



This section describes the seasonal climatology of the regions of West Africa where MSF is present, divided into 12 different zones. It describes the links between aspects of climate and environment and their impact on agriculture, nutrition and seasonality of health risks. This information is based on historical data and is NOT a forecast for the coming season.

The regional split (left) is a geographical compromise between climatic characteristic zones, MSF operational areas and state borders. The text describes the seasonality of Climate, Health, Nutrition and Pests where there is data available for each area.

Chad (Central)

States: Chari-Baguirmi, Guera, Hadjer-Lamis, Ouaddaï, Salamat, Sila, Ville de N Djamena

Climate: Central Chad has a hot and semi-arid climate. The rainy season begins in May, with heavy rains and flooding risk peaking from July-September. The dry season lasts from November-April, with its 'harmattan' winds bringing an increased risk of dust storms and drought. Air pollution in Chad was ranked the worse in the entire world in 2024. Air pollution risk is highest from December-April, peaking in March. The highest risk of extreme heat is seen from March-June, there is then a temporary reduction in heat risk during the rainy season, and then an increased risk of extreme heat again from September-November. **Health:** Malaria is endemic in Central Chad, but seasonally peaks after the rainy season. Historically the period with the highest malaria transmission is from August-November. The risk of Cholera outbreaks is highest in the Lac region, and risk peaks towards the end of the dry season, when water scarcity may be high, and just as the rainy season begins. Dengue surveillance is poor across Chad, however the highest risk of dengue transmission is considered to be from July-December. Meningitis outbreaks can happen year-round but are most common during the peak dry season, from January-March. **Nutrition:** The pastoral lean season occurs from February-May, followed by the main subsistence lean season from June-August. Malnutrition is often highest just before the harvest of Maize and Sorghum arrives in September. There are often fires for agricultural reasons towards the end of the dry season, which can worsen air pollution. Pastoral migration often flows from the northern regions to the south from November-April and then from May-October herders often return back to the north. Conflict between herders and pastoralists can peak in around December-January and again in April in relation to tensions over access to land for grazing and water. **Pests:** The highest risk of locust swarms are when flooding or heavy rains occur from July-August, but locusts have been recorded to swarm and damage crops any time from May-December. If locust swarms that form in East Africa reach reproductive areas of Chad, the prevailing wind can then blow them across West Africa.

Chad (South)

States: Logone Occidentale, Logone Orientale, Mandoul, Mayo-Kebbi Est, Mayo-Kebbi Ouest, Moyen-Chari, Tandjilé

Climate: Southern Chad is mostly a 'tropical savannah' and the rainy season begins in April in southern Chad with light rains. Heavier rains usually start in June, peaking in August and reducing over September and October and the highest risk of flooding in the south of Chad is therefore around this time. The hot dry season then starts in November and lasts until March with frequent dust storms and extreme heat risk peaking from February-April. Air pollution in Chad was ranked the worse in the entire world in 2024. Air pollution is often the highest in southern Chad from Jan-April, with harmattan winds bringing saharan dust. **Health:** Malaria is endemic in Central Chad, but the seasonal peak occurs just after the rainy season. Historically the months with the highest malaria transmission are from August-November. The risk of Cholera outbreaks is highest from June-August and cholera outbreak risk lasts throughout the rainy season. Meningitis outbreaks can happen year-round but are highly seasonal in southern Chad, being most common during the dry season with peak meningitis outbreak risk from January-March. **Nutrition:** The pastoral lean season occurs from February-May, followed by the main subsistence farming lean season from June-August. Pastoral migration flows from north to south from November-April and then from May-October herders generally return back north. Malnutrition is often highest just before the harvests of maize and sorghum arrives in September. There are often fires for agricultural reasons towards the end of the dry season, from February-May, which can worsen air pollution. **Pests:** The highest risk of locust swarms are when flooding or heavy rains occur from July-August.

Sierra Leone (North)

States: Northern, Western, Northwestern

Climate: Sierra Leone has a long rainy season from March to December, with the most heavy rains falling from July-November. The highest risk for floods occurs from July-September, peaking in August. The highest temperatures and risk of extreme heat are from Feb-April. **Health:** Malaria is endemic with high transmission year-round but transmission is highest during the peak of the rainy season from June-November. Cholera outbreak risk is highest from June-August at the beginning of the rainy season. Viral Haemorrhagic fevers like Lassa fever outbreaks can occur at any time of the year, but the risk of an outbreak is highest during the dry season from November-April. This is thought to be because the virus can persist for longer when it is less humid, and also as rodents are more likely to enter human dwellings in search of food. Most Lassa outbreaks of the last few decades have been in the Eastern state in the areas of Kenema, Kailahun, Pujehun, Kono and Bo. **Nutrition:** The cassava harvest is from January-June. The lean season then follows from July-August and then ends with the rice harvest which is usually usually from September-December. **Pests:** Desert locusts activity is minimal in Sierra Leone, and is confined to the extreme northern border region. Mealybugs can affect cassava crops in parts of Sierra Leone and are most common during the rainy season.

Mali (South)

States: Bamako, Koulikoro, Sikasso

Climate: Southern Mali has a rainy season that begins in May, increasing in intensity over June and peaking in July/August and then reducing again from September to October. The rest of the year is dry and hot, with the highest risk for extreme heat ranging from March-June. The risk of extreme heat reduces during the peak rainy season, and then increases again over October-November. The peak risk for air pollution in southern Mali is from December to April, peaking in March, largely due to dust blown from the Sahara by 'harmattan' winds. **Health:** Malaria is endemic in southern Mali, with peak transmission occurring from June-November and a peak in the Sahelian zone from August-October. Cholera outbreak risk is highest during the rainy season from June-September. Meningitis outbreaks can occur year round, but the risk is highest during the peak dry season from January-March. Melioidosis is an often neglected or overlooked bacterial infection with a high mortality, that also peaks in transmission following heavy rain. Recent data has shown it is present in southern Mali and most common shortly after the rains peaking in around August/September. **Nutrition:** The main lean season usually lasts from June-August, ending when the maize, millet and sorghum harvests become available in August. The main rice harvest is then from November-February. There is often pastoral migration and cross-border transhumance from March-May and internal transhumance during the rainy season, and again from November-January. **Pests:** In southern Mali desert locusts are less common than in the north, but swarms can spread from the north, and are most during the rainy season from July-August.

Mali (Central)

States: Kayes, Segou,, Mopti

Climate: The rainy season in central Mali is from May-October with the heaviest rains falling from July-August. Central Mali is a 'hot and semi-arid' zone and the dry season is from November-April, with significant exposure to extreme heat especially from March-June and again after the rains from October-November. The 'harmattan' winds from November to April bring dust storms from the Sahara and cause high levels of air pollution. Drought conditions are common throughout the year, especially if the rains fail. **Health:** Malaria is endemic with a peak in the south from June-November and a peak in the Sahelian zone from August-October. Cholera outbreak risk is highest during the rainy season from June-September. Meningitis outbreaks can occur year round, but risk is the highest during the peak dry season from January-March. **Nutrition:** The main lean season usually lasts from June-August, ending when the maize, millet and sorghum harvests begin in August. The main rice harvest is then from November-February. There is often pastoral migration and cross-border transhumance from March-May and internal transhumance when the rainy season comes and again from November-December. **Pests:** The rainy season brings the highest risk of locust outbreaks, and whilst these are most common in Northern Mali, then can spread to central areas from July-August.

Mali (North)

States: Timbuktu, Gao, Menaka, Kidal

Climate: The north of Mali is very hot and dry desert climate, with a long dry season from October-May, and a short rainy season from June-September. There is minimal risk of flooding in the north, but drought conditions are common throughout the year, with air pollution and dust storms risk being high from December-June with a peak in March. Extreme heat risk is highest from April-October. **Health:** Malaria risk is lower in the north of Mali compared with the central and southern parts of the country, but the risk of epidemic malaria increases during and just after the rainy season (from August-October) with a couple of months lag time. Cholera risk is also highest over the rainy period. Meningitis outbreaks are possible year-round, and there is typically higher transmission over the dry season when the harmattan winds come from January-March. **Nutrition:** The main lean season usually lasts from June-August, ending when the maize, millet and sorghum harvests begin in August. The main rice harvest is then from November-February. There is often pastoral migration and cross-border transhumance from March-May and internal transhumance during the rainy season and again from November-December. **Pests:** The highest risk period for locust outbreaks in northern Mali has historically been during the peak rainy season in July-August, with desert locusts travelling from east to west. Winter breeding of hopper bands can occur from October-February along the border with Niger and in spring some small groups can invade from southern Algeria from March-May.

Niger (North)

States: Agadez, Diffa, Tahoua, Zinder

Climate: Northern Niger is very dry with a hot desert climate, and a short limited rainy season from June-August, which can sometimes be associated with flooding. Drought conditions are common, from April-May, and can continue if the rains fail. Air pollution levels and dust storm risk is high throughout December-April due to the harmattan winds blowing sands and dust particles from the Sahara. The risk of extreme heat is highest from March-October. **Health:** Malaria is endemic but transmission is unstable and low in the Northern Areas, although malaria risk does rise shortly following the rainy season. There is limited evidence of cholera seasonality in northern Niger but it is slightly more common following the rains. Meningitis risk is highest from December-April as this is when the 'harmattan' winds come. **Nutrition:** The lean season is from April until the harvest of millet, rice and sorghum which occurs in October. There is regular cross-border pastoral transhumance from the south to the north from February-May and then further internal transhumance during the rainy season, with North to South transhumance occurring in November. **Pests:** The highest risk of locust swarms occurs with the July-August rainy season, and summer breeding often leads to swarms travelling from East to west during this time. Winter breeding can lead to hopper bands from October-February in border areas.

Niger (South)

States: Tillaberi, Niamey, Dosso, Maradi

Climate: The rainy season in southern Niger is from May-September, and is associated with flood risk during this period. The dry season runs from November-April with the highest levels of air pollution and highest risk of dust storms from January-May. Drought risk is also high from April-July, especially if the rains fail. There are two key periods of extreme heat risk, firstly from March-June before the rains, then again from October-November (after the rains). **Health:** Malaria is endemic in southern Niger, but transmission is highest during and shortly after the rainy season from July-September. The risk of cholera is highest in the south and can often occur just following the rains (August-September), but also can occur during the peak of the dry season due to water scarcity. There is also some evidence measles transmission risk in Niamey is highest from January-May before the rains begin. Meningitis outbreaks can occur year-round, however the risk of an outbreak is highest from December-April with the harmattan winds. **Nutrition:** The lean season is from April until the harvest of millet, rice and sorghum which occurs in October. There is regular cross-border pastoral transhumance from the south to the north from February-May and then further internal transhumance during the rainy season, with North to South transhumance in November. **Pests:** Locust swarm risk increases when there are heavy rains during the summer breeding season from July-August.

States: Boucle Du Mouhoun, Centre, Centre-Nord, Est, Nord, Plateau-Central, Sahel

Climate: The rainy season in northern Burkina Faso occurs from April-October, with the heaviest rains falling between June-September. It is a 'hot and semi-arid' area. Flood risk is associated with this heavy rain, with flooding most commonly occurring from June-October. The dry season then lasts from November-March, with an increased risk of dust storms from December-March, and droughts can occur especially when the rains fail. Air pollution levels (mainly due to saharan dust blown by 'harmattan winds') are classically highest from December to April, peaking in March. The risk of extreme heat is highest from February-June, it then reduces during the rainy season, but extreme heat is common again from October-November. **Health:** Malaria is endemic with increased transmission following the rainy season from August-November, and the highest risk for Dengue outbreaks also occur around this period. Cholera outbreak risk is highest during the rainy season from July-August. The peak meningitis risk is highest during the dry season from January-May. Arbovirus outbreaks such as dengue and yellow fever have previously occurred in September-October. **Nutrition:** The agricultural lean season is most often from June-August, with high rates of malnutrition until the harvests of maize, millet and sorghum which occurs from September-November. The pastoral lean season occurs from April-May, whilst there is reduced movement of pastoralists during the rainy season, when it ends in September there is often internal transhumance, and cross-border transhumance is common from December-March. **Pests:** The highest risk for locust swarms in northern Burkina Faso occurs with the peak rainy season from July-September. Fall armyworm have been observed to peak at two points of the year; in January and again in August.

States: All except for Hautassandra

Climate: Almost all of Cote D'Ivoire is a tropical savanna climate, with just the southwestern coastal area of Hautassandra being a tropical monsoon climate zone. There is a heavy rainy season from March-November, with peak rainfall occurring between May-October. The highest flood risk occurs from June-July. The short dry season lasts from December-February with air pollution being high from December-March, peaking in around January. The highest risk of extreme heat is from February-April. **Health:** Malaria is endemic year round, with peak transmission occurring from July-September as this is when the rainy season peaks. The peak risk of dengue transmission occurs a bit earlier in the rainy season, from April-July, although surveillance for dengue is limited. Cholera outbreak risk also peaks during the rainy season, from May-September. Meningitis outbreaks can occur year round, but the outbreak risk peaks with the dry season from January-February. **Nutrition:** The lean season in Cote D'Ivoire usually peaks from June-August, ending with the harvest of maize and rice in August and September. **Pests:** In northern Côte d'Ivoire, mango mealybugs (*Rastrococcus invadens*) exhibit a seasonal pattern, and numbers are higher during the rainy season than the dry season. Their numbers increase from December to peak in February and decline to low levels in May.

States: Kebbi, Adamawa, Anambra, Bauchi, Benue, Cross River, Ebonyi, Edo, Ekiti, Enugu, Federal Capital Territory, Gombe, Kaduna, Kano, Kogi, Kwara, Nasarawa, Niger, Ogun, Ondo, Osun, Oyo, Plateau, Sokoto, Taraba

Climate: In Central Nigeria the rainy season is from May-October, peaking from August-September. The climate in Central Nigeria is a 'tropical savannah' with heavy rains from August-September bringing the highest risk of flooding over this period. The dry season runs from November-February and high levels of air pollution from saharan dust blown by 'harmattan winds' are seen from December to March. The risk of extreme heat is highest from February-April. **Health:** In Central Nigeria malaria is endemic, with the highest transmission occurring after the rainy season from July-December. Cholera outbreak risk is present throughout the year, but there are a number of peak risk moments e.g. at end of the dry season (when water scarcity is highest) in April, and also in the early part of the rainy season from June-August. Lassa fever outbreaks can occur year-round, but outbreak risk is highest from December-March, as the drier conditions and warmer temperatures during this period contribute to the virus's stability and survival, and populations of the main rodent vector (*M. natalensis*) often are highest. Meningitis outbreaks can also occur year-round but the risk peaks in the dry season when the 'harmattan' winds and risk dust storms are highest. **Nutrition:** In central Nigeria the lean season usually lasts from April-July, ending when the harvests of rice, maize, yam and millet become available in August. **Pests:** Fall armyworm has been observed to peak most commonly during the rainy season.

States: Borno, Jigawa, Katsina, Yobe, Zamfara

Climate: Northern Nigeria is a hot and semi-arid climate area. The rainy season in northern Nigeria runs from May-October, peaking in August. The heavy rains bring the highest risk of flooding too, with flood risk peaking from July-September. The dry season lasts from November-April with the 'harmattan' winds bringing a high risk of dust storms and air pollution from December-May. Extreme heat risk is highest from March-May, it reduces temporarily during the rains and then again is high from October-November after the rainy season. **Health:** In northern Nigeria malaria is endemic, with higher seasonality seen in northern Nigeria compared to the rest of the country. *Plasmodium falciparum* accounts for 94% - 98% of infections and the highest microscopy prevalence of malaria (amongst children age 6-59 months) is in the Northwest of the country, up to 36% in Zamfara Jigwa and Sokoto states and 52% in Kebbi. Highest transmission is usually seen after the rainy season, with peak malaria transmission usually between July-October. Cholera outbreak risk peaks at end of the dry season (when water scarcity is highest), and also remains high throughout the rainy season. Lassa fever outbreaks can occur year-round, but outbreak risk is highest from December-March, as the drier conditions and warmer temperatures during this period contribute to the virus's stability and survival, and populations of the main rodent vector (*M. natalensis*) often are highest. Meningitis outbreaks can also occur year-round but the risk peaks in the dry season when strong winds and dust storms are most common. **Nutrition:** The lean season in northern Nigeria usually runs from June-August, ending when the harvests of rice, yam and millet become available in September. **Pests:** The highest risk of locust swarms occurs from July-August and is higher in the Northern than the central or southern areas. The prevailing wind most often can blow locust swarms from East to West during the Spring months from March to May and from West to East during the summer month (July to September).