Chapter 4. China

After a brief overview of the agro-climatic and agronomic conditions in China over the reporting period (section 4.1), Chapter 4 presents an updated estimate of major cereals and soybean production at provincial and national level as well as summer crops production and total annual outputs (4.2) and describes the situation by region, focusing on the seven most productive agro-ecological regions of the east and south: Northeast China, Inner Mongolia, Huanghuaihai, Loess region, Lower Yangtze, Southwest China, and Southern China (4.3). Additional information on the agro-climatic indicators for agriculturally important Chinese provinces are listed in table A.11 in Annex A.

4.1 Overview

This report covers the main growing period of winter wheat and rapeseed. The sowing of the first summer crops, such as spring maize and early rice started in March. Half of cropland in China is irrigated and agro-meteorological conditions play important role for the rest crops. Rainfall is not the major influential factor on irrigated cropland.

Generally speaking, agroclimatic conditions over the major winter crops producing regions were normal. For China, RADPAR and TEMP increased by 4% and 1.1℃, respectively, as compared to the 15-year average, whereas RAIN decreased by 12%. Consequently, BIOMSS was at average compared to the 15-year average. During the monitoring period, rainfall in China's main winter crop producing area (Huanghuaihai) was 21% above average and the temperature was 1.4℃ higher. The favorable hydrothermal conditions contributed to the good crop growth state, as confirmed by the VCIx value at 0.86. National CALF decreased by 4% and VCIx was quite fair, with a value of 0.79. National Crop Production Index (CPI) was 1.11, indicating slightly better-than-normal crop production conditions. All in all, the conditions for winter crop production in China were fair, apart from Southern- and South-West China, which was affected by a rainfall deficit.

Spatially, most of the arable land (marked in dark green and blue, taking up 92.2% of the arable land) experienced average precipitation throughout the monitoring period, with the absolute value of departure was less than 30 mm/dekad. Arable land in the remaining 7.8% of the regions (marked by light green) went through some rainfall fluctuations, mainly distributed in Guangdong, Fujian, Jiangxi, and some parts of Guangxi, Hunan, and Jiangsu. Negative rainfall anomalies (more than 60 mm/dekad below average) occurred in early March, and positive rainfall anomalies (more than 120 mm/dekad above average) occurred in late March. With respect to temperature, the clustered regions all had anomalies with similar changing patterns over time across the whole country. The dark green marked areas, including most parts of Northeast China, Huanghuaihai, and some parts of Lower Yangtze and Southwest China, had the biggest positive temperature departure (more than 6.5℃ above average) in early March. The light green marked areas, including some parts of Inner Mongolia, Loess region and Southwest China, had the biggest negative temperature departure (more than 4.0℃ below average) in late April. The uncropped areas were mainly located in the Northwest and Northeast regions and some parts in Inner Mongolia, Gansu, Ningxia, Shaanxi, Shanxi, and Hebei. Cold temperatures during the winter months make them unsuitable for crop production.

According to the spatial VCIx patterns, favorable crop conditions (VCIx larger than 0.8) occurred widely across China; values between 0.5 and 0.8 were observed for some parts in Inner Mongolia, Gansu, Ningxia, Shaanxi, Shanxi, Hebei, Sichuan, Hubei, Jiangxi, and Guizhou. The potential biomass showed significant variability across regions. Positive anomalies (more than 20%, marked in blue) mainly occurred in eastern

Northeast China, southern Inner Mongolia, eastern Loess region, and western Huanghuaihai, while negative anomalies (-20% or more) were mainly observed in some parts of Inner Mongolia, Liaoning, Yunnan, Guangxi, Guizhou, Hunan, and Sichuan. With regard to VHIn, high values (above 35%) were widespread in China, indicating limited water deficit effects on most of the winter crops.

As for the main producing regions at the sub-national level, rainfall was above average in Inner Mongolia, Huanghuaihai and Loess region by 5%, 21%, and 35%, respectively, while rainfall in other regions was below average, ranging from -31% (Southern China) to -4% (Northeast China and Southwest China). TEMP was all above average, and the range of temperature departures varied from +0.8°C (Southwest China and Loess region) to +1.5°C (Northeast China). RADPAR was above average, except for Inner Mongolia (-1%), Loess region (-1%) and Northeast China (-1%). BIOMSS increased in almost all of the regions compared to average, with the anomalies ranging from +1% (Lower Yangtze) to +20% (Loess region), except for Southern China (-18%) and Southwest China (-2%). CALF in almost all of the regions was all below average to average, and only CALF in Lower Yangtze (+1%) and Huanghuaihai (+3%) was slightly above average. As for VCIx, the values were quite varying for all the regions, ranging between 0.74 (Loess region) and 0.90 (Lower Yangtze region).

Table 4.1 CropWatch agroclimatic and agronomic indicators for China, January - April 2023, departure from 5YA and 15YA

Region	Agroclimatic indicators				Agronomic indicators	
	Departure from 15YA				Departure from 5YA	Current period
	RAIN (%)	TEMP (°C)	RADPAR (%)	BIOMSS (%)	CALF (%)	Maximum VCI
Huanghuaihai	21	1.4	0	12	3	0.86
Inner Mongolia	5	1.1	-1	5	/	/
Loess region	35	0.8	-1	20	-10	0.74
Lower Yangtze	-11	1.2	9	1	1	0.90
Northeast China	-4	1.5	-1	8	/	/
Southern China	-31	1.1	9	-18	0	0.89
Southwest China	-4	0.8	3	-2	-3	0.84

Figure 4. 1 China crop calendar

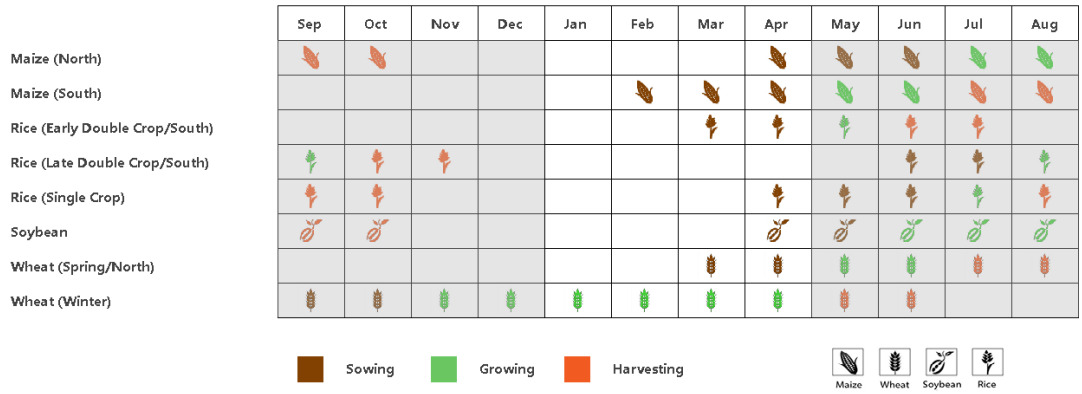


Figure 4.2 China spatial distribution of rainfall profiles, Jan to Apr 2023

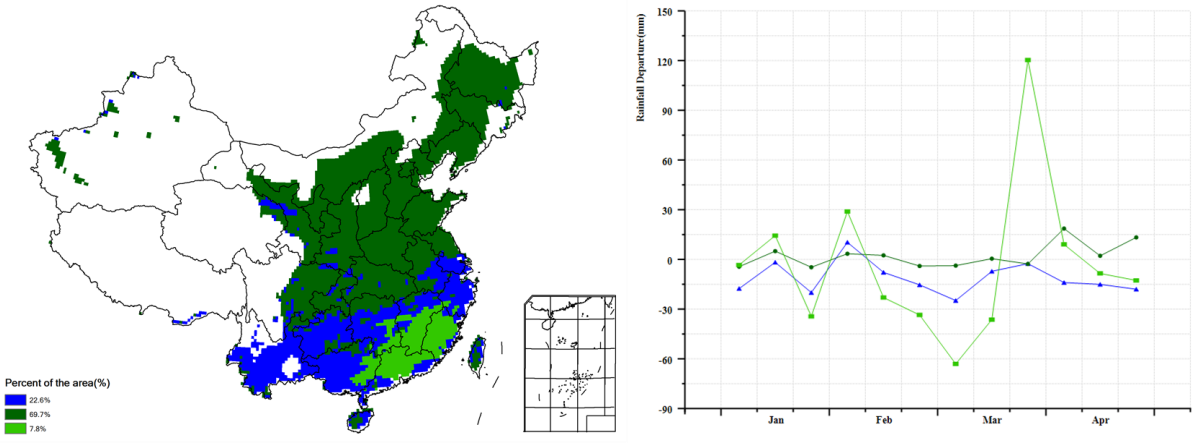


Figure 4.3 China spatial distribution of temperature profiles, Jan to Apr 2023

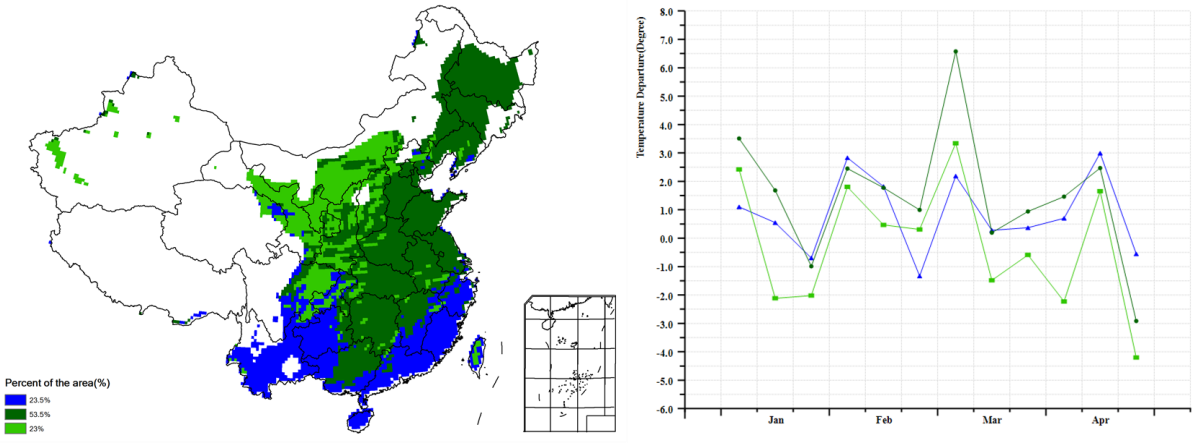
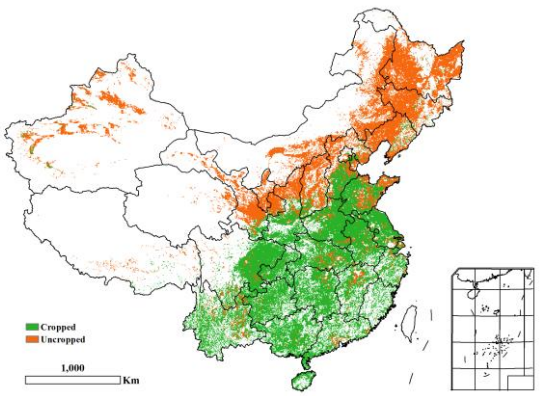


Figure 4.4 China cropped and uncropped arable land, by pixel, Jan to Apr 2023

Figure 4.5 China maximum Vegetation Condition Index (VCIx), by pixel, Jan to Apr 2023



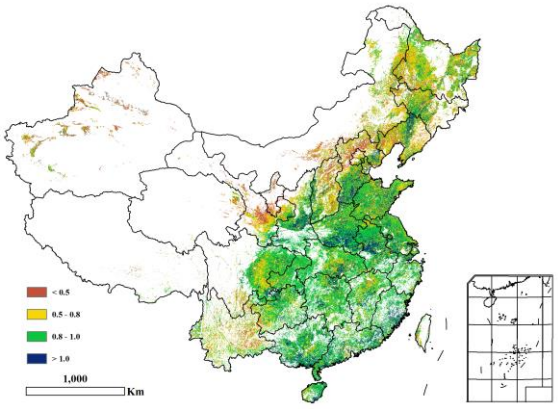
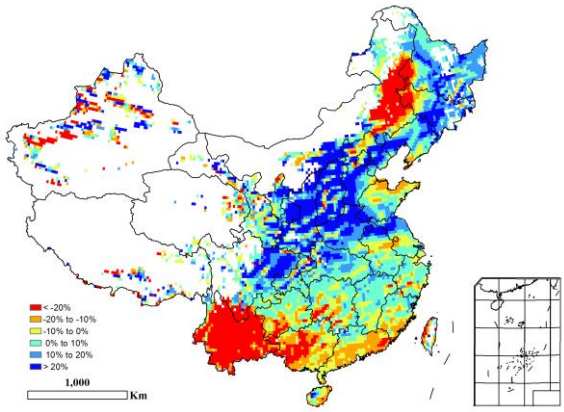
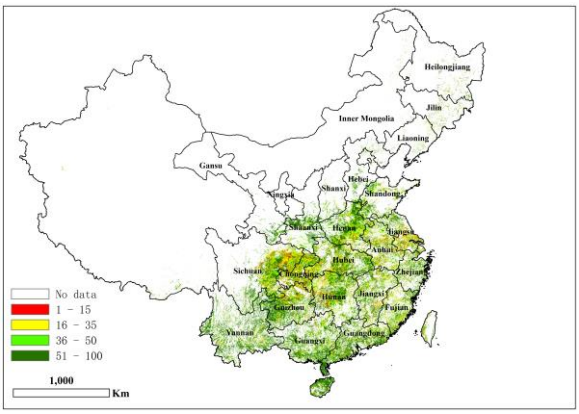


Figure 4.6 China biomass departure map from 15YA, by pixel, Jan to Apr 2023

Figure 4. 7 China minimum Vegetation Health Index (VHIn), by pixel, Jan to Apr 2023


<-20%
-20% to -10%
-10% to 0%
0% to 10%
10% to 20%
> 20%
1,000
Km


Heilongjiang
Jilin
Inner Mongolia
Liaoning
Gansu
Hebei
Shanxi
Qinghai
Shandong
Shaanxi
Henan
Jiangsu
Anhui
Hubei
Sichuan
Chongqing
Zhejiang
Hunan
Jiangxi
Guizhou
Fujian
Yunnan
Guangdong
Guangxi
No data
1 - 15
16 - 35
36 - 50
51 - 100
1,000
Km

4.2 China's crop production

(1) Winter grain production forecast

The main winter grain producing areas in China experienced abundant precipitation during the overwintering to spring green-up and flowering period. The accumulated rainfall and average temperature were higher than the 15YA for the same period. In March-April, temperatures were cooler than average, which delayed canopy growth. Starting in late April, the weather conditions returned to normal levels. The total winter grain production in China is expected to be 144.14 million tons in 2023, an increase of 1.91 million tons or 1.3% year-on-year (Table 4.2).

Table 4.2 China's winter crop production

City	Production (million tons)	Area variation (%)	Yield variation (%)	production Variation (%)	Summer grain production (million tons)
Hebei	12.51	2.4	-0.3	2.1	12.77
Shanxi	2.34	0.8	-3.9	-3.2	2.27
Jiangsu	13.99	0.5	-0.6	-0.1	13.97
Anhui	14.66	2.5	0.4	3.0	15.09
Shandong	27.15	2.8	-2.3	0.5	27.28
Henan	32.65	2.2	2.0	4.2	34.04
Hubei	6.19	-0.9	-3.8	-4.7	5.90
Sichuan	5.96	-2.7	-0.4	-3.1	5.77
Shaanxi	4.07	-2.2	2.4	0.2	4.07
Gansu	3.56	-2.5	-2.0	-4.4	3.41
Xinjiang	5.12	2.2	-0.3	1.9	5.21
Subtotal	128.19			1.2	129.77
National*	142.23	1.6	-0.2	1.3	144.14

*Note: Summer grains from Taiwan Province are not included in the total production of other provinces and the country.

Fall planting in the North China Plain in 2022 was normal, and the area planted with winter grains increased by 1.6%. For the 2021-22 season, the area had been reduced due to local flooding, which had prevented planting. In Henan, Shandong, Anhui, Hebei, the four major winter grain producing provinces, the planted area increased by 2.2%, 2.8%, 2.5% and 2.4%. Xinjiang's winter grain area increased by 2.2%. Shanxi's and Jiangsu's areas also increased slightly by 0.8% and 0.5%, respectively. This contributed to an increase in the national area of winter cereals and a return to the 2020-21 level.

There was a wide variation in winter grain yield among the regions. Henan benefited from good agro-meteorological conditions, and its winter grain yield increased by 2.0% year on year. Combined with the increase in area, Henan's winter grain production increased by 1.39 million tons to 34.04 million tons. Although the winter grain area in Shaanxi decreased by 2.2%, meteorological conditions were generally good and conducive for winter wheat growth and yield formation. The forecasted winter grain yield in Shaanxi increased by 2.4%, offsetting the impact of the area decrease. Most winter grain producing areas in northern China experienced strong cold air in late April. Rain and snow in central Shanxi, western Hubei, and eastern Gansu caused frost damage to winter wheat during the flowering and grainfilling periods, reducing winter grain yields by 3.2%, 4.7%, and 4.4%.

(2) Winter wheat production forecast

This report estimates the winter wheat yield in China for the 2022-23 season. It is based on remote sensing data from ESA Sentinel-1 and 2 and US Landsat 8 satellites, as well as a large survey. We applied machine learning and crop yield forecasting models in conjunction with the satellilte data, agro-meteorological information and crop survey data to generate the production forecasts. Winter wheat production in China

in 2023 is estimated at 130.56 million tons, an increase of 2.05 million tons or 1.6% (Table 4.3). The area planted with winter wheat reached 23,72 million hectares, recovering to the level of 2020-21. The area planted with winter wheat in 2023 increased by 422 thousand hectares or 1.8% compared with 2022; the average yield of winter wheat was 5505 kg/ha. It had slightly decreased by 0.2% year on year, and the small decrease was mainly due to frost damage in some regions.

The area planted with winter wheat had increased in most provinces, more than offsetting the slight decrease in yield. In the 2021/22 season, the area had been reduced to flooding. During the current season, planting resumed to average levels. Henan, Anhui, Hebei, Shandong and other major winter wheat producing provinces in North China increased the winter wheat planting area in 2022 by 2.2%, 2.5%, 1.9% and 2.5%. This resulted in an increase of the winter wheat production by 1.38 million tons, 0.41 million tons, 0.2 million tons and 0.09 million tons. Xinjiang, Shanxi, Gansu, Hubei and Jiangsu provinces and regions also increased their winter wheat area year on year to varying degrees, offsetting the impact of lower yields. Shaanxi and Sichuan winter wheat area decreased by 3.0% and 1.7% year-on-year, respectively, and production decreased by 0.02 million tons and 0.05 million tons.

However, in late May, continuous rainy weather occurred in the major winter wheat production areas of North China, affecting the harvest and drying of wheat in provinces such as Henan. This has led to the emergence of sprouted wheat and mold in some production areas, which may result in a decrease in both the quality and yield of wheat.

Table 4.3 China's winter wheat production

City	Area		Yield		Production		
	2023 (thousand ha)	Variation (%)	2023 (kg/ha)	Variation (%)	2023 (million tons)	Variation (%)	Increment/Decrement (million tons)
Hebei	2130	1.9	5822	-0.3	12.40	1.7	0.2
Shanxi	430	3.1	5217	-3.9	2.24	-1.0	-0.02
Jiangsu	2713	1.3	5037	-0.6	13.67	0.7	0.09
Anhui	3054	2.5	4777	0.3	14.59	2.9	0.41
Shandong	4196	2.5	6422	-2.3	26.95	0.1	0.04
Henan	5402	2.2	6273	2.0	33.88	4.2	1.38
Hubei	1123	2.6	3932	-3.7	4.42	-1.2	-0.05
Sichuan	484	-1.7	3982	-0.6	1.93	-2.3	-0.05
Shaanxi	773	-3.0	3989	2.5	3.08	-0.5	-0.02
Gansu	544	2.8	4105	-0.6	2.23	2.2	0.05
XInjiang	619	5.3	5492	-2.1	3.40	3.1	0.1
Subtotal	21468	2.0	5534	-0.2	118.79	1.8	2.13
National*	23715	1.8	5505	-0.2	130.56	1.6	2.05

*Note: Winter wheat in Taiwan Province is not included.

4.3 Regional analysis

Figures 4.8 through 4.14 present crop condition information for each of China's seven agricultural regions. The provided information is as follows: (a) Phenology of major crops; (b) Crop condition development graph

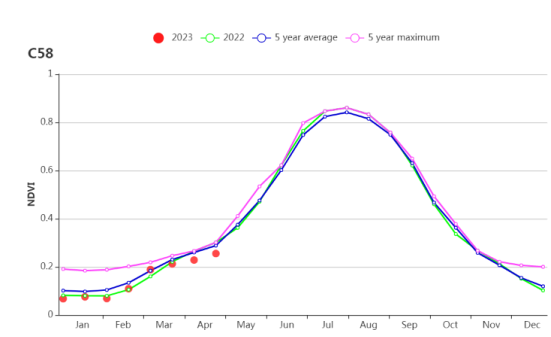
based on NDVI, comparing the current season from January to April 2023 to the previous season, to the five-year average (5YA), and to the five-year maximum; (c) Spatial NDVI patterns for January to April 2023 (compared to the (5YA)); (d) NDVI profiles associated with the spatial patterns under (c); (e) maximum VCI (over arable land mask); and (f) biomass for January to April 2023. Additional information about agro-climatic indicators and BIOMSS for China is provided in Annex A.

Northeast region

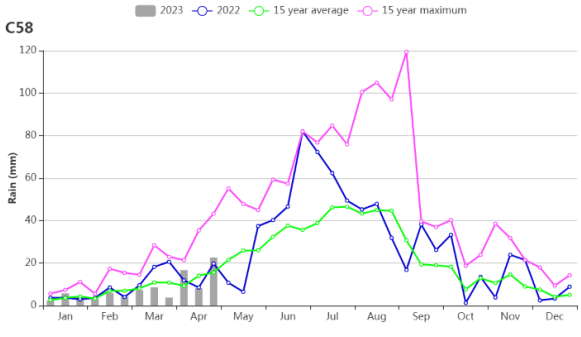
Due to the cold winter weather, no crops were grown in the northeast region of China during this monitoring season (January to April 2023). CropWatch Agroclimatic Indicators (CWAIs) show that the total precipitation decreased by 4%. It was below average in March and it returned to above average in April. The photosynthetically active radiation was below average (RADPAR - 1%), and the temperatures were above average (TEMP +1.5°C). Altogether, the potential biomass was 8% above the fifteen-year average level.

The increase of precipitation in April and the gradual recovery of temperature are beneficial for the spring sowing in the northeast region of China. However, the low precipitation in western part of Heilongjiang province and Jilin province lead to poor soil moisture, which may affect spring sowing and early crop growth to a certain extent. Warmer temperatures and abundant precipitation in May facilitate the germination and good establishment of the summer crops.

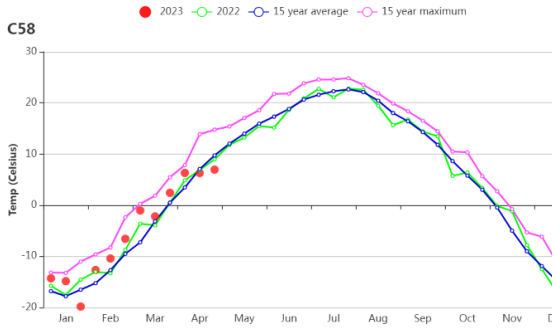
Figure 4. 8 Crop condition China Northeast region, January - April 2023



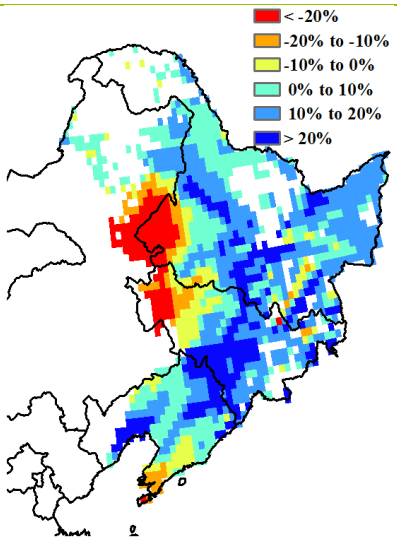
(a) Crop condition development graph based on NDVI



(b) Time series rainfall profile



(c) Time series temperature profile

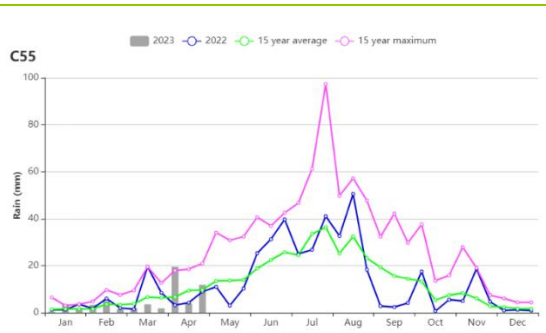


(d) Potential biomass departure from 15YA

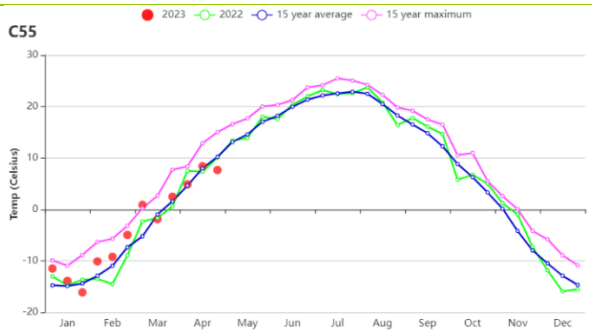
Inner Mongolia

During the first three months of this year, no crops were grown in Inner Mongolia due to the cold temperatures. Sowing activities gradually started in late April. Agro-climatic indicators of the reporting period show that both rainfall and temperature were above average (RAIN +5%, TEMP +1.1°C), while RADPAR was slightly below average (-1%). The resulting BIOMSS was above average (+5%). Higher precipitation and warmer temperatures were beneficial to the spring sowing in the region. Weather conditions in the following months are very critical.

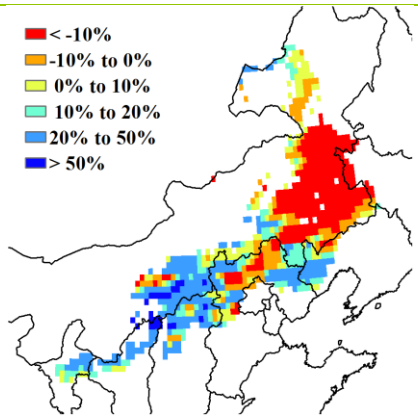
Figure 4. 9 Crop condition China Inner Mongolia, January - April 2023



(a) Time series rainfall profile



(b) Time series temperature profile



(c) Biomass departure

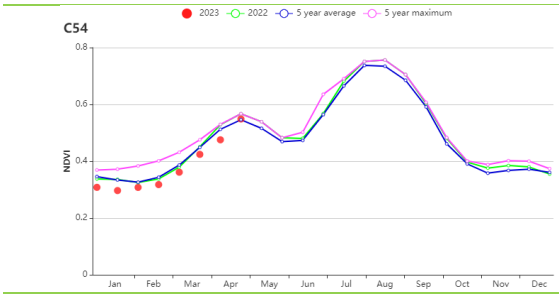
Huanghuaihai

The monitoring period (January to April 2023) covers the early growth to flowering stages of winter wheat in Huanghuaihai. Agro-climatic indicators showed that precipitation (+21%) and temperature (+1.4°C) in this area were above the 15YA, but radiation was unchanged. As a result of these indicators, an increase in crop biomass production potential was estimated (BIOMSS +12%). The CALF exceeded the 5YA by 3%, indicating an increased cropping area. Below-average BIOMSS was located in northern Shandong.

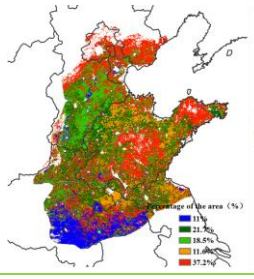
According to the NDVI development graph, crop growth was below average due to the late spring cold. Sufficient rainfall and above-average temperatures caused an increase in NDVI, even above the average level since April. As the NDVI departure clustering map shows, 11% of the cropland exceeded the average before early April, mainly located in central Henan and northeastern Anhui. Crops in the areas of Shandong, northeastern Henan, northern Jiangsu, and the Bohai Bay area (yellow, red, and dark green colors in the NDVI departure clustering map) presented below-average conditions until mid-April but recovered quickly thereafter.

The maximum VCI value was 0.86, and the Crop Production Index (CPI) is 1.10. Generally, the crop conditions in this important winter wheat production region were normal.

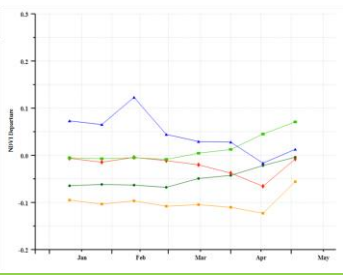
Figure 4. 10 Crop condition China Huanghuaihai, January - April 2023



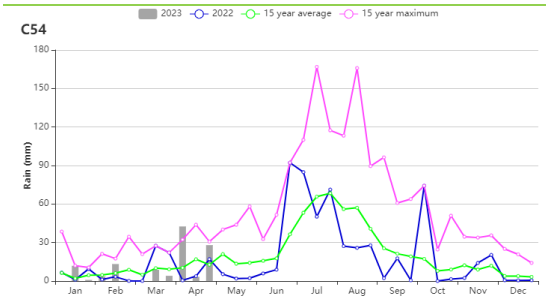
(a) Crop condition development graph based on NDVI



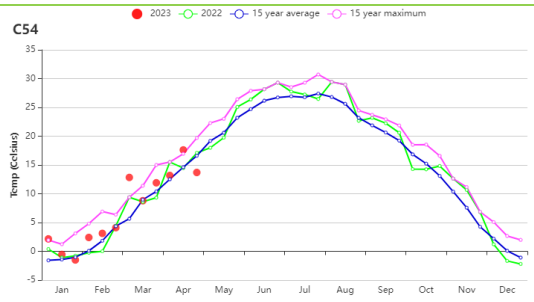
(b) Spatial NDVI patterns compared to 5YA



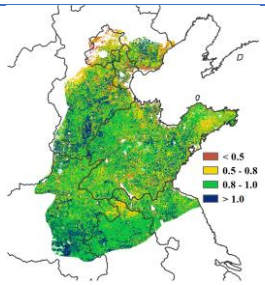
(c) NDVI profiles



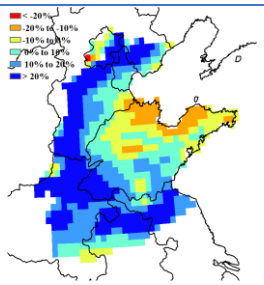
(d)Time series rainfall profile



(e)Time series temperature profile



(f) Maximum VCI



(g) Biomass departure

Loess region

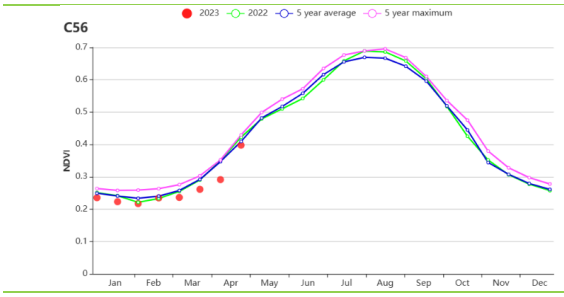
During this reporting period, winter wheat, spring wheat, and spring maize were the predominant crops grown in Loess region. Winter wheat sowing started from late September to mid-October and will be harvested in mid-June. Spring wheat and spring maize were sown from late March to April.

The CropWatch Agroclimatic Indicators (CWAIs) show that radiation in this area was slightly lower by 1% (RADPAR -1%), but precipitation was obviously higher by 35% (RAIN +35%), and temperature was higher by 0.8℃ (TEMP +0.8℃), which brought the potential biomass higher than the 15YA by 20%. Precipitation during most of the monitoring period was close to the average, but in early and late April, the maximum precipitation in 15 years (local snowstorm) exceeded, resulting in low temperature freezing damage in parts of Shanxi and Gansu. According to the regional NDVI development map, the overall crop condition in the Loess region was below the 5YA and recovered to average by April.

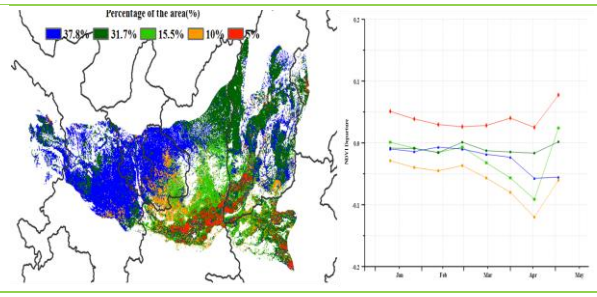
The NDVI departure cluster profiles indicate that about 63.3% of the areas were below average from mid-March to mid-April, and gradually recovered afterward in most areas. In addition, about 5% of the areas were above average, mainly in central Henan, southwestern Shanxi, and southeastern Shaanxi Province. The Maximum VCI map shows a relatively low value of VCIx (0.74), and in southern Ningxia, central Gansu, and parts of Shanxi Province, VCIx was even below 0.5. According to the CALF map, 36% of the farmland was cultivated, which was 10% below the 5YA.

In conclusion, the CPIx in the region was greater than 1, and the crop production situation was expected to be generally normal. The agricultural conditions in the Loess region were close to average.

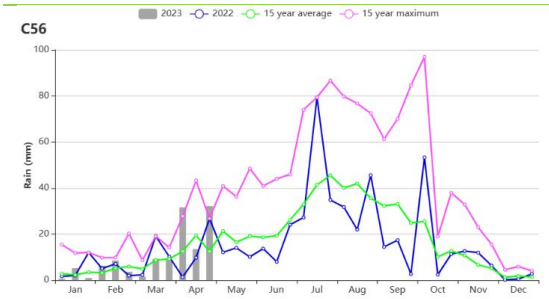
Figure 4.11 Crop condition China Loess region, January - April 2023



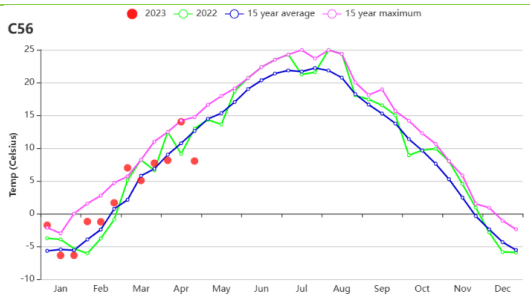
(a) Crop condition development graph based on NDVI



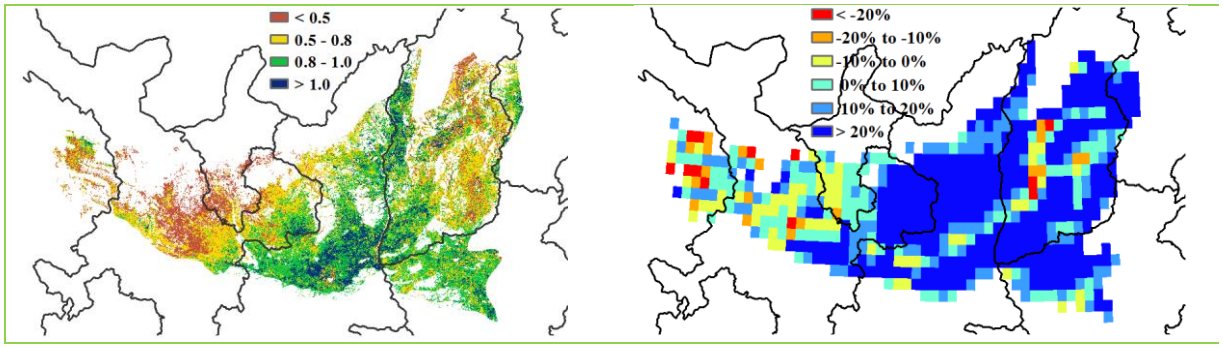
(b) Spatial NDVI patterns compared to 5YA(c) NDVI profiles



(d)Time series rainfall profile



(e)Time series temperature profile



(f) Maximum VCI (g) Biomass departure

Lower Yangtze region

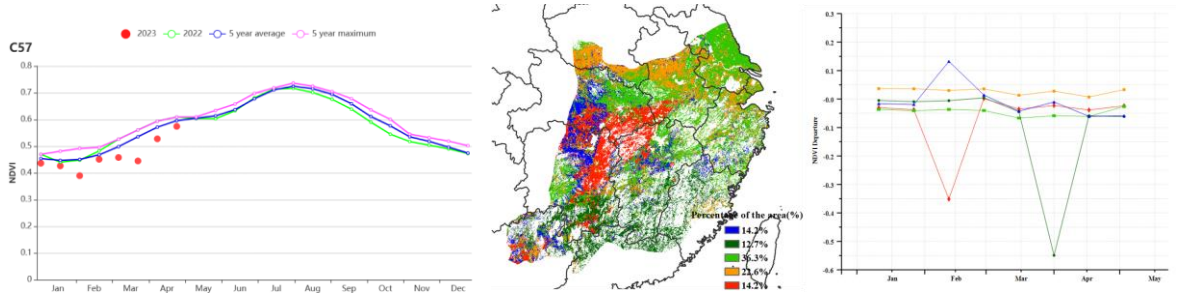
During this monitoring period, only winter crops like wheat and rapeseed were in the field, mostly in the north of the region, including parts of Hubei, Henan, Anhui and Jiangsu provinces. Limited winter crops were planted in Fujian, the southern Jiangxi and Hunan provinces.

According to the CropWatch agro-climatic indicators, the accumulated precipitation was 11% below the average. Temperature and photosynthetically active radiation were 1.0℃ and 9% higher than the 15-year averages, respectively. The agro-climatic condition with abundant sunlight resulted in an increase of biomass potential production by 1%. The rainfall profile indicates that the decadal precipitation was at or above average from late March.

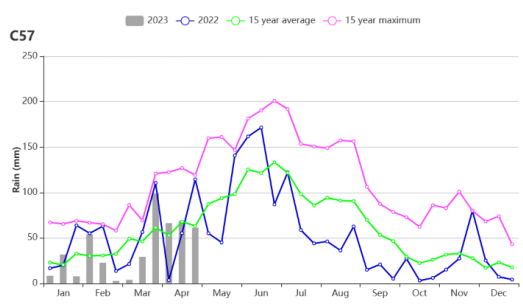
As shown in the NDVI development graph, crop conditions were slightly below the 5-year average. 22.6% of the region, mainly in the northern part, including Anhui, Henan and northern Zhejiang, had above-average crop growth. The crop conditions in other parts were slightly below average. The potential biomass departure indicates that the agro-climatic conditions were generally normal in most areas, with potential biomass departure values mostly between ±10%. The potential biomass in the northern part of this region was higher than 20%, and the NDVI values in the corresponding areas were higher than the 5-year average.. The average VCIx of this region was 0.90, and most of the area had VCIx values ranging from 0.8 to 1.

In general, the crop conditions in the Lower Yangtze region were close to average.

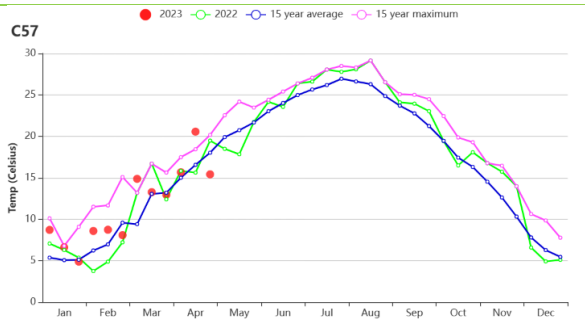
Figure 4.12 Crop condition China Lower Yangtze region, January - April 2023



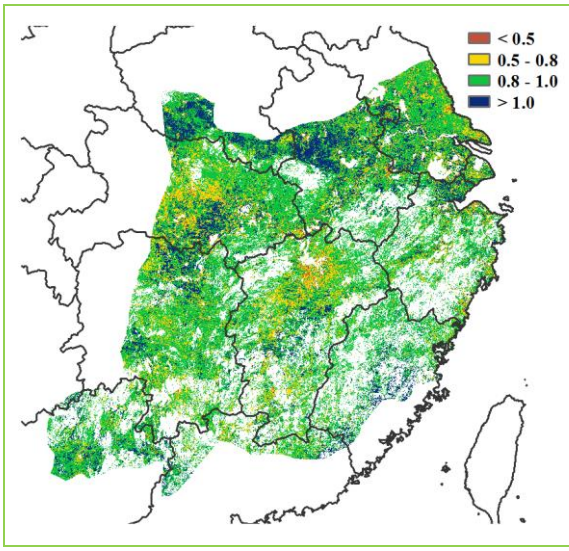
(a) Crop condition development graph based on NDVI (b) Spatial NDVI patterns compared to 5YA (c) NDVI profiles



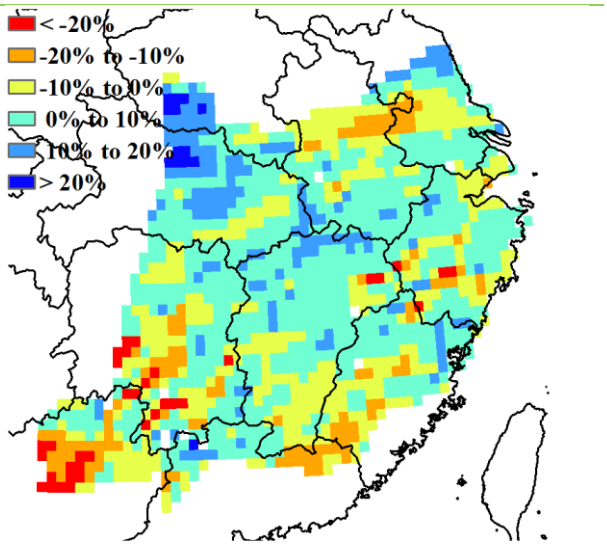
(d)Time series rainfall profile



(e)Time series temperature profile



(f) Maximum VCI



(g) Biomass departure

Southwest region

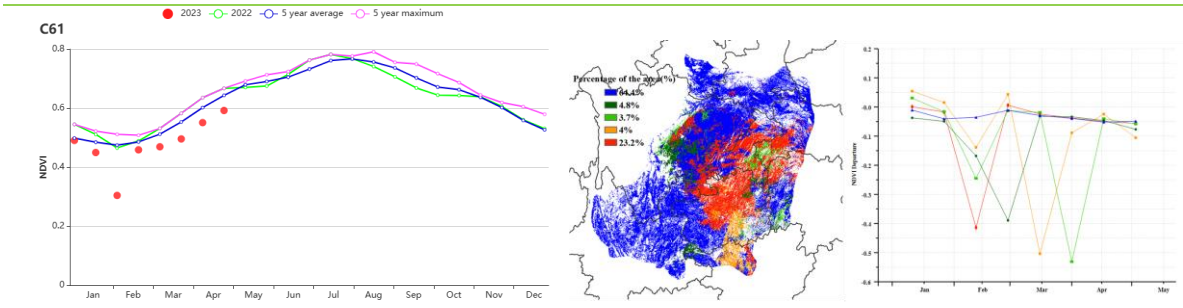
This reporting period covered the overwintering to ripening stage of winter wheat in Southwest China. Based on the NDVI profile, the overall crop conditions during this monitoring period were slightly below the 5-year average.

Agroclimatic indicators indicated a predominance of drier and warmer weather as compared to the 15YA. The RAIN was 304 mm, which was 4.0% below the 15-year average, and the TEMP was 0.8℃ higher than the 15-year average. Solar radiation was slightly higher than the 15YA (RADPAR, +3.3%).

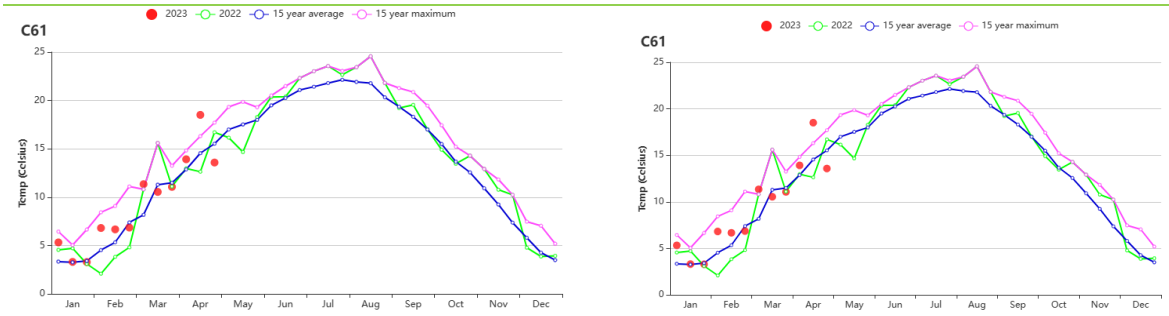
The vegetation condition index (VCI) showed that the optimal vegetation condition reached 0.84, lower than the same period last year (0.89), indicating that the crop condition did not reach the same level as the same period last yea. Based on the VCI map, the affected areas were mainly in the southern and eastern parts of Sichuan and the northern part of Yunnan, with significantly lower VCIx values in these regions.

Overall, the crop conditions in the Southwest region were slightly below the five-year average due to reduced precipitation. However, this region is not the core production area for winter wheat, so the impact on winter wheat production in China is relatively small.

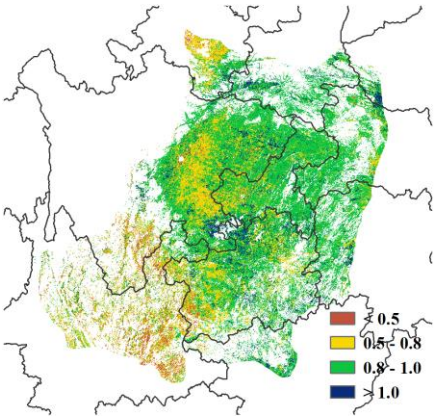
Figure 4.13 Crop condition China Southwest region, January - April 2023



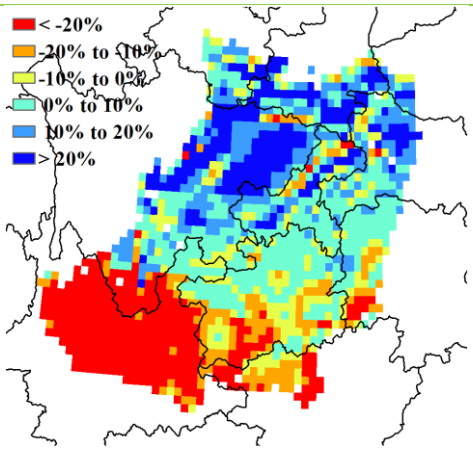
(a) Crop condition development graph based on NDVI (b) Spatial NDVI patterns compared to 5YA(c) NDVI profiles



(d)Time series rainfall profile (e)Time series temperature profile



(f) Maximum VCI



(g) Biomass departure

Southern China

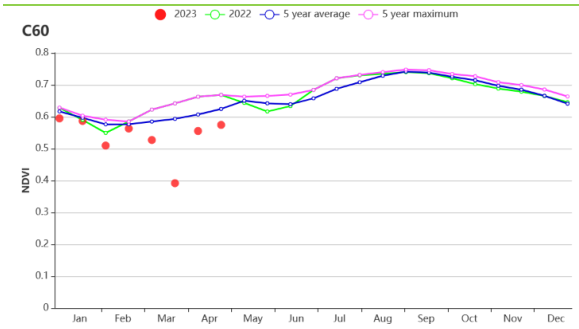
This reporting period covers the seedling and transplanting phases of early rice in Southern China. Based on the regional NDVI profile, crop conditions were below average.

According to the CropWatch agro-climatic indicators, Temperature (+1.1°C) and radiation (+9%) in this area were above average, but rainfall was below the 15-year average (RAIN, -31%), which resulted in below-average BIOMSS (-18%). The cropped arable land fraction remained at the same level as in the last five years.

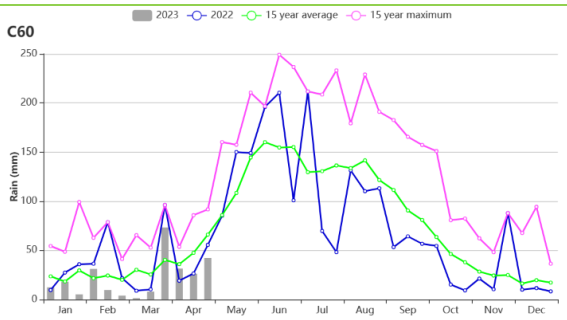
Based on the NDVI departure clustering map and profiles, it was found that most parts of southern China had NDVI values slightly below the average level during the monitoring period. Affected by insufficient precipitation, approximately 28.8% of the region had NDVI values lower than average throughout the monitoring period, and these areas were mainly located in Yunnan, Guangxi, and southwestern Guangdong. Crop conditions in most other areas was slightly lower than the average level. In central Guangxi, the deviation of NDVI started to widen from March, while the growth of crops in most parts of Guangdong returned to the average level by the end of April. The same crop growth pattern was also reflected by the potential biomass departure map, with Yunnan and Guangxi showing a greater decrease in BIOMSS, while Guangdong province showing a relatively smaller decrease.. The average VCIx of this region was 0.89, and most of the area had VCIx values ranging from 0.8 to 1.

In general, the crop conditions were below average.

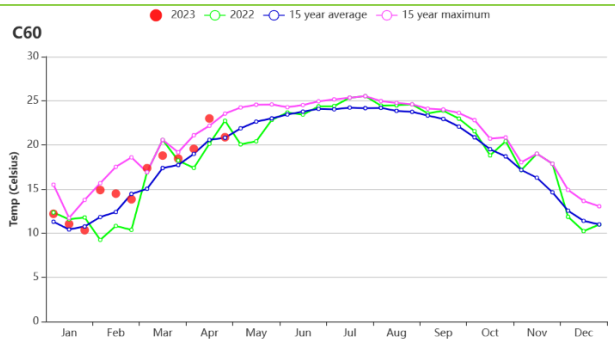
Figure 4.14 Crop condition Southern China, January - April 2023



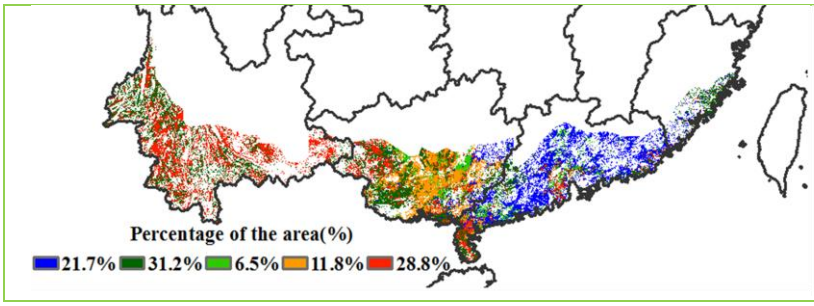
(a) Crop condition development graph based on NDVI



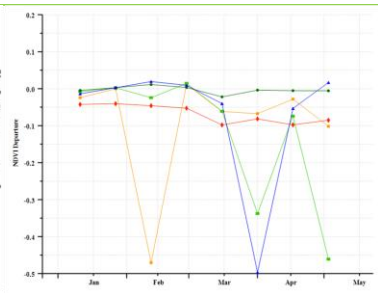
(b) Time series rainfall profile



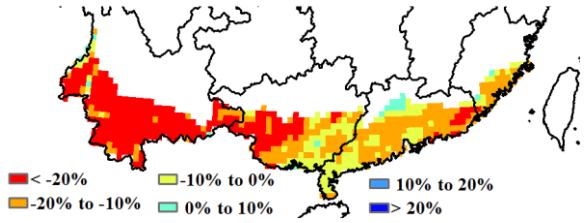
(c)Time series temperature profile



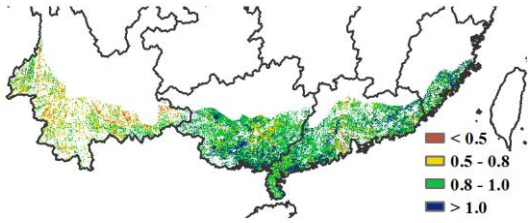
(d) Spatial NDVI patterns compared to 5YA



(e) NDVI profiles



(f) Maximum VCI



(g) Biomass departure

4.4 Major crops trade prospects

(1) International trade prospects for major cereals and oil crop in China

Maize

In the first quarter, China imported 7.52 million tonnes of maize, an increase of 6% over the previous year. The main sources of maize imports were the United States, Brazil, and Ukraine, accounting for 37.8%, 28.8%, and 27.7% of the total import, respectively.

Rice

In the first quarter, China imported 1.004 million tonnes of rice, a decrease of 39.4% over the previous year. The main sources of rice imports were Myanmar, Vietnam, Thailand, India, and Pakistan, accounting for 29.2%, 26.8%, 13.7%, 13.3%, and 8.8% of the total import, respectively.

Wheat

In the first quarter, China imported 4.35 million tonnes of wheat and wheat products, a growth of 42.6% over the previous year. The main sources of wheat imports were Australia, Canada, and France, accounting for 58.2%, 18%, and 17.8% of the total import, respectively.

Soybean

In the first quarter, China imported 23.02 million tonnes of soybeans, an increase of 13.5% over the previous year. The main sources of soybean imports were the United States, Brazil, and Argentina, accounting for 71.3%, 17%, and 6.2% of the total import, respectively.

(2) Trade prospects for major cereals and oil crop in China for 2022

On the basis of remote sensing-based production prediction in major agricultural producing countries in 2023 and the Major Agricultural Shocks and Policy Simulation Model, it is predicted that the import of major grain crops will decrease in 2023. The details are as follows:

In 2023, China's maize import will increase by 10.3%, and exports will decrease by 5.1%. With the recovery of domestic demand for feed grains and the downward trend of international maize prices, China's maize imports are expected to increase. In particular, the opening of channels for maize imports from Brazil contributes to the anticipated increase in maize imports in 2023.

In 2023, China's rice import will decrease by 14.2%, and exports will decrease by 3.2%. Factors such as the uncertainty of policies, such as increased tariffs by the Indian government, and reduced production due to disasters, contribute to weakened rice import demand in China. It is expected that rice imports in China will decrease in 2023.

In 2023, China's wheat import will increase by 20.1%, and exports will decrease by 5.8% in 2023. The main driving factors for wheat imports are strong domestic demand for high-quality special-purpose wheat and the price advantage of foreign wheat. Considering the economic complexities following the COVID-19 pandemic, wheat imports in 2023 are expected to remain at a relatively high level.

In 2023, China's soybean import will increase by 4.6%, while exports will remain relatively stable. Despite domestic efforts to increase soybean oilseed production capacity, imported soybeans remain the main raw material for soybean crushing. Brazil and the United States will continue to be the main sources of soybean imports. It is expected that soybean imports in China will increase in 2023.

Figure 4.15 Rate of change of imports and exports for rice, wheat, maize, and soybean in China in 2023 (%)