SEASONAL OUTLOOK
WEST AFRICA

October to December (OND) 2024
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Highlights

Review of July to September (JAS):

- Severe flooding has affected large parts of the Sahel and West Africa in recent months, particularly in Chad and Nigeria, with numerous negative impacts on human health. Conversely, the Gulf of Guinea region has experienced a shortage of rain over this period.

Forecasts for October to December (OND):

- The Sahelian region is entering the dry season. In the coastal regions to the south, **above-average rainfall is forecast, leading to a risk of flooding.**
- The La Niña phenomenon is expected to return during the OND period. This phenomenon generally leads to excessive rainfall from June to September, so its impacts won't be significant in West Africa this OND, but should be monitored closely in the 2025 monsoon.

July to September (JAS) Regional Review

- **Heavy rains and flooding:** According to the latest available figures, torrential rains and subsequent flooding affected more than 4.4 million people in West and Central Africa in 2024. The countries worst affected are Chad (1.5 million people affected), Nigeria (1.1 million) and Niger (710k) [WHO]. These figures are three times higher than those for the same period last year. Deforestation in the area increases the damages of floods and also heightens the risk of zoonotic outbreaks.

- **Epidemics:** A number of infectious diseases have broken out in West Africa over recent months, including Lassa fever, smallpox, meningitis, cholera, measles, hepatitis E, polio and dengue fever [WHO].

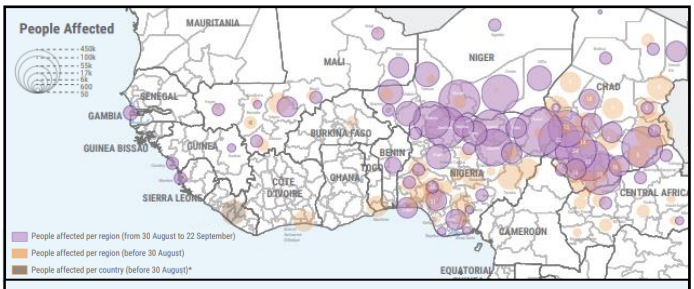

Figure 1: Floods across West Africa over JAS [OCHA]

- **Higher than normal temperatures** affected north-west Africa in July, particularly in the Sahel [WWA].

Timeline of the impacts of floods on health

1 **Immediate Risks: Trauma, drowning, hypothermia, electrocution, carbon monoxide poisoning.**

2 **Short Term (0-7 days) Water-borne diseases, snake bites and animal attacks:** Flooding can cause aspiration pneumonia, bacterial skin infections, cholera and hepatitis A/E. Epidemics of diarrhoeal diseases can be viral (rotavirus), bacterial (E. coli, salmonella, yersinia) and protozoan (giardia).

3 **Medium term (1-4 weeks) Atypical infections transmitted by rodents:** rodents, snakes and many other animals escape their flooded burrows to seek out dry land, concentrating together leading to increased interaction with humans and a higher risk of infection for example with leptospirosis.

Table 4 from this study presents a list of early measures that should be considered to reduce these risks.

4 **Longer term (+4 weeks) Vector-borne diseases:** Heavy rainfall causes Aedes eggs to hatch, carrying arboviruses (dengue, yellow fever, Zika, Rift Valley fever). Stagnant water puddles allows Anopheles mosquitoes to breed, increasing the risk of malaria and lymphatic filariasis.

Continuous: Flooding also has a significant impact on non-communicable diseases. This impact can be **direct** (asthma/COPD exacerbations, heart attacks or worsening mental health conditions), or **indirect** (delays in diagnosis, treatment or care). This increases all-cause mortality, which peaks between 15 and 35 days after a flood. The risk of **cardiovascular and respiratory mortality** peaks between days 20-25 and 25-35 respectively (data not specific to West Africa). Health effects may disproportionately affect women, who often bear the burden of certain work activities, and violence and exploitation may increase following floods. Exposure to **environmental contaminants** such as heavy metals and toxic industrial waste, particularly in oil exploration areas, is increasing. These pollutants are linked to cancers, female infertility, miscarriages, birth defects, eye infections, blindness and skin problems, with communities close to oil fields being the most affected.

[Sources: Brown et al, Paterson et al, Senkwe et al, Martinez et al, Ochoa et al, Benanisio et al, Onafruo et al, Yang et al, McCreesh et al, Holt et al, and Okoka et al]

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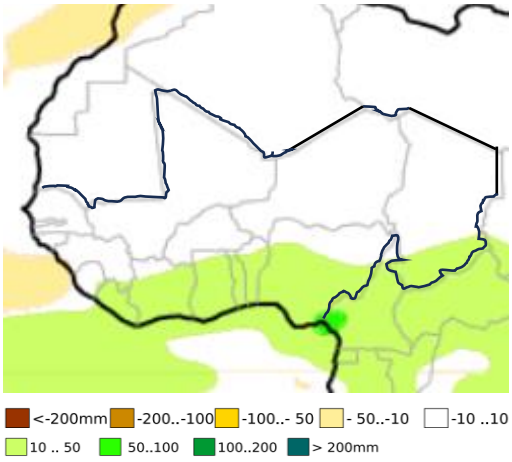
CLIMATE FORECAST FROM OCTOBER TO DECEMBER (OND)

Fig 2. Rainfall Anomaly (above usual) for OND [C3S]



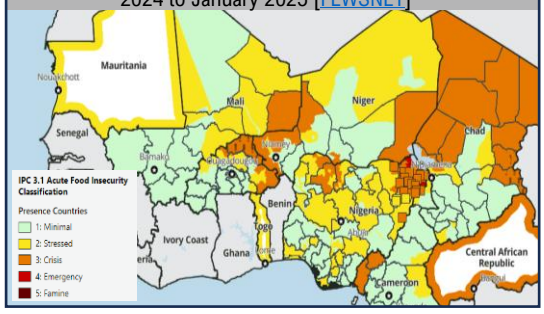
- The area around the Gulf of Guinea, which has been relatively dry in recent months, will see an increased risk of flooding during OND, **due to above-normal rainfall [Fig 2]**, up to 50mm in excess of average, and a reduced capacity of the soil to absorb water, with rivers having heavy flows upstream.
- Due to heavy rains in the Sahel, river levels are expected to remain high in southern Niger, Burkina Faso, northern Nigeria, Ghana and Chad [GloFAS] during OND.
- The OND season generally brings a low risk of extreme heat in the region, but above-average temperatures are expected throughout the region, particularly in Mauritania, Cameroon, Liberia and the coastal areas of Nigeria [IRI and CS3].
- **La Niña** is set to return in autumn. The impact of La Niña should be felt during the next monsoon (JAS 2025).
- A recent [UNHCR] report paints a worrying picture for the future of the Sahel, with rising temperatures, reduced soil moisture, difficult harvests and worsening water scarcity problems over the coming decades.

EXPECTED IMPACTS ON HEALTH & NUTRITION

Simultaneous epidemics. Epidemics of water-borne diseases (cholera and hepatitis E) and vector-borne diseases (dengue and malaria) are ongoing across the region. The m-pox outbreak is threatening to spread; in West Africa, the cases reported are mainly of clade IIB (whereas they have been of clade IA or IB in the DRC and East Africa). One death and 55 cases have so far been reported in Nigeria [AfricaCDC]. Increasing temperatures and rainfall are expected to increase the risk of dengue fever in many parts of West Africa [Damtew et al].

The risk of meningitis typically begins to increase around December. West Africa is also exposed to a high risk of zoonotic diseases and epidemics of viral haemorrhagic fever, a risk amplified by climate change [Redding et al].

Fig 3. Food insecurity forecasts for the period October 2024 to January 2025 [FEWSNET]



Conflict and displacement: More than 600,000 Sudanese refugees have arrived in Chad since the conflict began in April 2023, other violence and unrest in the Sahel has displaced millions of people internally, particularly around the Lake Chad basin. Livelihoods, market activities, trade, transhumance movements and access to basic social services have been severely disrupted in these areas.

Food Insecurity: Cereal prices experienced an increase on Sahel markets from June to July 2024 during the lean season. During the OND period, food insecurity in many parts of West Africa will be stressed (IPC2) until crops from the harvest become available. In areas affected by civil unrest, crisis levels (IPC3) are forecast in Burkina Faso (Loroum, Bam, Komandjari, Seno, Soum, Yagha, Oudalan, Kompienga and Tapoa), Niger (Tillabéry, Tahoua, Maradi and Diffa) and Mali (Ménaka). In Nigeria, the inaccessible north-eastern states of the country (Abadam, Guzamala, Marte, Bama) will probably remain in an emergency situation (IPC4) until January 2025. [FEWSNET].

Ravageurs: Fall armyworm, which invaded West Africa in 2016, continues to spread and damage a wide range of crops [Day et al] especially during the rainy season [Ahissou et al]. Banana top disease and fusarium TR4 pose serious threats to crops, economic growth and sustainable development in the region, and efforts are underway to strengthen epidemic preparedness [FAO]. Groups of locusts could migrate into Chad, Niger and Mali over the coming months. Heavy rainfall and high temperatures in West Africa increase the risk of individual locusts all swarming together as flooding reduces food availability for them and concentrates them together [FAO].

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Calendar Bar Key

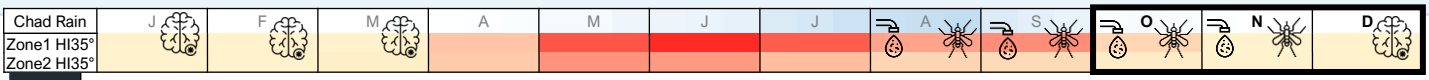
50	100	150
1	10	20

The blue bands represent average rainfall from 0 to >150mm per month [WFP]. The red bands represent the average number of days per month when the heat index (a combination of temperature and humidity that gives a better estimate of heat stress) >35°C. We use the climate projections for 2020-39 (scenario SSP1-1.9) since they correspond best to the temperature increases observed at the regional level (+1 to 1.9°C) [CKP]. As most countries have highly variable precipitation and temperature regimes, we recommend the use of ERA5 for more localy specific data.

Mosquito symbols represent historical monthly malaria peaks [from PMI, EMDAT and peer-reviewed publications]. Malaria is endemic across most of West Africa, and epidemics also occur outside the seasonal peaks, particularly as a result of atypical weather. This could potentially (with caution!) be used as a rough indicator of other mosquito-borne diseases, bearing in mind that many other factors like immunity and mosquito types are also relevant.

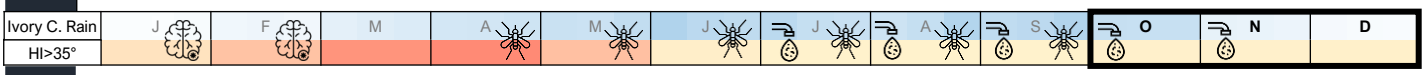
The contaminated water symbol indicates periods of high cholera risk [from Perez-Saez et al]. This seasonality could be used (with caution!) as an approximate indicator for other waterborne diseases, bearing in mind that many other factors modify the epidemic risk.

The brain symbol represents the months when the historical risk of meningitis is high [from EMDAT, and peer-reviewed publications]. This risk peaks during the dry season when 'harmattan winds' bring Saharan dust, which damages the mucosal barrier and inhibits immune defences, thus facilitating bacterial invasion. See ACMAD for dust storm/risk warnings and forecasts [methods - Dione et al].



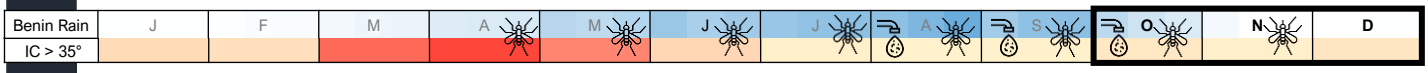
Chad

Climate: Major floods have affected more than 1.6 million people in Chad in recent months, among the worst in living memory for many people [MSF]. Around normal rainfall is expected over the next few months, with the exception of the southern border area with CAR, which could experience above-average rainfall. **Health**: MSF projects have responded to outbreaks of malaria, acute watery diarrhoea and upper/lower respiratory tract infections in Sila linked to heavy rains and flooding. The teams are on alert and preparing for a possible cholera epidemic. A response to an outbreak of hepatitis E is underway in Irba. Dengue outbreak risk peaks from July-Dec. **Nutrition**: WFP food and cash transfer programmes have been interrupted by the floods. Malnutrition rates have been higher this season than last year in N'Djamena. The WFP plans to provide food aid to 400k people across the country, but has only received funds for 165k people so far; refugees in the Adré camp have been protesting against the lack of food. The north of the country is expected to remain in crisis (IPC3) over the next few months, while the situation in the southern states is expected to improve from stressed (IPC2) to minimal (IPC1). **Pests**: Small swarms of locusts are present and breeding in the north-east and Ziguey, Kanem and Wadi Fira. Group densities are likely to increase over OND due to the heavy rains and flooding observed in August and September, and a second generation of locusts could form over the next few months [FAO].



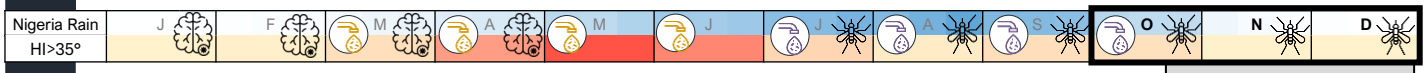
Ivory Coast

Climate: In Abidjan, torrential rains in July claimed more than 630 victims and 8 lives. The coming months are likely to be wetter than usual throughout the country, increasing the risk of flooding. **Health**: Measles epidemics have recently broken out in Ouangolodougou and Agboville, where a vaccination campaign has been supported by MSF teams. The risk of malaria and cholera epidemics generally diminishes with the onset of the dry season. Côte d'Ivoire is one of the only countries experiencing sustained human-to-human transmission of mpox (along with DRC, Burundi, South Africa, Nigeria and CAR), with 172 suspected cases, 45 confirmed cases and one death in 21 health districts, with a peak in week 33 and a gradual decline since then. **Nutrition**: The lean season ended in August, and food supplies should increase with the arrival of the rice and maize harvests. **Pests**: No significant locust outbreaks are expected in Côte d'Ivoire. [FAO].



Bénin

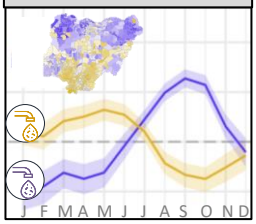
Climate: Intense rain has fallen in Benin, particularly in Mono, Couffo, Zou and Ouémé in the south, causing the Couffo to overflow its banks and affecting several regions. This was the worst flooding for 50 years [IFRC]. The next OND season should continue to be wetter than usual throughout the country. **Health**: Benin usually experiences seasonal peaks in malaria during the rainy season - cases are expected to decrease during the OND period. **Nutrition**: The floods caused significant damage to agricultural equipment and infrastructure, as well as losses of livestock and crops submerged by floodwaters. **Pests**: No significant development of locusts is expected in Benin in October/November [FAO], but the fall armyworm, banana virus and TR4 fusarium wilt pose serious threats to the country's economy [FAO].



Nigeria

Climate: Heavy rains and flooding have affected more than 1.2 million people in Nigeria across 31 states, and more than 300 deaths have been reported [OCHA]. Borno was severely affected by the collapse of the Alau dam, which displaced 400k people. The floodwaters are just beginning to recede, and people have started to return to their homes in Maiduguri and Jere. Contaminants from oil and mining operations have polluted floodwaters in some areas. Above-average rainfall is expected in the southern half of the country, increasing the risk of further flooding. **Health**: Nigeria is one of the few countries with sustained human-to-human transmission of mpox with 55 suspected cases (mainly clade IIb) and no deaths [WHO]. Surveillance and contact tracing efforts are continuing. Cholera epidemics have been declared in Adamawa, Borno, Bauchi and Yobe (10837 cases, CFR 3.3%) and a mass vaccination campaign is planned. The risk of a cholera epidemic has been highest in the north of the country in recent months; this risk generally decreases during the dry season [**Fig 4**, Perez-Saez et al]. Lassa outbreak risk increases in the north from December-March, but can occur year-round. **Nutrition:** 5 million people are facing critical food insecurity in Borno, Adamawa and Yobe states due to flood damage. With markets and businesses severely affected, crops damaged and livestock washed away, there are fears that malnutrition could worsen in the coming weeks. North-East Nigeria remains the epicentre of the Boko Haram insurgency, and the conflict is driving up food prices and reducing access to markets; IPC 4 (emergency) and IPC 3 (crisis) conditions are likely over the coming months.

Fig 4 - Risk of cholera epidemic in Nigeria



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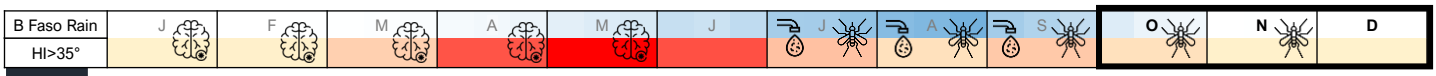
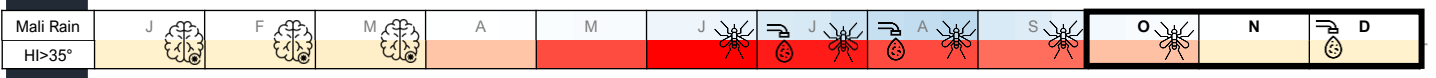


Burkina Faso

Climate: In recent months, the west of the country has experienced heavy rainfall and flooding. Average rainfall and above-average temperatures are forecast for the coming dry season OND. **Health**: Flooding in Houet and Oudalan is likely to have contributed to outbreaks of hepatitis E and could contribute to an increase in cases of malaria and other water-borne diseases. The ongoing violence and conflict of recent months has interrupted vaccination programmes, reducing coverage. Cases of measles have decreased in Kaya [souk]. With deteriorating access to food and limited access to health services, cumulative admissions and deaths related to malnutrition in children could increase (already up 25% and 85%, respectively, this year). Dengue outbreak risk peaks from August to October in the North. **Nutrition**: This year's agricultural production is expected to be higher than last season in some areas. However, in the south-west region, which has been hardest hit by periods of drought, and in the regions most affected by conflict (Sahel, East and Centre-North), production is likely to be below average. Pending new harvests, cereal reserves (maize, millet and sorghum) remain low. New maize harvests from coastal countries, which generally help to boost supply, are scarce on the markets, and export restrictions imposed by Ghana could limit inflows over the coming months. Demand remains high, particularly in areas with large numbers of displaced people and in urban centres. Prices of basic foodstuffs have risen significantly compared to last year (+26% for millet, +18% for sorghum and +17% for maize). **Pests**: No significant increase in locusts is expected in the coming months [FAO].

Sierra Leone

Climate: The next OND season should continue to be wetter than usual. After more than 400 floods recorded between 2021 and 2022 and numerous mudslides, the loss of land and displacement of people have had dramatic consequences for the populations affected [Acland] **Health:** Rates of transmission of mosquito-borne and water-borne diseases should begin to decline over the next few months. **Nutrition**: Food prices have risen (+15% for rice), but this should ease with the start of the main rice harvesting season in September, and conditions should improve with the end of the lean season (July to August). The WFP is combating deforestation by transplanting tree seedlings and regenerating mangroves in order to adapt to the increasing risks [WFP]. **Pests:** No significant development of desert locusts is expected in October/November [FAO].



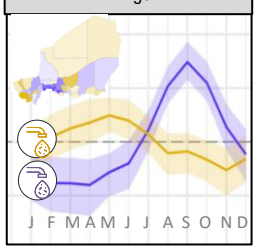
Mali

Climate: In Mali, 374 floods were reported and 30,000 buildings collapsed due to heavy rain. The regions of Ségou (39,245), Timbuktu (36,317), Gao (19,238), Bamako (17,127) and Mopti (1,782) recorded the highest number of people affected. The next OND season should see rainfall around normal for the season. **Health**: Conflict in Mali has resulted in many deaths and injuries and has limited MSF's flood response and other activities. In the north, the risk of malaria and cholera is highest during the rainy season, while in the Sahelian strip, the risk of malaria is highest from August to October. The risk of meningitis generally begins to increase in December/January. **Nutrition**: Emergency levels of food insecurity (IPC4) are currently reported in the south-east (Menaka); most of the east of the country has experienced stress/crisis levels of food insecurity (IPC2/3) in recent months. Conditions should improve during the course of the OND with the end of the lean season in September, the availability of the main harvests and lower food prices [FEWSNET]. **Pests**: No locusts have been reported in August/September, but small numbers are expected between Timétrine, the Tilemsi valley, Adrar des Iforas and Tamesna, where there will be a few larvae and adults. Small groups may form in October/November as the vegetation dries out [FAO].

Niger

Climate: Over recent months, Niger has experienced above-average rainfall, particularly in the south of the country, including Niamey. The rains have caused widespread flooding, damaging infrastructure, displacing 350,000 people and causing more than 217 deaths. Above-seasonal temperatures and normal rainfall are forecast for OND. **Health**: Niger is currently facing cholera outbreaks in the regions of Zinder, Konni and in the south of Tahoua. As of mid-September, there were a total of 172 suspected cases, 12 confirmed cases, six deaths and (CFR 3.5%). UNICEF and MSF have trained community volunteers and set up cholera treatment units in the affected districts and provided cholera treatment kits to support case management. Malaria cases have also been very high in Niamey and the Zinder region in recent months. An epidemic of peritonitis has also been reported in Tera (Tillabrey) [MSF]. **Nutrition**: Due mainly to armed conflict and flooding, the food insecurity situation has reached crisis level (IPC3) in recent months in Diffa, Tahua and Niamey, while IPC2 (stressed) food insecurity levels have been observed in most of the rest of the country. The floods have exacerbated malnutrition and water-borne diseases have affected children due to the consumption of polluted and unhealthy water. Conditions are expected to improve in the central regions (Zinder, Dosso, Maradi and southern Tahoua) during the OND with the end of the lean season and the start of the main harvest season (particularly irrigated rice) [FEWSNET]. There was a malnutrition crisis in Djorikoro, with rates of severe acute malnutrition reaching 16.8%. **Pests**: No locusts were reported in August, and a small number of solitarious adults are probably present; breeding is expected in the Tamesna plains and along the central pastures. With more rain, a second generation of locusts is expected to develop from mid-October [FAO].

Fig 5 Cholera outbreak risk in Niger



DISCLAIMER: Although climate forecasts can provide predictive health information, other factors (conflicts, population movements, socio-economic conditions, politics, immunity and vaccination) modulate disease transmission and must always be taken into account. What's more, the impact of weather conditions can be felt long after a meteorological event has occurred.

The Humanitarian Action for Climate and Environment is an MSF-Canada choice initiative established in 2020 **to support Climate Change Adaptation within the movement.**