- NOCC -

Climate forecast bulletin for March, April and May 2025, Cameroon

NOCC 2025

This document is a NOCC publication, the production of which was made possible thanks to the collaboration with some major international centres working daily in the field of climatology and weather forecasts, as well as the National Meteorological Centre.

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CONTENT

I. INTRODUCTION

The objective of this seasonal climate forecasts is to determine the climate situation for the next three months in Cameroon's five agro-ecological zones. The information contained in this Bulletin takes the form of forecasts of major trends in climate parameters (warmer or colder, drier or wetter) compared to the norm observed for over 60 years.

The National Observatory on Climate Change (NOCC) is offering an overview of seasonal climate trends for the months of March, April and May 2025 in a context where Cameroon is increasingly vulnerable to the harmful effects of climate change, which impact key sectors of its socio-economic development.

To optimize the resilience of these sectors to climate disruptions, NOCC has produced its 30th Seasonal Bulletin of Climate Parameter Forecasts for Cameroon's five agro-ecological zones. This Bulletin presents seasonal forecasts of climate parameters (rainfall and temperatures), potential impacts on socio-economic development sectors (agriculture, livestock, health, water and energy, tourism, environment and biodiversity and public works) and proposed solutions to adapt/adjust to these impacts.

The forecasts produced by NOCC are based on the results of the C3S (Copernicus Climate Change Service) multi-model package. They also come from the International Research Institute for Climate and Society (IRI) at the University of Colombia (USA), the National Oceanic and Atmospheric Administration (NOAA) (USA) and the African Centre of Meteorological Applications for Development (ACMAD), spatial data relating to Ocean Surface Temperatures (OST) in the Atlantic and Pacific, the intensity of El-Niño episodes in the Pacific and research work on the spatial and temporal dynamics of climate in Cameroon from 1982 to 2022 carried out by NOCC.

II. Global climate context for March, April and May 2025

For the current period, which runs from March, April and May 2025, the seasonal climate forecasts produced by the International Centres agree on the following:

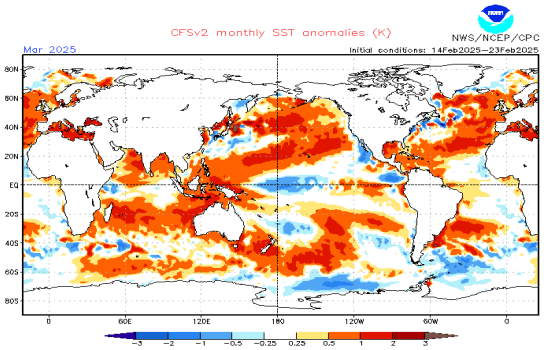


Figure 1: Neutral OST anomalies in the equatorial Pacific, precursors of a neutral situation in the equatorial Pacific from March to May 2025.

(Source: NCEP, February 2025).

According to the National Centres for Environmental Prediction (NCEP), the neutral conditions for OST observed since the beginning of February 2025 might continue until the month of June 2025.
In addition to this, the northern part of the Atlantic Ocean might register positive surface temperature anomalies.

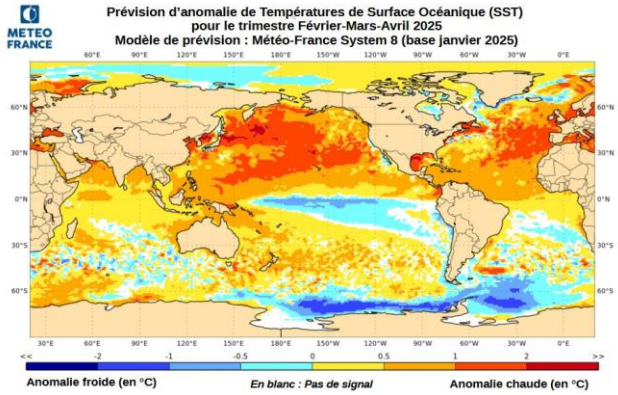


Figure 2: Anomalies in OSTs, in the equatorial Pacific from March to May 2025

Source : Meteo France, February 2025

Meteo France has announced that, after several months of warming following an El Nino episode, a neutral phase in the ocean surface temperature (OST) has been in place since February 2025 in the equatorial Pacific. According to the same institution, this situation could continue until June 2025.

Season	La Niña	Neutral	El Niño
FMA	50	50	0
MAM	34	66	0
AMJ	29	70	1
MJJ	30	65	5
JJA	35	55	10
JAS	42	48	10
ASO	46	43	11
SON	54	35	11
OND	55	32	13

Figure 3: Anomalies in OSTs, in the equatorial Pacific from March to June 2025.

(Source : NOAA, February 2025).

The National Oceanic and Atmospheric Administration (NOAA) has announced that a neutral phase of ENSO is underway, with a temperature anomaly over the Pacific Ocean of between -0.5 and +0.5°C.

At the same time, to the north of the Atlantic, the waters remain warmer than normal over the entire basin. These warmer waters may encourage cloud development and therefore precipitation along the coast.

III. Cameroon's climate under the influence of La Niña episodes in March, April and May from 1982 to 2022

What is La Niña episode?

El Niño is a warm marine current (the opposite of La Niña), characterized by an increase in the ocean surface temperature. It is a large-scale oceanic phenomenon that takes place in the equatorial Pacific, with a periodicity of 2 to 5 years. It affects the large-scale global circulation of the atmosphere and the wind regime. El Niño corresponds to the warm phase of the coupled ocean/atmosphere phenomenon known as ENSO (El Niño Southern Oscillation).

La Niña is a cold marine current, an unusual climatic phenomenon that generally occurs every 2 to 7 years in the equatorial Pacific, especially along the coasts of Latin America. It is characterized by the rise of oceanic waters from the depths to the surface (upwelling). These waters generally contain high levels of nutrients. It affects the global circulation of the atmosphere, and its consequences are worldwide: changes in wind patterns and rainfall, the appearance of extreme weather situations such as floods, extreme drought, etc.

V. Methodology for climate parameter forecasts

There are seven main stages in the production of this weather forecast bulletin:

1. Exploitation of global seasonal trends obtained from digital models of the International Climate Prediction Centres, which are combined with statistics to express local seasonal trends. Then, using a classification of indices, it will be possible to say with a certain probability that the season will be deficient, normal or excessive for the stations in Cameroon's five Agro-ecological Zones;
2. The exploitation of El Niño/La Niña indices and SST anomaly behaviour for March, April and May 2025 to identify the extent of their impacts in Cameroon;
3. The use of statistical tools to analyse the spatiotemporal dynamics of climate parameters observed at the local level and the probability of occurrence of these climate anomalies for March, April and May 2025 in Cameroon;
4. The use of digital models based on multiple regression equations between the different variables. These statistical tests also refer to connections between several indices and their repercussions for the future;
5. The elaboration, review and consolidation of forecasts for Cameroon;
6. The validation of these forecasts by a committee set up;
7. Monitoring and assessment of forecasts (Climate Outlook).

VI. Summary of forecasts for Cameroon's five Agroecological Zones

A. FOR RAINFALL

Based on the global climatic context and the analysis of spatiotemporal climate dynamics carried out by NOCC, this bulletin highlights:

T THE GLOBAL SCALE:

- the gradual installation of the monsoon from the southwest part of the country to the Southeast;
- the gradual withdrawal of the Harmattan towards the southern part of Lake Chad;
- the migration of the Inter-Tropical Front (ITF) towards the south of the Adamawa region.

T THE LEVEL OF AGRO-ECOLOGICAL ZONES

We expect:

- *extreme scarcity of rainfall during the months of March and April 2025 in the various localities of the **Far North** region and record rainfall amounts around the historical regional average (51.1mm of rainfall) in the month of May 2025 in the localities of Mora, Mokolo, Kousseri,*

*Waza, Kaele, Mindif, Mora, Maga, Kousseri, Waza and Makary (**Far North region**); no rainfall in March and April 2025 in the various localities of the North region and rainfall amounts around the historical regional average (112.4mm of rainfall) in May 2025 in Guider, Dembo, Lagdo, Poli, Rey Bouba, Touboro, Pitoa and Tchollire (**North region**), in the **Sudano-Sahelian zone**;*

- *rainfall amounts above the historical regional average (i.e. 336.1mm of rainfall) from March to May 2025 in the locality of Dota; around the historical regional average (i.e. 336.01mm of rainfall) during the same period in Ngaoundere, Tignere, Tibati, Banyo, Kongolo, Betare Gongon, Meiganga and Mbe (Adamaoua region), in the Guinea High Savannah zone;*
- *cumulative rainfall above the historical average (440.2mm) in Monatele, Nanga Eboko, Ngoro, Yaounde, Mbalmayo, Eseka and Ayos; around the historical average (440.2 mm) in Ngambe Tikar, Akonolinga and Mbaka (**Centre region**); above the regional average (464.8mm) in Batouri, Doume, Abong Mbang, Koso, Yokadouma and Moloundou; around this average (464.8mm) in Garoua Boulai, Mbitom, Belabo, Mindourou, Lomie and Mintoum (**East region**); above the historical regional average (570.7mm) in Ebolowa and Nyabizan; around the same regional average (570.7mm) in Kribi, Sangmelima, Ambam Lolodorf and Campo (**South region**), **Bimodal Rain Forest zone**;*
- *rainfall amounts above the historical regional average (481.5mm) in Bafang; around the regional average (481.5mm) in Bazou, Dschang, Makam, Nkoumagba, Bamendjing, Foumbot, Bafoussam, Bangangte and Mbouda (Western region); around the historical regional average (481.2mm) in Ako, Kumbo, Nkambe, Bambalang, Fundong, Bali, Santa, Munkep, Wum, Benakuma, Esu, Bamenda, Ndop and Pinyin (**North West region**), **Western Highlands zone;***
- *rainfall amounts above the historical regional average (635mm) in Yabassi, Nkongsamba and Edea; around the said average (635mm) in Melong, Manjo, Loum, Penja, Mbanga, Ndokama, Douala, Mouanko and Dizangue (Littoral region); around the historical regional average (611.9mm) in Bechati, Ekutu, Kumba Balue, Munyenge, Mundemba, Bamusso, Idenau, Nguti, Ekok, Mamfe, Bakogo, Dikome Balue, Fontem, Buea, Limbe, Tiko, Muyuka, Kumba and Mutengene (**South West region**), in the **Monomodal rain forest zone**.*

***NB (3)**: The climate forecasts for March, April and May 2025 suggest:*

- *an extension of the dry season until June 2025 in the **Sudano-Sahelian zone**. This period will be marked by high temperatures, with a high risk of depletion of water resources in the main dams and reservoirs, notably Maga and Mokolo in the **Far North region**; Lagdo in the North region; and Mbakaou in the **Adamawa region**;*
- *a gradual onset of the short rainy season, from the first dekad of March in the **Bimodal rain forest zone** (**Centre, East and South regions**).*
- *an effective start to the rainy season from the first rainy season in the **Monomodal rain forest zone** (**Littoral and South West regions**).*

Figure 5 below shows a summary of rainfall forecasts for March, April and May 2025 over the entire national territory.

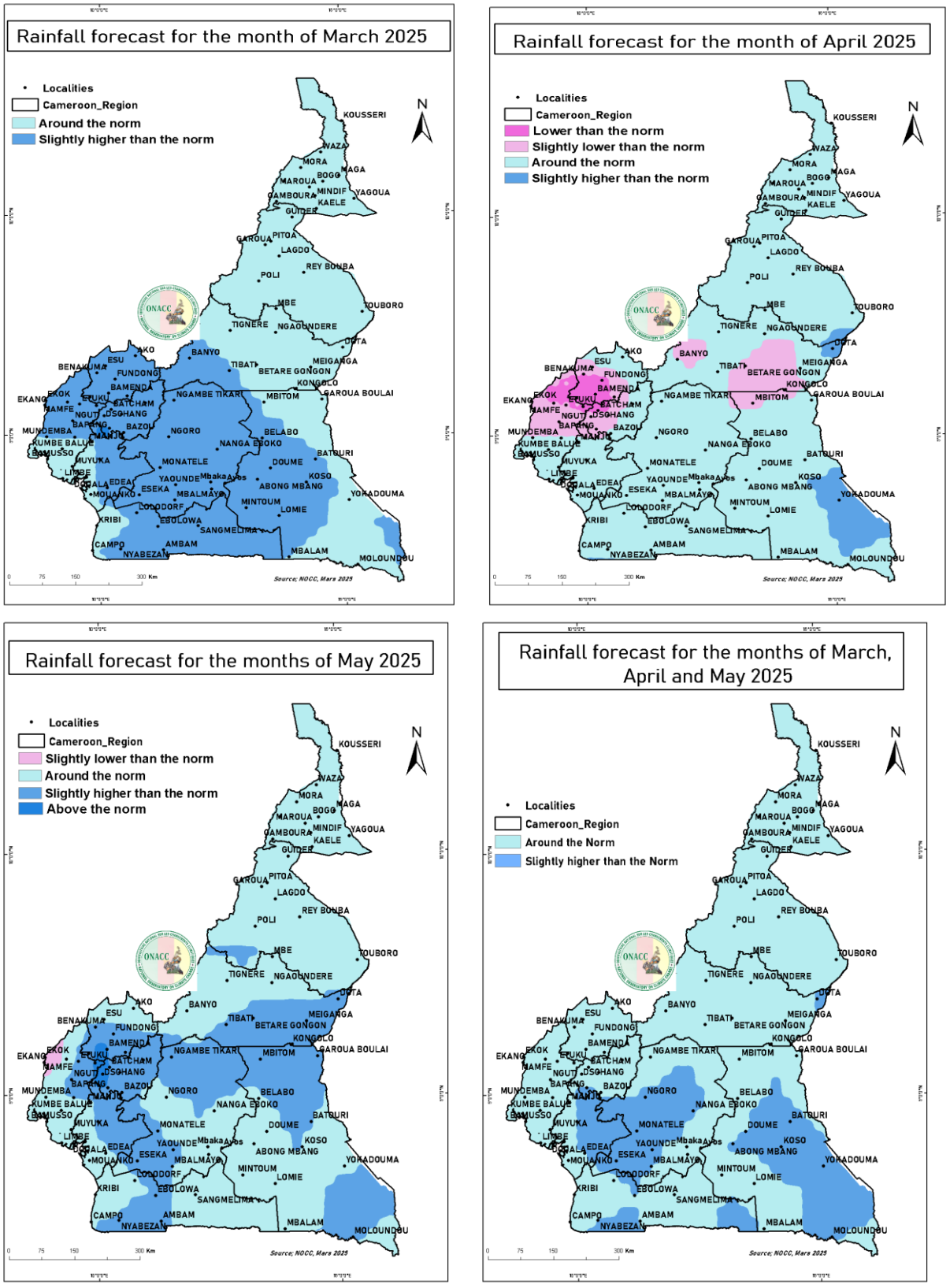


Figure 5: Rainfall forecast map for March, April and May 2025 in Cameroon.

B. FOR TEMPERATURE

For the period from March to May 2025, there is a high probability of recording average temperatures of:

- *above the historical regional average (i.e. 32.20°C) in Mora, Mokolo, Waza, Kaele, Mindif and Maga. They will be around the said average at Makary and Koussseri, in the **Far North region**;*
- *above the historical regional average (i.e. 31.03°C) at Dembo, Tchollire, Poli, Guider, Pitoa, Lagdo, Rey Bouba and Touboro, in the **North region**;*
- *above the historical regional average (i.e. 25.83°C) in Tignere, Meiganga, Ngaoundere, Ngaou Mbol, Betare Oya, Nass Arao, Yimbere, Mbakaou, Banyo and Tibati, in the **Adamawa region**;*
- *above the historical regional average (i.e. 24.39°C) in Ngambe Tikar, Nanga Eboko, Nkoteng, Obala, Akonolinga, Yaounde, Mbalmayo, Monatele and Yoko; it will be around the said historical regional average (i.e. 24.39°C) in Mbalmayo and Eseka, in the **Centre region**;*
- *above the historical regional average (i.e. 25.14°C) in Bertoua, Garoua Boulai, Doume, Batouri, Yokadouma, Mambele, Libongo, Moloundou, Kika, Belabo, Betare Oya, Garoua Boulai, Lomie and Ngoyla; it will be around the said average (i.e. 25.14°C) in Koso, Mintoum and Abong Mbang, in the **East region**;*
- *above the historical regional average (i.e. 25.2°C) in Kribi, Akom II and Djoum; around the same regional average (i.e. 25.2°C) in Lolodorf, Ebolowa, Sangmelima, Zoetele, Campo, Nyabizan and Ambam in the **South region**;*
- *above the historical regional average (i.e. 21.3°C) in Ako, Nkambe, Esu, Fundong, Bamenda, Ndop, Santa, Nwa, Kumbo, Benakuma, Wum and Bambalang; around the said regional average in Bali, Widikum, Batibo and Pinyin, in the **North West region**;*
- *above the historical regional average (i.e. 22.11°C) in Makoupa, Mbouda, Nkoumagba, Foumban, Makam, Tonga, Foumbot, Bafoussam, Bangangte, Bazou and Bamendjing; around the same average in Dschang, Bafang and Batcham, in the **West region**;*
- *above the historical regional average (i.e. 27.58°C) in Edea, Mouanko, Baptek and Yawanda; around the historical regional average (i.e. 27.58°C) in Yabassi, Mbanga, Manjo, Loum, Penja, Douala, Dizangue, Ndokama, Baptek, Ndokiti, Nkongsamba, Melong and Ndogtima Crique, in the **Littoral region**;*
- *around the regional average (i.e. 26.30°C) in Ekang, Ekok Mamfe, Bamusso, Kumba, Mutengene, Buea, Idenau, Limbe and Tiko, in the **South West region**.*

NB : (4) The period from March to May 2025 will be marked by:

- ***the gradual return of the monsoon from the south-west to the north-east of the country;***
- ***major heatwave risks (successive days with maximum temperatures above 30-40°) in the Far North, North, Adamawa, West, Centre and South Regions;***
- ***an increase in the number of days with hot nights in the Centre, South, East and Littoral Regions;***
- ***an increase in the number of days with cold nights in the Far North, North and Adamawa Regions, following the drop in minimum temperatures due to the continued persistence of the Harmattan during this period.***

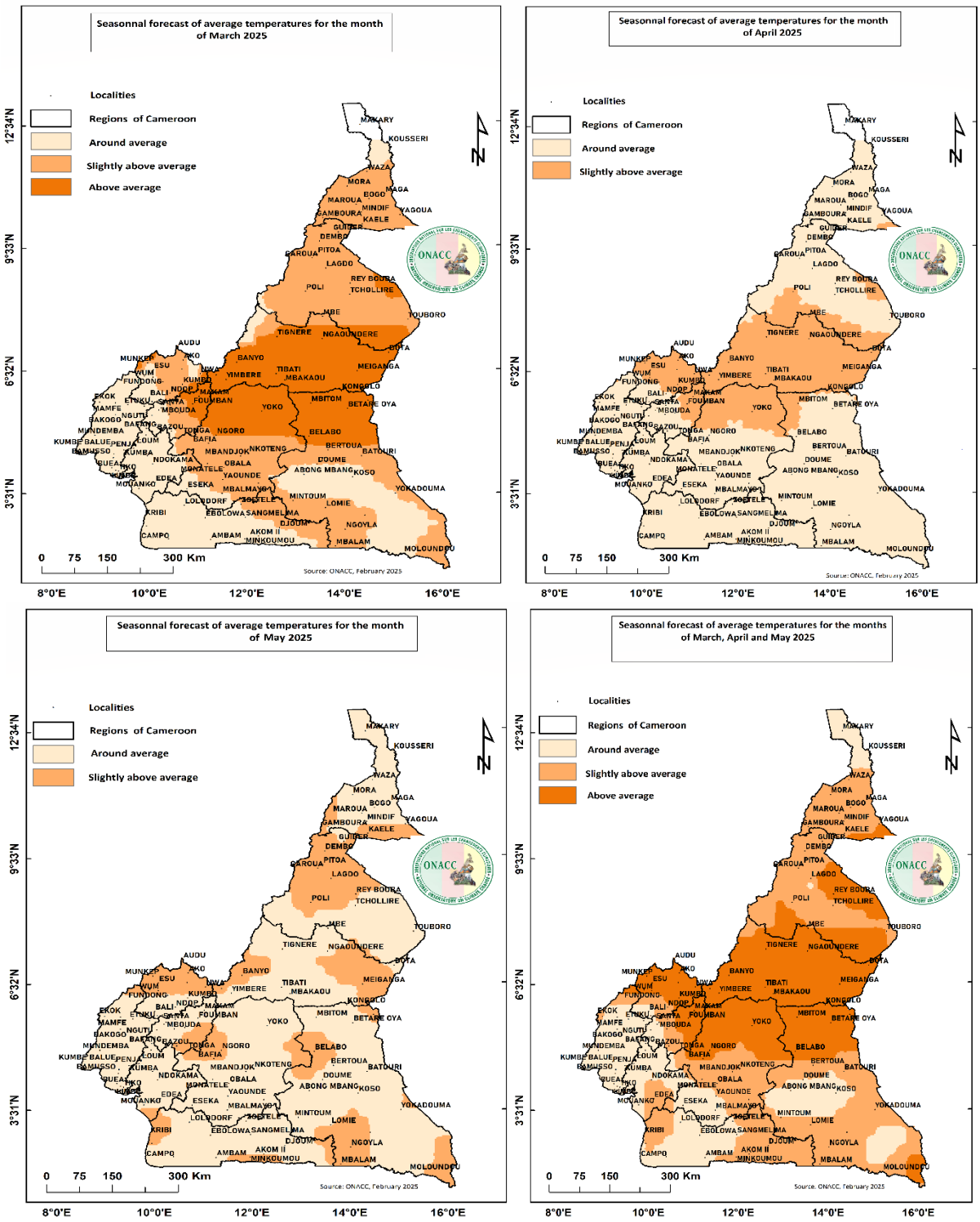


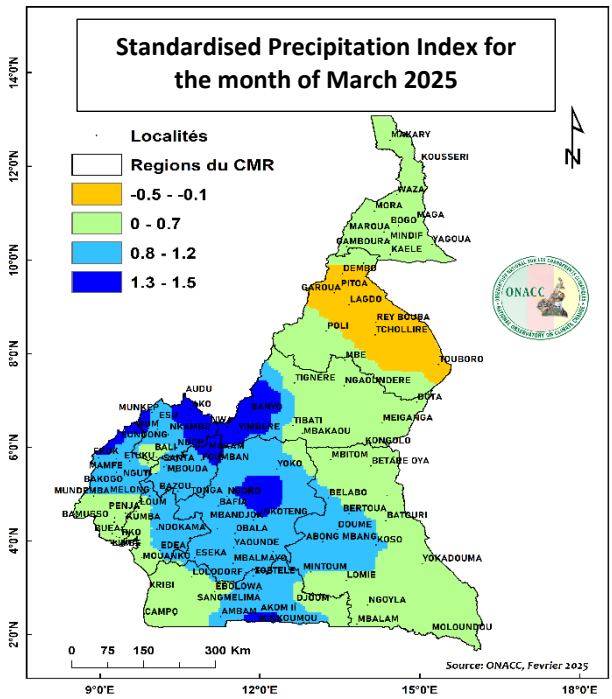
Figure 7: Temperature forecast map for the months of March, April and May 2025 in Cameroon.

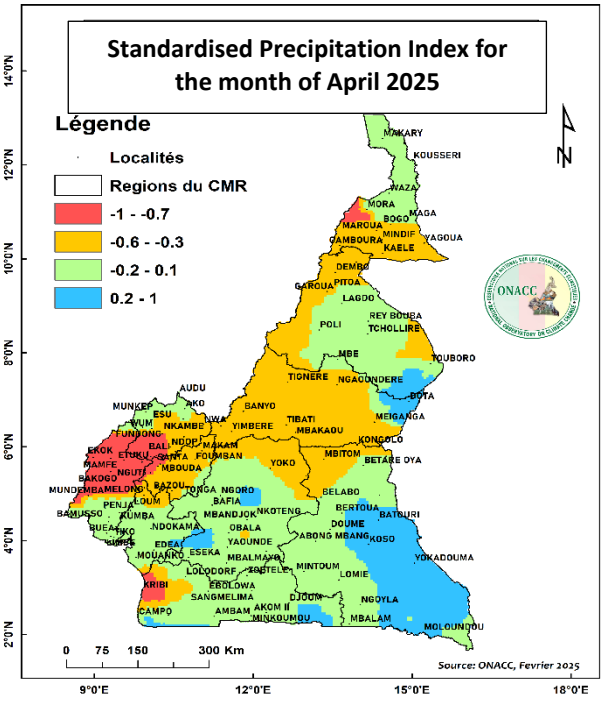
(4) SPI Index forecast for the period March to May 2025

The SPI index is a standardized representation of monthly precipitation over an area, and its applications are closely related to meteorological/climatological drought, as well as to short-term soil moisture and water stress affecting crops during the growing season. This index (SPI) provides an approximation of crop moisture conditions.

Figure 8 below shows the SPI index for March, April and May 2025. The figure shows that the Centre, South, western part of the East, West, North West, South West and Littoral regions, including the south west part of the Adamawa region, will be wetter than the other regions of the country. The SPI indices are between 0.7 and 1.5 for the month of March and between 0.2 and 1 for the month of May 2025. This humidity will be more pronounced in March 2025 in the north-eastern part of the North West and West Regions, as well as in the south-western part of the Adamawa region. The eastern parts of Adamawa and the East region will experience fairly moderate humidity during the same month of March.

April will be less wet than the other two months, especially in the Adamawa region, which is expected to see its first rains, and in the northern part of the Centre region, as well as in the West and North West regions, where the SPI will be between -0.6 and -0.3. The driest part will be seen in the northern part of the South West region and in the western part of the North West region, which have an SPI of between -1 and -0.7.





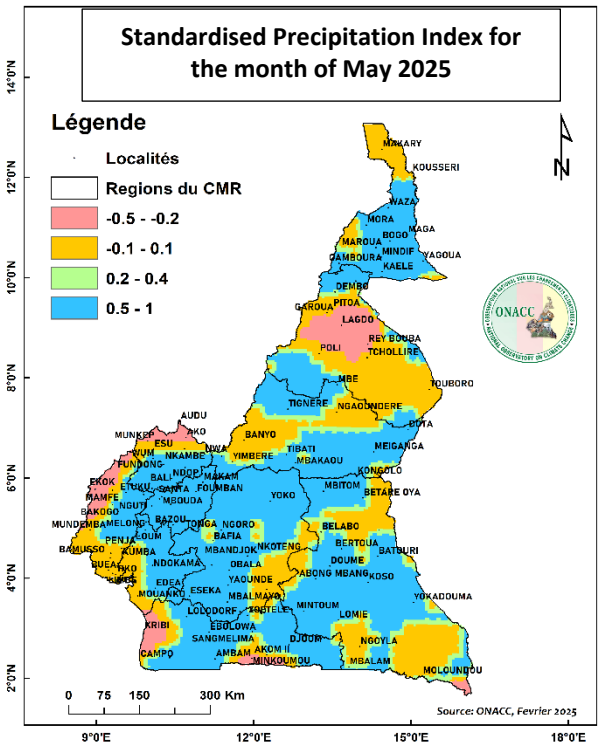


Figure 8: Map of SPI forecasts for March, April and May 2025 in Cameroon.

VII. CLIMATE FORECASTS IN CAMEROON, POTENTIAL IMPACTS AND PROPOSED RESPONSES

VII.1. SOUDANO-SAHELIAN ZONE

VII.1.1. Climate forecasts

Based on analyses of forecasts from major international centres, analysis of climate data carried out by NOCC and the use of publications on the spatial and temporal dynamics of climate in Cameroon, we expect:

A. Temperatures

1. FOR THE FAR NORTH REGION

Between March and May from 1982 to 2022, the temperatures below (Tab 7) were observed:

*Table 7: Observed temperatures for March, April and May from 1982 to 2022 in the **Far North region** and forecasts from March to May 2025*

Period	Avg Max T° from 1982 to 2022	Avg. Min T° from 1982 to 2022	Avg T° from 1982 to 2022	Forecast trends in average temperatures from March to May 2025
March	39.6	22.56	31.08	**Above the mean**
April	40.58	25.54	33.06	**Around the mean**
May	38.87	26.06	32.43	**Above the mean**
Avg	39.68	24.9	32.20	**Above the mean**

Based on the historical averages of temperatures recorded in the Far North region for the months of March, April and May from 1982 to 2022, notably 39.68°C for average maximum temperature; 32.20°C for average temperature and 24.9°C for average minimum temperature, for the period from March, April and May 2025, there is a high probability of recording:

- ***above the historical regional average (i.e. 32.20°C) recorded during this period from 1982 to 2022 in Mora, Mokolo, Waza, Kaele, Mindif, Mora, Maga, Kousseri and Waza;***
- ***around the historical regional average (i.e. 32.20°C) recorded during this period from 1982 to 2022 at Kousseri, Makary;***
- ***an increase in the number of days with average maximum temperatures above 40°C at various locations in the region;***
- ***an increase in daily temperature differences (between 16 and 19°C) in Waza, Mora, Maga, Makari, Kousseri, Mokolo, Bogo, Yagoua and Gamboura.***

2. FOR THE NORTH REGION

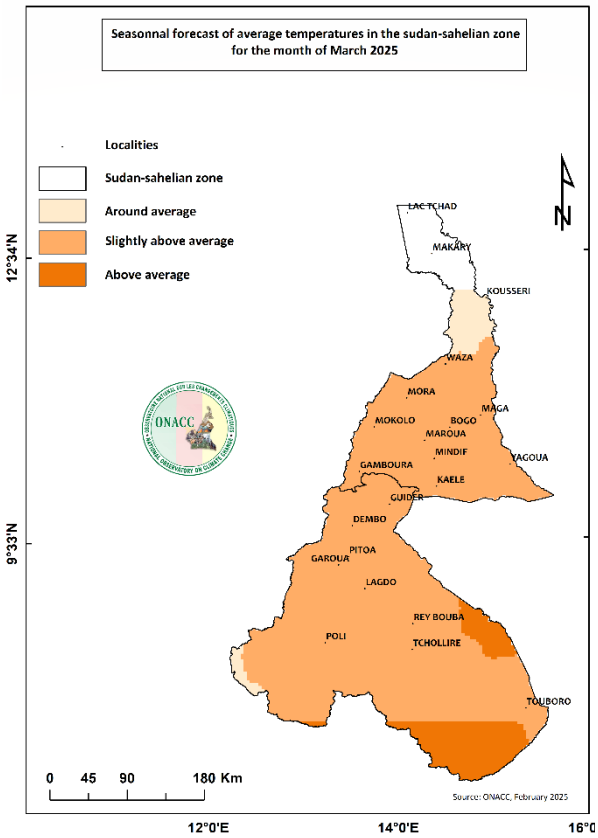
Between March and May from 1982 to 2022, the following regional temperatures were observed (Tab 8)

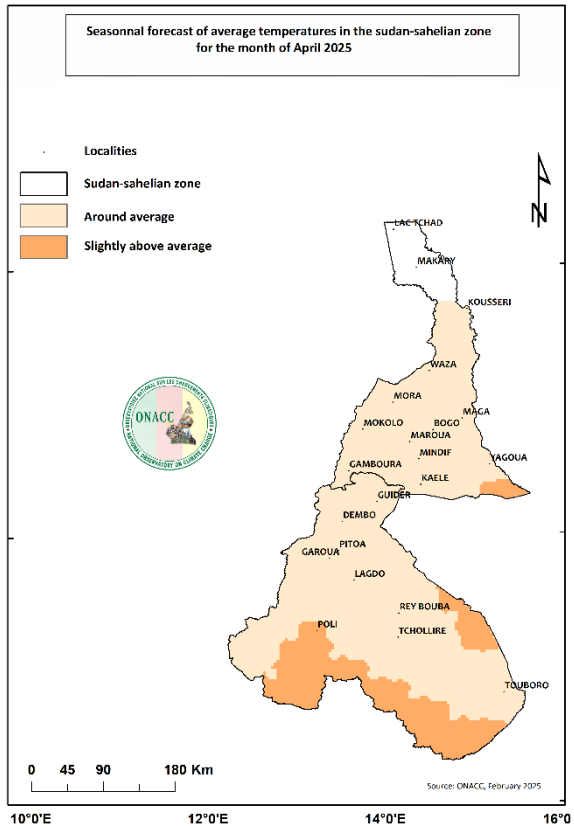
*Table 8: Observed temperatures for the months of March, April and May from 1982 to 2022 in the **North Region** and forecasts for the period from March to May 2025.*

Period	Avg Max T° from 1982 to 2022	Avg Min T° from 1982 to 2022	Avg T° from 1982 to 2022	Forecast trends in average temperatures from March to May 2025
March	39.41	23.92	31.67	**Above the mean**
April	38.11	25.50	31.81	**Around the mean**
May	34.78	24.45	29.62	**Above and around the mean**
Avg	39.41	23.92	31.03	**Above the mean**

Based on the historical averages of temperatures recorded in the Far North region for the months of March, April and May from 1982 to 2022, notably 39.41°C for the average maximum temperature, 31.03°C for the average temperature, and 23.92°C for the average minimum temperature, for the period from March, April and May 2025, there is a high probability of recording:

- ***average temperatures higher than the historical regional average (31.03°C) recorded over the same period from 1982 to 2022 in Dembo, Tchollire, Poli, Guider, Pitoa, Lagdo, Rey Bouba and Touboro;***
- ***an increase in the number of days with average maximum temperatures above 40°C in the various localities in the region;***
- ***an increase in daily temperature variations (between 13 and 18°C) in Dembo, Tchollire, Poli, Guider, Pitoa, Lagdo, Rey Bouba and Touboro.***





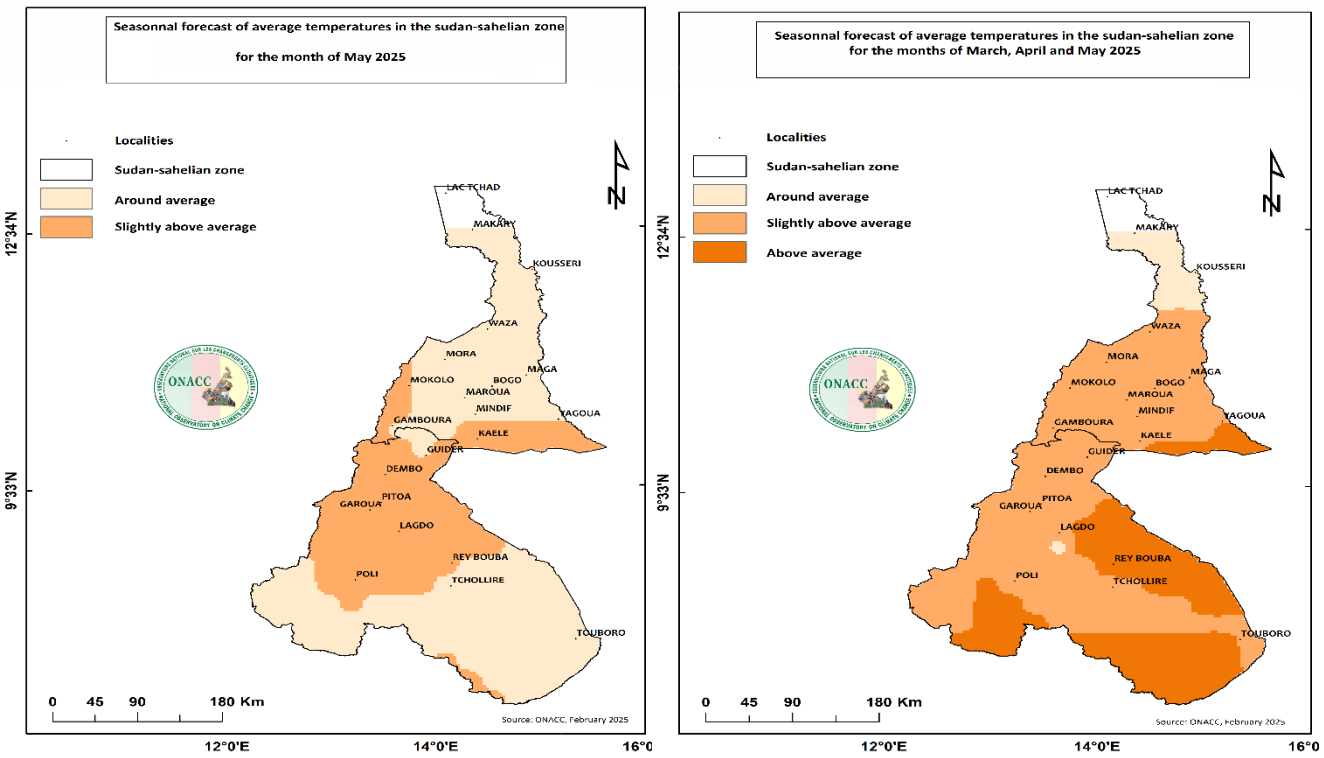


Figure 9: Forecast map of average temperatures for March, April and May 2025 in the ***Sudano-Sahelian zone****.*

B. Rainfall

1. FOR THE FAR NORTH REGION

Between March, April and May from 1982 to 2022, the following rainfall was observed (Tab.9):

Table 9: Rainfall for the months of March, April and May from 1982 to 2022 in the ***Far North Region*** *and forecasts for March, April, and May 2025*

Period	No. of rainy days from 1982 to 2022 (days)	Rainfall from 1982 to 2022 (mm)	Forecast no. of rainy days from March to May 2025 (days)	Rainfall forecasts f rom March to May 2025 (mm)
March	1	1.0	**No rainfall**	**No rainfall**
April	3	19.1	**No rainfall**	**No rainfall**
May	7	51.1	**Around the mean**	**Around the mean**
Total	11	71.2	**Around the mean**	**Around the mean**

Analyses from international weather forecasting centres, research carried out by NOCC for the period March to May 1982 to 2022 for the Far North Region, the gradual installation of the monsoon from the South West to the North West, the gradual withdrawal of the Harmattan to the Adamawa region and the migration of the Inter-Tropical Front (ITF) to the North of the Adamawa region, for the period March to May 2025, show a high probability of recording:

- ***no rainfall in the months of March and April 2025 in the different localities of the region;***
- ***rainfall amounts around the historical regional average (51.1mm of rain) recorded in the months of May from 1982 to 2022 in the localities of Mora, Mokolo, Kousseri, Waza, Kaele, Mindif, Mora, Maga, Kousseri, Waza and Makary;***
- ***an accumulation of the number of rainy days around the historical regional average (07 rainy days) recorded in the months of May from 1982 to 2022 in the various localities of the said region***

2. FOR THE NORTH REGION

Between March, April and May from 1982 to 2022, the following rainfall was observed (Tab.10):

Table 10: *Rainfall for the months of March, April and May from 1982 to 2022 in the* ***Far North Region*** *and forecasts for March, April, and May 2025*

Period	No. of rainy days from 1982 to 2022 (days)	Rainfall from 1982 to 2022 (mm)	Forecast no. of rainy days from March to May 2025 (days)	Rainfall forecasts f rom March to May 2025 (mm)
March	1	6.5	**Around the mean**	**No rainfall**
April	5.19	46.6	**Around the mean**	**No rainfall**
May	9.62	112.4	**Around the mean**	**Around the mean**
Total	15.81	165.5	**Around the mean**	**Around the mean**

Analyses from international climate forecasting centres, research carried out by NOCC for the period March to May 1982 to 2022 for the North Region, the gradual installation of the monsoon from the South West to the North West, the gradual retreat of the Harmattan towards Adamawa region and the migration of the Inter-Tropical Front (ITF) towards the North of the Adamawa region, for the period March to May 2025, show a high probability of:

- ***no rainfall in the months of March and April from 1982 to 2022 in the various localities in the region;***
- ***rainfall amounts around the historical regional average (112.4mm of rain) recorded in May from 1982 to 2022 in Guider, Dembo, Lagdo, Poli, Rey Bouba, Touboro, Pitoa and Tchollire;***
- ***a number of rainy days around the historical regional average (10 rainy days) recorded in May from 1982 to 2022 in the various localities in the region.***

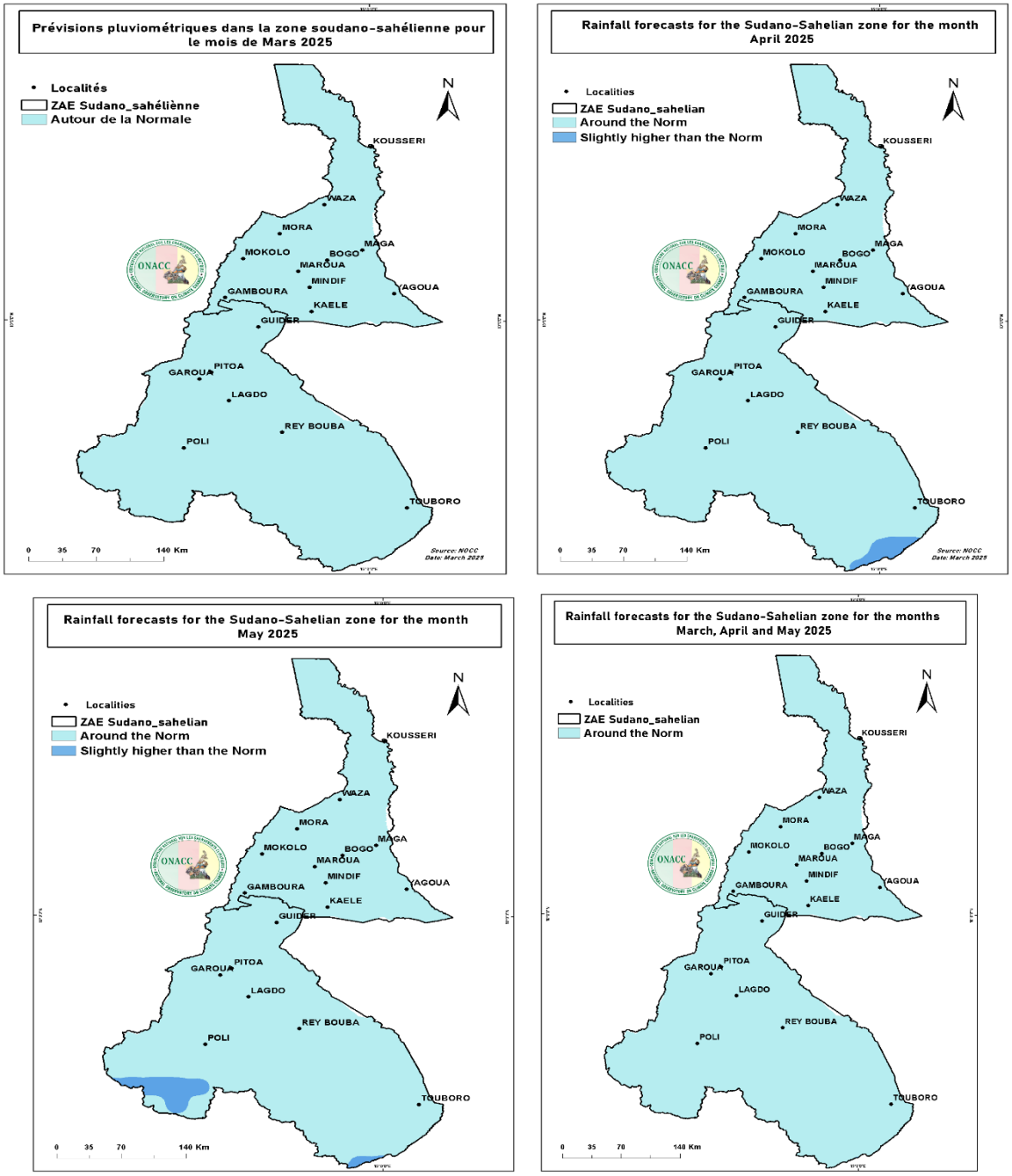


*Figure 10: Map of rainfall forecasts for the months of March, April and May 2025 in the **Sudano-Sahelian** zone of Cameroon*

VII.1.2. Risks, potential impacts and proposed solutions by sector of activity in the Sudano-Sahelian zone

Impacts on the agricultural sector	Proposed solutions for the agricultural sector
• risk of shortened crop ripening due to high temperatures; • high risk of water stress for crops in flood-prone areas due to high evapotranspiration; • increased risk of plant infection through insect proliferation;	• sow under plant cover; • use mulching; • plan sowings according to the agricultural calendar; • use integrated pest management to combat pest attacks;

• high risk of locust invasion, which could reduce yields; • risk of reduced yields from off-season crops due to warmer temperatures; • high risk of food and nutritional insecurity for poor households hosting IDPs and refugees outside camps.	• give preference to crop species and varieties that are resistant to water deficit; • promote integrated water resource management; • give priority to importing certain foodstuffs (long-term solution); • build up emergency stocks to provide food assistance to poor households, refugees outside camps and IDPs; • promote the restoration of degraded land.
Impacts on the livestock sector	**Proposed solutions for the livestock sector**
• risk of an increase in the number of cases of epizootic diseases; • risk of scarcity of pasture and water resources; • risk of livestock losses due to thermal discomfort; • risk of lower milk and meat production; • risk of lower meat quality and increased migratory movements of livestock farmers in search of pasture and water; • risk of increased conflict between livestock farmers and farmers around major rivers (Logone, Benoue, etc.); • high risk of an increase in the price of livestock.	• organize vaccination campaigns to prevent epizootic diseases; • intensify fodder collection and storage; • increase stocks of animal feed in at-risk areas; • increase the number of watering points for animals; • promote the use of agricultural residues as animal feed (oilcake, bran, hay, etc.).
Impacts on the health sector	**Proposed solutions for the health sector**
• risk of an upsurge in cases of water-borne diarrhoeal • water-borne diarrhoeal diseases, due to the scarcity or shortage of drinking water and the deterioration in water quality caused by bacterial and chemical contamination (amoebiasis, dysentery, cholera, etc.) • risk of recording cases of conjunctivitis, following the presence of particles in the air; • risk of registering cases of meningococcal meningitis and nasal haemorrhage in children and adults; • high risk of cases of respiratory illness as a result of strong winds and the proliferation of dust particles in the air; • risk of malnutrition or food poisoning due to the growth of bacteria or algae as a result of the heat, food shortages or poor storage conditions • risk of cases of general fatigue due to dehydration caused by the high heat; • risk of cases of dermatitis in children as a result of the heat; • risk of abortions in pregnant women as a result of the heat; • risk of an upsurge in cases of malaise among the elderly, pregnant women, diabetics and people	• intensify public awareness campaigns on basic hygiene measures (hand washing, sterilisation of drinking water, food washing, proper use of latrines, etc.). • intensify public awareness campaigns on drinking water purification techniques; • develop drinking water supply points for the population; • provide pharmacies and other health centres with stocks of essential medicines; • raise awareness of the need to rehydrate regularly (an average of 2 litres a day). • raise people's awareness of their way of life to help them adapt.

with high blood pressure as a result of heat discomfort; • a very high risk of an outbreak of malaria, due to people being exposed to mosquito bites on hot nights;	
Impacts on the water and energy sector	**Proposed solutions for the water and energy sector**
• risk of a severe drop in the flow of hydroelectric dams, resulting in a drop in energy production. • risk of a severe drop in the flow of watercourses, resulting in a reduction in household water supplies; • high risk of water supply points drying up as a result of lower groundwater levels; • risk of increased use of thermal power stations due to the drying up of dams; • risk of increased power cuts in large conurbations.	• promote the use of hybrid lighting systems (solar, generators, etc.); • promote the use of water tankers to supply water to households in towns and cities; • take climate forecasts into account when managing water resources in dams; • popularize energy efficiencý in households and businesses; • rationalize and optimise the use of water resources in households; • promote mixed energy in households and businesses;
Impacts on the tourism sector	**Proposed solutions for the tourism sector**
• risk of animals wandering outside the Waza, Bouba-Ndjida, Faro and Benoue parks as a result of the drying up of grazing areas; • risk of a reduction in the number of tourists as a result of animals moving towards residential areas.	• develop artificial watering points for wildlife in the various parks and reserves; • intensify and direct advertising spots towards natural sites that are more suitable for visits, in particular the Mindif peaks, the Kapsiki peak, Mount Rhumsiki, the Mandara mountains and the Kola gorges.
Impacts on the environment and biodiversity sector	**Proposed solutions for the environment and biodiversity sector**
• risk of loss of biodiversity as a result of bush fires; • risk of water points drying up, causing animals to migrate and resulting in human-wildlife conflicts; • high risk of increased conflict between farmers and certain wildlife species; • increased risk of loss of soil biological potential and of the ability to grow plants as a result of high temperatures.	• provide localities with supply points for the sedentarization of animals; • raise farmers' awareness of the dangers of using bush fires to stimulate regrowth; • raise people's awareness of the risks associated with settling in transhumance corridors; • develop and increase the number of water points in protected areas; • secure animal movement corridors; • promote the planting of fast-growing forage species around protected areas.
Impacts on the public works sector	**Proposed solutions for the public works sector**
• risk of increased thermal discomfort for construction site workers; • high risk of water scarcity on construction sites due to high temperatures and a drop in the water table.	• produce reference climatological information at local level, for infrastructure and public works projects; • to disseminate seasonal climate forecast bulletins to public works companies and design offices, and to central and decentralised public works departments; • take climate change into account when planning public works activities;

VII.2. IN THE ADAMAWA REGION

VII.2.1. Climate Forecasts

Based on analyses of forecasts from major international centres, analysis of climate data carried out by NOCC and the use of publications on the spatial and temporal dynamics of climate in Cameroon, we expect:

A. Temperatures

Between March, April and May from 1982 to 2022, the following temperatures were observed (Tab 11):

*Table 11: Observed temperatures for March, April and May from 1982 to 2022 in the **Adamawa region** and forecasts for March, April and May 2025*

Period	Avg Max T° from 1982 to 2022 (°C)	Avg. Min T° from 1982 to 2022 (°C)	Avg T° from 1982 to 2022 (°C)	**T° forecasts from March to May 2025**
March	32.63	19.14	25.89	**Above the mean**
April	33.61	20.07	26.84	**Above the mean**
May	29.97	19.56	24.77	**Above the mean**
Avg	32.07	19.59	25.83	**Around to above the mean**

Based on the historical averages of temperatures recorded in the Adamawa region for March, April and May from 1982 to 2022, notably 32.07°C for the average maximum temperature, 25.83°C for the average, and 19.59°C for the average minimum for March, April and May 2025, there is a high probability of recording:

- ***Average temperatures higher than the historical regional average (i.e. 25.83°C) recorded over the said period from 1982 to 2022 in the localities of Tignere, Meiganga, Ngaoundere, Ngaou Mbol, Betare Oya, Nass Arao, Yimbere, Mbakaou, Banyo and Tibati;***
- ***An increase in the number of days with average maximum temperatures above 32°C in the various localities in the region;***
- ***An increase in daily temperature differences (between 10 and 15°C) in Tignere, Ngaoundere, Ngaou Mbol, Betare Oya, Nass Arao, Yimbere, Mbakaou, Banyo and Tibati.***

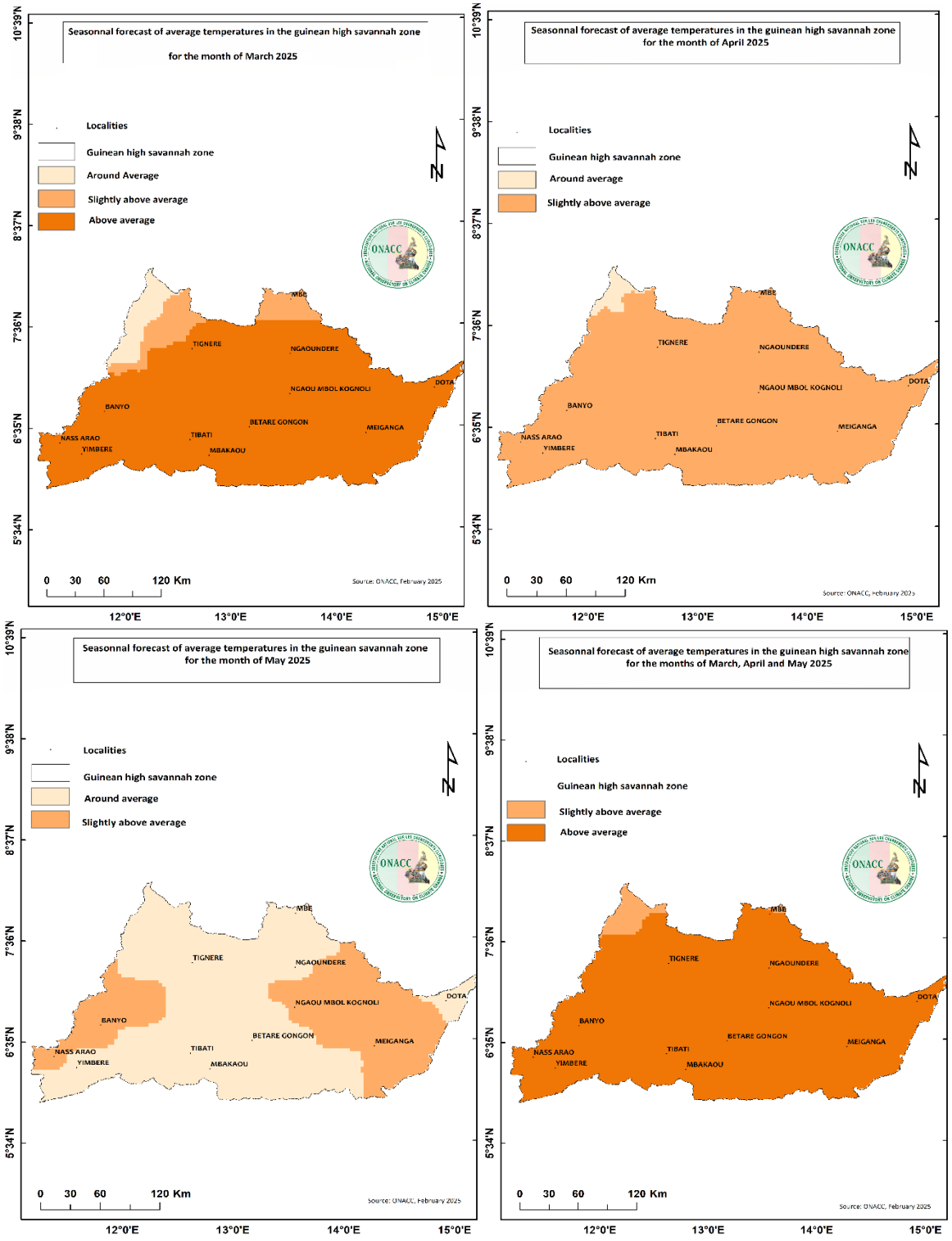


Figure 11: Map of average temperature forecasts for March, April and May 2025 in the ***Guinea High Savannah zone.***

B. Rainfall

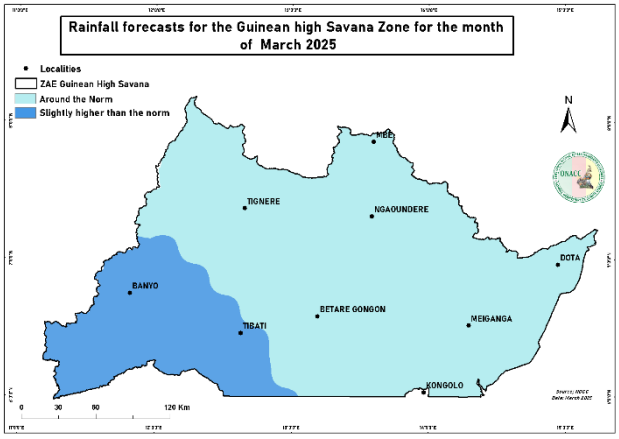
Between March, April and May from 1982 to 2022, the following rainfall was observed (Tab.12):

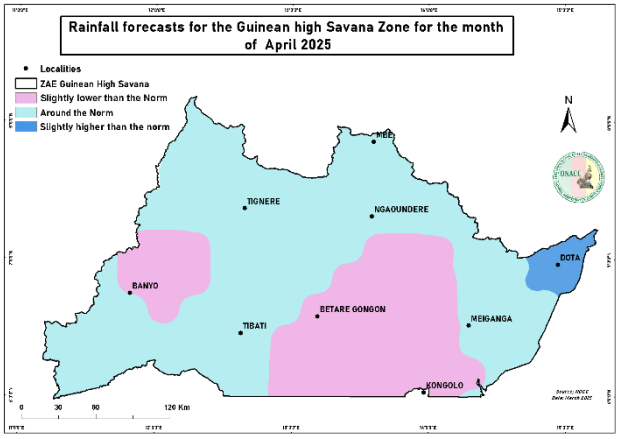
*Table 12: Observed rainfall from March to May from 1982 to 2022 in the **Adamawa region** and forecasts for March to May 2025*

Period	No. of rainy days from 1982 to 2022 (days)	Rainfall from 1982 to 2022 (mm)	**Forecast no. of rainy days from March to May 2025 (days)**	**Rainfall forecasts from March to May 2025 (mm)**
March	3.33	38.0	Around the mean	Around the mean
April	15	115.6	Around the mean	Around to above the mean
May	20.15	182.6	Around the mean	Around to above the mean
Total	38.48	336.1	Around the mean	Around to above the mean

Analyses from international climate forecasting centres, research carried out by NOCC for the period March to May 1982 to 2022 for the Adamawa Region, the gradual installation of the monsoon from the South West to the North West, the gradual retreat of the Harmattan towards the Adamawa region and the migration of the Inter-Tropical Front (ITF) towards the North of the Adamawa region, for the period March to May 2025, show a high probability of recording:

- ***rainfall amounts above the historical regional average (i.e. 336.1mm of rainfall) recorded from March to May from 1982 to 2022 in Dota;***
- ***Ngaoundere, Tignere, Tibati, Banyo, Kongolo, Betare Gongon, Meiganga and Mbe recorded rainfall amounts around the historical regional average (i.e. 336.01mm) for the same period from 1982 to 2022;***
- ***cumulative number of rainy days around the historical regional average (39 days) recorded over the same period from 1982 to 2022 in the various localities in the Region.***





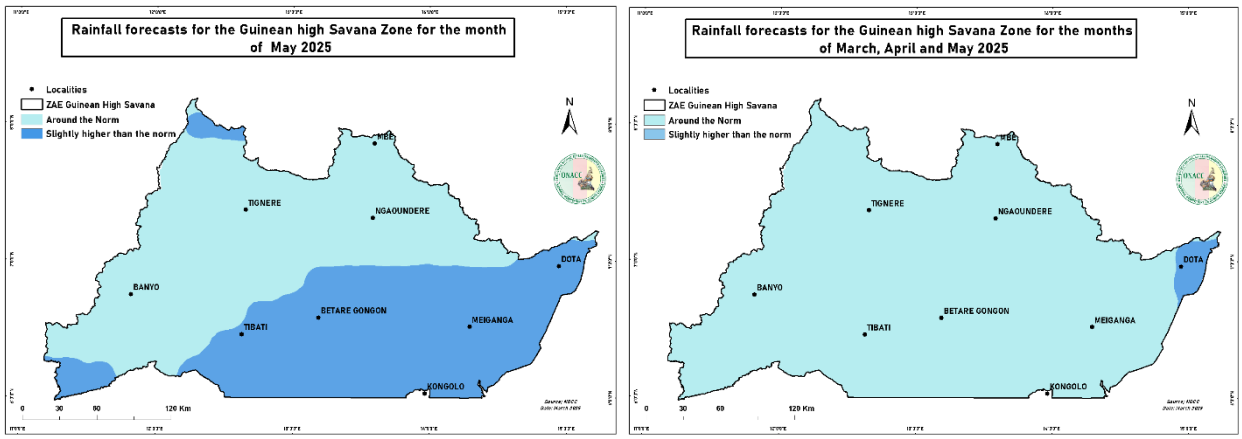


*Figure 12: Rainfall forecast map from March to May 2025 in the **Guinea High Savannah zone**.*

V.2.2. Risks, potential impacts and proposed solutions by sector of activity in the Guinea High Savannah zone

Impacts on the agricultural sector	Proposed solutions for the agricultural sector
• risk of increased leaching from cultivated soils due to heavy rainfall, particularly in Betare Gongon; • risk of an increase in weeds and outbreaks of disease due to rainfall; • risk of crop waterlogging, particularly in Betare Gongon; • risk of reduced effectiveness of pesticide treatments; • high risk of mortality and lodging of stems after plant heading at the beginning of the seasons due to strong winds.	• put into practice the recommendations of the agricultural calendar; • increase vigilance against diseases and crop pests (locusts and other harmful insects); • encourage terrace cultivation; • promote soil restoration through agroforestry to limit soil erosion and leaching. • increase vigilance against fungal diseases; • NB: this information on the potential risks and impacts, together with the proposed responses, relates primarily to the southern part of the Adamawa region.
Impacts on the livestock sector	**Proposed solutions for the livestock sector**
• high risk of epizootic diseases caused by germs that prefer humid conditions in Betare Gongon; • high risk of an increase in respiratory diseases; • high risk of outbreaks of PPR (plague of small ruminants); • high risk of weed regrowth in grazing areas; • risk of deterioration in straw quality; • risk of conflicts between agro-pastoralists due to the search for the best pastures.	• increase public awareness of prophylactic measures against epizootic diseases. • promote vaccination campaigns against PPRs such as New Castle and infectious bronchitis; • risk of an increase in hoof diseases; • raise public awareness of measures to preserve good quality straw; • raise farmers' awareness of the need to store hay in dry areas; • popularize new livestock farming models such as ranching and modern farms; • promote animal vaccination campaigns.
Impacts on the health sector	**Proposed solutions for the health sector**
• risk of an increase in cases of malaria; • risk of increased cases of respiratory illnesses (bronchitis, flu, etc.), especially among children, the elderly and pregnant women	• raise awareness of the need to respect hygiene rules (WASH); • intensify awareness-raising campaigns on malaria prophylaxis.

• risk of an increase in joint pain among the elderly and people suffering from rheumatism and arthritis, as a result of persistent night-time cold in high-altitude localities.	• raise public awareness of the need to keep warm during cold spells; • step up campaigns to raise people's awareness of the need to use impregnated mosquito nets; • continue to raise awareness of the need to protect people from inhaling dust particles;
Impacts on the water and energy sector	**Proposed solutions for the water and energy sector**
• risk of a severe drop in the flow of hydroelectric dams, resulting in a drop in energy production. • risk of a severe drop in the flow of watercourses, resulting in a reduction in household water supplies; • high risk of water supply points drying up as a result of lower groundwater levels; • risk of increased use of thermal power stations due to the drying up of dams; • risk of increased power cuts in large conurbations.	• promote the use of hybrid lighting systems (solar, generators, etc.); ; • promote the use of water tankers to supply water to households in towns and cities; • take climate forecasts into account when managing water resources in dams; • popularize energy efficiencý in households and businesses; • rationalize and optimise the use of water resources in households ; • promote mixed energy in households and businesses ;
Impacts on the tourism and leisure sector	**Proposed solutions for the tourism and leisure sector**
• - Risk of obstruction of access routes to tourist sites; • - risk of accidents caused by the poor condition of access roads to tourist sites; • - risk of animals migrating away from tourist sites.	• - Accompany tourists throughout their visit to potentially high-risk sites; • - establish safety cordons around dangerous areas; • - make tourists aware of the need to drive carefully in tourist areas; • - Provide tourists with protective equipment against potential accidents; • - putting up road signs in high-risk areas;
Impacts on the environment and biodiversity sector	**Proposed solutions for the environment and biodiversity sector**
• high risk of trees falling as a result of strong winds in Betare Gongon; • risk of soil erosion caused by heavy rainfall in Betare Gongon; • high risk of an increase in invasive species; • high risk of pollution of water points following the spread of waste through run-off water and sewage;	• promote soil restoration through agroforestry to limit soil erosion and leaching; • strengthen the waste collection system; • raise public awareness of the need to avoid sheltering under trees during storms; • promote campaigns to combat insalubrity and improve sanitation; • intensify reforestation;
Impacts on the public works sector	**Proposed solutions for the public works sector**
• high risk of damage to various infrastructures (bridges, roads, culverts, etc.) as a result of heavy rainfall (southern part of the Adamawa Region); • high risk of disruption to the execution of infrastructure with a negative impact on delivery times; • risk of increased erosion and obstruction of run-off water drainage infrastructures;	• take account of climate change in the planning of public works activities; • produce reference climatological information at local level, for infrastructure and public works projects; • disseminate seasonal climate forecast bulletins to public works companies and consultancies, and to central and decentralised public works departments. • plan for rain barriers during road works;

V.3. BIMODAL RAINFOREST ZONE

V.3.1. Climate forecasts

Based on analyses of forecasts from major international centres, analysis of climate data carried out by NOCC and the use of publications on the spatial and temporal dynamics of climate in Cameroon, we expect:

A.Temperatures

1. FOR THE CENTRE REGION

Between March and May from 1982 to 2022, the following temperatures were recorded (Tab 9):

*Table 9: Temperatures observed from March to May from 1982 to 2022in the **Centre region** and forecasts from March to May 2025.*

Period	Avg Max T° from 1982 to 2022	Avg. Min T° from 1982 to 2022	Avg T° from 1982 to 2022	**Forecast trends in average temperatures from March to May 2025**
March	28.69	21.02	24.86	**Above the mean**
April	27.53	21.20	24.37	**Around to above the mean**
May	26.90	20.97	23.94	**Around the mean**
Avg	28.69	21.02	24.39	**Above the mean**

Based on the historical averages of temperatures recorded in the Centre region for March, April and May from 1982 to 2022, notably 28,69°C for the average maximum temperature; 24,39°C for the average temperature and 21,02°C for the average minimum temperature, for March, April and May 2025 there is a high probability of recording:

- ***Average temperatures above the historical regional mean (i.e. 24.39°C) recorded over the said period from 1982 to 2022 in Ngambe Tikar, Nanga Eboko, Nkoteng, Obala, Akonolinga, Yaounde, Monatele and Yoko;***
- ***Average temperatures around the historical regional mean (i.e. 24.39°C) recorded over the said period from 1982 to 2022 in Mbalmayo and Eseka;***
- ***An increase in the number of days with maximum temperatures above 30°C in the various localities in the region.***

2. FOR THE EAST REGION

Between March and May from 1982 to 2022, the following temperatures were recorded (Tab 10).

Table 10: Observed temperatures from March to May from 1982 to 2022 in the East region and forecasts from March to May 2025.

Period	Avg Max T° from 1982 to 2022	Avg. Min T° from 1982 to 2022	Avg T° from 1982 to 2022	**Forecast trends in average temperatures from March to May 2025**
March	30.44	20.68	25.56	**Above or equal to the mean**
April	28.78	20.87	24.83	**Around the mean**
May	27.82	20.57	24.20	**Above or equal to the mean**
Avg	29.01	20.71	24.86	**Above or equal to the mean**

Based on the historical averages of temperatures recorded in the East region for March, April and May from 1982 to 2022, notably 29,01°C for the average maximum temperature; 25,14°C for the average temperature and 20,71°C for the average minimum temperature, for March, April and May 2025 there is a high probability of recording:

- ***Average temperatures above the historical regional mean (i.e. 24.89°C) recorded during the same period from 1982 to 2022 in Bertoua, Garoua Boulai, Doume, Batouri, Yokadouma, Mambele, Libongo, Moloundou, Kika, Belabo, Betare Oya, Garoua Boulai, Lomie and Ngoyla;***
- ***Average temperatures around the historical regional mean (i.e. 24.89°C) recorded during the same period from 1982 to 2022 in Koso, Mintoum and Abong Mbang;***
- ***An increase in the number of days with maximum temperatures above 32°C in the various localities of the region.***

3. FOR THE SOUTH REGION

Between March and May from 1982 to 2022, the following temperatures were recorded (Tab 11):

*Table 11: Observed temperatures from March to May from 1982 to 2022 in the **South region** and forecasts from March to May 2025.*

Period	Avg Max T° from 1982 to 2022	Avg. Min T° from 1982 to 2022	Avg T° from 1982 to 2022	**Forecast trends in average temperatures from March to May 2025**
March	28.39	21.82	25.11	**Above the mean**
April	27.64	21.87	24.76	**Above the mean**
May	27.14	21.63	24.39	**Above the mean**
Avg	27.72	21.77	24.75	**Above the mean**

Based on the historical averages of temperatures recorded in the East region for March, April and May from 1982 to 2022, notably 27,72°C C for the average maximum temperature; 24,75°C for the average temperature and 21,77°C for the average

minimum temperature, for March, April and May 2025 there is a high probability of recording: :

- ***Average temperatures above the historical regional mean (i.e. 24.75°C) recorded from 1982 to 2022 in Kribi, Akom II and Djoum;***
- ***Average temperatures around the historical regional mean (i.e. 24.75°C) recorded from 1982 to 2022 in Lolodorf, Ebolowa, Sangmelima, Zoetele, Campo, Nyabizan and Ambam;***
- ***An increase in the number of days with maximum temperatures above 32°C in the various localities of the region.***

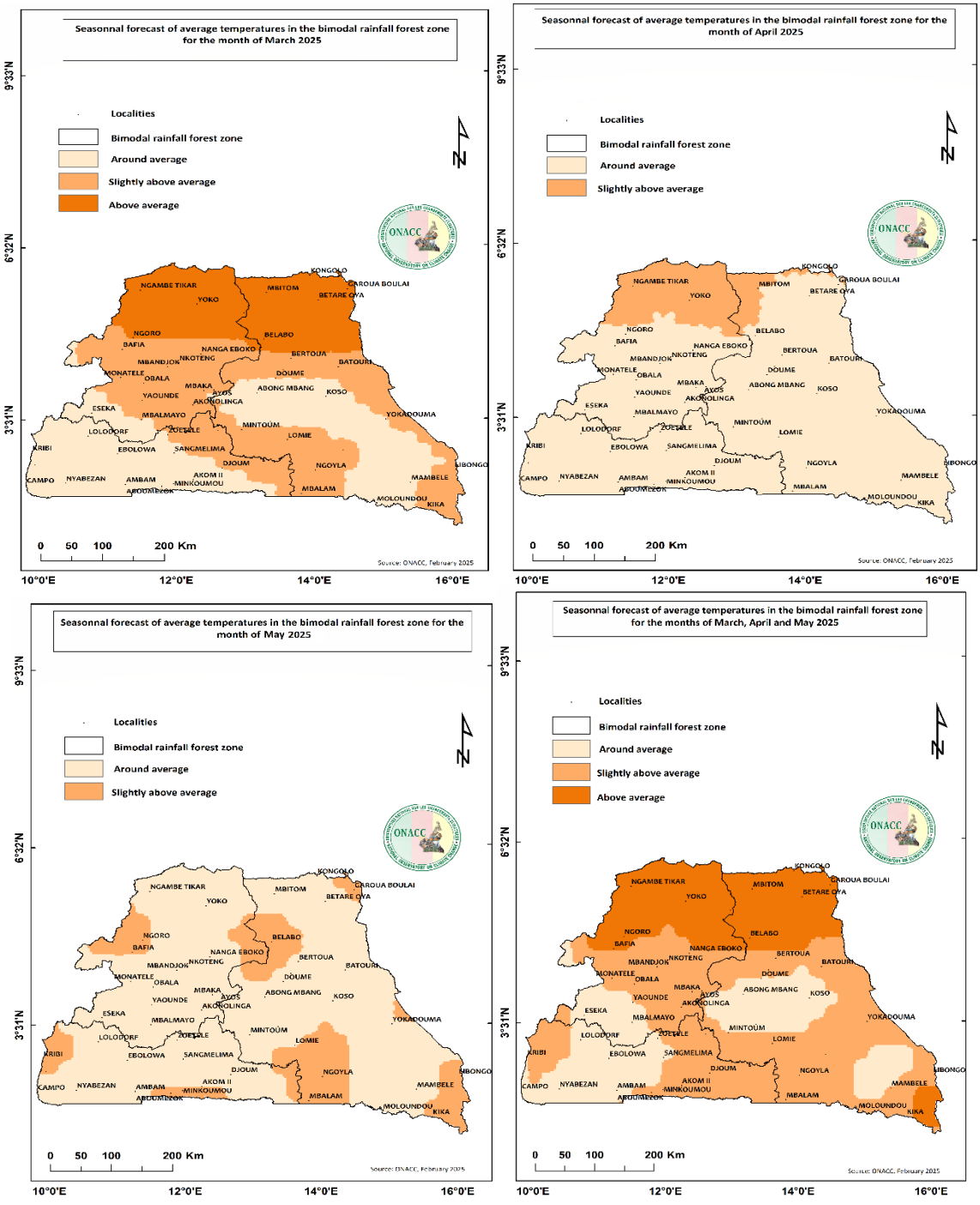


Figure 13: Forecast map of average temperatures for March, April, and May 2025 in the bimodal rainforest zone.

B. Rainfall

1. FOR THE CENTRE REGION

Between March and May 1982 to 2022, the following were observed (Tab 12):

*Table 12: Observed rainfall for March, April, and May 1982 to 2022 in the **Centre region** and forecast from March to May 2025.*

Period	Rainfall from 1982 to 2022 (mm)	No. of rainy days from 1982 to 2022(days)	**Forecast no. of rainy days from March to May 2025 (days)**	**Rainfall forecasts from March to May 2025 (mm)**
March	104.2	13	**Around the mean**	**Above the mean**
April	159.0	16	**Around the mean**	**Around to above the mean**
May	177.0	18	**Around the mean**	**Around the mean**
Total	440.2	47	**Around the mean**	**Around to above the mean**

Analyses from international weather forecast centres, research carried out by NOCC from March to May 1982 to 2022 for the Centre region, the gradual installation of the monsoon from the South-West to the North-West, the gradual withdrawal of the Harmattan to the Adamawa region and the migration of the Inter-tropical Front (ITF) to the north of the Adamawa region, for the period from March to May 2025, indicate a high probability of recording:

- ***Cumulative rainfall above the historical mean (440.2 mm of rain) recorded from March to May from 1982 to 2022 in Monatele, Nanga Eboko, Ngoro, Yaounde, Mbalmayo, Eseka and Ayos;***
- ***Cumulative rainfall around the same historical mean (440.2 mm of rain) recorded during the same period from 1982 to 2022 in Ngambe Tikar, Akonolinga and Mbaka;***
- ***Cumulative number of rainy days around the historical mean (47 days) recorded from March to May from 1982 to 2022 in the various localities of the region.***

2. FOR THE EAST REGION

Between March and May 1982 to 2022, the following were observed (Tab. 13):

*Table 13: Observed rainfall for March, April, and May 1982 to 2022 in the **East region** and forecast from March to May 2025*

Period	Rainfall from 1982 to 2022 (mm)	No. of rainy days from 1982 to 2022(days)	**Forecast no. of rainy days from March to May 2025 (days)**	**Rainfall forecasts from March to May 2025 (mm)**
March	106.4	10	**Around the mean**	**Around to above the mean**
April	151.0	12	**Around the mean**	**Around to above the mean**
May	177.4	15	**Around the mean**	**Around to above the mean**
Total	434.8	37	**Around the mean**	**Around to above the mean**

Analyses from international weather forecast centres, research carried out by NOCC from March to May 1982 to 2022 for the East region, the gradual installation of the

monsoon from the South-West to the North-West, the gradual withdrawal of the Harmattan to the Adamawa region and the migration of the Inter-tropical Front (ITF) to the north of the Adamawa region, for the period from March to May 2025, indicate a high probability of recording:

- ***Rainfall amounts above the historical regional mean (464.8mm) recorded from March to May 1982 to 2022 in Batouri, Doume, Abong Mbang, Koso, Yokadouma and Moloundou ;***
- ***Rainfall amounts around the historical regional mean (464.8mm) recorded during the same period from 1982 to 2022 in Garoua Boulai, Mbitom, Belabo, Mindourou, Lomie and Mintoum;***
- ***Cumulative number of rainy days around the historical regional mean (37 days) recorded from March to May from 1982 to 2022 in the various localities of the region.***

3. FOR THE SOUTH REGION

Between March and May 1982 to 2022, the following were observed (Tab. 14):

*Table 14: Observed rainfall for March, April, and May 1982 to 2022 in the **South region** and forecast from March to May 2025*

Period	Rainfall from 1982 to 2022 (mm)	No. of rainy days from 1982 to 2022(days)	**Forecast no. of rainy days from March to May 2025 (days)**	**Rainfall forecasts from March to May 2025 (mm)**
March	166.0	15	**Above the mean**	**Above the mean**
April	197.8	18	**Around the mean**	**Around to above the mean**
May	206.9	19	**Around the mean**	**Around the mean**
Total	570.7	52	**Around the mean**	**Around to above the mean**

Analyses from international weather forecast centres, research carried out by NOCC from March to May 1982 to 2022 for the South region, the gradual installation of the monsoon from the South-West to the North-West, the gradual withdrawal of the Harmattan to the Adamawa region and the migration of the Inter-tropical Front (ITF) to the north of the Adamawa region, for the period from March to May 2025, indicate a high probability of recording:

- ***Amounts of rainfall above the historical regional mean (570.7mm) recorded from March to May between 1982 and 2022 in Ebolowa and Nyabizan ;***
- ***Cumulative rainfall around the historical regional mean (570.7mm) recorded over the same period from 1982 to 2022 in Kribi, Sangmelima, Ambam Lolodorf and Campo;***
- ***Cumulative number of rainy days around the historical regional mean (52 days) recorded over the same period from 1982 to 2022 in the region's various localities.***

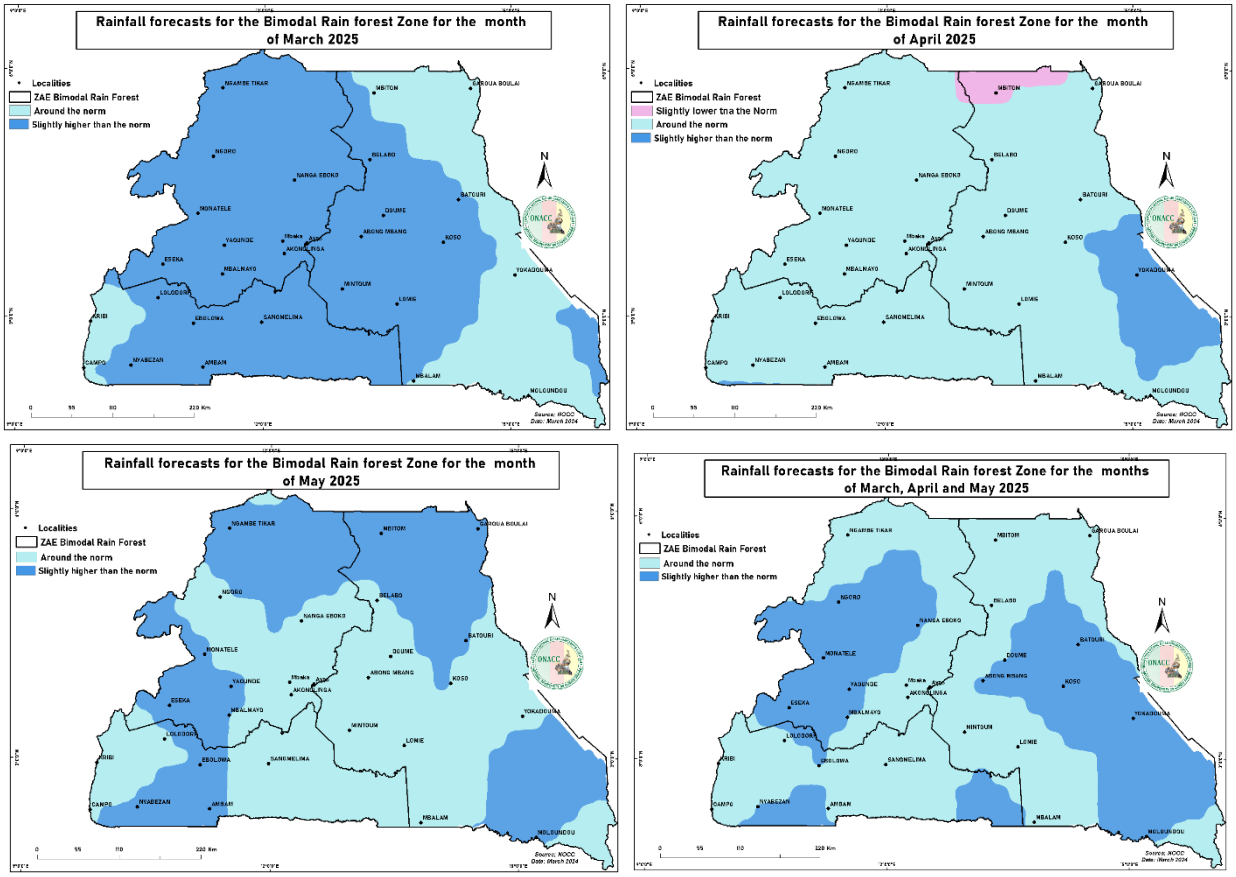


Figure 14: Rainfall forecast map from March to May 20254 in the bimodal rainforest zone.

C. Fog

Thick fog was observed from the first dekad of February 2025, covering the hill slopes of localities on the periphery of most towns in the **Centre, East and South regions**, especially in the early hours of the morning. This situation is likely to continue until May 2025.

V.3.2. Risks, potential impacts and proposed solutions by sector of activity in the Bimodal rainforest zone

Impacts on the agricultural sector	Proposed solutions for the agricultural sector
• high risk of increased weeds and disease outbreaks due to heavy rains; • high risk of reduced effectiveness of phytosanitary treatments due to leaching of products by heavy rains; • - high risk of waterlogging of crops (maize, cassava, plantain, etc.), especially in areas potentially flooded by rainwater; • high risk of water stress for crops, especially in Garoua Boulai, Batouri, Belabo, Doume, Betare Oya, Mbitom, Moloundou, Yokadouma and Mbalam in East Cameroon and Nanga Eboko, Ngoro and Mbaka in the Centre.	• update agricultural calendars and make them available to farmers in due time; • - adapt crop protection treatments to the weather forecast; • - increase vigilance against diseases and crop pests (locusts and other harmful insects); • - give priority to crop varieties resistant to water stress, notably in Garoua Boulai, Batouri, Belabo, Doume, Betare Oya, Mbitom, Moloundou, Yokadouma and Mbalam in East Cameroon and Nanga Eboko, Ngoro and Mbaka in the Centre.

	NB : In the Bimodal Rainforest zone, this period is favourable for developing the lowlands, notably for growing maize, vegetables, etc.
Impacts on the livestock sector	**Proposed solutions for the livestock sector**
• high risk of sprouting epizootics preferring good wet conditions, especially in the localities of Ngambe Tikar and Mbam and Inoubou in the East region • high risk of low pasture yields in the transition zone, notably in Belabo, Garoua Boulai and Mimtom due to low rainfall; • risk of destruction of dykes and contamination of land; • risk of tick infestation in Garoua Boulai, Batouri, Belabo, Doume, Betare Oya, Mbitom, Moloundou, Yokadouma and Mbalam in East Cameroon and Nanga Eboko, Ngoro and Mbaka in Centre region.	• prevent epizootic diseases caused by germs that prefer humid conditions; • reinforce dykes to protect fish ponds from pollution and contamination; • - promote animal vaccination campaigns; • - fit out animal pens; • - provide stocks of hay.
Impacts on the health sector	**Proposed solutions for the health sector**
• an upsurge in cases of typhoid, due to the consumption of spoiled or contaminated food, the poor quality of drinking water during this season.; • - risk of food poisoning due to the development of bacteria or algae caused by humidity. • - Risk of an increase in cases of irritation of the nasal and bronchial passages, due to humidity and cold; • - risk of a sharp increase in cases of joint pain in people suffering from arthrosis and arthritis due to cold weather; • - risk of an increase in cases of malaria, due to the multiplication of breeding grounds; • - a high risk of an increase in cases of respiratory illnesses (flu, pneumonia, etc.) among the elderly, children and pregnant women.	• regularly drink hot beverages (at medium temperature); • increase public awareness of the use of impregnated mosquito nets; • increase stocks of medicines in pharmacies, especially antimalarials and antitussives; • raise public awareness of hygiene and sanitation rules (washing hands and food, sterilising drinking water, etc.); • raising people's awareness on latrine construction; • raise people's awareness on how-to live-in order to better adapt.
Impacts on the water and energy sector	**Proposed solutions for the water and energy sector**
• high risk of silting up of water retention dams; • risk of destruction of electricity transmission and production infrastructure/equipment (poles, cables, transformers, etc.) by heavy rain accompanied by violent winds; • risk of destruction of equipment at water treatment plants; • risk of turbidity in drinking water; • risk of contamination of drinking water by polluted floodwater and run-off.	• continuously gauge and clean dams; • promote the installation of hybrid electrification systems (solar energy, generators, etc.) in households, offices, shopping centres, etc. • ensure ongoing maintenance of electricity transmission and distribution equipment; • raise public awareness of water treatment before use (bleaching, boiling, filtering, decanting, etc.); • protecting water catchment areas against any form of pollution from run-off water;

	• produce and disseminate real-time climate information to better plan the calibration of hydroelectric facilities.
Impacts on the tourism and leisure sector	**Proposed solutions for the tourism and leisure sector**
• risk of obstruction of access routes to tourist sites; • risk of accidents caused by poor access roads and falls • high risk of falling trees due to strong winds at tourist sites; • risk of animals migrating away from tourist sites; • risk of flooding of swimming pools in ecotourism sites; • risk of tourists drowning in ecotourism sites due to rising water levels.	• accompany tourists throughout their visit to potentially high-risk sites; • establish safety cordons around dangerous areas; • make tourists aware of the need to drive carefully in tourist areas; • provide tourists with protective equipment against potential accidents; • put up road signs indicating the various risks.
Impacts on the environment and biodiversity sector	**Proposed solutions for the environment and biodiversity sector**
• high risk of falling trees due to strong winds; • risk of waterlogging caused by heavy rainfall; • risk of soil erosion caused by heavy rain; • risk of loss of biodiversity and destruction of animal habitats due to landslides; • risk of landslides; • risk of loss of aquatic biodiversity due to the invasion of rivers and lakes by waste carried by run-off water; • risk of colonisation of aquatic fauna by invasive exotic species (invasives) carried by run-off water.	• promote soil restoration through agroforestry to limit soil erosion and leaching; • raise public awareness of potential impacts in risky areas; • strengthen the waste collection system; • raise awareness of sanitation issues; • ensuring the sustainable management of peri-urban forests.
Impacts on the public works sector	**Proposed solutions for the public works sector**
• high risk of damage to various infrastructures (bridges, roads, culverts, etc.) as a result of heavy rainfall; • high risk of disruption of infrastructure works • with a negative impact on delivery schedules; • - risk of increased erosion and obstruction of • drainage infrastructure.	• take into account climate change in the planning of public works activities; • produce reference climatological information at the local level, for infrastructure and public works projects; • disseminate seasonal climate forecast bulletins to public works companies and consulting firms and to central and decentralised public works departments; • plan for rain barriers during road works. ;
Impacts on the urban sector	**Proposed solutions for the urban sector**
• risk of destruction of public buildings and dwellings in certain localities in the far south, as a result of the violent winds expected to blow with the forecast rainfall; • increased risk of floods due to the clogging of drains with various types of waste in the major towns; • increased risk of electricity shortages due to the destruction of power transmission and regulation equipment in some areas of the southern part of Cameroon.	• reinforce building structures and roofs; • continuously clean drains in major conurbations; • promote the installation of hybrid lighting systems.

V.4. WESTERN HIGHLANDS ZONE

V.4.1. Climate forecasts

Based on analyses of forecasts from major international centres, analysis of climate data carried out by NOCC and the use of publications on the spatial and temporal dynamics of climate in Cameroon, we expect:

A. Temperatures

Between March and May from 1982 to 2022, the following temperatures were observed (Tab 15):

1. FOR THE WEST REGION

*Table 15 : Observed temperatures for March, April and May from 1982 to 2022 in the **West region** and forecasts from March to May 2025.*

Period	Avg Max T° from 1982 to 2022	Avg Min T° from 1982 to 2022	Avg T° from 1982 to 2022	**Forecast trends in average temperatures from March to May 2025**
March	28.56	18.88	23.72	**Around to above the mean**
April	27.06	19.49	23.28	**Around to above the mean**
May	26.12	19.25	22.69	**Around to above the mean**
Avg	27.25	19.21	23.23	**Around to above the mean**

Based on the historical averages of temperatures recorded in the West region for March, April and May from 1982 to 2022, notably 27,25°C for the average maximum temperature; 23,23°C for the average temperature and 19,21°C for the average minimum temperature, for the period of March, April and May 2025 there is a high probability of recording:

- *Average temperatures above the historical regional mean (i.e. 23.23°C) recorded from 1982 to 2022 in Makoupa, Mbouda, Nkoumagba, Foumban, Makam, Tonga, Foumbot, Bafoussam, Bangangte, Bazou and Bamendjing;*
- *Average temperatures around the historical regional mean (i.e. 23.23°C) recorded from 1982 to 2022 in Dschang, Bafang and Batcham;*
- *An increase in the number of days with maximum temperatures above 30°C in the various localities of the region.*

2. FOR THE NORTH WEST REGION

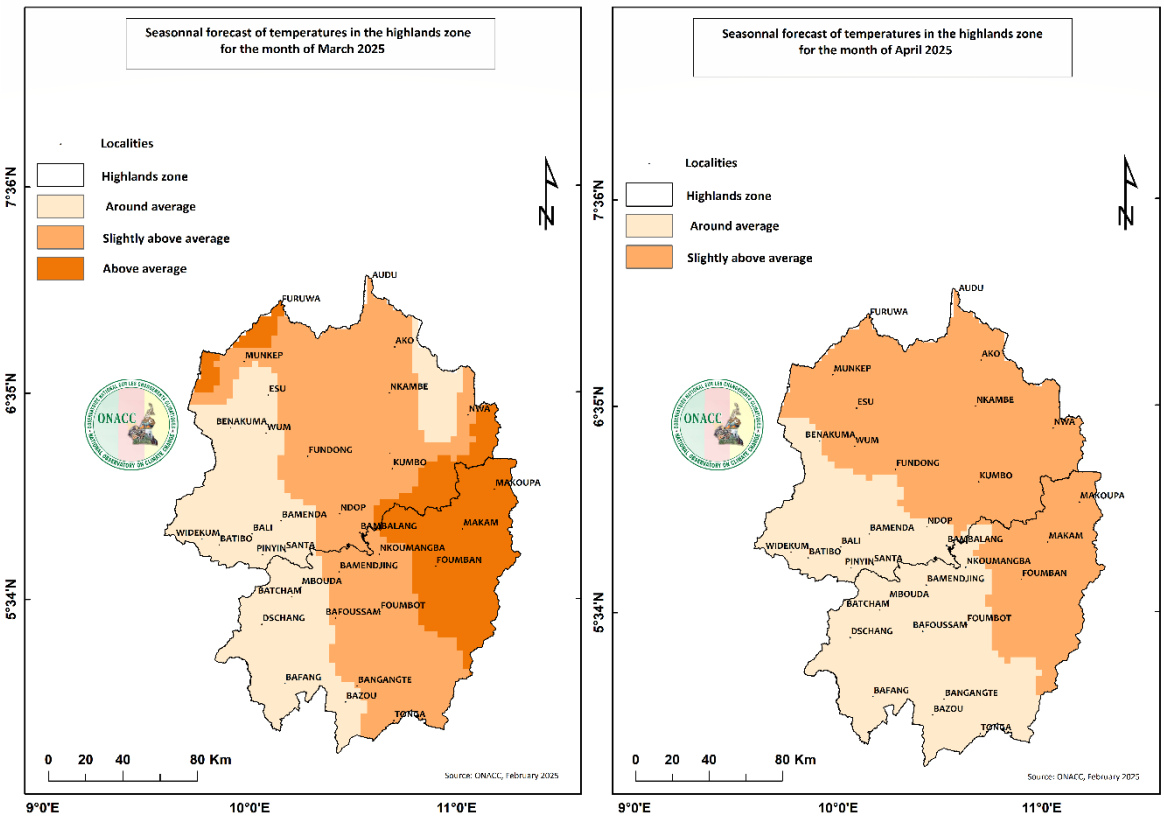
Between March and May from 1982 to 2022, the following temperatures were observed (Tab 16):

*Tab. 16: Observed temperatures for March, April, and May from 1982 to 2022 in the **North West region** and forecasts from March to May 2025.*

Period	Avg Max T° from 1982 to 2022	Avg Min T° from 1982 to 2022	Avg T° from 1982 to 2022	**Forecast trends in average temperatures from March to May 2025**
March	26.63	19.16	22.90	**Around to above the mean**
April	28.17	19.70	23.94	**Around to above the mean**
May	26.91	19.53	23.22	**Around to above the mean**
Avg	27.24	19.46	23.35	**Around to above the mean**

Based on the historical averages of temperatures recorded in the North West region for March, April and May from 1982 to 2022, notably 27,24°C for the average maximum temperature; 23,35°C for the average temperature and 19,46°C for the average minimum temperature, for March, April and May 2025 there is a high probability of recording:

- ***Average temperatures above the historical regional mean (i.e., 23.35°C) recorded from 1982 to 2022 in Ako, Nkambe, Esu, Fundong, Bamenda, Ndop, Santa, Nwa, Kumbo, Benakuma, Wum and Babalang;***
- ***Average temperatures around the historical regional mean (i.e., 23.35°C) recorded from 1982 to 2022 in Bali, Widekum, Batibo, and Pinyin;***
- ***An increase in the number of days with average maximum temperatures above 28°C in the various localities of the region.***



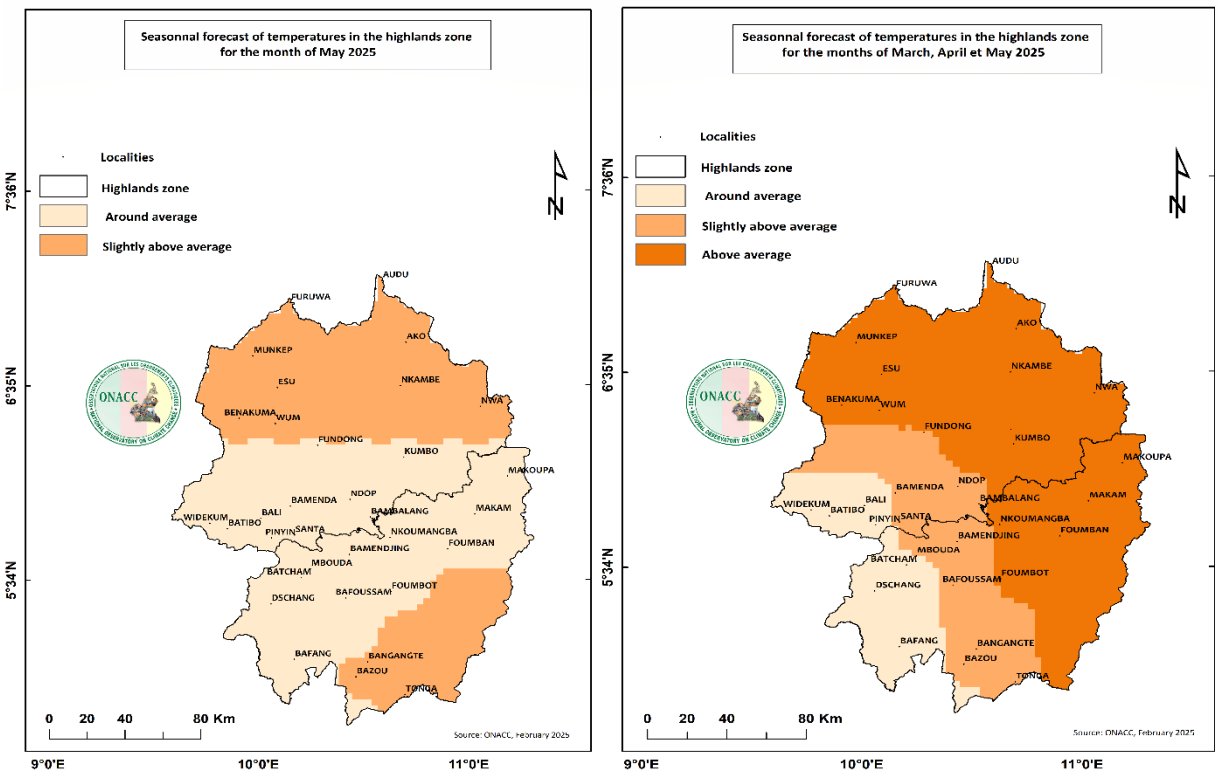


*Figure 15: Forecast map of average temperatures for March, April, and May 2025 in the **Western Highland zone**.*

B. Rainfall

1. FOR THE WEST REGION

Between March and May from 1982 to 2022, the following rainfall was recorded (Tab 17) :

*Table 17: Observed rainfall from March to May from 1982 to 2022 in the **West region** and forecasts from March to May 2025.*

Period	Rainfall from 1982 to 2022 (mm)	No. of rainy days from 1982 to 2022 (days)	**Forecast no. of rainy days from March to May 2025 (days)**	**Rainfall forecasts from March to May 2025 (mm)**
Mars	103.5	9	**Around the mean**	**Around to above the mean**
Avril	171.5	14	**Around the mean**	**Above the mean**
Mai	206.4	15	**Around the mean**	**Around to below the mean**
Total	481.5	38	**Around the mean**	**Around the mean**

Analyses from international weather forecast centres, research carried out by NOCC from March to May 1982 to 2022 for the West region, the gradual installation of the monsoon from the South-West to the North-West, the gradual withdrawal of the Harmattan to the Adamawa region and the migration of the Inter-tropical Front (ITF) to the north of the Adamawa region, for the period from March to May 2025, indicate a high probability of recording:

- ***Rainfall amounts above the historical regional mean (481mm) recorded during this period from 1982 to 2022 in Bafang ;***
- ***Rainfall amounts around the historical regional mean (481mm) recorded from March to May 1982 to 2022 in Bazou, Dschang, Makam, Nkoumagba, Bamendjing, Foumbot, Bafoussam, Bangangte and Mbouda ;***
- ***The total number of rainy days around the historical regional mean (38 rainy days) recorded over the same period from 1982 to 2022 in the various localities of the region.***

2. FOR THE NORTH WEST REGION

Between March and May from 1982 to 2022, the following rainfall was recorded (Tab 18):

*Tab. 18 : Observed rain from March to May from 1982 to 2022 in the **North West region** and forecasts from March to May 2025.*

Period	Rainfall from 1982 to 2022 (mm)	No. of rainy days from 1982 to 2022 (days)	**Forecast no. of rainy days from March to May 2025 (days)**	**Rainfall forecasts from March to May 2025 (mm)**
Mars	87.2	12	**Around the mean**	**Around the mean**
Avril	165.9	19	**Around the mean**	**Around to above the mean**
Mai	228.0	20	**Around the mean**	**Around to below the mean**
Total	481.2	51	**Around the mean**	**Around the mean**

Analyses from international weather forecast centres, research carried out by NOCC from March to May 1982 to 2022 for the North West region, the gradual installation of the monsoon from the South-West to the North-West, the gradual withdrawal of the Harmattan to the Adamawa region and the migration of the Inter-tropical Front (ITF) to the north of the Adamawa region, for the period from March to May 2025, indicate a high probability of recording:

- ***Rainfall amounts around the historical regional mean (481.2mm) recorded during the same period from 1982 to 2022 in Ako, Kumbo, Nkambe, Bambalang, Fundong, Bali, Santa, Munkep, Wum, Benakuma, Esu, Bamenda, Ndop and Pinyin;***
- ***The cumulative number of rainy days above the historical regional mean (51 days) recorded during the same period from 1982 to 2022 in the various localities of the region.***

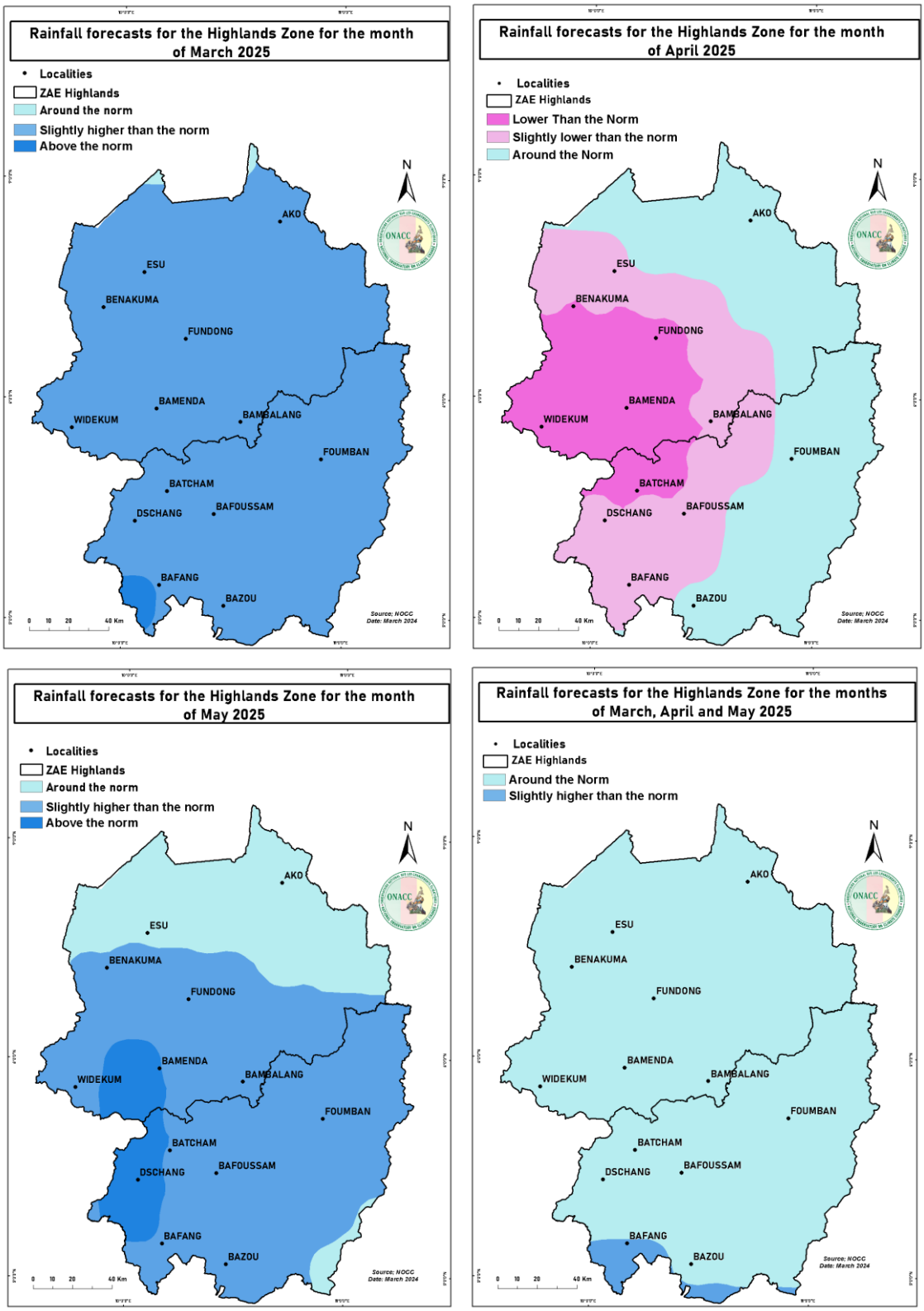


*Figure 16: Rainfall forecast map for the months of March, April and May 2025 in the **Western Highlands zone**.*

C. Fog

A thick fog was observed from the second dekad of January 2025, covering the localities along the hillsides on the borders of Bamenda, Fundong, Santa, Kumbo and Bali in the

North-West region; and Bafoussam, Dschang, Bafang, Bamendjing, Foumban, Mbouda, Foumbot, Bafang, Bangangte, Tonga and Bazou in the **West region**, in the early morning and sometimes in the afternoon. This situation could last until the end of May 2025.

V.4.2. Risks, potential impacts and proposed solutions by sector of activity in the Western Highlands zone

Impacts on the agricultural sector	Proposed solutions for the agricultural sector
• risk of increased erosion of cultivated soils due to heavy rains; • risk of an increase in weeds and disease outbreaks due to rainfall on crops such as tomatoes, potatoes and beans; • risk of reduced effectiveness of phytosanitary treatments due to the leaching of products by heavy rains; • risk of crop waterlogging (potatoes, beans, plantain, groundnuts, etc.); • - risk of increased lodging due to strong winds	• adapt crop protection treatments to weather forecasts; • update agricultural calendars and make them available to farmers on time; • - adapt crop protection treatments to weather forecasts; • Increase vigilance against crop diseases and pests (locusts and other harmful insects); • -raise farmers' awareness of the importance of agroforestry and the installation of windbreaks: • NB: In the western highlands (west and north-west), this period is suitable for cultivating lowlands (taro, maize, etc.) and market gardening (potatoes, carrots, watermelons, cabbage, tomatoes, parsley, lettuce, etc.).
Impacts on the livestock sector	**Proposed solutions for the livestock sector**
• a high risk of epizootic diseases caused by germs that prefer good humid conditions; • a risk of deterioration in straw quality; • high risk of weed regrowth in pastures in the North-West and West regions; • risk of animals' loss and drowning due to lightning during thunderstorms; • increased risk of tick attacks.	• prevent epizootic diseases caused by germs that prefer humid conditions; • promote animal vaccination campaigns; • take care of animal enclosures; • provide storage areas for livestock food (straw, bran, hay, etc); • fit out animal pens.
Impacts on the health sector	**Proposed solutions for the health sector**
• risk of increased joint pain for people suffering from arthritis and osteoarthritis; • risk of physical accidents or loss of life as a result of mass movements on steep slopes; • risk of an increase in cases of water-borne diarrhoeal diseases (amoebic dysentery, etc.); • risk of an upsurge in cases of respiratory diseases (bronchitis, flu, etc.) as a result of the cold and high humidity; • risk of increased cases of malaria in lowland areas.	• intensify public awareness of malaria prophylaxis measures; • raise public awareness on hygiene rules; • broadcast advertising spots on the need to drink hot beverages regularly; • encourage people living in lowlands to use impregnated mosquito nets; • raise public awareness on the need for latrines; • raise public awareness on how to live to better adapt to climate change
Impacts on the water and energy sector	**Proposed solutions for the water and energy sector**
• high risk of silting up of water retention dams in the localities of Benakuma, Fundong; Bamenda, Bambalang; Widekum in the North-West and Batcham and Dschang in the West regions; • risk of destruction of electricity transmission infrastructure/equipment (poles, cables,	• produce and disseminate real-time climate information to better calibrate hydroelectric facilities and manage water resources; • promote the installation of hybrid electrification systems in households, offices, shopping centres, etc. • maintain electricity transmission and distribution equipment;

transformers, etc.) by heavy rain accompanied by violent winds; • risk of destruction of equipment in water treatment plants; • risk of contamination of drinking water by polluted floodwater and run-offs.	• raise awareness of water treatment before use (bleaching, boiling, filtering, decanting, etc.); • protect water catchment areas against any form of pollution from run-off water; • continuously gauge and clean reservoirs.
Impacts on the tourism and leisure sector	**Proposed solutions for the tourism and leisure sector**
• risk of flooding of swimming pools at ecotourism sites ; • risk of increased accidents due to falling trees in the forest reserve, parks and other tourist sites; • risk of tourists drowning due to floods; • high risk of traffic accidents on tracks leading to tourist sites.	• accompany tourists throughout their visit to potentially high-risk sites; • establish security cordons around dangerous areas; • make tourists aware of the risks of drowning and other accidents; • provide tourists with safety equipment.
Impacts on the environment and biodiversity sector	**Proposed solutions for the environment and biodiversity sector**
• high risk of loss of biodiversity (flora and fauna) as a result of mass movements; • high risk of falling trees as a result of strong winds; • risk of soil erosion as a result of heavy rainfall; • risk of reduced soil fertility due to leaching; • high risk of changes in the physical landscape as a result of mass movements and erosion (relief, watercourse profiles, etc.); • high risk of pollution from the spread of waste in run-off water.	• promoting soil restoration through agroforestry to limit soil erosion and leaching; • raise awareness and train local people on natural disaster risk management techniques; • promote terrace and contour farming techniques; • strengthen the waste collection system; • raise awareness on sanitation; • promote the protection of areas at risk
Impacts on the public works sector	**Proposed solutions for the public works sector**
• high risk of destruction/degradation of various infrastructures (bridges, roads, culverts, etc.) due to heavy rainfall; • high risk of disruption to the execution of infrastructural works, with a negative impact on delivery times; • risk of increased erosion and obstruction of clogging of runoff drainage infrastructures;	• take climate change into account when planning public works activities; • produce reference climatological information at the local level for infrastructure and public works projects; • disseminate seasonal climate forecast bulletins to public works companies and consultancies and central and decentralised public works services; • anticipate rain barriers during road works;
Impacts on the urban sector	**Proposed solutions for the urban sector**
• risk of destruction of public buildings and dwellings in certain localities in the far south as a result of the violent winds that could accompany the expected rainfall; • increased risk of floods due to the clogging of drains with various types of waste in the major towns; • increased risk of power shortages due to the destruction of electricity transmission and regulation equipment in some areas of southern Cameroon.	• strengthen building structures and roofs; • continuously clean drains in major conurbations; • promote the installation of hybrid lighting systems.

V.5. MONOMODAL RAINFOREST ZONE

V.5.1. Climate forecasts

Based on analyses of forecasts from major international centres, analysis of climate data carried out by NOCC and the use of publications on the spatial and temporal dynamics of climate in Cameroon, we expect:

A. Temperatures

1. FOR THE LITTORAL REGION

Between March and May from 1982 to 2022, the following temperatures were observed (Tab 19):

*Table 19: Observed temperatures for March, April and May from 1982 to 2022 in the **Littoral region** and forecasts from March to May 2025.*

Period	Avg Max T° from 1982 to 2022	Avg Min T° from 1982 to 2022	Avg T° from 1982 to 2022	**Forecast trends in average temperatures from March to May 2025**
March	30.7	24.1	27.40	**Around the mean**
April	30.1	24.1	27.10	**Around to above the mean**
May	29.8	23.9	26.85	**Around the mean**
Avg	30.20	24.03	27.12	**Around to above the mean**

Based on the historical averages of temperatures recorded in the Littoral region for March, April and May from 1982 to 2022, notably 30,20°C for the average maximum temperature; 27,12°C for the average temperature and 24,03°C for the average minimum temperature, for March, April and May 2025 there is a high probability of recording:

- *Average temperatures above the historical regional mean (i.e. 27.12°C) recorded during the same period from 1982 to 2022 in Edea, Mouanko, Baptek and Yawanda;*
- *Average temperatures around the historical regional mean (i.e. 27.12°C) recorded over the same period from 1982 to 2022 in Yabassi, Mbanga, Manjo, Loum, Penja, Douala, Dizangue, Ndokama, Baptek, Ndokiti, Nkongsamba, Melong and Ndogtima Crique;*
- *An increase in the number of days with maximum temperatures above 33°C in the various localities of the region.*

2. FOR THE SOUTH WEST REGION

Between March and May from 1982 to 2022, the following temperatures were observed (Tab 20):

*Table 20: Observed temperatures for March, April and May from 1982 to 2022 in the **South West region** and forecasts from March to May 2025.*

Period	Avg Max T° from 1982 to 2022	Avg. Min T° from 1982 to 2022	Avg T° from 1982 to 2022	**Forecast trends in average temperatures from March to May 2025**
March	29.54	23.89	26.72	**Above the mean**
April	28.62	23.96	26.29	**Above the mean**
May	28.03	23.77	25.90	**Above the mean**
Avg	28.73 23.87	23.89 23.87	26.30	**Above the mean**

Based on the historical averages of temperatures recorded in the South West region for March, April and May from 1982 to 2022, notably 28,73°C for the average maximum temperature; 26,30°C for the average temperature and 23,89°C for the average minimum temperature, for March, April and May 2025 there is a high probability of recording:

- *Average temperatures around the historical regional mean (i.e. 26.30°C) recorded from March to May 1982 to 2022 in Ekang, Ekok Mamfe, Bamusso, Kumba, Mutenguene, Buea, Idenau, Limbe and Tiko;*
- *An increase in the number of days with daily maximum temperatures above 32°C in various localities of the region.*

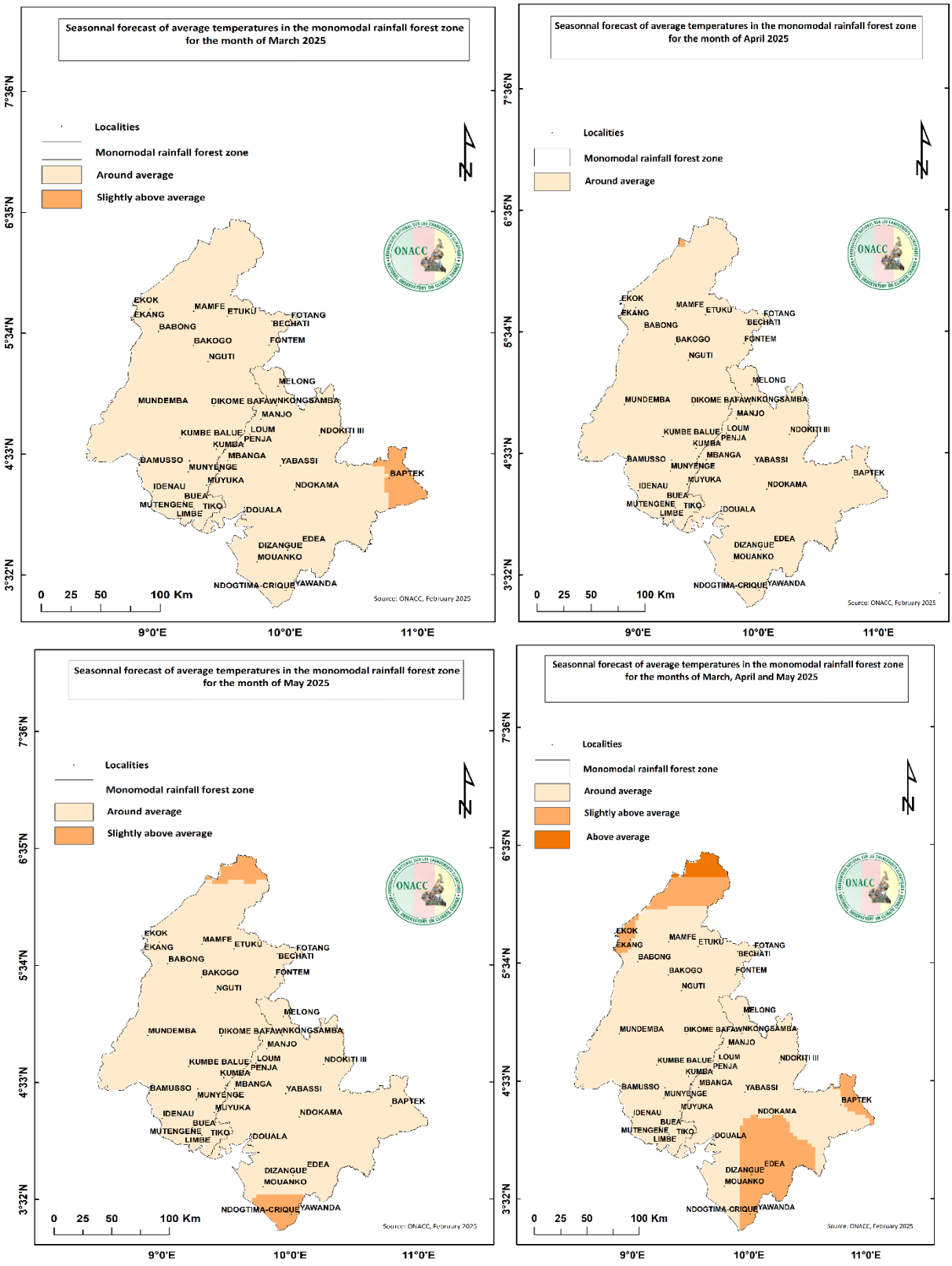


Figure 17: Forecast map of average temperatures for March, April and May 2025 in the Monomodal rainforest zone.

B. Rainfall

1. FOR THE LITTORAL REGION

Between March and May from 1982 to 2022, the following temperatures were observed (Tab.21).

*Table 21: Observed rainfall from March to May from 1982 to 2022 in the **Littoral region** and forecasts from March to May 2025.*

Period	Rainfall from 1982 to 2022 (mm)	No. of rainy days from 1982 to 2022 (days)	Forecast no. of rainy days from March to May 2025 (days)	Rainfall forecasts from March to May 2025 (mm)
March	163.4	16	**Around the mean**	**Around or above the mean**
April	217.2	19	**Around the mean**	**Around or above the mean**
May	254.6	21	**Around the mean**	**Around the mean**
Total	635.2	56	**Around the mean**	**Around or above the mean**

Analyses from international weather forecast centres, research carried out by NOCC from March to May 1982 to 2022 for the Littoral region, the gradual installation of the monsoon from the South-West to the North-West, the gradual withdrawal of the Harmattan to the Adamawa region and the migration of the Inter-tropical Front (ITF) to the north of the Adamawa region, for the period from March to May 2025, indicate a high probability of recording:

- ***Rainfall amounts above the historical regional mean (635mm) recorded from March to May 1982 to 2022 in Yabassi, Nkongsamba and Edea;***
- ***Rainfall amounts around the historical regional mean (635mm) recorded from March to May 1982 to 2022 in Melong, Manjo, Loum, Penja, Mbanga, Ndokama, Douala, Mouanko and Dizangue;***
- ***A cumulative number of rainy days around the historical regional mean (56 days) recorded during the same period from 1982 to 2022 in all the localities of the region.***

2. FOR THE SOUTH WEST REGION

Between March and May from 1982 to 2022, the following temperatures were observed (Tab 22).

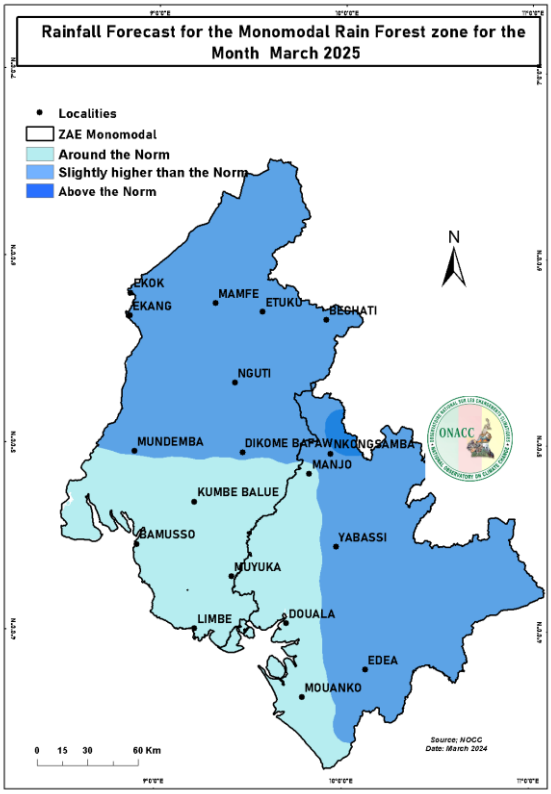
*Table 22: Observed rainfall from March to May from 1982 to 2022 in the **South West region** and forecasts from March to May 2025.*

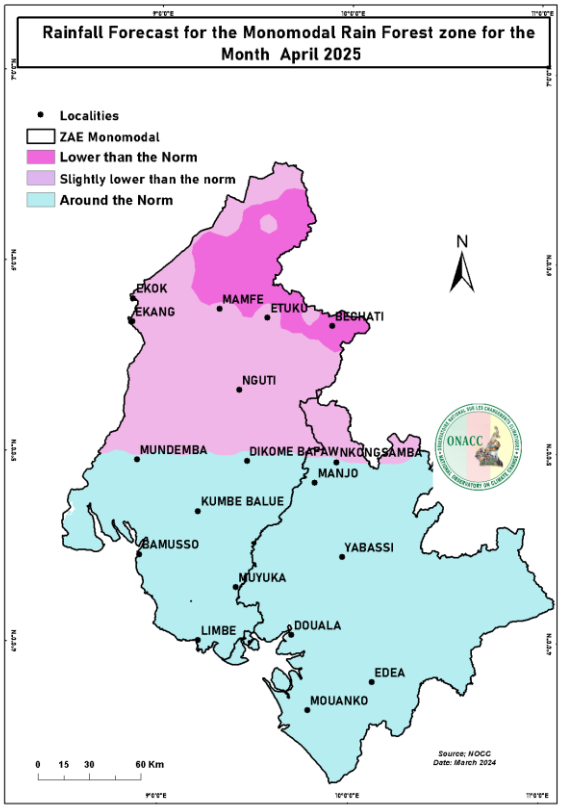
Period	Rainfall from 1982 to 2022 (mm)	No. of rainy days from 1982 to 2022 (days)	Forecast no. of rainy days from March to May 2025 (days)	Rainfall forecasts from March to May 2025 (mm)
March	151.6	11.4	**Around the mean**	**Around or above the mean**
April	205.4	16.3	**Around the mean**	**Around the mean**
May	254.9	18.1	**Around the mean**	**Around or above the mean**
Total	611.9	45.8	**Around the mean**	**Around the mean**

Analyses from international weather forecast centres, research carried out by NOCC from March to May 1982 to 2022 for the South West region, the gradual installation of the monsoon from the South-West to the North-West, the gradual withdrawal of

the Harmattan to the Adamawa region and the migration of the Inter-tropical Front (ITF) to the north of the Adamawa region, for the period from March to May 2025, indicate a high probability of recording:

- ***Rainfall amounts around the historical regional mean (611.9mm) recorded from March to May from 1982 to 2022 in Bechati, Ekutu, Kumba Balue, Munyenge, Mundemba, Bamusso, Idenau, Nguti, Ekok, Mamfe, Bakogo, Dikome Balue, Fontem, Buea, Limbe, Tiko, Muyuka, Kumba and Mutenguene ;***
- ***A cumulative number of rainy days around the historical regional mean (46 days) recorded during the same period from 1982 to 2022 in all the localities of the region.***





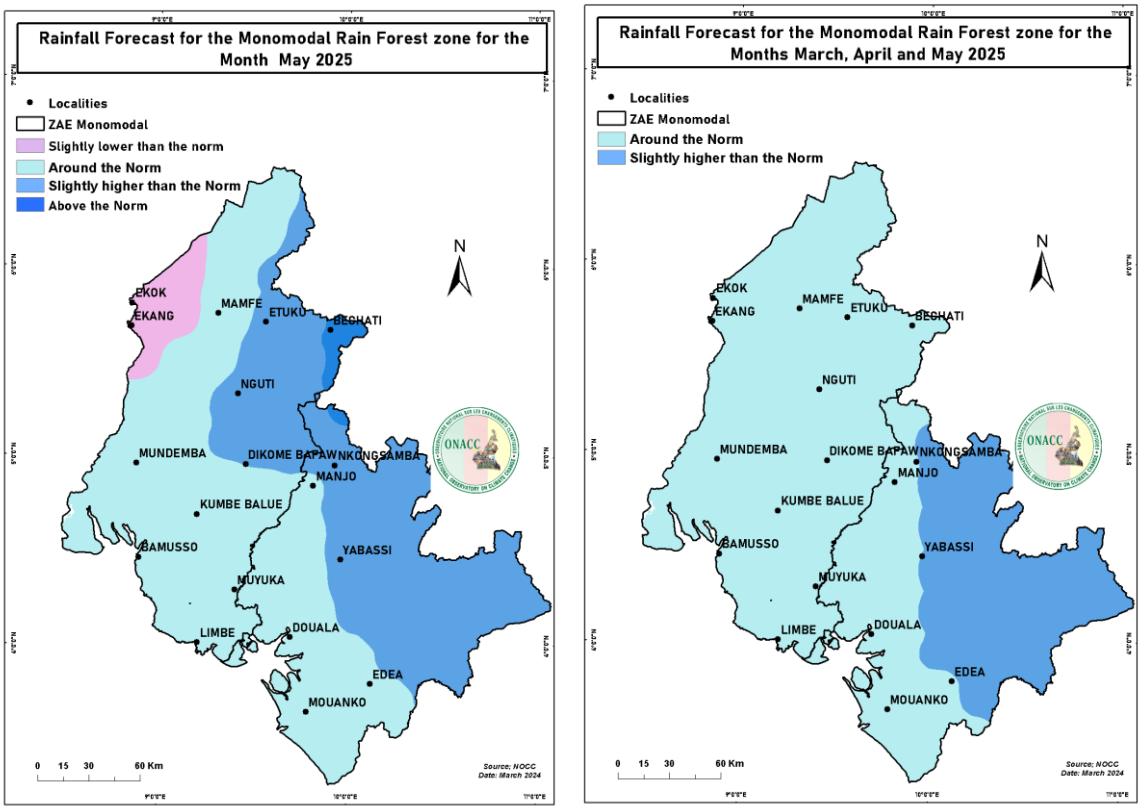


*Figure 18: Rainfall forecast map from March to May 2025 in the **monomodal rainforest zone**.*

V.5.2. Risks, potential impacts and proposed solutions by sector of activity in the Monomodal rainforest zone

Impacts on the agricultural sector	Proposed solutions for the agricultural sector
• risk of increased erosion of cultivated soils due to heavy rains in certain localities in the coastal and southwest regions; • risk of an increase in weeds and outbreaks of disease due to heavy rains; • risk of crop waterlogging • risk of reduced effectiveness of phytosanitary treatments due to leaching of products by heavy rain; • risk of reduced soil fertility due to leaching and erosion.	• update agricultural calendars and make them available to farmers on time; • adapt crop protection treatments to weather forecasts; • increase vigilance against crop diseases and pests (locusts and other harmful insects).
Impacts on the livestock sector	**Proposed solutions for the livestock sector**
• high risk of epizootic diseases caused by germs that prefer good wet conditions in the Littoral and South-West regions; • risk of an increase in weeds and disease outbreaks due to heavy rains; • risk of increased animal purchase costs; • risk of parasite invasion;	• prevent epizootic diseases caused by germs that prefer humid conditions; • promote animal vaccination campaigns; • fit out animal enclosures; • provide warming facilities for animals.

• risk of loss of young animals due to sudden cooling caused by temperature variations.	
Impacts on the health sector	**Proposed solutions for the health sector**
• risk of an increase in cases of water-borne diarrhoeal diseases, notably amoebic dysentery, cholera, etc., especially in the lowland areas of the Littoral region; • risk of accidents or loss of life as a result of mass movements on the steep slopes of the Moungo Division; • risk of loss of human life due to floods in marshy areas inhabited or used by local people; • risk of an increase in malaria cases due to the abundance of larval breeding sites.	• raise public awareness on hygiene rules; • - continue and raise public awareness on malaria prophylaxis measures encourage people living in the lowlands to use impregnated mosquito nets; • - raise public awareness on latrine construction; • - raise awareness among local people on how to live in order to better adapt.
Impacts on the water and energy sector	**Proposed solutions for the water and energy sector**
• risk of destruction of equipment in water treatment plants by ambacles; • risk of contamination of drinking water by polluted run-off; • risk of increased turbidity at drinking water catchment points due to suspended particles drained by run-off water; • - risk of destruction of electricity transmission and regulation infrastructure/equipment (poles, cables, transformers, etc.) by heavy rain accompanied by violent winds.	• develop and increase the number of water supply points; • take climate forecasts into account when managing water resources in dams; • promote the installation of hybrid electrification systems in households, offices, shopping centres, etc. • maintain electricity transmission and distribution equipment; • raise awareness of water treatment before use (bleaching, boiling, filtering, decanting, etc.); • protect water catchment areas against any form of pollution from run-off water;
Impacts on the tourism and leisure sector	**Proposed solutions for the tourism and leisure sector**
• risk of falling trees in national parks and botanical gardens, • risk of stumbling accidents in Korup Park due to the formation of foam on shady rocks; • risk of floods on the beaches in Limbe.	• raise awareness of the national heritage and sustainable resource management; • accompany tourists during their visit to potentially high-risk sites; • set up safety cordons around dangerous areas.
Impacts on the environment and biodiversity sector	**Proposed solutions for the environment and biodiversity sector**
• risk of waterlogging caused by heavy rainfall, especially in the north-eastern part of the South-West region; • high risk of animals drowning, especially in the northern part of the South-West region and the eastern part of the Littoral region; • risk of migration of certain animal species due to floods;	• draw up and implement contingency plans; • carry out participatory mapping and demarcate flood risk zones in parks and protected areas; • raise public awareness on poaching; • promote soil restoration through agroforestry to limit soil erosion and leaching; • promote the use of organic fertilisers; • provide resettlement and support sites for flood and landslide victims;

• high risk of falling trees as a result of strong winds and landslides; • risk of reduced soil fertility due to leaching; • risk of modification of the physical landscape and loss of biodiversity (animal and/or plant) as a result of mass movements (landslides, mudflows, etc.); • - high risk of increased coastal erosion as a result of strong coastline dynamics; • risk of spread of invasive species and other parasites transported by run-off water and other erosion agents.	• restore marshland, riverbanks and other natural vegetation formations that encourage the infiltration of water into the soil from upstream to downstream; • improve the sewerage system and strengthen the waste collection system.
Impacts on the public works sector	**Proposed solutions for the public works sector**
• high risk of deterioration/destruction of various infrastructures (bridges, roads, culverts, etc.) due to heavy rainfall; • high risk of disruption to the execution of infrastructural works, with a negative impact on delivery times; • risk of increased erosion and obstruction of drainage channels;	• take account of climate change in the planning of public works activities; • produce reference climatological information at the local level, for infrastructure and public works projects; • disseminate seasonal climate forecast bulletins to public works companies and consultancies and to central and decentralised public works departments; • plan for rain barriers during road works.
Impacts on urban sector	**Proposed solutions for the urban sector**
• risk of destruction of public buildings and dwellings in certain localities in the far south, due to the violent winds that could accompany the expected rainfall; • increased risk of flooding due to the clogging of drains with various types of waste in the major towns; • increased risk of electricity shortages due to the destruction of power transmission and regulation equipment in some areas of the far southern part of the country.	• reinforce building structures and roofs; • continuously clean drains in major conurbations; • promote the installation of hybrid lighting systems.