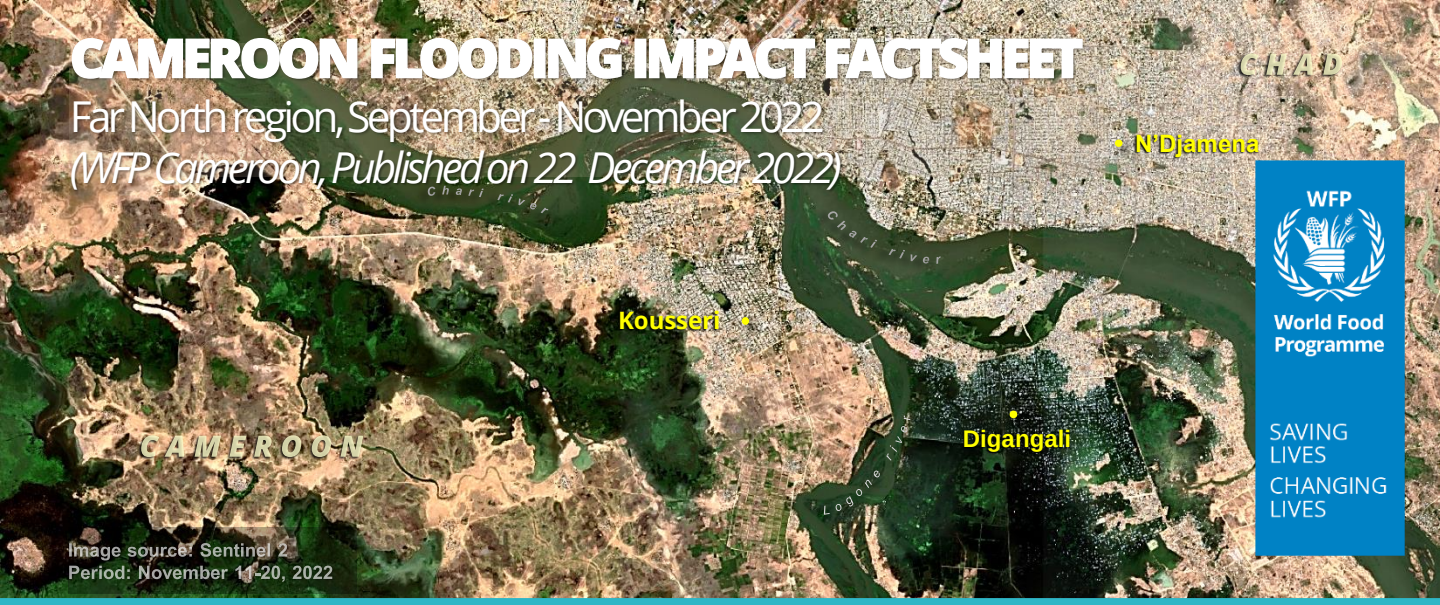
CAMEROON FLOODING IMPACT FACTSHEET

Far North region, September - November 2022

(WFP Cameroon, Published on 22 December 2022)



WFP World Food Programme

SAVING LIVES CHANGING LIVES

HIGHLIGHTS

- **More than 54,845 households (313,200 people) affected by flooding in the Far North region of Cameroon since August 2022**
- **More than 17,348 households (113,324 people) forced to displace**
- **Approximately 7,797 households (47,249 people) of Chadian nationality found refuge in the Logone et Chari division following the floods in Chad**
- **A total of 30,872 buildings or shelters were partially or completely destroyed by water**
- **More than 52,539 ha of farmland were flooded in the Mayo-Danay and Logone et Chari divisions, with more than 28,153 ha of cereal crops destroyed and more than 29,753 farmers affected**
- **The 2022 rainy season (April - October) was the second wettest since 1991 in the Lake Chad Basin (LCB) region**
- **Nearly 428,782 ha of land flooded in the Far North region of Cameroon from November 11 to 20, 2022, or 38% of the area flooded in the LCB during this period**

SITUATION OVERVIEW

Like every year during the rainy season, the Lake Chad Basin (LCB), which includes Adamawa, Borno, Diffa (Niger), Far North (Cameroon), Lake (Chad) and Yobe (Nigeria) has been facing flooding since August 2022.

As in other countries bordering the LCB, the Far North region of Cameroon has been hit by floods that have negatively affected thousands of households and their livelihoods, through the destruction of their homes, crops and fields, and the restriction of their access to basic social services; education and health. Indeed, the floods that occurred in the region between August and November 2022 caused, in addition to the displacement of several hundred households, the closure of several schools, health centers and some markets. They also negatively impacted the mobility of the population, with several access roads flooded, forcing people to travel by dugout canoe only. Households forced to leave their homes had to find refuge in sites not affected by the waters while waiting for the waters to recede.

These floods are of pluvial or fluvial origin or consecutive to dykes breakage. The pluvial floods occur mainly during the months of August to September. Fluvial floods are caused by the overflow of rivers, particularly the Chari River, with its main tributary, the Logone, providing 90% of the inflow to the lake (acaps, 2022). They occur following intense rainfall events, but mainly during the months of October to November. They are considered to be the most important in terms of spatial extent (Fig. 1), and therefore the ones that cause the most socio-economic impacts.

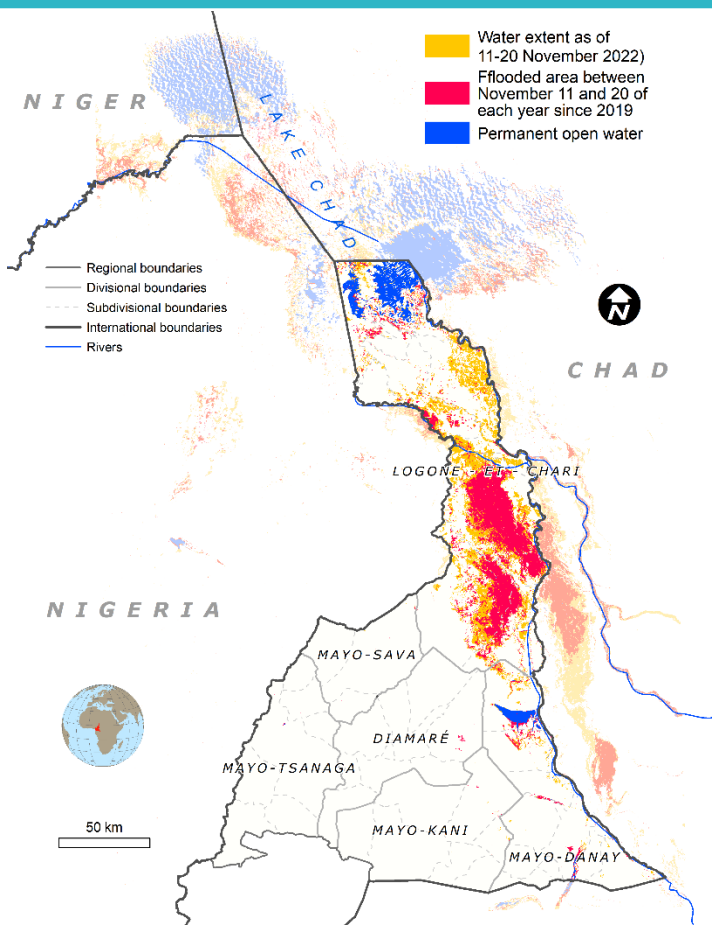
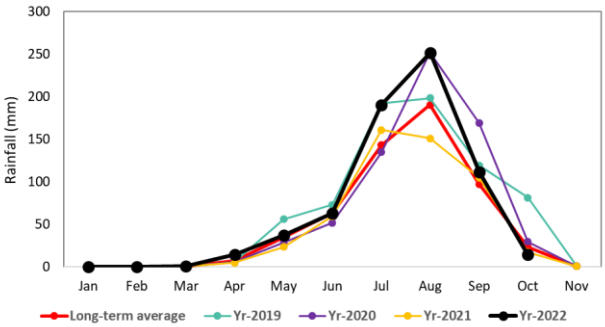


Fig 1: Study area and Water extent as of November 11-20, 2022

CLIMATE OVERVIEW

Fig 2: LCB monthly rainfall variability



Cumulated rainfall: The 2022 rainy season in the Far North region - as in the LCB as a whole - was the second wettest since 2018. Compared to the long-term average (LTA, 1991-2020), July and August 2022 received 32% more rainfall (Fig. 2). Since 2018, these months have been as wet as July 2019 and August 2020 (Fig. 2).

Rainfall anomaly: Compared to the LTA, cumulative rainfall (April-October) was generally abundant in the LCB. In the Far North region of Cameroon, rainfall was particularly excessive in the Logone et Chari and Mayo-Danay divisions. Indeed, some parts of these divisions received an excess of rainfall in the order of 30% to 50% (Fig. 3). In general, rainy season in 2022 was either stable or surplus in all of the Far North divisions compared to the LTA. The Lake Chad area also benefited from excess rainfall in the range of 50% to 70% (Fig. 3).

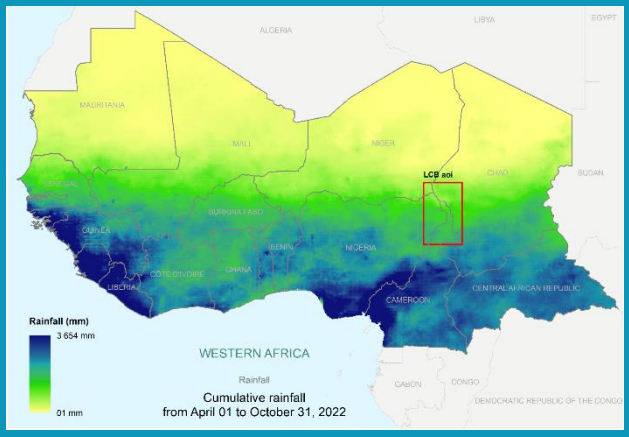


Fig 3a: Cumulative rainfall (April 01 - October 31 2022) The map shows the total rainfall received during the rainy season based on rainfall estimates from the CHRIPS data

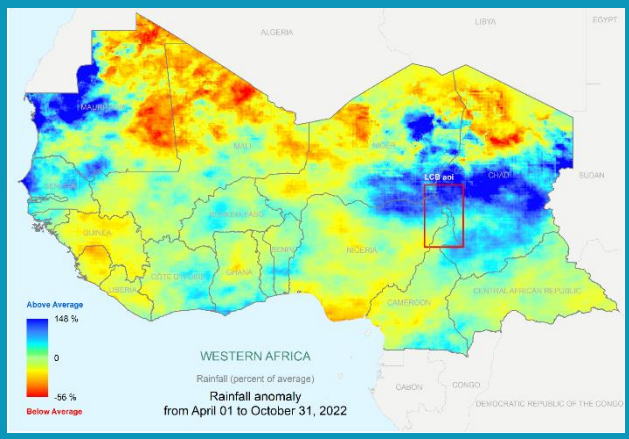


Fig 3b: Rainfall anomaly (April 01 - October 31, 2022) The map shows the rainfall anomaly during the rainy season as a percentage of the long-term average (1991-2020) based on rainfall estimates from CHRIPS data.

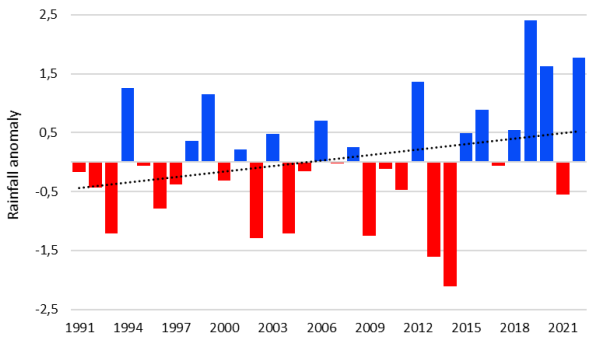


Fig 4: LCB annual (April – October) rainfall anomaly (1991 to 2022)

Rainfall trend: Since 2015, LCB would experience a wetter phase regarding rainfall. From 1991 to 2014, LCB's rainfall was mostly dominated by deficit years following each other for two or three years. The situation appears to have reversed in 2015 (Fig. 4). Since 2015, only 2021 has been a deficit year compared to LTA. In 2021, August recorded 21% less rainfall than LTA (Fig. 2). Since 1991, the wettest years in the LCB have occurred after 2015. These are 2019, 2020, and 2022 (Fig. 4). The year 2019 is characterized by a particularly wet July compared to the LTA, +34% (Fig. 2). In 2020, it is the month of August that is particularly wet (+32%). For 2022, July and August record surpluses of 33% and 32% respectively. Therefore, the 2022 rainy season was the second wettest in the LCB since 1991.

FLOOD EXTENT FLUCTUATIONS

From November 11 to 20, 2022, flooded areas in the Far North region of Cameroon accounted for approximately 428,782 ha, or 38% of flooded areas in the LCB. Since 2019, these area represents the second largest area after 2019 at the same period (Fig. 5). From one year to another, these flooded areas varied according to the cumulative rainfall recorded between April to October; by example, the low area observed in 2021 is due to a deficit in rainfall recorded this year (Fig. 5). Thus, the more rainfall between April and October, the more likely it is that the areas affected by river flooding - which occurs in November each year - will be significant.

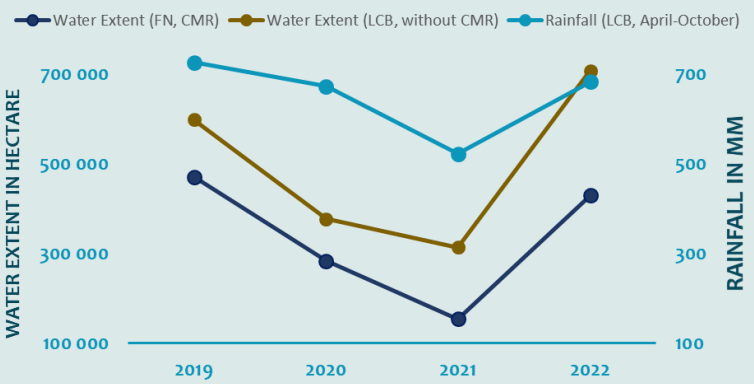
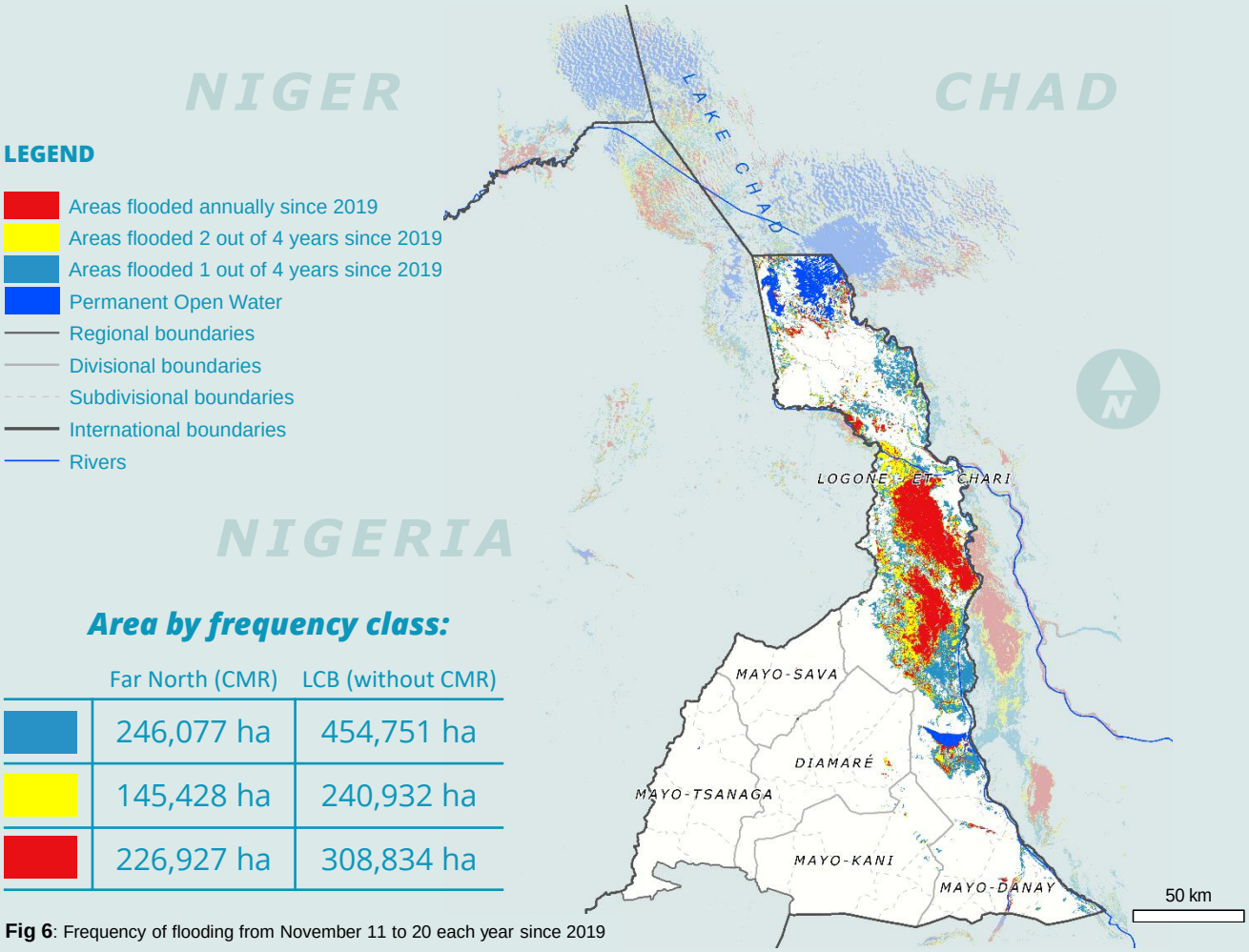


Fig 5: Water extent trend from November 11 to 20 every year since 2019



Area by frequency class:

	Far North (CMR)	LCB (without CMR)
	246,077 ha	454,751 ha
	145,428 ha	240,932 ha
	226,927 ha	308,834 ha

Fig 6: Frequency of flooding from November 11 to 20 each year since 2019

FLOOD IMPACTS

Impact on households

In the Far North region of Cameroon - as in the entire LCB - the floods that began in August 2022 have affected many households in the Logone et Chari, Mayo Danay and Mayo Tsanaga divisions. With the interruption of rains since the end of September 2022, the rising waters of the Logone river, which flows into the Chari at the city of Kousseri, have caused the flooding of several localities in the Mayo-Danay division, and particularly in the Logone et Chari division.

In total, rain and river flooding affected more than 54,845 households (313,200 people) in the region. Of these populations, 17,348 households (113,324 people) were forced to relocate due to the destruction of their shelters or high water level. Also, 7,797 households (47,249 people) of Chadian nationals were reported in the subdivisions of Kousseri and Logone Birni to have left their country due to flooding. At least 23 drowning deaths were reported, 10 in Mayo-Danay and 13 in Logone et Chari. Seven of these deaths were due to hippo attacks. (OCHA, Dec. 2022).

Some households whose homes were not destroyed, or were only partially destroyed, continued to live in them despite being flooded. Those whose shelters were completely destroyed, and who had to leave, were either taken in by neighbors whose shelters were not damaged, or found refuge with households located in non-exposed sites, or in temporary resettlement sites that were set up by the authorities or humanitarian actors.

More specifically, in Logone et Chari division, approximately 34,175 households (226,722 people) were affected. In the city of Kousseri, several neighborhoodss were flooded partially or entirely when several protective dykes broke in October and November due to Logone and Chari rivers overflow (see Box 1). The floods caused the internal displacement of thousands of households who found refuge in 13 temporary resettlement sites. There were also 7,797 households (47,249 people) of Chadian nationals who fled the floods in their country (OCHA, Dec. 2022). These Chadian households came from Kalewa, Ngawama Sara, Gamal, Dambayel, and other localities along the Logone River on the Chadian side of the border, according to data from the IOM Displacement Tracking Matrix (DTM) for Cameroon. In this division, Kousseri, Blangoua, Makary and Goulfey subdivisions were the most affected.

Table 1: localities hosting Chadian refugees due to floods

COUNTRY OF ORIGIN: **CHAD**	HOST COUNTRY: **CAMEROON**		
LOCALITY OF ORIGIN	DIVISION	SUB DIVISION	HOST TOWN OR VILLAGE
//	LOGONE ET CHARI	KOUSSERI	KAWADJI 1 & 2
AMNABACK, DOMANTALA			NDOU
KELEWA		LOGONE-BIRNI	DJARANKOUBOU MOUSGOUM
NGAWAMA SARA			KAFELA
GAMAL			LOGONE-BIRNI CENTRE (Quartier GAOUPATA)
DAMBAYEL			LOGONE-BIRNI CENTRE (Quartier TIKINI)

source: IOM DTM CMR/PUI-RRM

In Mayo-Danay division, a total of 20,602 households (85,141 people) were affected, including 485 households (3,289 people) forced to relocate. These displaced households found refuge in temporary resettlement sites in Yagoua (310 households, or 2,164 people) and Kaï-Kaï (176 households, or 1,125 people). The most affected subdivisions were Kai-Kai, Yagoua, Guere, and Gobo.

Finally, in the Mayo-Tsanaga division, there were 68 households (1,337 people) affected by flooding during the month of September 2022.

Impact on assets and services

A total of 30,872 buildings or homes were completely or partially destroyed by the waters, including 17,827 in the Logone et Chari division and 13,045 in the Mayo-Danay division. The majority of the destroyed houses are made of earth. The same is true for the dikes that were destroyed by the rising waters, such as the one protecting the town of Kousseri from the Logone River, which broke in several places on November 10, 2022, under the pressure of the river's waters. This was also the case for the dyke protecting the locality of Biamo in the Makary subdivision against the waters of the river, which broke during the night of November 7 to 8, 2022. These various dikes were built of earth.

Access to health care was severely disrupted by the flooding of at least a dozen health centers, as well as several roads with consequences on the mobility of populations. Physical access to some localities has been severely damaged. For example, for several weeks in October and November 2022, Fotokol subdivivion (Logone et Chari division) was cut off from Maltam. On the other hand, access to the Zina subdivision (Logone et Chari division) and the Kaï-Kaï subdivision (Mayo-Danay division) was only possible by dugout canoe, as the main access roads were submerged. The situation is gradually returning to normal, particularly in the Logone et Chari division, with the water receding observed since the end of November and beginning of December (see Box 1).

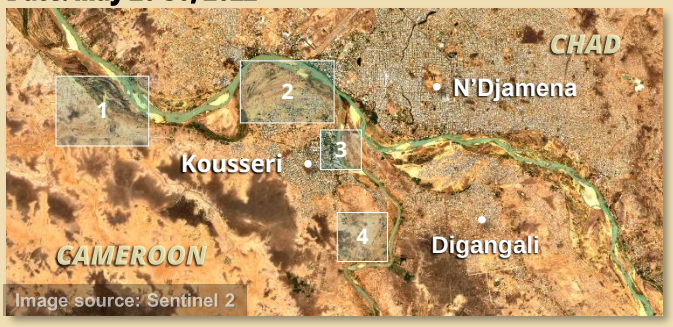
In terms of education, more than 151 schools were flooded, depriving nearly 54,000 children of access to school. In addition, more than 200 water points and 2,623 latrines were flooded, increasing the risk of outbreak and spread of cholera and other waterborne diseases (OCHA, Dec. 2022).

House made of earth destroyed by the waters in the Lacka neighborhood following the rupture of the protective dike of the city of Kousseri on November 10, 2022.

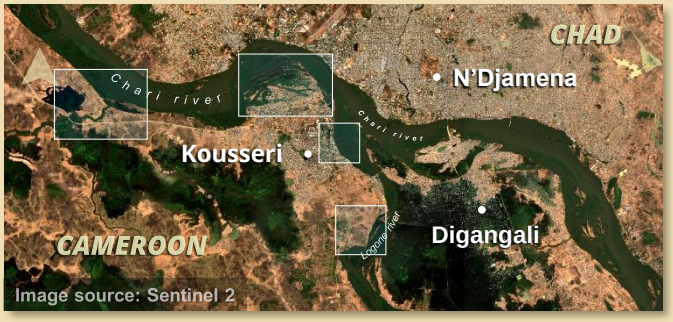
Credit photo: MINDCAF.

BOX 1: overview of flooding in the city of Kousseri (CMR)

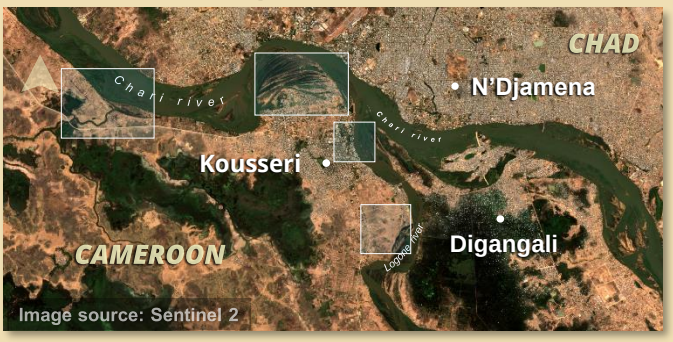
Date: May 20-30, 2022



Date: November 11-20, 2022



Date: December 01-08, 2022



Main flooded sectors in the city

In the city of Kousseri, since the beginning of October 2022, several neighborhoods have been flooded by water from the overflow of the Logone and Chari rivers, which in some places has caused the city's dike to break. Several households were forced to leave their homes and take refuge in high ground on spontaneous resettlement sites and with host families to find shelter. The affected neighborhoods are located in the sectors of the city along the Logone River in the south and the Chari River in the north. They are as follows:

- *Sector 1: Djogondo and Seheba neighborhoods;*
- *Sector 2: Ngargouzo, Krouang 1 and 2, Djambalbar, Madagascar 1 and 2, Hilé Haoussa, Babou and Goré neighborhoods;*
- *Sector 3: Koulouk and Lacka neighborhoods;*
- *Sector 4: Kawadji 1 and 2 neighborhoods.*

Compared to the period from November 11 to 20, 2022, the satellite image from December 01 to 08, 2022, shows the beginning of a water receding in sectors 2 and 4 of the city; a sign that the peak of the flooding seems to have passed for the city of Kousseri, while it is still to come in subdivisions bordering the Lake Tchad (Fotokol, Makary, Blangoua and Logone Birni).

Impact on agriculture

According to evaluation reports from the authorities in charge of agriculture in the Far North region of Cameroon, the 2022 agricultural season was negatively impacted by the double flooding that hit the region; the first related to rainfall - which was particularly abundant during the months of July and August (Fig. 2) - and the second related to the flooding of the Logone and Chari rivers and other rivers that cross the region. In total, approximately 52,539 ha of farmland were destroyed by flooding in Logone et Chari and Mayo-Danay divisions from August to November 2022.

In Logone et Chari division, which is located downstream of the watershed drained by the Logone and Chari rivers that flow into Lake Chad, rainfall flooding affected 10,343 ha, or 11% of the total area of cereals cultivated for the agricultural season, while fluvial flooding affected 24,711 ha, for a total of 35,054 ha destroyed for the 2022 agricultural season. Rainfall flooding particularly affected Makary, Kousseri, and Goulfey subdivisions, while fluvial flooding particularly affected Goulfey, Blangoua, Makary, and Waza subdivisions (Table 2). In Mayo-Danay division, flooding affected approximately 17,485 ha of farmland, particularly in Kaï-Kaï, Yagoua, Guere, Gobo and Maga subdivisions (Table 2). The floods affected approximately 29,753 farmers there.

Table 2: Flooded agricultural areas by division in 2022

DIVISIONS	SUBDIVISIONS	AREA
LOGONE ET CHARI (the data concern only the areas flooded by fluvial flooding)	GOULFEY	13,614
	BLANGOUA	6,453
	WAZA	1,354
	MAKARY	1,230
	LOGONE-BIRNI	917
	KOUSSERI	549
	DARAK	250
	HILE-ALIFA	175
	ZINA	145
	FOTOKOL	25
SUB-TOTAL		**24,711**
MAYO-DANAY	KAÎ-KAÎ	6,495
	YAGOUA	4,543
	GUÉRÉ	2,230
	GOBO	1,716
	MAGA	1,477
	VÉLÉ	715
	TCHATIBALI	167
	DATCHEKA	144
	KALFOU	0
SUB-TOTAL		**17,485**
TOTAL		**42,196**

source: MINADER/DDADER/LOGONE ET CHARI, MAYO-DANAY.

The various crops that were destroyed by flooding in these two divisions during this agricultural season are 17 in number (Table 3). Although data on the flooded areas for each of these crops in each subdivision of the Logone et Chari division are incomplete, sorghum, rice and maize are the crops that were most affected in terms of flooded areas. Indeed, more than 15,000 ha of sorghum were flooded, particularly in the Mayo-Danay division. In total, more than 28,153 ha of cereal crops were affected by flooding in these two divisions during the 2022 agricultural season..

Table 3: Flooded areas (ha) by crop and by division in 2022

CROPS	MAYO-DANAY	LOGONE ET CHARI	TOTAL
SORGHUM (SP*)	10,212	2,842	**13,054**
RICE	3,190	3,827	**7,017**
MAIZE	1,757	3,825	**5,582**
SORGHUM (SS)**	0	2,500	**2,500**
COTTON	645	*No data*	**645**
GROUNDNUT	488	*No data*	**488**
NIÉBÉ	402	26	**428**
PENICILLAIRE	404	*No data*	**404**
CASSAVA	233	*No data*	**233**
SÉSAME	95	*No data*	**95**
VOANDZOU	50	*No data*	**50**
OKRA	10	*No data*	**10**
PEPPER	0	8	**8**
TOMATO	0	5	**5**
WHEAT	0	1	**1**
SUGAR CANE	0	*No data*	
SWEET POTATO	0	*No data*	

* Saison des Pluies (Wet Season); ** Saison Sèche (Dry Season)
Source: MINADER/DDADER/LOGONE ET CHARI, MAYO-DANAY.

Impact on food agriculture

Among the various contributing factors that influence food security in the Far North region of Cameroon, climatic shocks such as floods occupy an important place because of their impact on agricultural production and agropastoral activities.

Grain deficit and food availability on the markets

Every year in the Far North region, agricultural production is threatened by a number of shocks, such as attacks by granivorous birds or army worms, destruction of plantations by pachyderms, and flooding. The combination of these different threats is the cause of a more or less significant cereal deficit with consequences on the availability of cereals on the markets. In 2021, the cereal deficit in this region was 74,560 tons, compared to 15,560 tons in 2020 (Mbodiam B.R., 2022)). This deficit appears to have had an impact on the availability of cereals and other commodities on the markets during the months of March-April, given the sharp increase in wholesale prices observed (Fig. 7a).

Since 2019, grain availability in the markets appears to be lowest at the beginning of each year in light of the sharp rise in wholesale prices experienced during this period. During the first quarter of each year, wholesale grain prices show their largest quarterly increase of the year (fig. 7b). After this sharp increase in the first quarter, either prices hold steady in the second quarter before gradually declining until the fourth

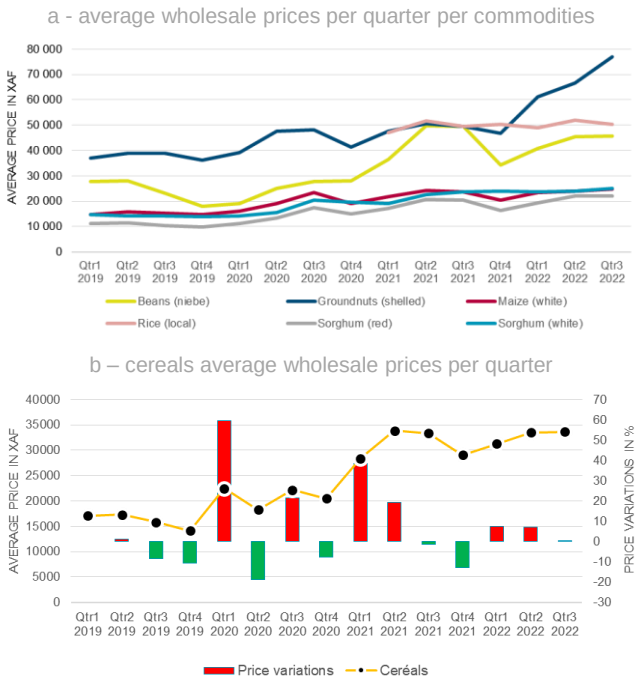


Fig 7: Average wholesales prices per quarter (Far North region – CMR)

S**ource**: FEWSNET.

quarter, or the increase continues in the second quarter before stabilizing and declining during the fourth quarter, which corresponds to the post-harvest period. Thus, in the first quarter of 2020, wholesale grain prices increased by an average of 60% compared to the fourth quarter of 2019. In the first quarter of 2021, they increased by about 40% compared to the fourth quarter of 2020. In contrast, in the first quarter of 2022, they increased by an average of only 8% compared with the fourth quarter of 2021 (fig. 7b).

Rising food prices and accessibility

Since 2019, the gradual increase in the prices of the main staples for the region's populations has affected their food and nutrition situation and the conditions of access to food. In a region where 81% of households rely primarily on markets to access the food they consume compared to 13.3% who rely on their own production, and 47.3% rely primarily on commercializing their own agricultural production to obtain an income (CFSVA, 2022), It is feared that during the first quarter of 2023, the number of households forced to resort to negative coping strategies (rCSI), or to implement crisis or emergency livelihoods-based coping strategies (lCSI) will increase significantly due to a lack of means to access food.

The increase in the price of cereals and other foods expected in the first or second quarter(s) of 2023, and more specifically in March and April, is likely to further deteriorate the food situation of households, particularly those that are economically vulnerable, i.e., those that spend more than 65% of their income on food. They represent 52.2% of households in the region (CFSVA, 2022). With harvest levels likely to be lower following the floods that destroyed more than 28,000 ha of cereal farms and affected more than 29,000 farmers, it is likely that the cereal deficit in 2022 will be significant. This could cause problems with the availability of local cereals (sorghum, maize, rice) and other basic foodstuffs such as niebe and groundnuts, which are sources of vegetable protein, on the market at the beginning of the lean season, once household stocks have been exhausted. It is therefore feared that wholesale prices will rise significantly (>30%) at this time, as they will in 2020 and 2021 (Fig. 7). With average prices in the third quarter of 2022 more than doubled (+113%) compared to the same period in 2019, such an increase would be particularly damaging for economically vulnerable households as well as those who were forced to move by the floods following the destruction of their shelters (17,348 households) who have limited economic capacity. Therefore, they could be forced to change their eating habits by resorting to less preferred foods because they are cheaper. For the poorest, they will only be able to rely on donations and food aid.

However, the floods of 2022 could be beneficial for the usual off-season crops, particularly in the Logone et Chari division. In general, people in Darack, Hilé Alifa, Fotokol, Makary, Goulfey, and Logone-Birni subdivisions, for example, take advantage of the water reserves in the soil that are released as the water recedes during the dry season to grow niebe and various vegetable crops (tomatoes, cabbage, carrots, lettuce, eggplant, cucumbers, etc.). They are considered as cash crops, and sold to buy cereals (PAM, 2005). They thus play an essential role in the income of these households during the dry season..

In the Mayo-Danay division, the receding of floodwaters began in October 2022, while in Logone et Chair, it seems to have begun towards the end of November and will continue throughout December 2022 (Box 1). It may continue during January 2023 in the so-called Lake areas (Darack and Hilé Alifa subdivisions), which are areas of flood recession agriculture (PAM, 2005). While it is obvious that this gradual recession process will have an impact on off-season agricultural activities depending on the subdivision, they will be able to benefit from water-rich soil over a longer period of time, thereby reducing the need for supplemental irrigation. This could be favorable for off-season crops, allowing households to reduce the effects of flooding that negatively impacted crops in the 2022 agricultural season. However, this scenario is undermined by the climatic forecasts formulated by the ONACC for the month of December 2022 and if they continue in the upcoming dry season, with an increased risk of high temperatures and heat waves. This would be favorable to attacks by army worms and granivorous birds, as in 2021 in the region.

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