Maradi, 1 in Niamey, 13 in Tahoua, 5 in Tillabéri and 10 in Zinder as of August 12, 2024, 2,221 heads livestock were lost. Sources ( <https://www.dw.com/fr/niger-niamey-plombs-asupplement-degats/video-70018986>, <https://www.youtube.com/watch?v=TptS61bsRV0>)



**Figure 2:** floods and road traffic is interrupted between Didiéni and Kolokani in Mali, following the damage to a bridge caused by the torrential rains recorded during the day of Sunday August 18, 2024. <https://www.maliweb.net/environment/mali-floods-in-mali-deaths-and-material-damage-3074516.html>



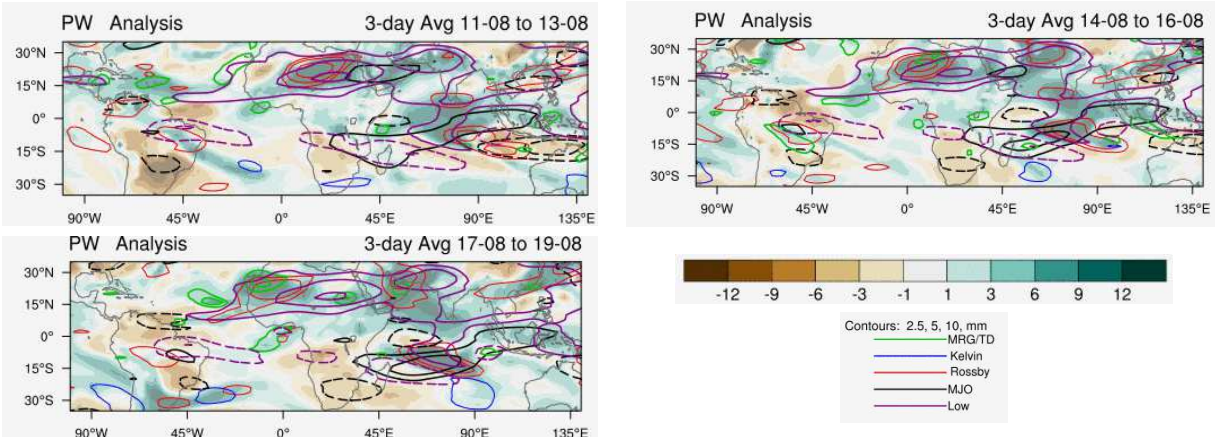
**Figure 3:** floods in the town of Tibesti in Chad, on August 14 and 17, 2024, causing more than 60 deaths and 250,000 victims ( <https://fr.apanews.net/news/tchad-plus-de-250-000-people-affected-by-floods/>)



**Figure 4:** floods in Gummi, Zamfara State, North West Nigeria (Source: testimony on Facebook)

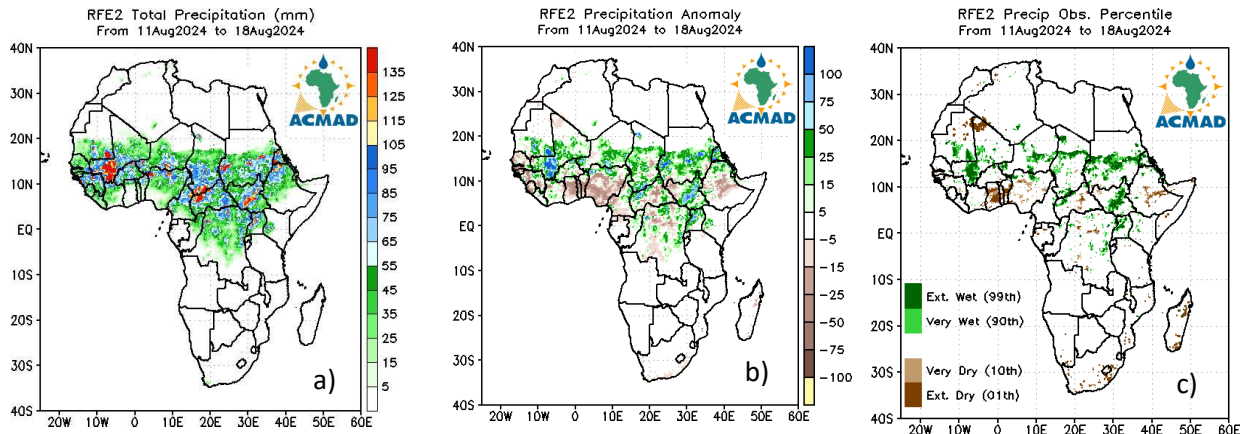
## 2. Analysis of the Meteorological Situation: ‘When forecasts become reality’

This week had been predicted for at least two weeks from available forecast models. All models were consistent, forecasting heavy to extreme rain. All the ingredients were there. Recent studies have shown that tropical waves (MJO, Rossby, Kelvin) are key factors in extreme precipitation in the Central Sahel. When coupled, they strengthen storm systems and increase the likelihood of extreme rainfall. As can be seen on the map below, all of these waves prevailed during the period from August 11 to 18, 2024.



**Figure 5:** Analysis of tropical waves (MJO, Equatorial Rossby, Kelvin) from August 11 to 19, 2024 over Africa (Source: MISVA)

Generally, during the week, a total of more than 200 mm of rains were recorded in some places in the Sahel band (see Figure 6.a). For example, 201 mm of rain was recorded in 24 hours in Mali on the morning of August 17, and 113 mm in Gaya, in the southwest of Niger, on the border with Benin. These rainfall amounts are well above the climatology as depicted on the maps in figures 6.b and 6.c below. This Scenario can be considered as an extremely humid week especially in the South of Mali, the North of Burkina, the South and the North of Niger, the center and the North of Chad and the entire southern half of Sudan when compared with the 2001-2010 Climatology.



**Figure 6:** Satellite estimated rainfall over Africa for the period August 11-18, 2024. a) Estimated Total rainfall (mm); b) Rainfall anomaly (mm); c) Estimated Percentile category.

Reference period: 2001-2020. Data Source: NOAA/CPC

The month of August is known to be the wettest in the Sahel. This year, in particular, seasonal forecasts predicted a wetter than normal season across the region (see PRESASS2024 maps), despite a late start to the season. Seasonal forecast updates, organized by ACMAD in collaboration with AGRHYMET and National Meteorological Services, have confirmed very rainy trends for July, August and September 2024 with high risks of flooding in the sub-region.

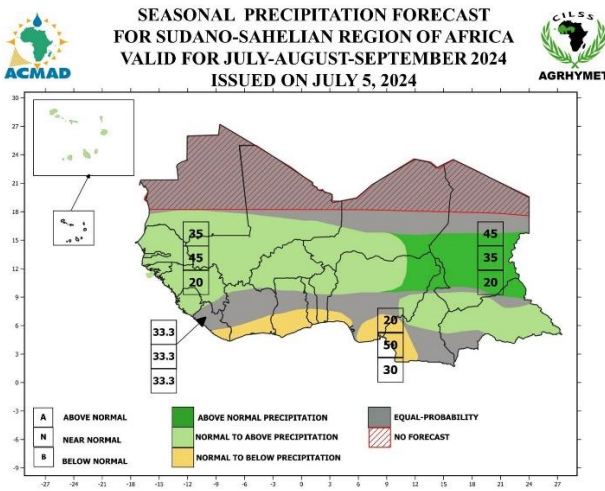


Figure 7: Updated seasonal Outlook for July August September 2024 issued on July 5, 2024

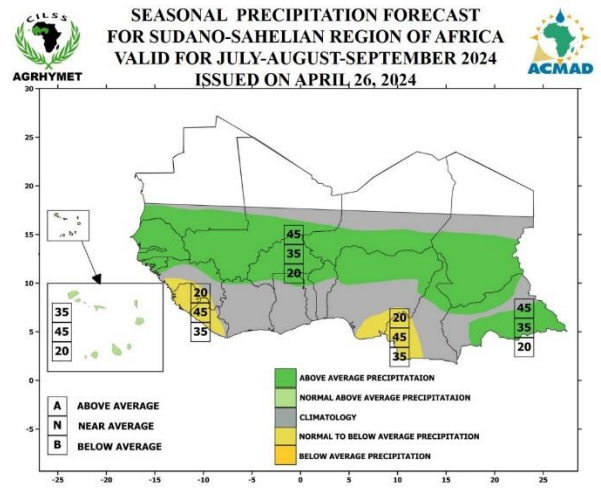


Figure 8: Seasonal Outlook for July-August-September issued on April 26, 2024 during PRESASS2024

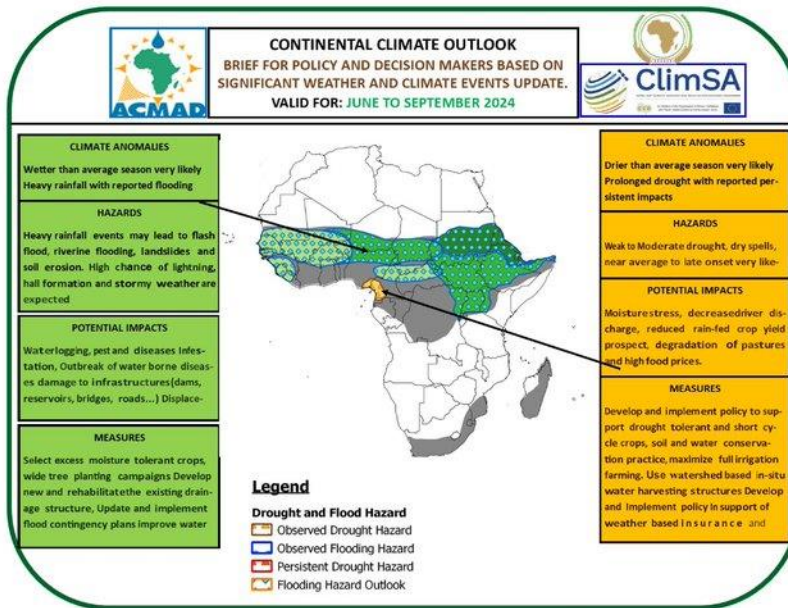
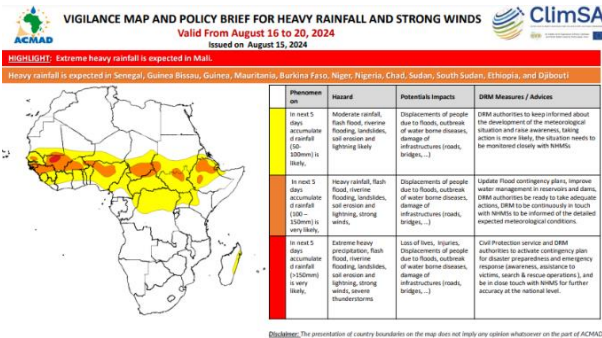
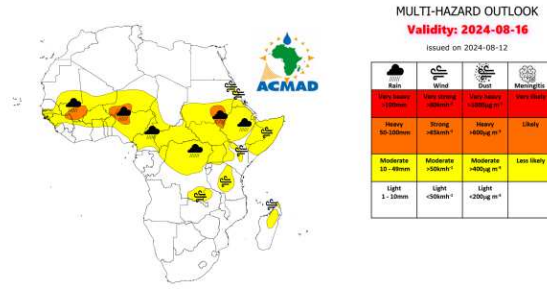


Figure 9: Impact based seasonal Outlook for June to September 2024 issued in May 2024 during the ACCOF17

ACMAD, in collaboration with other Climate Centers as well as National Meteorological Services, carries out briefings to share tools, methods, and encourage good practices for the dissemination of early warnings. High Vigilance Alerts are issued by the Continental Multi-Hazard Forecast Center. See below the vigilance policy maps for heavy rainfall and strong winds.



**Figure 10:** 5-day heavy rain warning map issued on August 15, 2024 valid from August 16-20, 2024



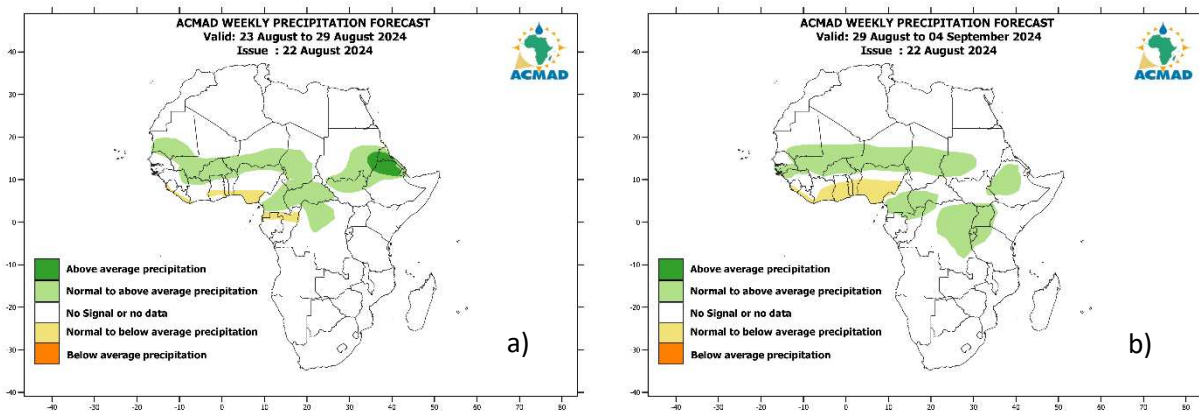
**Figure 11:** Vigilance map of August 12 indicating a high probability of having 100mm of rain in southern Mali and southwest Niger on August 16, 2024

However, it is regrettable to note that despite the measures taken, the populations still suffered significant damage and losses. This reminds us of the need to combine efforts to effectively transform early warnings into early actions, for the benefit of the most vulnerable populations.

### 3. Outlook for the Weeks of August 23 to 29 and September 29 to 4, 2024

The forecast for the next two weeks, from August 23 to September 4, 2024, shows that during the first week, wet conditions are expected over Mauritania, Guinea, Mali, Burkina Faso, Niger, Chad, Sudan, Cameroon, northern Nigeria, Ethiopia, Djibouti and Eritrea. Dry to normal conditions are very likely over the southern Gulf of Guinea region, some places in Cameroon, Equatorial Guinea, Gabon and Congo.

The second week will be characterized by humid to normal conditions over Senegal, Gambia, Guinea, Guinea Bissau, Mali, Burkina Faso, Niger, Chad, Sudan, Ethiopia, northern DRC, Uganda, Rwanda, Burundi and part of Tanzania. A dry to normal situation is forecast over Sierra Leone, Liberia, southern Ivory Coast, Ghana, Togo, Benin and Nigeria.



**Figure 12:** Weekly Precipitation outlook issued on August 23, 2024 and Valid for: a) Week-1 i.e from August 23 to 29, 2024; b) Week-2 i.e from August 29 to September 4, 2024

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