

## Chapter 4. China

After a brief overview of the agroclimatic and agronomic conditions in China over the reporting period (section 4.1), Chapter 4 presents an updated estimate of national winter crop production (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). Section 4.4 presents the results of ongoing pests and diseases monitoring, while sections 4.5 and 4.6 describe trade prospects (import/export) of major crops (4.5) and an updated outlook for domestic prices of maize, rice, wheat and soybean (4.6). Additional information on the agroclimatic indicators for agriculturally important Chinese provinces are listed in table A.11 in Annex A.

### 4.1 Overview

On the national scale, rainfall increased by 9% above average, while temperature and RADPAR decreased by 0.3°C and 0.5%, respectively. The resulting biomass production potential indicator BIOMSS was average (+1%). At the sub-national level, above-average rainfall occurred in almost all regions, except Northeast China. Temperature was close to average everywhere, with departures ranging between -1.0°C and +0.8°C. The spatial distribution of rainfall and temperature profiles showed that these two climatic variables fluctuated over time (figure 4.1 and figure 4.2). Although rainfall was continuously close to average for 70.3% of areas in China, 29.7% of regions experienced excess rainfall from June to July, with these areas mainly located in south and southeast China. Moreover, precipitation was significantly above average (with an increase of more than 270 mm) in most regions of Hunan, Jiangxi, and Guizhou provinces in late June, accounting for 11.5% of planted areas of China. As a result, these areas may suffer from flood damage. During the monitoring period, consistent temperature fluctuations occurred in different regions of China.

As shown in figure 4.3, most cropland in China was cropped (with the exception of central Inner Mongolia, south Ningxia, and eastern Gansu) during the reporting period as it is now the the peak of the agricultural season for most of China. The VCIx at the national level was 0.75. Higher values appear in northeast and southwest China, as well as in Huanghuaihai (table 4.1). In contrast, lower values occur in the Loess region and Inner Mongolia, which might be affected by drought. Compared with average, the Cropped Arable Land Fraction for the country decreased by 2%, with significant declines occurring in the Loess region (-13%) and Inner Mongolia (-9%). In contrast, Huanghuaihai, Lower Yangtze, Northeast, Southern, and Southwest China regions all had average levels for CALF. The map for VHI<sub>n</sub> showed that low values were mainly located in Northeastern and Northern China (figure 4.5), consistent with the pattern of VCIx.

**Table 4.1. CropWatch agroclimatic and agronomic indicators for China, April-July 2017, departure from 5YA and 15YA**

Region	Agroclimatic indicators			Agronomic indicators		
	Departure from 15YA (2002-2016)			Departure from 5YA (2012-2016)		Current
	RAIN (%)	TEMP (°C)	RADPAR (%)	BIOMSS (%)	CALF (%)	Maximum VCI
Huanghuaihai	15	0.5	0	3	0	0.79
Inner Mongolia	17	0.8	2	2	-9	0.64
Loess region	19	0.0	-1	8	-13	0.67
Lower Yangtze	7	-0.6	-1	-4	0	0.73
Northeast China	0	0.3	4	-5	0	0.84
Southern China	8	-1.0	-4	0	0	0.71

Region	Agroclimatic indicators			Agronomic indicators		
	Departure from 15YA (2002-2016)			Departure from 5YA (2012-2016)		Current
	RAIN (%)	TEMP (°C)	RADPAR (%)	BIOMSS (%)	CALF (%)	Maximum VCI
Southwest China	3	-0.7	-1	-2	0	0.77

Figure 4.1. China spatial distribution of rainfall profiles, April-July 2017

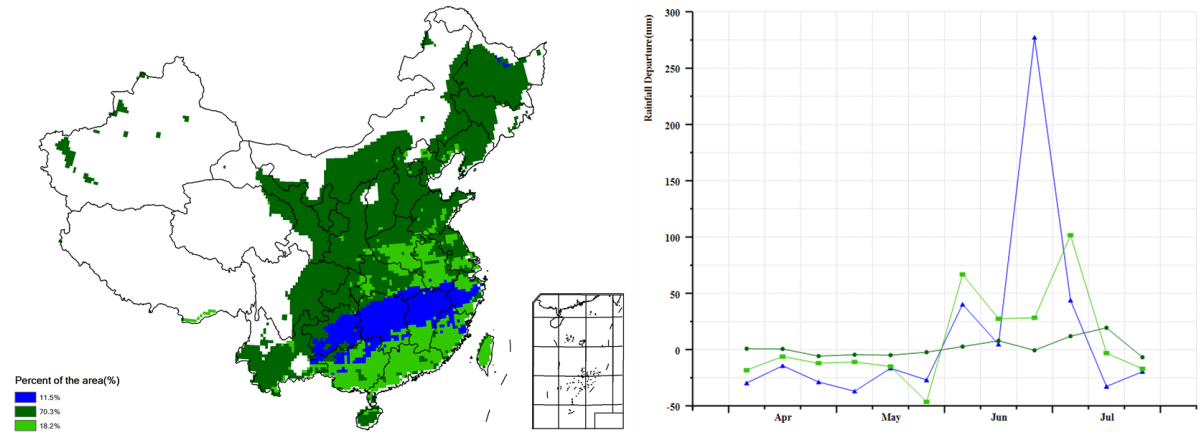


Figure 4.2. China spatial distribution of temperature profiles, April-July 2017

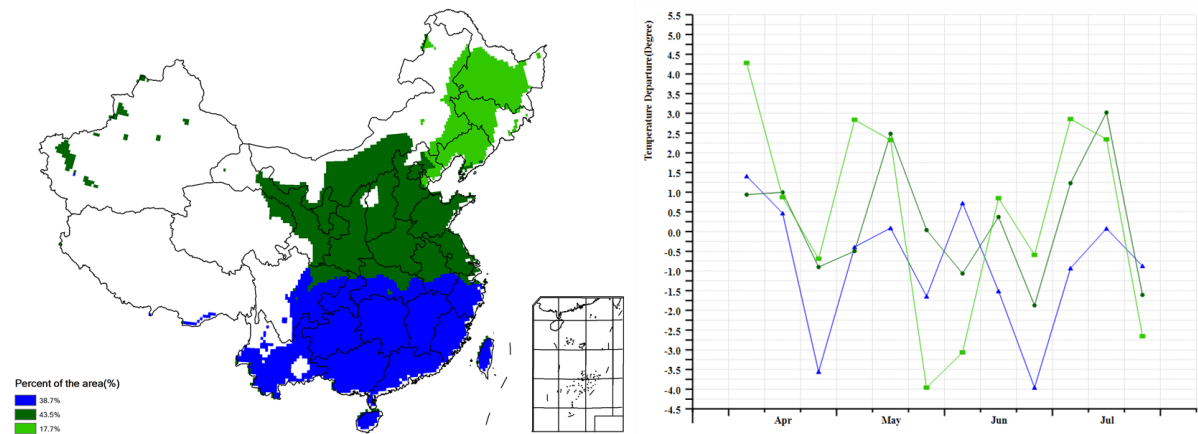


Figure 4.3. China cropped and uncropped arable land, by pixel, April-July 2017

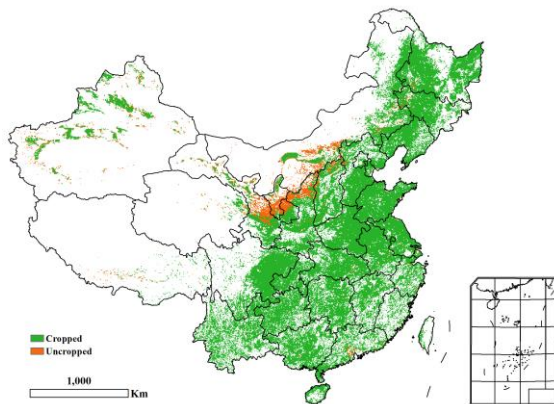
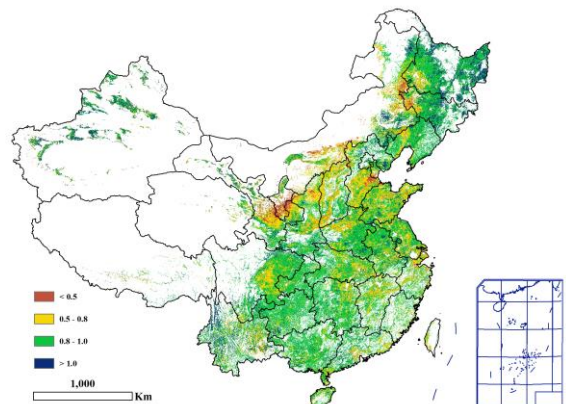
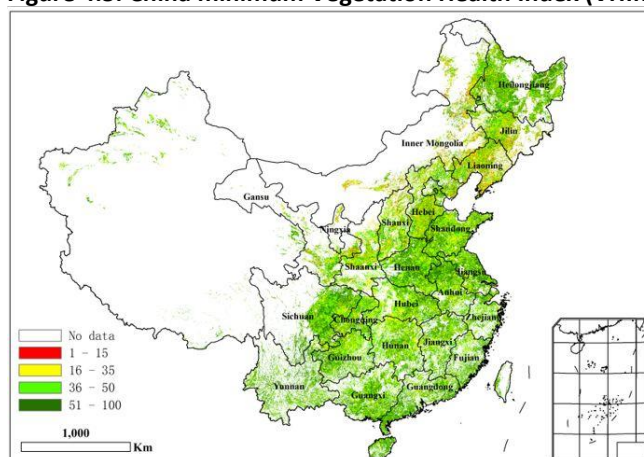


Figure 4.4. China maximum Vegetation Condition Index (VCIx), by pixel, April-July 2017



**Figure 4.5. China minimum Vegetation Health Index (VHI<sub>min</sub>), by pixel, April-July 2017**

## 4.2 China crop production

Adequate environmental conditions over China resulted in a 0.9% increase in the yield of winter crops (among which wheat accounts for more than 90%) compared with the previous year (table 4.2). However, planted area dropped by 0.8% with most of the uncropped arable land distributed in central Anhui and southern Jiangsu. Based on the latest remote sensing data and meteorological information, CropWatch revised the winter crop production down to 124,814 thousand tons, which is about equivalent to the 2016 output (0.1% increase). The most significant production decreases occurred in Anhui (-7.8%), Shaanxi (-4.8%), and Jiangsu (-3.9%). The top winter crop area, Henan Province, produced 26.3 million tons, 3.9% up from 2016 with an absolute increase of 988,000 tons compared to that year, mitigating the poor performance of other provinces.

**Table 4.2. China 2016-17 winter crops production (in thousand tons) and variation (%) from 2015-16, by province**

	Production			Area	Yield Change
	2015-2016	2016-2017	Δ(%)	Δ(%)	Δ(%)
Hebei	11615	11391	-1.9	0	-1.9
Shanxi	2218	2251	1.5	-3.1	4.7
Jiangsu	9971	9585	-3.9	-6	2.3
Anhui	12044	11101	-7.8	-5.1	-2.9
Shandong	24100	24540	1.8	0.9	0.9
Henan	25305	26293	3.9	2.5	1.4
Hubei	5875	5756	-2	-1.8	-0.2
Chongqing	2316	2289	-1.1	-1.5	0.4
Sichuan	5541	5513	-0.5	-1.7	1.2
Shaanxi	4085	3889	-4.8	-3.3	-1.5
Gansu	3002	2999	-0.1	0.4	-0.5
<b>Sub total</b>	106072	105606	-0.4	-	-
<b>Other provinces</b>	18613	19207	3.2	-	-
<b>National total*</b>	124685	124814	0.1	-0.8	0.9

Note: \* Production for Taiwan province is not included.

Table 4.3 lists the latest revision of CropWatch production estimates for maize, rice, wheat, and soybean production. Additional estimates for different types of rice (by growing seasons) are shown in table 4.4. As illustrated in these tables, the production of maize and rice is 3.2% and 0.1% below that of 2016, while for wheat and soybean, the production is 0.3% and 4.3% above.

Starting in 2016, China has implemented a new agricultural policy that encourages farmers to shift from maize to other, more suitable crops in regions where maize cultivation is less than optimal due to soil or climate conditions. As a result, the soybean area increased by a significant 4.6% at the national level,

while maize planted area dropped 2.5%, indicating the conversion of maize cultivation to other more profitable crops.

The most significant increase in soybean production (+7%) was observed in Heilongjiang, the top soybean producer in China, thanks to both favorable yield and increased area. Inner Mongolia also outputs 2% above 2016 production due to the expanded planted area. Soybean production decreased in the North China Plain including in Henan, Shandong, and Shanxi. As for maize, the provinces in the North China Plain and South-western China all display lower production, including Anhui, Jiangsu, Hebei, Shandong, Shanxi, Inner Mongolia, Ningxia, Sichuan, Chongqing, and Yunnan. The reasons differ from province to province: in Inner Mongolia, Ningxia, and Shanxi, both yield and area decreased, while in Anhui, Chongqing, Sichuan, and Yunnan the main factor was a drop in yield.

The overall rice production for China remains close to 2016, although the situation depends on the type of growth (Table 4.4). Early rice and late rice production increased by 0.7% and 0.1%, respectively, while single rice production was 0.3% below 2016 values. Since rice is mostly irrigated in China, yield changes only marginally between years. The inter-annual production variation by province is not as significant as for maize, wheat, and soybean. Large production changes include single rice in Ningxia, Sichuan, and Yunnan, and late rice in Hubei.

**Table 4.3. China 2017 production of maize, rice, wheat, and soybean, and percentage change from 2016, by province**

	Maize		Rice		Wheat		Soybean	
	2017	Change (%)	2017	Change (%)	2017	Change (%)	2017	Change (%)
Anhui	3485	-3	16878	1	10233	-10	1095	0
Chongqing	2066	-2	4673	-1	1089	-2		
Fujian			2828	-2				
Gansu	5136	7			2559	0		
Guangdong			11128	1				
Guangxi			11408	1				
Guizhou	5184	2	5430	0				
Hebei	17690	-1			10626	-2	195	5
Heilongjiang	27271	0	21449	3	473	5	4919	7
Henan	17126	2	3780	-2	25619	2	773	-2
Hubei			15773	2	4281	-1		
Hunan			24667	0				
Inner Mongolia	15263	-6			2118	3	1039	2
Jiangsu	2161	-1	16619	0	9540	-2	787	1
Jiangxi			16880	1				
Jilin	24215	0	5845	3			725	3
Liaoning	15651	0	4477	2			427	2
Ningxia	1633	-5	510	-8	782	-1		
Shaanxi	3517	3	1020	0	3841	-4		
Shandong	18945	-1			22293	2	693	-1
Shanxi	8353	-4			2254	6	164	-2
Sichuan	7014	-3	14551	-3	4677	1		
Xinjiang	6876	2						
Yunnan	5987	-2	5408	-4				
Zhejiang			6331	1				
<b>Sub total</b>	<b>187574</b>	<b>-2.1</b>	<b>189654</b>	<b>0.5</b>	<b>100384</b>	<b>-0.7</b>	<b>10816</b>	<b>3.5</b>
Other provinces	6279	-27.9	10716	-9	18518	5.5	3044	7.4
<b>China*</b>	<b>193853</b>	<b>-3.2</b>	<b>200371</b>	<b>-0.1</b>	<b>118902</b>	<b>0.3</b>	<b>13860</b>	<b>4.3</b>

\* Production for Taiwan province is not included.

Note: Wheat data include both winter wheat and spring wheat.

**Table 4.4. China 2017 early rice, single rice, and late rice production and percentage difference from 2016, by province**

	Early rice		Single		Late rice	
	2016	Change (%)	2016	Change (%)	2016	Change (%)
Anhui	1802	1	13345	1	1731	1
Chongqing			4673	-1		
Fujian	1686	-2			1142	-2
Guangdong	5285	1			5842	1
Guangxi	5476	1			5932	1
Guizhou			5430	0		
Heilongjiang			21449	3		
Henan			3780	-2		
Hubei	2320	2	10639	2	2814	4
Hunan	8229	0	8153	0	8284	0
Jiangsu			16619	0		
Jiangxi	7341	1	2724	0	6816	1
Jilin			5845	3		
Liaoning			4477	2		
Ningxia			510	-8		
Shaanxi			1020	0		
Sichuan			14551	-3		
Yunnan			5408	-4		
Zhejiang	802	1	4683	1	846	1
<b>Sub total</b>	<b>32940</b>	<b>0.6</b>	<b>123788</b>	<b>0.7</b>	<b>33408</b>	<b>1</b>
<b>China*</b>	<b>34326</b>	<b>0.7</b>	<b>131066</b>	<b>-0.3</b>	<b>34979</b>	<b>0.1</b>

\* Production for Taiwan province is not included

Due the significant drop of maize production, CropWatch puts the total 2017 output of summer crops (including maize, single rice, late rice, spring wheat, soybean, minor cereals, and tubers) at 399.6 million tons, a 1.8% drop from 2016 or a 7.3 million ton decrease in production. The total annual crop production is estimated at 558.7 million tons, down 1.2% from 2016 (6.9 million tons decrease).

As late rice is still at an early growing stage, and maize and single rice are at grain filling stage, CropWatch will further revise the production for each crop type as well as total production in the next bulletin.

### 4.3 Regional analysis

Figures 4.6 through 4.12 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 up to July 2017 to the previous season, to the five-year average (5YA), and to the five-year maximum; (c) Spatial NDVI patterns for April to July 2017 (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 April-July 2017. Additional information about agroclimatic indicators and BIOMSS for China is provided in Annex A.

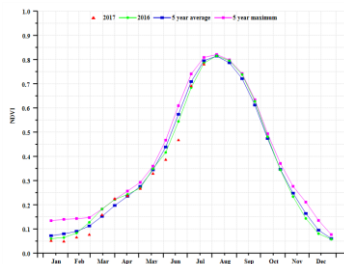
# Northeast region

For the Northeast region, the monitoring period mostly covers the sowing and cultivation of spring maize. Single-season rice is sowed in part of the region from April on forward, which is similar to the planting window of soybean. Starting in May, the overall condition of crops was below the five-year average, but it recovered in the middle of June as a result of additional precipitation.

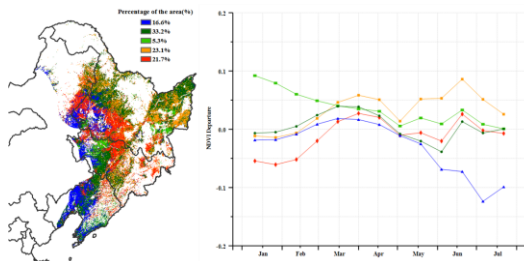
According to the CropWatch agroclimatic and agronomic indicators, rainfall was +12% compared to average in Heilongjiang and Jilin, while a 23% drop was observed for Liaoning. These dry conditions, however, changed into wet conditions during late June according to a ground survey in Liaoning. All three provinces experienced an increase in temperature (+0.3°C for the region) and radiation (RADPAR, +4%), which is beneficial for photosynthesis. Shortage of soil moisture led to an overall 5% decrease of biomass (BIOMSS) for the region, with a drop most serious in Liaoning (BIOMSS, -20%).

The NDVI profiles for the entire region stayed below the five-year average before July, but then recovered to average. According to the the VCIx map of Northeast China, the drought area is mainly distributed in the west of Liaoning and Jilin. The biomass map and NDVI cluster show a similar deficit pattern in the same area. Due to recent heavy rain in this area, crop condition is expected to recover but nevertheless deserves close monitoring.

**Figure 4.6. Crop condition China Northeast region, April - July 2017**

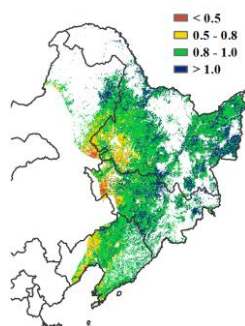


(a) Crop condition development graph based on NDVI

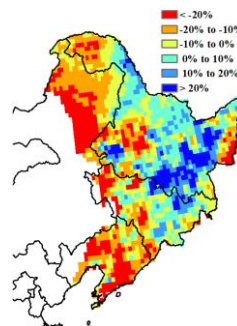


(b) Spatial NDVI patterns compared to 5YA

(c) NDVI profiles



(d) Maximum VCI



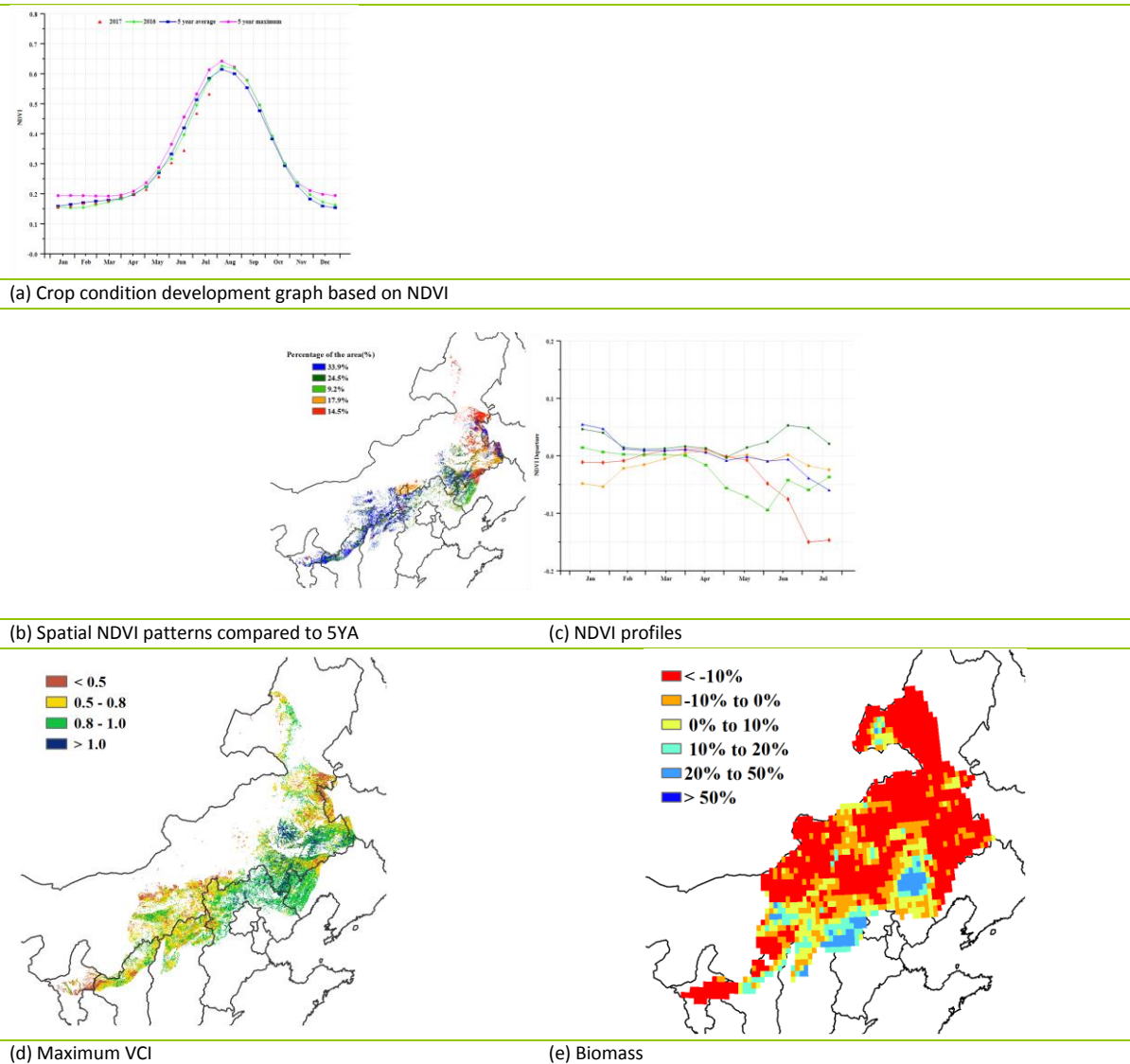
(e) Biomass

# Inner Mongolia

The condition of spring crops was unfavorable in Inner Mongolia over the reporting period. Globally, among the CropWatch agroclimatic indicators, RAIN was below average (-17%), while TEMP was above (+0.8°C), and a small increase was reported for both RADPAR and the potential biomass production index BIOMSS (+2%). The spatial and temporal distribution for these CropWatch indicators, however, was very uneven. Conditions were generally unfavorable for the sowing and early growth of spring crops, as illustrated in the crop development graph (starting in April). West Liaoning, central and east Inner Mongolia, central Ningxia, and northern Shaanxi and Shanxi all suffered unfavorable condition according to the VCIx map (with VCIx values below 0.5). The biomass accumulation potential (BIOMSS) is also poor in most areas. According to the NDVI profiles, about a tenth (9.2%) of the cropped areas display consistently below average conditions since the beginning of early April, especially in west Liaoning, northern Shanxi and Shaanxi, northwest Hebei, along with some areas in Inner Mongolia. Later in the reporting period, the situation even worsened in 15% of the cropped areas (including in west Liaoning and eastern and northern Inner Mongolia) to the extent that 76% of areas have shown below average conditions.

Overall, crop condition was unfavorable for this part of China from April to July. If unfavorable conditions are maintained over the remainder of the cropping season, the outcome may altogether be a poor season.

**Figure 4.7. Crop condition China Inner Mongolia, April - July 2017**

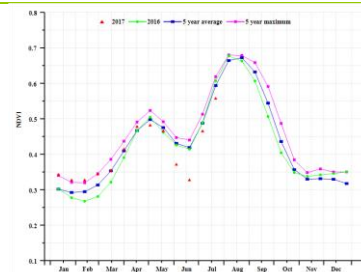


# Huanghuaihai

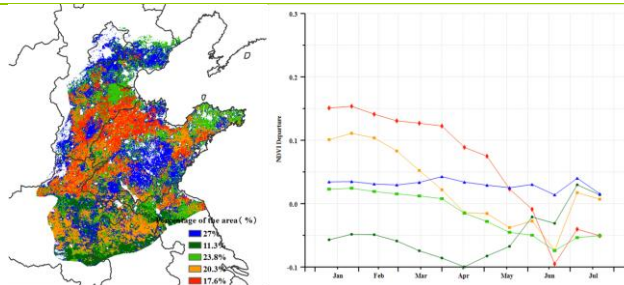
Crop condition in Huanghuaihai was not favorable over the monitoring period. The main crops in the region are winter wheat--in full development since spring and with harvests starting in early June--and summer maize, which is planted after the harvesting of winter wheat. As shown by the NDVI development graph, crop condition was generally satisfactory compared with the recent five-year average and NDVI values of last year. From mid-May to early June, however, NDVI over the harvested field appeared largely below average, possibly due to strong precipitation since late May and the cloud over the region.

In terms of the spatial distribution of findings, many parts of the Huanghuaihai area had a below average condition but to different extents. In addition to east and central Hebei and central Shandong, a scattered area over eastern Henan and northern Anhui had below average condition throughout the reporting period. This is also visible from the VCIx map and biomass departure map. According to the CropWatch agro-climatic indicators, temperature and radiation over the region were normal, but precipitation, as mentioned above, was in excess since late May, which may influence the harvesting of mature winter wheat and possibly depress its yield. Meanwhile, precipitation can also provide favorable soil moisture condition for the growth of maize.

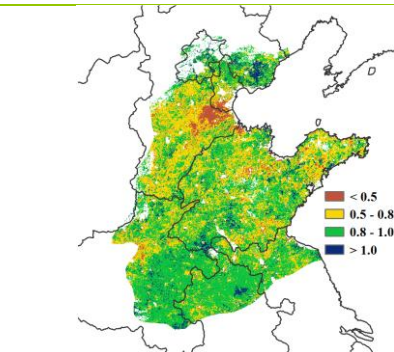
**Figure 4.8. Crop condition China Huanghuaihai, April - July 2017**



(a) Crop condition development graph based on NDVI

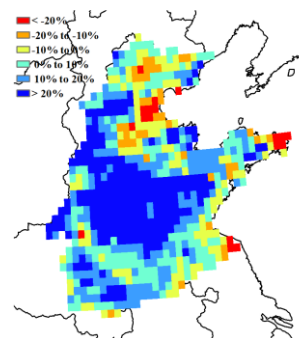


(b) Spatial NDVI patterns compared to 5YA



(d) Maximum VCI

(c) NDVI profiles

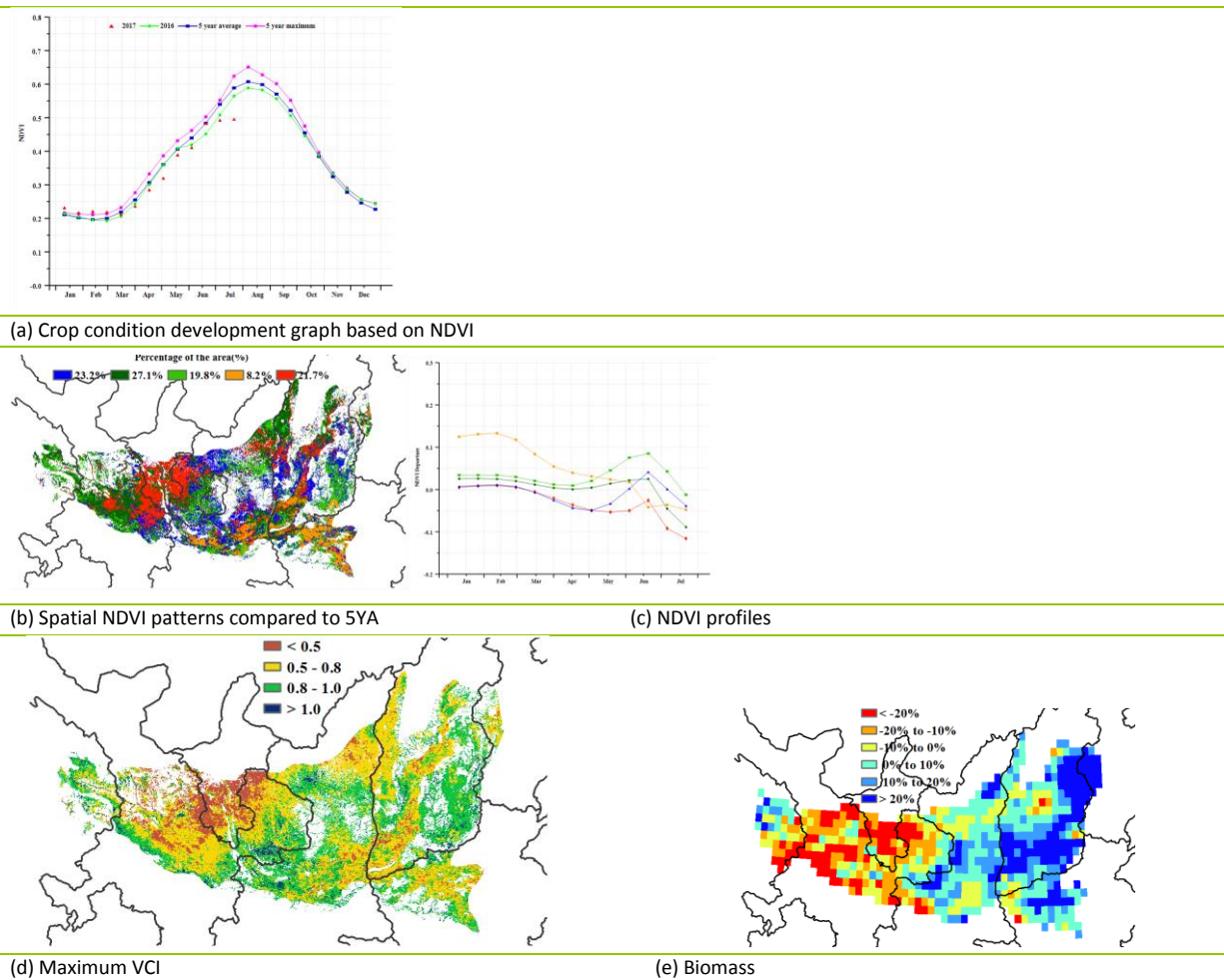


(e) Biomass

# Loess region

In the Loess region, winter wheat was harvested from late May to late June, while summer maize has been planted gradually from late April to late June. Compared to average, rainfall (RAIN) was 19% above average, radiation (RADPAR) dropped by 1%, while temperature (TEMP) was close to normal. The potential biomass (BIOMASS) was 8% above the five-year average as a result of ample rainfall and fair radiation. Up to mid-July, crop condition was mostly below the five-year average and last year's level, except during late June; the VCIx for the area is 0.67. The spatial NDVI clusters and profiles indicate that only 19.8% of areas have better crop condition than the average over the reporting period. Some important agricultural areas started suffering from poor crop condition during mid-June to late July owing to the local drought. In detail, crop condition was unfavorable in central and eastern Gansu, southern Ningxia, and several areas in central Shanxi, coinciding with a low VCIx in those regions. The Cropped Arable Land Fraction decreased 13%, resulting in a pessimistic crop production outlook for the region, which was also confirmed by figure 4.3.

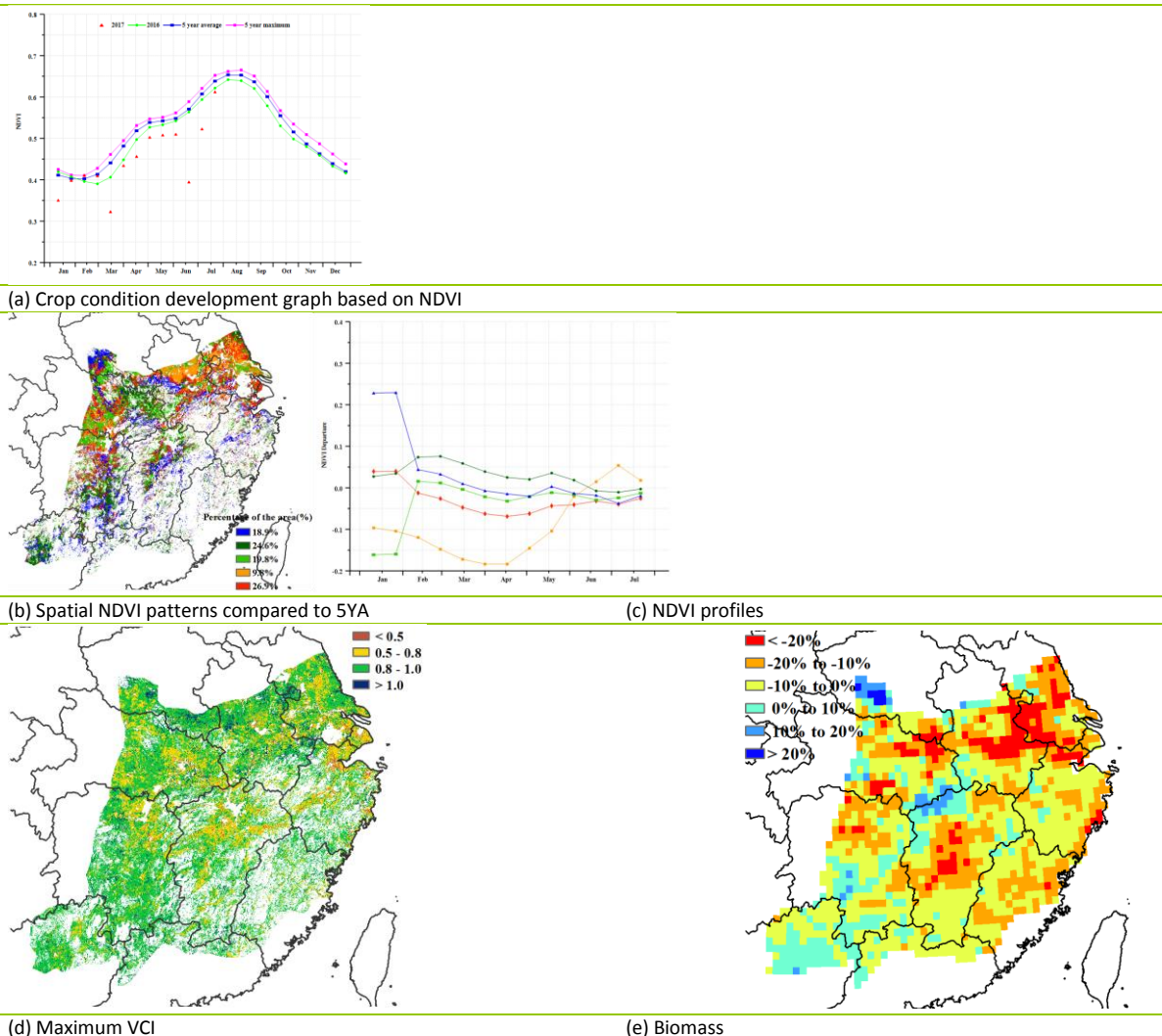
**Figure 4.9. Crop condition China Loess region, April - July 2017**



# Lower Yangtze region

During April to July, the winter wheat harvest was completed in the north of the Lower Yangtze region, including the south of Henan, Jiangsu, and Anhui provinces. The semi-late and late rice is still growing in the south and the center of the region (including in Fujian, Jiangxi, Hunan, and Hubei provinces), while early rice has been harvested. Crop condition was below but close to average according to agroclimatic indicators. Accumulated rainfall was above average (RAIN, +7%), but radiation and temperature were below but close to average (RADPAR, -1% and TEMP, -0.6°C, respectively), which brought about a slight decrease of biomass production potential (BIOSMSS, -4%). As shown in the NDVI development graph, crop condition was below last year's and the five-year average, especially at the beginning of March and in June. According to the BIOMSS map, the biomass production potential was below average in most of this region, especially in the north of Zhejiang and Hunan, central Jiangxi, Anhui, and west Hubei, which coincides with the situation depicted by the VCIx map. Finally, NDVI profiles show that crop condition was slightly below but close to average in 90.2% of cropped areas at the end of July, except the area in the middle of Anhui and Jiangsu where crop condition was above average. Overall, the yield of crops in this region is expected to be below average.

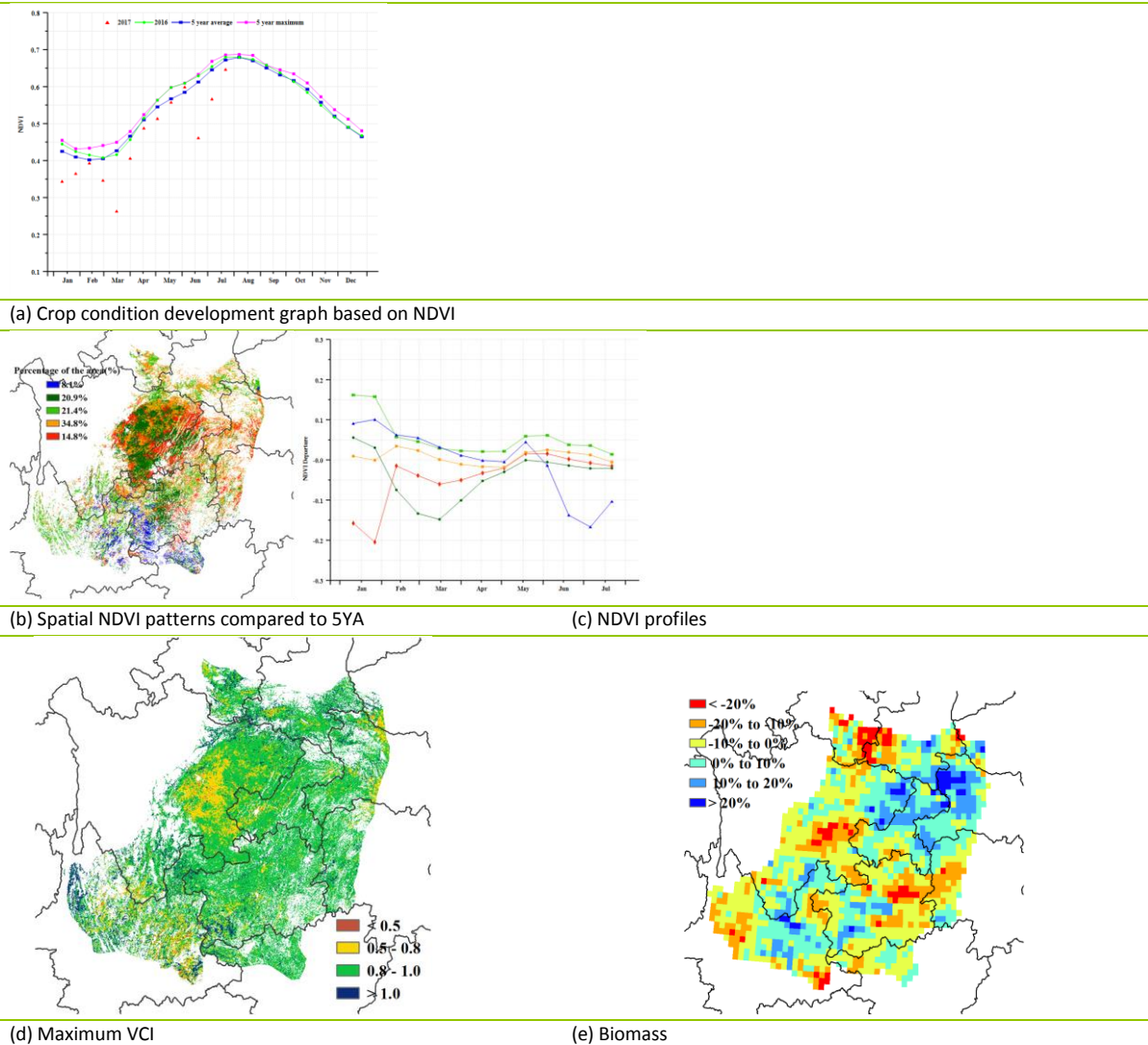
**Figure 4.10. Crop condition Lower Yangtze region, April - July 2017**



# Southwest China

The ongoing season covers the harvest of winter wheat and rapeseed, as well as the planting and early growing of summer maize and semi-late rice. Crops showed mostly average condition throughout the monitoring period. The NDVI profile was below average in April, recovered to average and above average from May to June, but dropped again to below average in July due to the sustainable cloudy and rainy weather. All agroclimatic indicators for the region were average: RAIN +3%, TEMP -0.7°C, RADPAR -1%, and BIOMSS -2%. The Cropped Arable Land Fraction was unchanged from 2016, while VCIx was just fair, indicating average conditions as well. Southwestern Guizhou, northeastern Yunnan, and northwestern Guangxi appear to show a below-average crop condition from May to July, according to the NDVI clusters. In eastern Sichuan, below average condition lasted for the whole monitoring period, with VCIx in the range of 0.5-0.8. CropWatch will monitor the region closely over the coming months.

**Figure 4.11. Crop condition Southwest China region, April - July 2017**



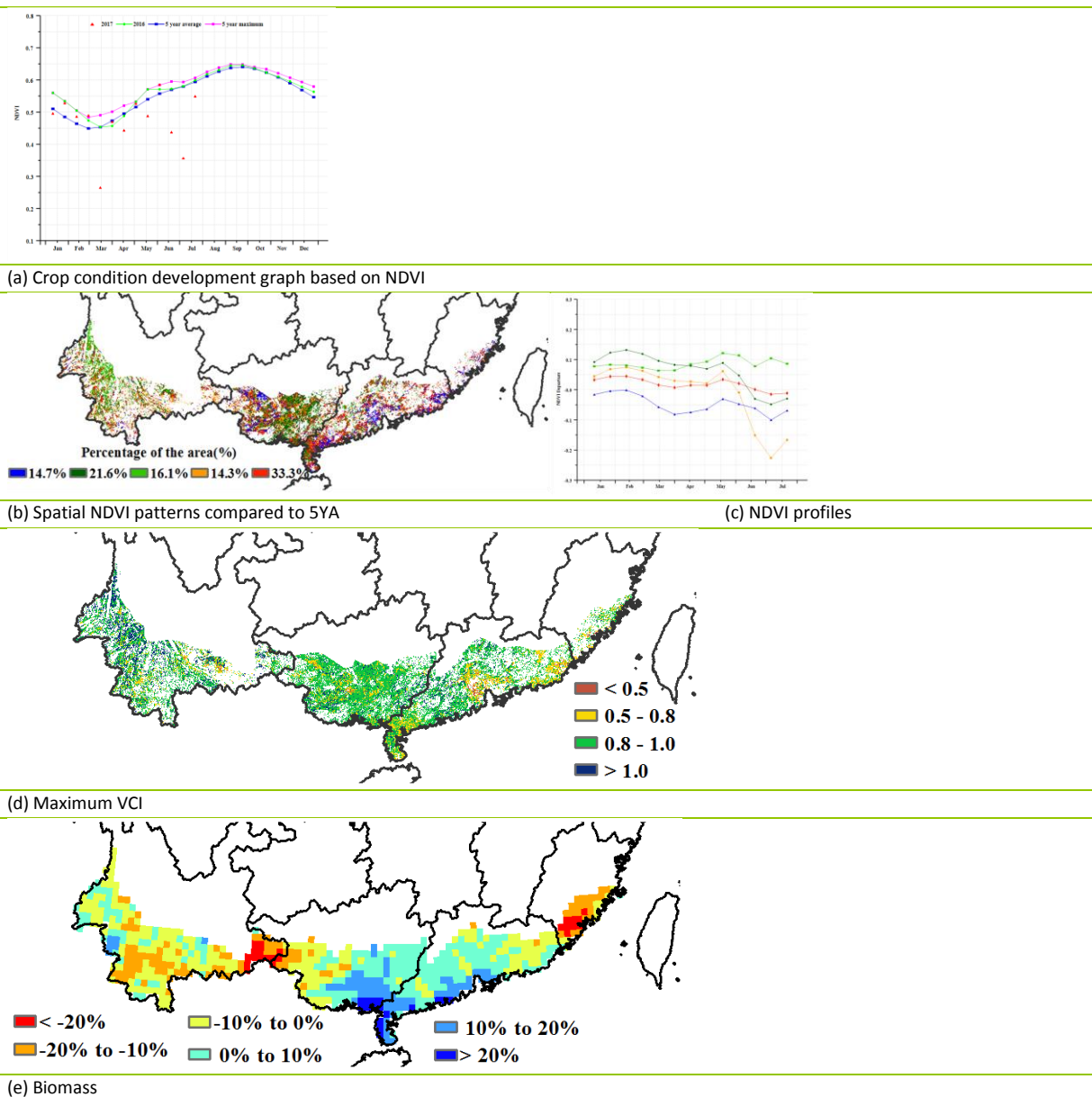
# Southern China

In Southern China, crop condition was below average over the reporting period. For the region as a whole, precipitation (RAIN) was 8% above average, with precipitation departures for each province as follows: Fujian, -3%; Guangxi, +21%; and Guangdong, +11%. Temperature (TEMP) dropped by 1.0°C on average, and radiation (RADPAR) decreased by 4%. Potential accumulated biomass (BIOMSS) was largely unchanged in Southern China.

The NDVI development graph for Southern China indicates that crop condition in the region was below average over the entire period. Although almost all of the cultivated land has been planted crops, the Cropped Arable Land Fraction (CALF) was still 0.5% lower than the average level. Spatial NDVI patterns and NDVI profiles showed that crop condition is generally below the average during monitoring period, except for the central part of Guangxi and central and western of Yunnan. Over the reporting period, 16.1% of the cropped area had above average condition, while about 14.7% of the cropped area continued to be below the average, sporadic scattered throughout the region.

Based on the above analysis, the yield of crops in this region is expected to be below average in 2017.

**Figure 4.12. Crop condition Southern China region, April - July 2017**



## 4.4 Pest and diseases monitoring

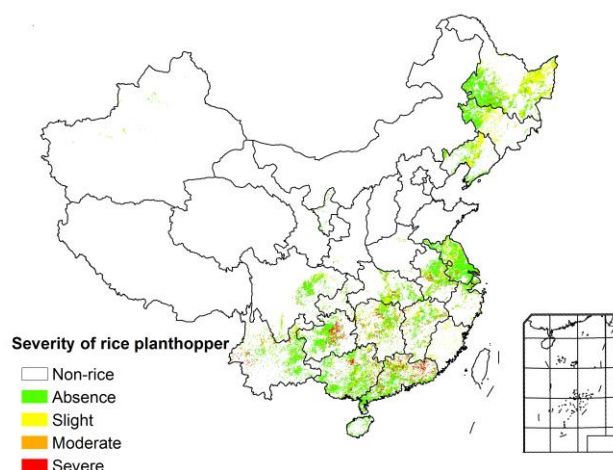
### *Rice pests and diseases*

The impact of pests and diseases was relatively moderate during mid to late July 2017 in the main rice regions of China. Affected by severe convective rain and storms, the habitat conditions in the fields were conducive to rice planthopper and rice leaf roller migration. In addition, for Lower Yangtze River and east Southern China, there was more precipitation and higher temperature than during the previous years, which provided appropriate conditions for rice sheath blight reproduction.

### *Rice planthopper*

The distribution of rice planthopper during mid to late July 2017 is shown in figure 4.13 and table 4.5. The total area affected by the planthopper reached 6.1 million hectares, with severe impact in central Guizhou, northern Guangxi, and most of Guangdong; the pest only moderately affected rice crops in northern Yunnan and northern Hunan.

**Figure 4.13. Distribution of rice planthopper in China, mid to late July 2017**

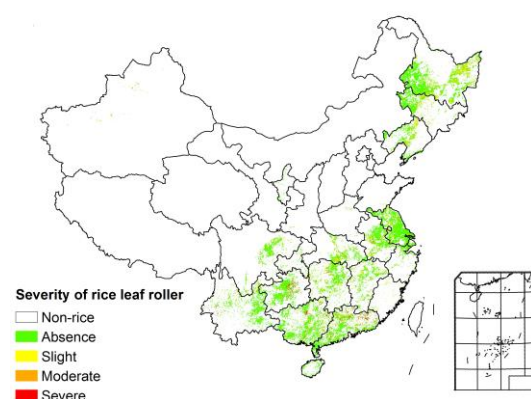


**Table 4.5. Statistics of rice planthopper in China, mid to late July 2017**

Region	Occurrence ratio (%)			
	Absence	Slight	Moderate	Severe
Huanghuaihai	85	9	4	2
Inner Mongolia	78	20	2	0
Loess region	78	20	2	0
Lower Yangtze	79	12	5	4
Northeast China	75	21	3	1
Southern China	81	9	2	8
Southwest China	80	11	4	5

### *Rice leaf roller*

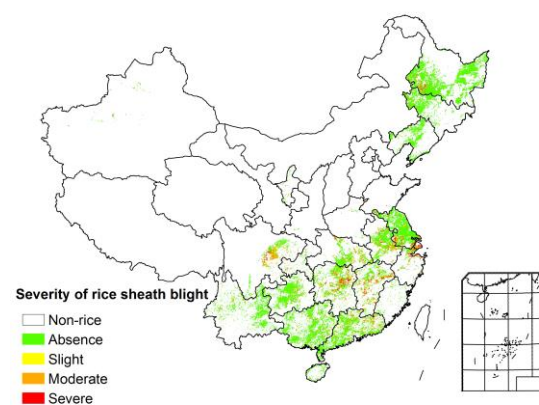
Rice leaf roller (figure 4.14 and table 4.6) damaged around 2.7 million hectares, and even severely so in central Guizhou and northern Guangdong. Damage was only moderately in northern Guangxi and northern Hunan.

**Figure 4.14. Distribution of rice leaf roller in China, mid to late July 2017****Table 4.6. Statistics of rice leaf roller in China, mid to late July 2017**

Region	Occurrence ratio (%)			
	Absence	Slight	Moderate	Severe
Huanghuaihai	94	5	1	0
Inner Mongolia	90	10	0	0
Loess region	89	10	1	0
Lower Yangtze	91	7	1	1
Northeast China	90	10	0	0
Southern China	91	6	1	2
Southwest China	90	7	2	1

*Rice sheath blight*

Rice sheath blight (figure 4.15 and table 4.7) damaged around 4.5 million hectares, severely so in southern Jiangsu and northern Zhejiang and moderately in central Sichuan, central Hunan, and central Jiangxi.

**Figure 4.15. Distribution of rice sheath blight in China, mid to late July 2017**

**Table 4.7. Statistics of rice sheath blight in China, mid to late July 2017**

Region	Occurrence ratio (%)			
	Absence	Slight	Moderate	Severe
Huanghuaihai	82	4	7	7
Inner Mongolia	97	0	2	1
Loess region	84	0	8	8
Lower Yangtze	77	5	8	10
Northeast China	95	0	3	2
Southern China	92	2	4	2
Southwest China	86	3	7	4

#### *Maize pests and diseases*

Maize suffered slightly to moderately from pest and disease attacks during late July in the main production areas. Heavy rains and high humidity in north and northeast China were conducive to armyworm reproduction and sheath blight dispersal.

#### *Maize armyworm*

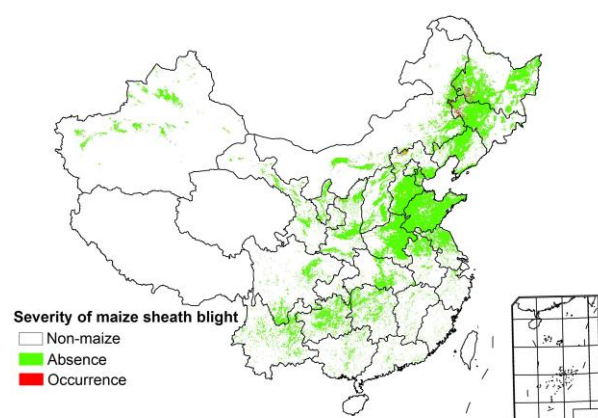
Its distribution in late July 2017 is shown in figure 4.16 and table 4.8. The total area affected reached 1.5 million hectares, with the pest mainly occurring in southwest Heilongjiang, northwest Jilin, southeast Hebei, central Shandong, and central and northern Shaanxi.

**Figure 4.16. Distribution of maize armyworm in China, late July 2017****Table 4.8. Statistics of maize armyworm in China, late July 2017**

Region	Occurrence ratio (%)	
	Absence	Occurrence
Huanghuaihai	95	5
Inner Mongolia	97	3
Loess region	98	2
Lower Yangtze	94	6
Northeast China	96	4
Southern China	97	3
Southwest China	94	6

#### *Maize sheath blight*

Maize sheath blight damaged around 0.4 million hectares. The disease mainly affected southwest Heilongjiang, northwest Jilin, and northern Hebei (figure 4.17 and table 4.9).

**Figure 4.17. Distribution of maize sheath blight in China, late July 2017****Table 4.9. Statistics of maize sheath blight in China, late July 2017**

Region	Occurrence ratio (%)	
	Absence	Occurrence
Huanghuaihai	99	1
Inner Mongolia	98	2
Loess region	99	1
Lower Yangtze	99	1
Northeast China	98	2
Southern China	100	0
Southwest China	99	1

## 4.5 Major crops trade prospects

### Grain import and export in China in the first half of 2017

#### Rice

In the first half of 2017, the total import of rice in China was 2.1361 million tons, an increase of 6.5% compared to the previous year. The imported rice mainly stems from Vietnam, Thailand, and Pakistan, respectively accounting for 55.3%, 31.3%, and 6.4% of imports. The expenditure for rice import was US\$981 million, reflecting a year-on-year growth of 7.9%. Total rice exports over the period were 571,000 tons, up by 349.3%, mainly exported to the Côte d'Ivoire, Republic of Korea, and Liberia (29.5%, 21.0%, and 6.7%, respectively). The value of the export was US\$281 million, an increase of 117.8% over 2016.

#### Wheat

During the first semester of 2017, Chinese wheat imports reached 2.6534 million tons, an increase of 48.2% over 2016. The main sources include Australia (47.4%), the United States (38.2%), and Kazakhstan (7.8%). Imports amounted to US\$607 million, up by 40.9%. Wheat exports fell by 11.1% to reach 49,600 tons. Hong Kong (72.7%), Korea (20.7%), and Macao (5.4%) were the main destinations of Chinese wheat exports.

#### Maize

In the first half of 2017, maize imports totaled 736,000 tons, down by 74.7% year-on-year. The main importing countries were Ukraine and the United States, accounting for 81.3% and 13.5% of imports

respectively. Total maize exports were 36,300 tons, up 26.5 times compared to the same period of 2016, mainly exported to Japan (54.8%) and North Korea (38.3%).

#### *Soybean*

The total import of soybean was up by 16.2% to 44,808,200 tons in China during the first half of 2017. Brazil and the United States respectively contributed 51.8% and 42.5%, for a total value of US\$1,895,500 million, up 6.5% compared to the first six months of 2016. Soybean exports were 63,000 tons, down 11.0%. Export amounts were US\$53.5091million, down 14.0%.

#### **Import prospects for major grains in China for 2017**

Based on the latest monitoring results, China grain imports are projected to increase. The projections are based on remote sensing data and the Major Agricultural Shocks and Policy Simulation Model, which derived from the standard GTAP (Global Trade Analysis Project).

#### *Rice*

According to the model forecast, rice imports and exports increased by 5.7% and 123.3% respectively in 2017. Due to the persistence of domestic and foreign prices, rice imports showed an increasing trend in the first half of 2017. Taking into account the domestic supply and the relaxed demand environment, however, rice imports will reduce, while the exports center of gravity will shift to Africa in the second half of 2017. Rice imports are expected to grow steadily within the quota range, while exports will grow faster across the whole year.

#### *Wheat*

China's wheat imports will increase by 20.7 percent, but exports are projected to drop 4.6% compared with those of 2016. At present, the global supply and demand of wheat is still in a relaxed pattern. The inventory consumption ratio shows the highest level for the past 15 years, and the international wheat prices are expected to fall after the rise. Wheat imports will grow steadily throughout the entire year.

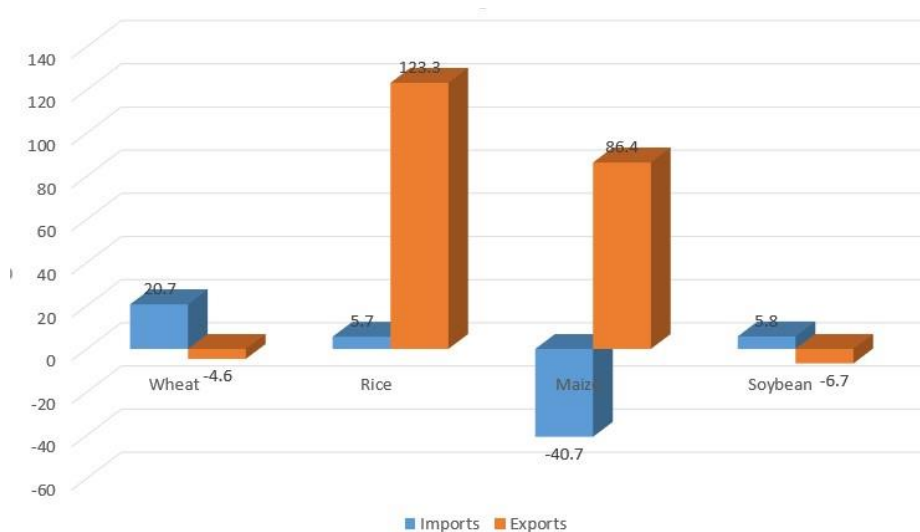
#### *Maize*

According to the model forecast results, maize imports decreased by 40.7% in China in 2017, but exports increased by 86.4%. Currently, the stage of supply exceeding demand will continue to inhibit the import in China. The domestic maize prices have been quickly close to the international standards. Foreign maize price advantage does not exist. China's maize imports continue to decline, while exports continue to increase. Maize imports are expected to decline sharply throughout the year in China.

#### *Soybean*

Soybean imports will increase by 5.8% while exports will be reduced by 6.7% in 2017. Due to a lack of soybean production, annual soybean imports will remain at a high level, but the growth in imports will slow down. For July 2017, soybean exports are expected to grow because the gap between domestic and international prices is expanding.

**Figure 4.18. Rate of change of imports and exports for rice, wheat, maize, and soybean in China in 2017 compared to those for 2016 (%)**



## 4.6 Outlook of domestic price of four major crops

### *Prediction of domestic prices for soybean*

Historical domestic prices of soybean from June 2007 to June 2017 were analyzed based on the theory of the price spiral mode (PSM) (Fang, 2011) and the historic ratio of world soybean consumption to global soybean production (consumption ratio). According to the data for the last six months, the soybean international consumption ratio is at equilibrium. Domestic soybean prices are also at equilibrium, but fluctuating around the trend line. Domestic prices for soybean will continue to fluctuate.

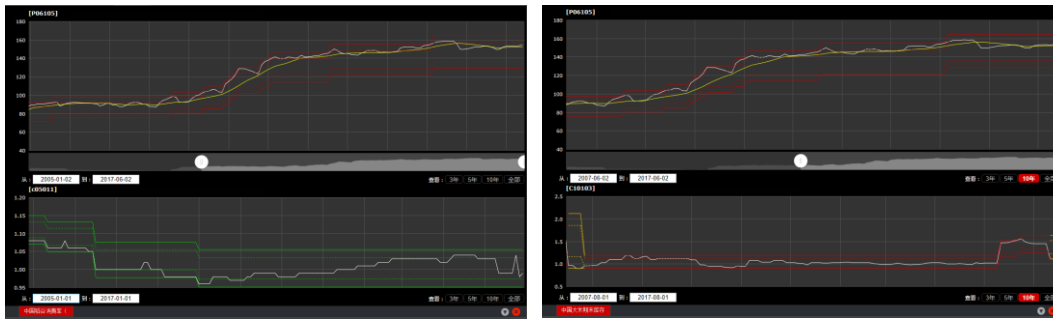
**Figure 4.19. Fluctuations in soybean price, June 2007 to June 2017**



### *Prediction of domestic prices for paddy rice*

Using again the price spiral model and now combining it with China's paddy rice consumption ratio, the trend of the domestic price of paddy rice from June 2007 to June 2017 can be analyzed. From 2009 to the end of 2015, price and consumption ratio are rising in sync, and according to the latest data, paddy rice prices are at equilibrium. It is assumed that the paddy rice prices will have an upward trend, which results from the obvious decrease of the domestic paddy rice inventory. In the end, the price will reach a non-equilibrium interval according to the helical model.

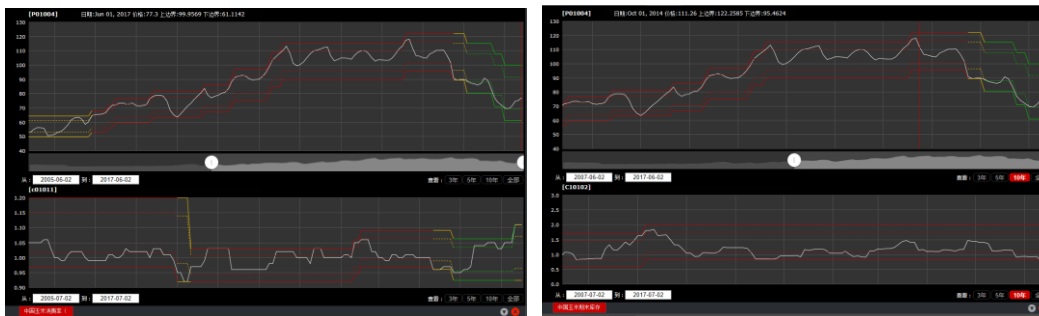
**Figure 4.20. Fluctuations in paddy rice price, January 2005 to June 2017 (left) and Chinese rice ending inventory (right)**



#### *Prediction of domestic prices for maize*

Domestic prices of maize from June 2005 to June 2017 were also analyzed using the same method. As predicted in previous bulletins, prices are now high, and the maize inventory has hit the lowest value of the last ten years, which will lead to a price increase.

**Figure 4.21. Fluctuations in maize price, June 2005 to June 2017 (left) and Chinese maize ending inventory (right)**



#### *Prediction of domestic prices for wheat*

Finally, the analysis covered the domestic prices of wheat from January 2005 to June 2017, using again the model and China's wheat consumption ratio. The wheat price is going down, while the consumption ratio is at a low level. Wheat prices and consumption rates are expected to be in the equilibrium range and the price will keep going down.

**Figure 4.22. Fluctuations in wheat price, January 2005 to June 2017**

