Chapter 3. Main producing and exporting countries

Building on the global patterns presented in previous chapters, this chapter assesses the situation of crops in 30 key countries that represent the global major producers and exporters or otherwise are of global or CropWatch relevance. For each country, maps present an NDVI-based crop condition development graph, maximum VCI, and spatial NDVI patterns with associated NDVI profiles. Additional detail on the agroclimatic and BIOMSS indicators, in particular for some of the larger countries, is included in Annex A, tables A.2-A.11. Annex B includes 2014 production estimates for Argentina, Australia, and Brazil.

3.1 Overview

Figures 3.1-3.4 illustrate the global distribution of CropWatch indicators for rainfall, temperature, radiation, and biomass—respectively the RAIN, TEMP, RADPAR, and BIOMSS indicators, showing their increase or decrease for this monitoring period compared to the average October-January period. Details by country are presented in table 3.1.

During the reporting period, above average temperature was recorded in:

- Most of Europe, with values increasing from the east (Poland, +1.6°C; Slovakia, +2.2°C; Hungary, +2.1°C; and Bosnia, +2.0°C) to west, with the highest departures in agriculturally important countries being those of France (+3.6°C) and Hungary (+2.1°C). Other high values include Switzerland (+2.5°C) and Norway (+2.8°C). The same area had above average rainfall in the north but a deficit in the south. High temperatures were mostly associated with above average sunshine often exceeding +10%.
- Western United States, with temperature departures between +1.7°C (Oregon) and +2.4°C (Utah and California) but also a shortage of rainfall in Nevada (-31%) and Oregon (-26%).
- Eastern South America from Ceara to Rio Grande do Sul, with highest temperature departures in Rio (+2.7°C, with a -27% drop in rainfall), Sao Paolo (+2.6°C and -21%), and Minas Gerais (+2.6°C and -32%).

Other areas with abnormally warm conditions included Afghanistan (+2.8 ℃) and Guatemala (+2.0 ℃); rainfall in these countries, however was in excess and close to +25%.

Very cold departure conditions—with temperatures much below average—were concentrated around the Caspian sea, encompassing an area including the republics of Dagestan (-2.7 ℃), Ingushetia (-2.0 ℃), and Northern Ossetia (-1.6 ℃) to the Oblasts of Rostov (-1.7 ℃), Saratov (-1.6 ℃), and all the way east to Jamblynsk (-2.2 ℃). The same area usually experienced excess rainfall in the south and east (+119% in Dagestan and +53% in the Jamblynsk Oblast) and close to average in the east and north.

Drought conditions occurred in the already mentioned areas around the Mediterranean: Portugal (RAIN -53%); Bosnia-Herzegovina (-46%); Albania (-45%); Spain (-38%); Croatia (-36%); Algeria (-35%), as well as in Brazil (Rio Grande do Norte, -66%); Amapa (-54%), and the United States (Arizona, -36% and Nevada, -31%). In addition, droughts occurred in:

- Southern South America, in Chile (-59% at the national level) and west to south Argentina (Catamarca, -35% to San Juan, Neuquen, and Santa Cruz, San Juan, which are all at or close to -70%).

- Eastern United States (Delaware, -53%; Maryland, -48%; Pennsylvania, -47%; and -45% in New Jersey).
- Northeast India (Assam and Meghalaya, both at -50%; West Bengal, Jharkhand, and Arunachal Pradesh at about -40%; and Odisha, -32%) and Bangladesh (-43%).
- Eastern Asia in Japan (-36%) and China (Taiwan, -84%; Jiangxi, -67%; Zhejiang, -65%; and Hainan, Guangdong, and Fujian, all around -55%; and Tianjin and Beijing with -30%).

Very wet conditions, with precipitation at least double of expected amounts (expressed as rainfall values above 100%) concentrate in four areas:

- Northern central United States (South Dakota, with a record +260%, followed by Montana and Wyoming, both close to +150%, and Colorado, 109%).
- Western Caspian, partly overlapping with very cold conditions: Astrakhan Oblast, +135%; Dagestan Republic, +120%; Armenia, +127%; and Azerbaijan, 106%.
- Northern Indian sub-continent with Uttarkhand, +186%; Nepal, +170%; and Uttar Pradesh, +100%.
- A large central Asian area stretching from Kyrgyzstan (300%) to China (Qinghai, 280%; Ningxia, 173%; Gansu, +129%; and Xinjiang, +108%).

Low sunshine has affected several isolated or high latitude areas of limited agricultural relevance, but also a large east-west stretch in southern Russia and Kazakhstan, mostly from the Tatarstan republic (RADPAR -16%) to the Kemerovo Oblast (-14%) and including the Oblast of Kurgan, North Kazakhstan, East Kazakhstan, Novosibirsk, and the Altay Krai, at -13%. This is unlikely to have had any significant impact of agriculture, except through the association of low sunshine with higher than expected precipitation, which has improved soil moisture storage and will benefit currently dormant winter crops and future spring crops.

Figure 3.1. Global map of rainfall (RAIN) by country and sub-national areas, departure from 13YA (percentage), October 2014-January 2015

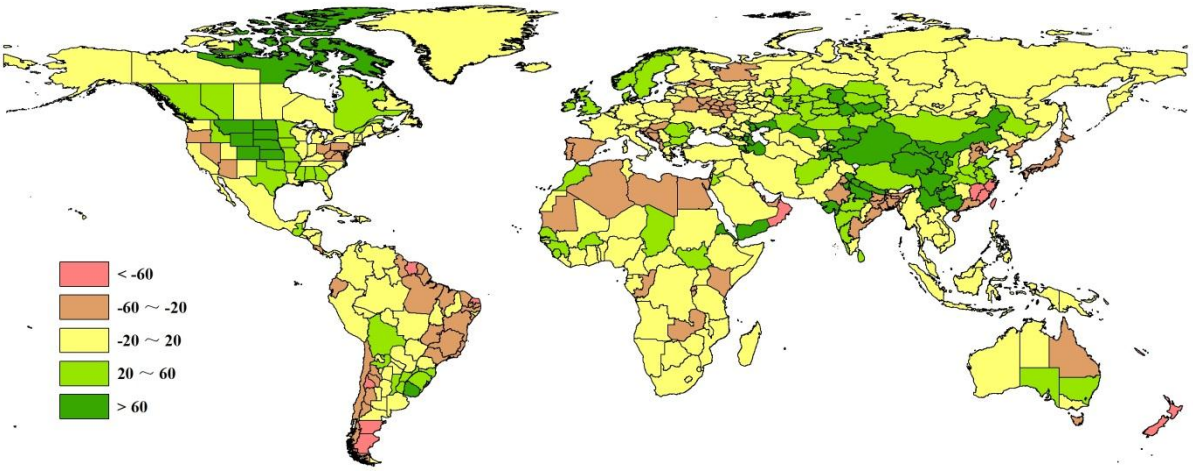


Figure 3.2. Global map of temperature (TEMP) by country and sub-national areas, departure from 13YA (degrees), October 2014-January 2015

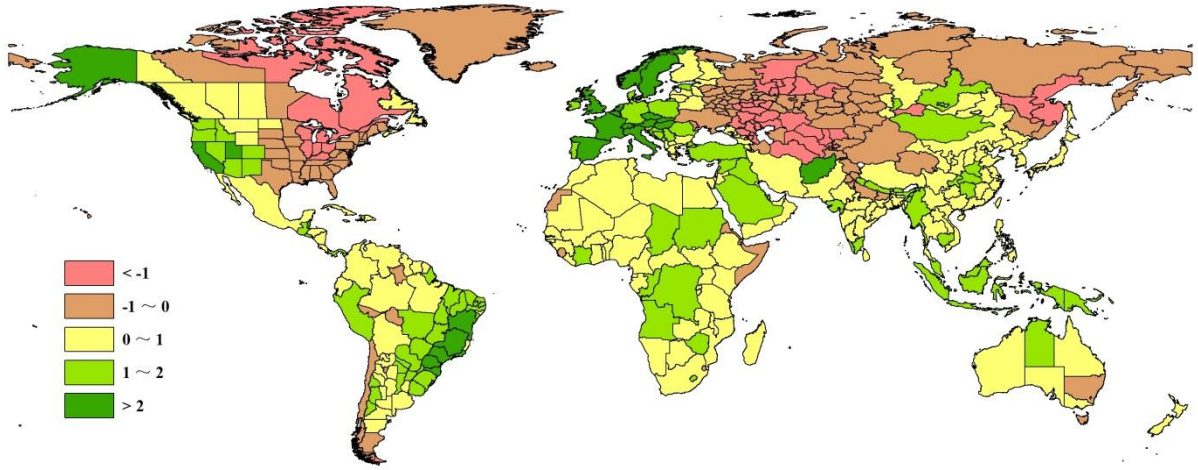


Figure 3.3. Global map of PAR (RADPAR) by country and sub-national areas, departure from 13YA (percentage), October 2014-January 2015

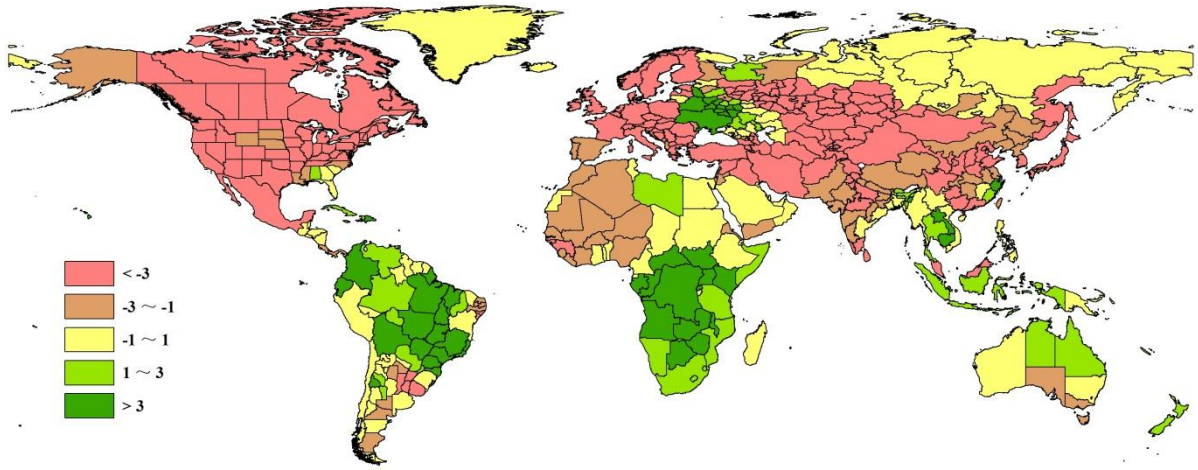


Figure 3.4. Global map of biomass (BIOMSS) by country and sub-national areas, departure from 5YA (percentage), October 2014-January 2015

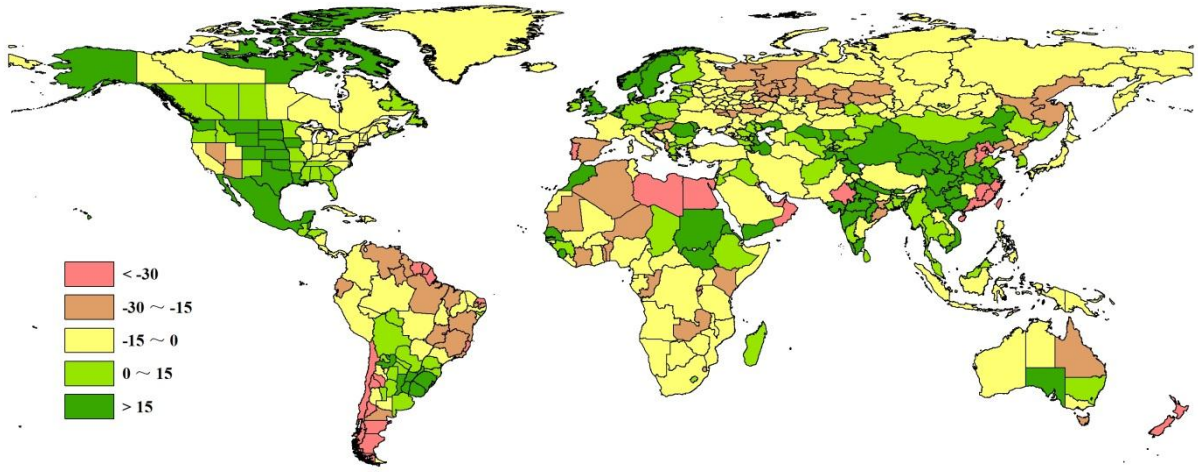


Table 3.1. CropWatch agroclimatic and agronomic indicators for October 2014-January 2015, departure from 5YA or 13YA

Country	Agroclimatic indicators			Agronomic indicators		
	Departure from 13YA (2001-13)			Departure from 5YA (2009-13)		Current
	RAIN (%)	TEMP (°C)	RADPAR (%)	BIOMSS (%)	CALF (%)	Maximum VCI
Argentina	22	0.7	-1	14	3	0.84
Australia	1	-0.3	0	0	5	0.62
Bangladesh	-43	0.6	0	8	1	0.83
Brazil	-14	1.5	5	-10	0	0.84
Cambodia	20	1.3	3	5	3	0.89
Canada	15	0.0	-7	5	4	0.81
China	14	0.8	-2	10	0	0.85
Egypt	-41	0.3	1	-31	-6	0.82
Ethiopia	15	0.0	1	0	3	0.88
France	-15	3.6	-7	-10	1	0.91
Germany	10	1.8	-8	13	3	0.93
India	5	0.5	-2	13	-2	0.83
Indonesia	-10	1.1	3	-8	0	0.87
Iran	3	0.3	-4	-7	5	0.76
Kazakhstan	41	-0.8	-8	-1	-1	0.59
Mexico	9	0.4	-5	20	5	0.87
Myanmar	25	0.8	-2	29	1	0.85
Nigeria	12	0.4	-1	-7	-1	0.82
Pakistan	-16	0.3	-3	-8	-8	0.71
Philippines	-5	0.3	0	-9	0	0.89
Poland	8	1.6	-5	13	4	0.87
Romania	42	1.1	-10	17	7	0.77
Russia	7	-0.6	-4	-11	5	0.60
S. Africa	-9	0.7	2	-9	-12	0.78
Thailand	17	0.8	1	2	1	0.89
Turkey	18	1.0	-5	-2	23	0.90
United Kingdom	36	2.1	-8	16	0	0.90
Ukraine	-8	-0.1	5	-3	9	0.61
United States	17	-0.2	-4	14	3	0.82
Uzbekistan	4	-1.1	-6	10	-3	0.76
Vietnam	-18	0.8	3	-15	1	0.89

Note: Departures are expressed in relative terms (percentage) for all variables, except for temperature, for which absolute departure in degrees Celsius is given. Zero means no change from the average value; Relative departures are calculated as (C-R)/R*100, with C=current value and R=reference value, which is the five-year (5YA) or thirteen-year average (13YA) for the same period (October-January).

3.2 Country analysis

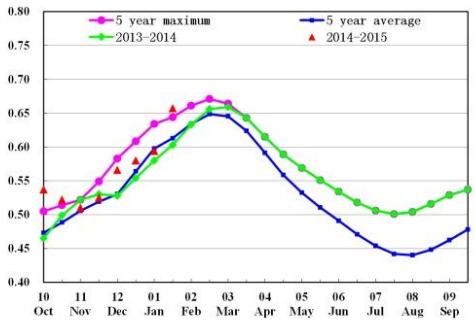
This section presents CropWatch results for each of thirty key countries (China is addressed in Chapter 4). The maps refer to crop growing areas only and include (a) Crop condition development graph based on NDVI average over crop areas, comparing the January-October 2014 period to the previous season and the five-year average (5YA) and maximum. (b) Maximum VCI (over arable land mask) for October 1 2014-January 31 2015 by pixel; (c) Spatial NDVI patterns from July or October (according to local cropping patterns) up to February 2015 (compared to the 5YA); and (d) NDVI profiles associated with the spatial pattern under (c). See also Annex A, tables A.2-A.10, and Annex B, tables B.1-B.3, for additional information about indicator values and production estimates by country. Country agricultural profiles are posted on www.cropwatch.com.cn.

Figures 3.5-3.34. Crop condition for individual countries ([ARG] Argentina- [ZAF] South Africa) for October 2014-January 2015

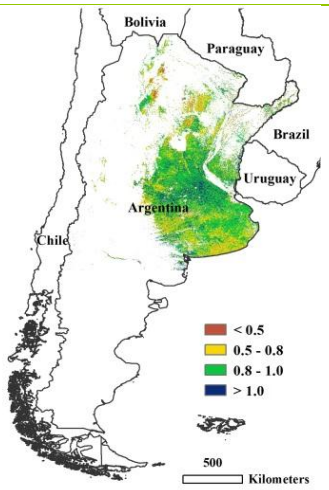
[ARG] Argentina

Crop condition in Argentina was generally favorable over the reporting period. Currently, the harvesting of winter wheat is almost completed, and maize and soybean are at flowering to grain filling stages. Argentina experienced sufficient rainfall and favorable temperatures, which promoted the development of maize and soybean. Compared to the average, Argentina experienced 22% more rainfall, 0.7°C higher temperature, and average PAR. The overall crop condition based on NDVI development shows above average crop condition. Spatial NDVI patterns compared to the five-year average and corresponding NDVI departure cluster profiles confirm that NDVI is above average for most arable land in Argentina. Only 10% of crop areas scattered across north Argentina showed below average condition since September 2014. Rainfall in late January promoted the summer crops' progress. High maximum VCI values in central and northern Buenos Aires, Santa Fe, and Cordoba indicate positive prospects for maize and soybean. CropWatch estimates winter wheat production for the 2014-2015 season at 12.1 million tons, 15% up from the previous season (see table B.1 in Annex B.)

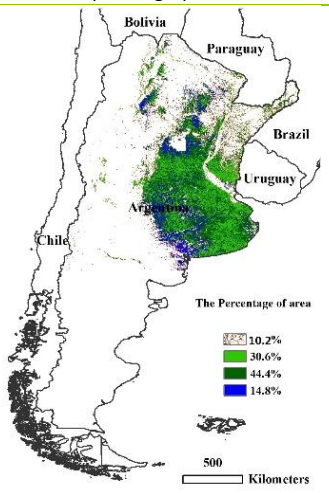
Figure 3.5. Argentina crop condition, October 2014-January 2015



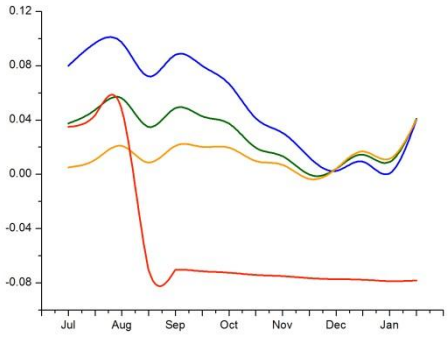
(a) Crop condition development graph based on NDVI



(b) Maximum VCI



(c) Spatial NDVI patterns compared to 5YA

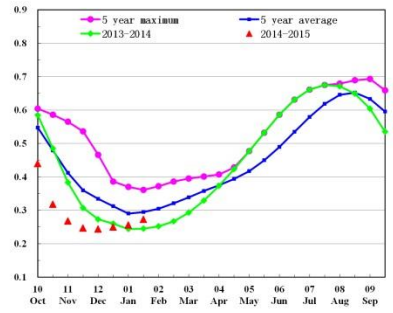


(d) NDVI profiles

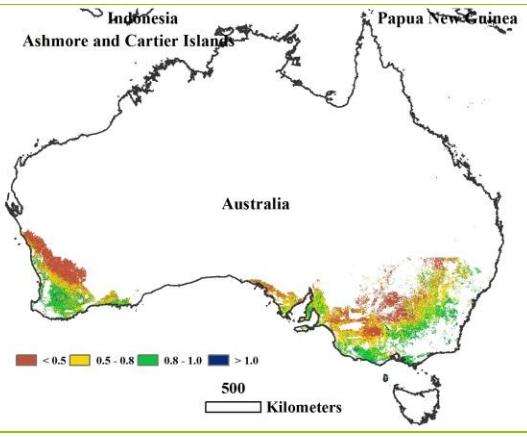
[AUS] Australia

The crops in Australia show below average condition from October 2014 to January 2015. The maximum VCI was between 0.5 and 0.8 for the central and southeastern regions of New South Wales, between 0.8 and 1.0 for the central area of Victoria, and at an overall value of 0.62 for Australia's cropped land. Compared to the last five years, the cropped regions show below average crop conditions for the entire monitored period, as shown by the spatial NDVI patterns. Regions with VCIx lower than 0.5 were not planted over the monitoring period. The NDVI-based crop condition development graph also displays below average crop condition from October 2014 to January 2015 compared to the last five-years. Even when compared with the situation of 2013, crop condition was not favorable before January 2015; following January, however, some degree of recovery can be seen. As it is harvest season for wheat and barley, some fears exist that production will be reduced this year, a result from the reduced precipitation during the main growing season from July to October, 2014. (See also table B.2 in Annex B.)

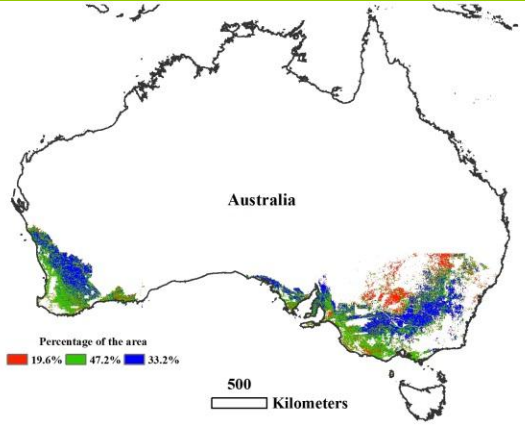
Figure 3.6. Australia crop condition, October 2014-January 2015



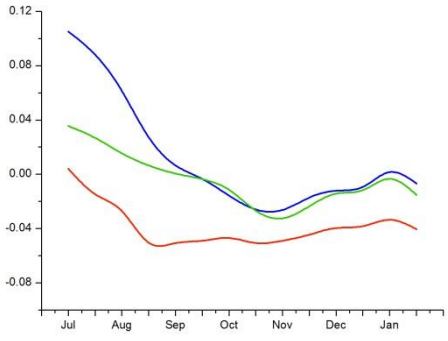
(a) Crop condition development graph based on NDVI



(b) Maximum VCI



(c) Spatial NDVI patterns compared to 5YA

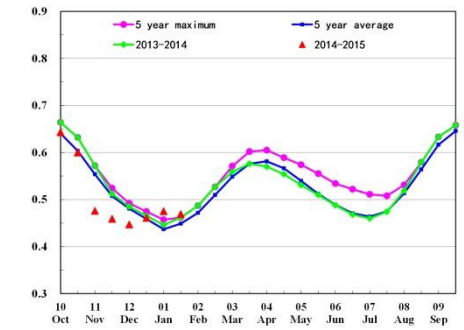


(d) NDVI profiles

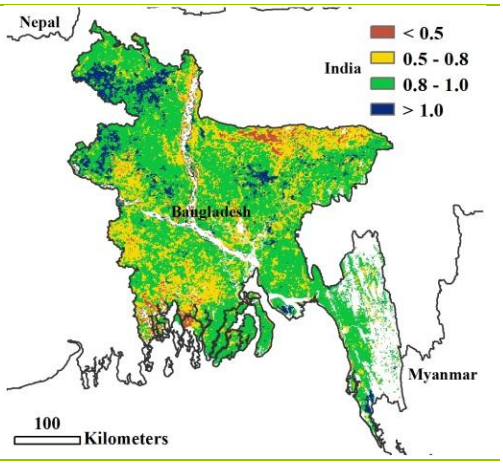
[BGD] Bangladesh

The monitoring period is the growing and harvesting season of Aman rice. The crop condition was favorable with maximum VCI ranges between 0.5 and 1 for most of the regions. Very favorable crop condition was observed in the northwestern part of Bangladesh with a maximum VCI value larger than 1. The NDVI values for crop growing regions dropped in mid-November but gradually started increasing in early December, indicating good crop progress. The NDVI values of the northern part of Dhaka and Sylhet increased between October and early December. The crop condition was below the previous year and the five-year average during the October to December period. However, it returned to normal in early January and crop condition development reached values above the previous five years maximum. Rainfall was 43% below average, while temperature and radiation were average. The cropped arable land fraction was about the five-year average. Biomass accumulation was 8% above. Overall, CropWatch indicators forecast good crop condition due to adequate average rainfall during the key seasons over the rice growing areas.

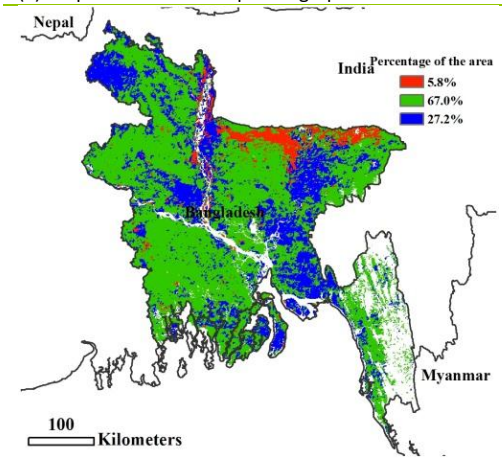
Figure 3.7. Bangladesh crop condition, October 2014-January 2015



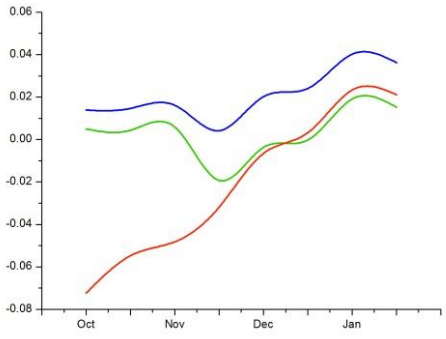
(a) Crop condition development graph based on NDVI



(b) Maximum VCI



(c) Spatial NDVI patterns compared to 5YA

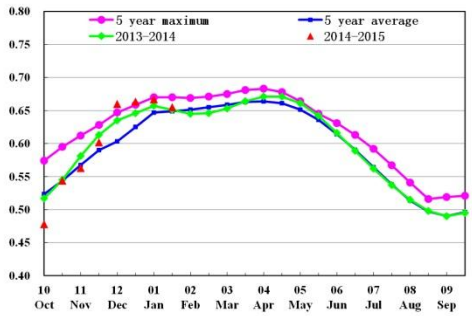


(d) NDVI profiles

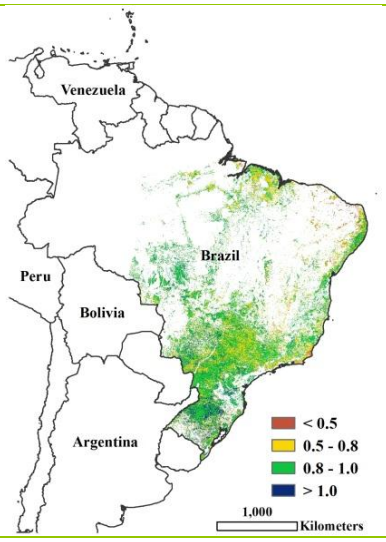
[BRA] Brazil

Crop condition was generally average in Brazil from October 2014 to January 2015. The harvest of wheat was completed in early January. Currently, soybean and first season maize are at grain filling stage while the planting of the second season maize is still ongoing. The reporting period recorded a 14% drop in rainfall compared to average and a 1.5°C increase in temperature at the national level. The unfavorable climatic conditions induced overall low biomass in Brazil. However, conditions varied from place to place. In the southernmost areas, including Rio Grande Do Sul and Santa Catarina, sufficient rainfall benefited crop development and yield accumulation. In contrast, below average rainfall hampered the crops in the central-west, the southeast region, and the northeast region. Spatial NDVI patterns together with NDVI cluster profiles also illustrate the above average condition in the south region, and average to below average condition in central and north Brazil. The observations are consistent with high maximum VCI mainly in southern Brazil, including the key grain producing state of Rio Grande Do Sul. Overall, crop condition for the whole of Brazil is slightly above both the average and the previous year according to the NDVI development graph. CropWatch puts wheat production for 2014-2015 at 6.7 million tons, an increase of 9% compared with the previous year (see also table B.3 in Annex B.)

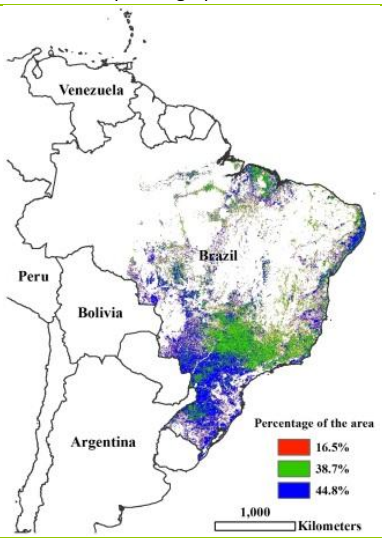
Figure 3.8. Brazil crop condition, October 2014-January 2015



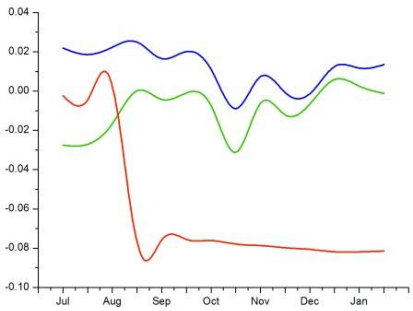
(a) Crop condition development graph based on NDVI



(b) Maximum VCI



(c) Spatial NDVI patterns compared to 5YA

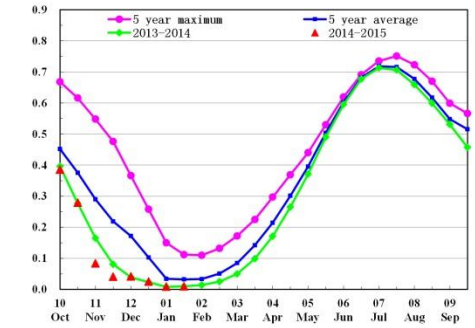


(d) NDVI profiles

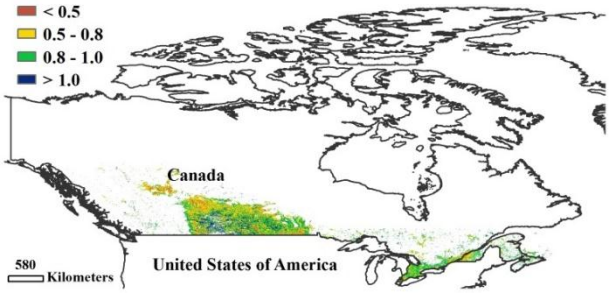
[CAN] Canada

In general, the crop condition as assessed by NDVI is below average in this monitoring period. This period is the harvesting season of spring-summer crops in Canada, and all crops had been harvested before the end of November. As mentioned in the previous CropWatch bulletin, some crops were damaged by floods and water logging in Alberta, Saskatchewan, and Manitoba, resulting in the low average crop condition indicated by VCIx and NDVI profiles. For the agroclimatic indicators in this monitoring stage, rainfall over agricultural areas was 17% above average, with a particularly high increase in Alberta (+29%); temperature was close to average, and PAR decreased by -7% compared to average at the national scale. The NDVI development profile is below average from early October to the end of January, while accumulated biomass (BIOMSS) showed a positive departure of 5%. The cropped arable land fraction (CALF) increased by 4% compared to last five-year average, while the maximum VCI was 0.81. The increase of CALF may have resulted from the delayed harvest of summer crops in 2014.

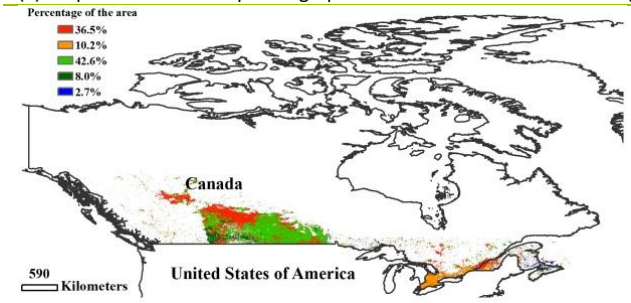
Figure 3.9. Canada crop condition, October 2014-January 2015



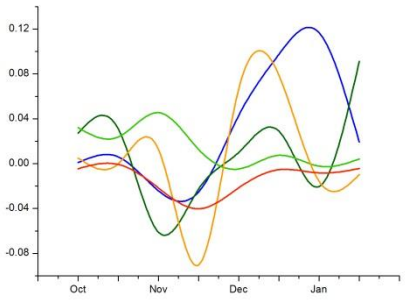
(a) Crop condition development graph based on NDVI



(b) Maximum VCI



(c) Spatial NDVI patterns compared to 5YA

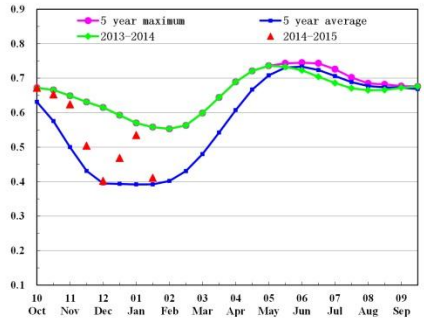


(d) NDVI profiles

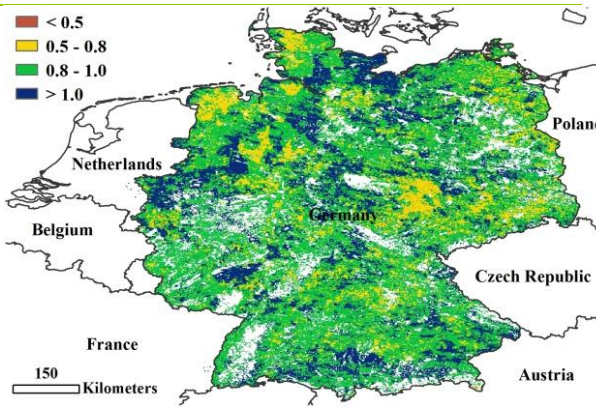
[DEU] Germany

The reporting period covered the late states of sugar beets (October harvest) and early vegetative stages of winter wheat and winter barley (planted in October) in Germany. The CropWatch agroclimatic indicators indicate above average rainfall and temperature (+10% and +1.8°C), while radiation decreased by 8%. With the positive moisture and thermal anomalies, biomass is expected to increase by 13% compared to the five-year average at the national scale. This observation is confirmed by the NDVI profiles, with the national NDVI values well above average and even close to the five-year maximum, except for a sharp drop at the beginning of December and another sharp drop at the end of January. The NDVI clusters indicate that NDVI values over the country were above average from the end of October to early December; a sharp drop of NDVI in December mostly affected central and southern Germany. The maximum VCI map also presents overall good crop condition. Generally, due to the suitable temperature and moisture conditions, the agronomic indicators mentioned above indicate a favorable condition for most winter crop areas of Germany.

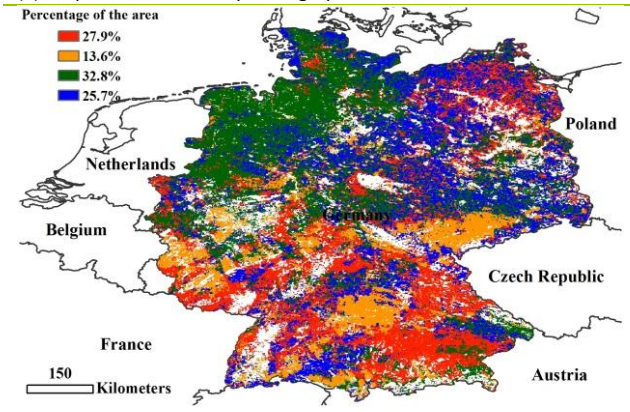
Figure 3.10. Germany crop condition, October 2014-January 2015



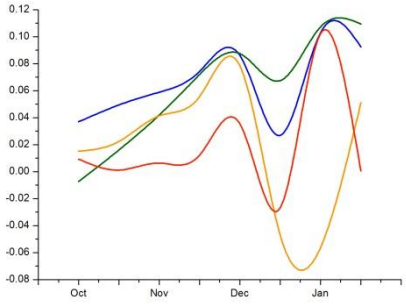
(a) Crop condition development graph based on NDVI



(b) Maximum VCI



(c) Spatial NDVI patterns compared to 5YA

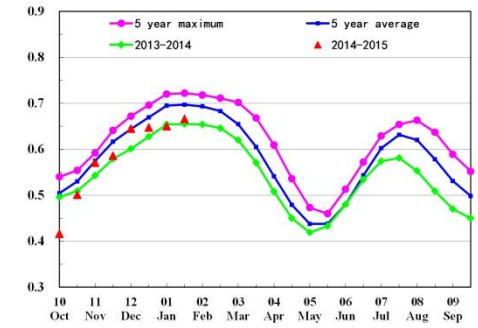


(d) NDVI profiles

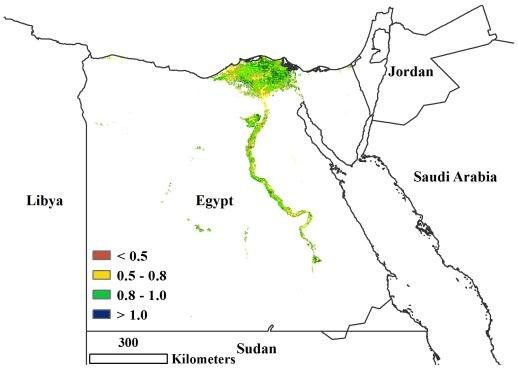
[EGY] Egypt

The harvest of summer crops was completed at the end of 2014; current winter crops were planted in November and December and are due to be harvested in May and June. Although almost all crops are irrigated, occasional rainfall does contribute to creating favorable growing conditions. The rainfall indicator for the reporting period was significantly below average (-41%), while radiation and temperature were about average. Cropped arable land fraction (CALF) also dropped (-6% compared to average), although this is unlikely to be due to reduced precipitation. Overall, 17.3% of the agricultural areas, located in the western half of the Delta (east Al Buhayrah), show a very significant NDVI drop at the beginning of November, which together with the decrease in CALF indicate poor or late planted crops, both situations leading to below average conditions in the areas concerned. The national NDVI profile started slowing down at the end of December. Although the winter crops are still three to four months from being harvested, current conditions point at just fair conditions.

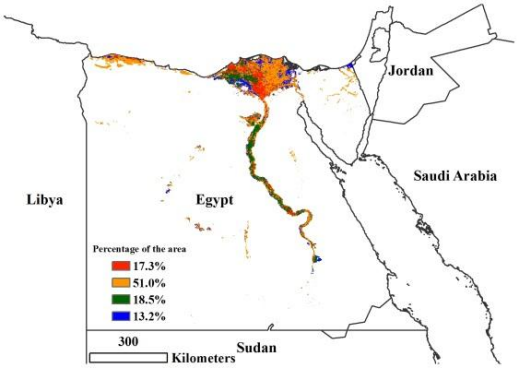
Figure 3.11. Egypt crop condition, October 2014-January 2015



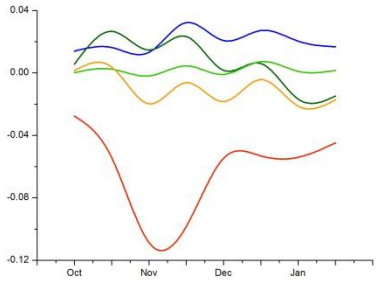
(a) Crop condition development graph based on NDVI



(b) Maximum VCI



(c) Spatial NDVI patterns compared to 5YA

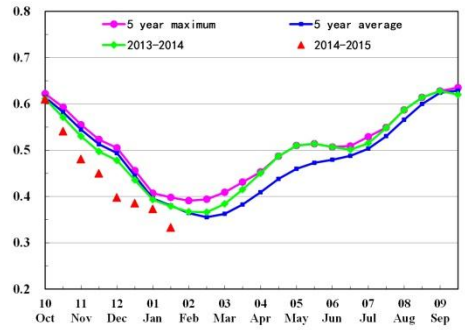


(d) NDVI profiles

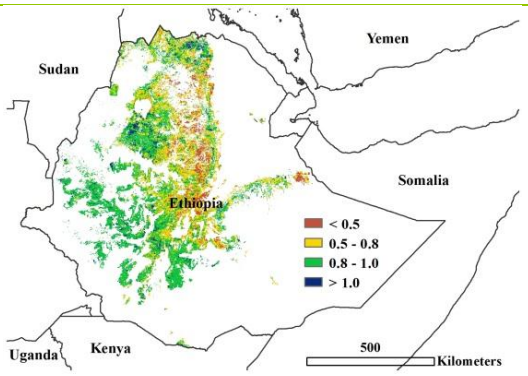
[ETH] Ethiopia

Main season (Meher) crops were harvested at the end of 2014, while some "minor" coarse grains (such as oats and millets) will be mostly harvested in January. The condition of these main season crops was generally slightly below the average of the previous five years. Based on the NDVI profiles, the areas where conditions were unfavorable are identified as the southeastern SNPP and southwest Oromyia, together representing about 15% of Ethiopia's cropland. Maximum VCI values are low in central Oromyia and in east Amhara, where NDVI values have been at least average throughout the reporting period. The discrepancy is not explained by rainfall (+15% compared with the recent reference period) nor temperature, PAR, or biomass accumulation potential, which were all average. On the other hand, the fraction of cropped arable land increased by 3%, while the average national VCIx amounts to 0.88, showing that the combination of cultivated area and slightly above-average yields has resulted in favorable crop condition.

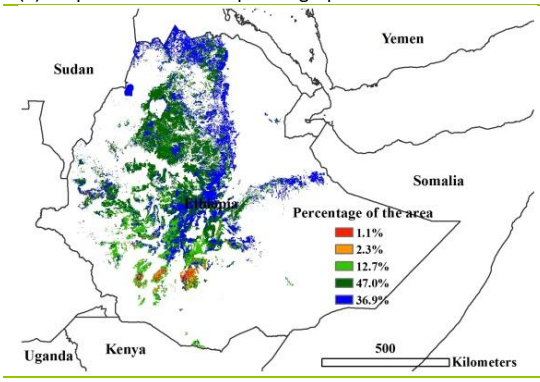
Figure 3.12. Ethiopia crop condition, October 2014-January 2015



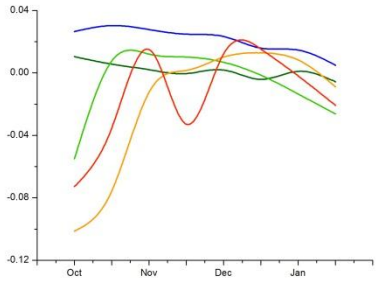
(a) Crop condition development graph based on NDVI



(b) Maximum VCI



(c) Spatial NDVI patterns compared to 5YA

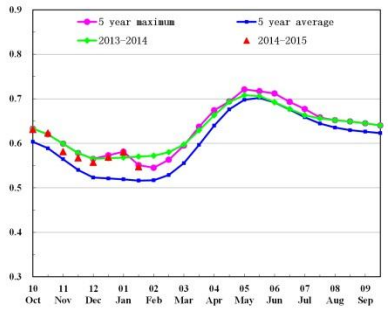


(d) NDVI profiles

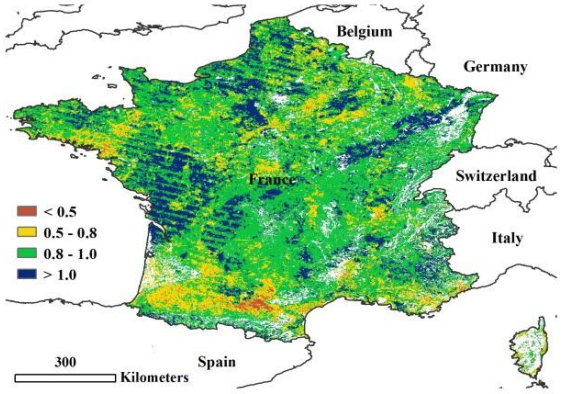
[FRA] France

This report's monitoring period covers the late stages of sugar beets (October harvest) and the early vegetative stages of soft wheat and winter barley (planted in October). On the national scale, the CropWatch TEMP indicator shows warmer than average weather. Also at the national level, biomass presents a 10% decrease compared to average due to low rains (-15%) and radiation (-7%). As shown by the NDVI profiles, national NDVI values were well above average and even close to the five-year maximum, consistent with a maximum VCI of 0.85 for France overall. According to the crop condition map based on NDVI, the country's spatial NDVI indicates a situation that on the whole is better than the five-year average, with the exception of (i) the east of Bourgogne, the south of Franche-comte, and the east of Rhone-Alpes region, with NDVI values below average from mid-November to early December; and (ii) the Lorraine and Champagne-Ardenne region, where NDVI values were below average from early November to mid-November. Generally, due to the suitable temperatures, the agronomic indicators mentioned above indicate a favorable condition for most winter crop areas of France.

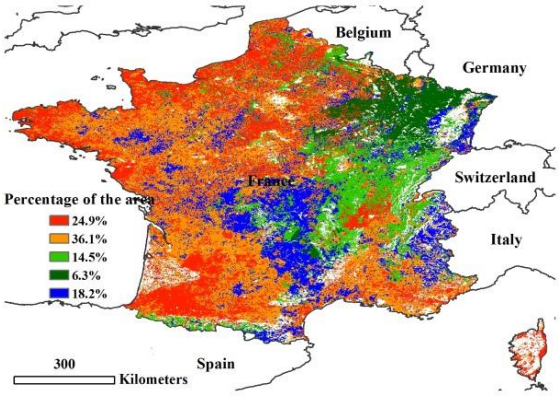
Figure 3.13. France crop condition, October 2014-January 2015



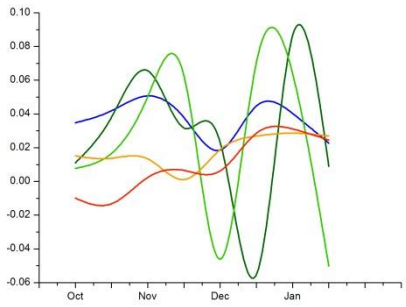
(a) Crop condition development graph based on NDVI



(b) Maximum VCI



(c) Spatial NDVI patterns compared to 5YA

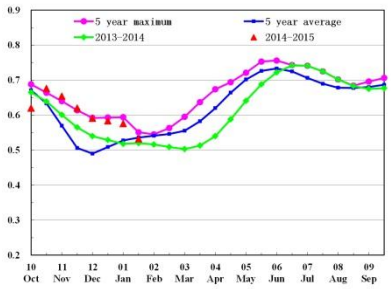


(d) NDVI profiles

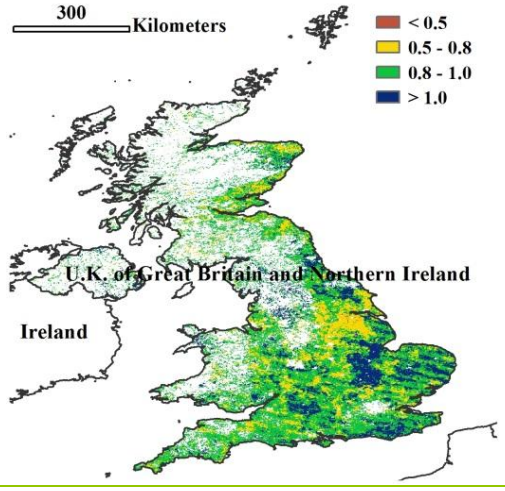
[GBR] United Kingdom

This reporting period from October 2014 to January 2015 covers the late states of sugar beets (December harvest) and the early vegetative stages of winter wheat, winter barley, and rapeseed. The country experienced unusually favorable weather conditions with an increase of the CropWatch agroclimatic indicators, especially rainfall (up 36% compared to average). As shown by the NDVI profiles, national NDVI values were well above average and even above the five-year maximum (except for a sharp drop at the beginning of October). According to the crop condition map based on NDVI, more than 90% of the country recorded higher than average NDVI from October to January. The eastern and southeast regions presented a NDVI decrease from November to December due to excess water, but have since recovered. This spatial pattern is also reflected by the maximum VCI in the different areas, with a VCIx of 0.9 for the country overall. The CropWatch agroclimatic and agronomic indices indicate above average temperature (TEMP, +2.1°C), while radiation (RADPAR, -8%) was below average. Due to adequate rainfall and suitable temperatures, biomass at the national scale is expected to increase by 16% compared with the last five-year average, reflecting the above-mentioned crop conditions. Overall, the agronomic indicators all indicate rather favorable conditions for the winter crop areas of the United Kingdom.

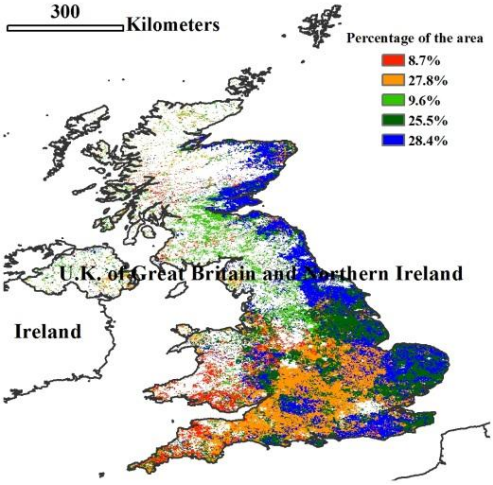
Figure 3.14. United Kingdom crop condition, October 2014-January 2015



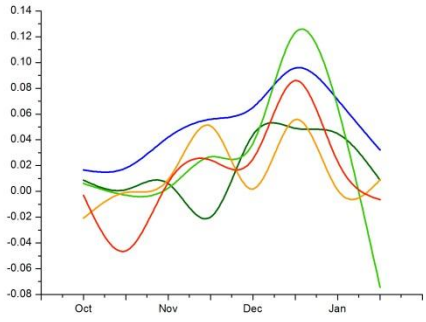
(a) Crop condition development graph based on NDVI



(b) Maximum VCI



(c) Spatial NDVI patterns compared to 5YA

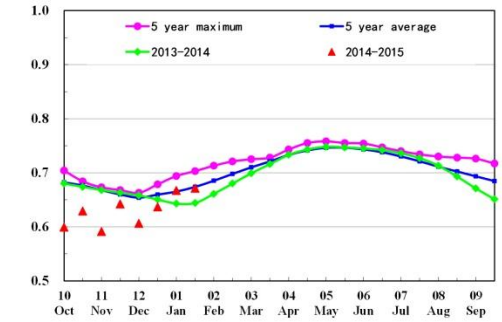


(d) NDVI profiles

[IDN] Indonesia

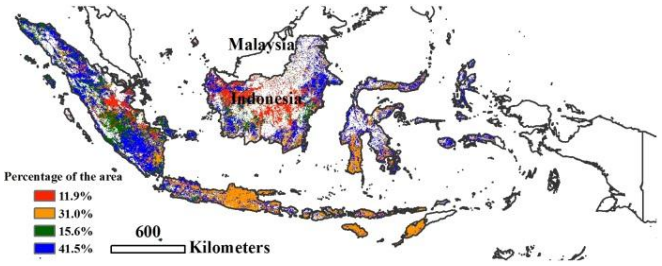
Indonesian crops generally showed satisfactory condition between October and January (VCIx=0.87). The monitoring period covers the harvesting stage of the dry season maize and rice; wet season crops are currently in the field. Compared with the average for the same period, precipitation was below average (-10%) and, correspondingly, the country enjoyed favorable radiation with values about 3% above average, as well as a 1.1°C increase of temperature. As the onset of the rainy season was late, dry and warm condition had negative effects on the seeding stage of rice, resulting in a decrease of 8% in biomass compared with the recent five-year average. According to the spatial patterns of NDVI profiles, in central and eastern Java, rice was below average condition until late December. In January, a well-established monsoon maintained abundant moisture supplies for rice, which benefited the growing rice and, based on NDVI, crop condition reached an average level.

Figure 3.15. Indonesia crop condition, October 2014-January 2015

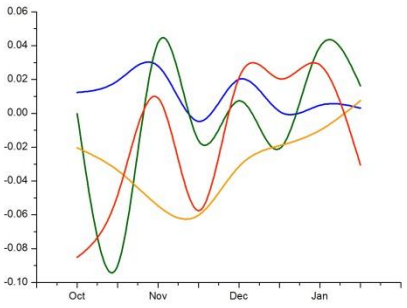


(a) Crop condition development graph based on NDVI

(b) Maximum VCI



(c) Spatial NDVI patterns compared to 5YA

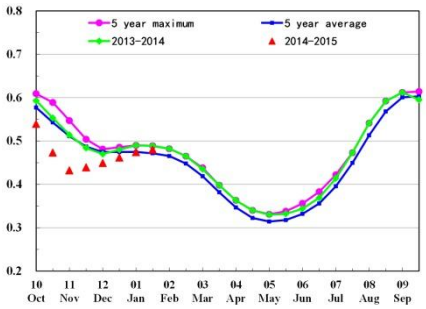


(d) NDVI profiles

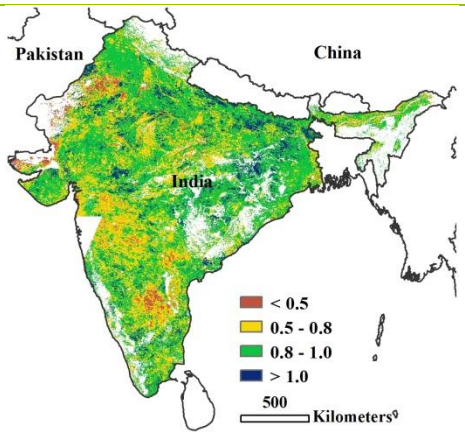
[IND] India

The reporting period corresponds to the planting and growing season of rabi crops. Several key rabi crop producing states experienced below average rainfall, such as Andhra Pradesh (RAIN, -25%), Assam (-49%), Bihar (-24%), Jharkhand (-38%), Odisha (-32%), Punjab (-29%), West Bengal (-41%), and Rajasthan (-8%), which may lead to poor crop condition. Low rainfall in these region also triggered low biomass accumulation, especially in Rajasthan (BIOMSS, -47%) followed by Odisha (-21%), Jharkhand (-20%), Bihar (-7%), and Assam (-4%). However, for the entire region, crop condition was average with maximum VCI values between 0.5 and 0.8. The lowest VCI was observed in the below average crop condition areas in Rajasthan and Andhra Pradesh with reported low rainfall. During the monitoring period the NDVI values increased gradually in Uttar Pradesh, Bihar, Punjab, Haryana, Karnataka, and Tamil Nadu, indicating good development of rabi crops. Starting in early December, NDVI values increased in Madhya Pradesh, Uttar Pradesh, and Maharashtra. In the states of Maharashtra, Andhra Pradesh, and the central part of Uttar Pradesh, crop development progress was favorable with increasing NDVI values starting in mid-December. NDVI values suddenly dropped to negative in early November in the coastal part of Tamil Nadu indicating poor crop condition, which, however, improved to average condition after mid-December. From October to January, crop condition was below last years', but starting in early January it reach last year's level. The fraction of cropped arable land decreased by 2%. Overall, as per the CropWatch indicators, the crop condition is average during the reporting period.

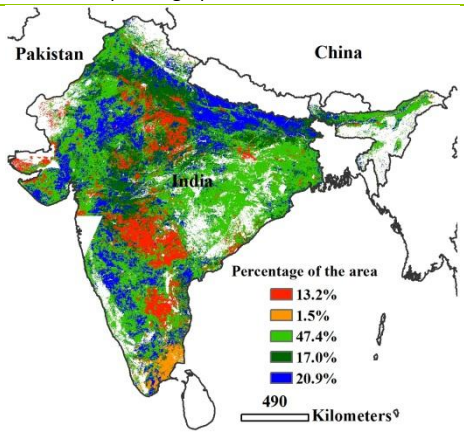
Figure 3.16. India crop condition, October 2014-January 2015



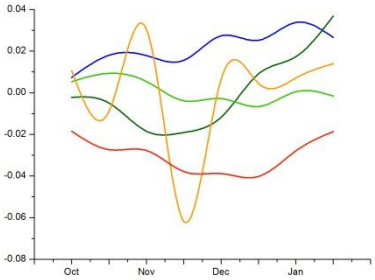
(a) Crop condition development graph based on NDVI



(b) Maximum VCI



(c) Spatial NDVI patterns compared to 5YA

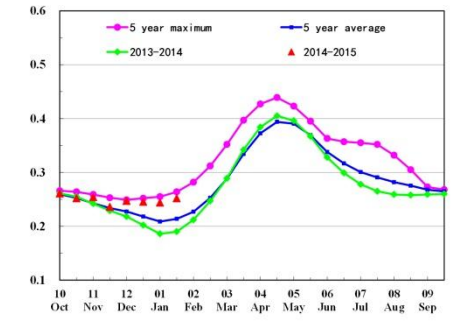


(d) NDVI profiles

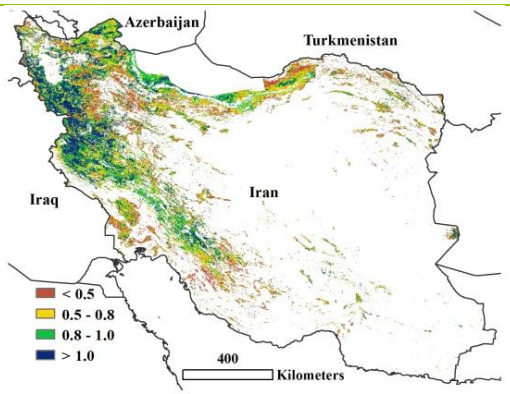
[IRN] Iran

During the period from October 2014 to January 2015, the planting of winter wheat has been completed, while at the end of January planting of barley was still underway. Rainfall and temperature were above and radiation below average. The CropWatch agroclimatic indices for the current season indicate unfavorable conditions for winter crop growth, which are confirmed by the decrease of the BIOMSS index by 7%. The national maximum VCI (0.76) was just above average conditions, while the fraction of cropped arable land increased by 5% compared to the five-year average. This information indicates that the initial conditions for winter crops in the country were favorable. Conditions were close to or above the five-year average in the Razavi Khorasan and North Khorasan province of the northeast region, in the western regions from Ardabil to Zanjan, and extending south and southwest as far as Khuzestan province. The crop conditions in the central-north region, particularly Mazandaran and Golestan province, were below the five-year average during the period of October to December. Most regions experienced close average crop condition from October to November and above average crop condition through December and January. Iran's latest 2014-15 winter crop generally underwent favorable conditions.

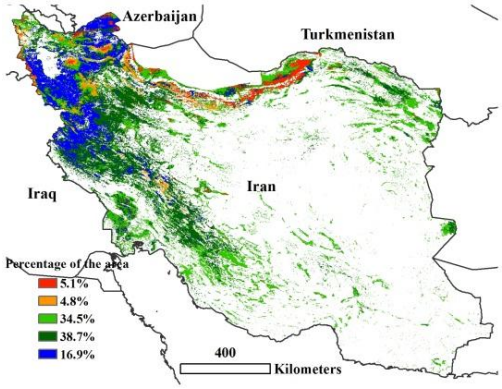
Figure 3.17. Iran crop condition, October 2014-January 2015



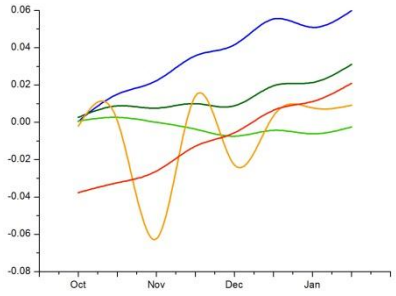
(a) Crop condition development graph based on NDVI



(b) Maximum VCI



(c) Spatial NDVI patterns compared to 5YA

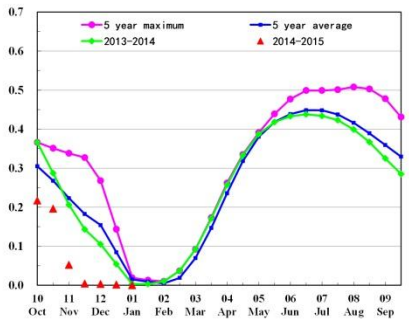


(d) NDVI profiles

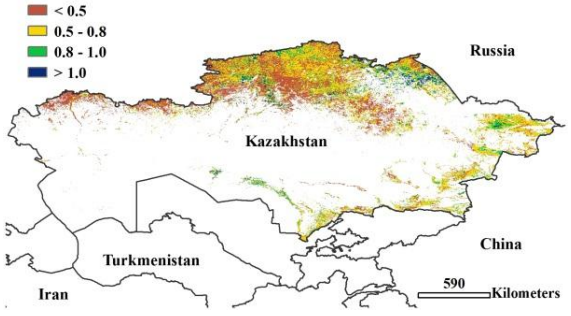
[KAZ] Kazakhstan

This analysis covers the harvesting period of last year's summer crops (cereals, spring barley, and wheat) from October 2014 to late January of this year. Among the CropWatch agro-climatic indicators, compared with average, rainfall over agricultural areas showed a sharp increase (+41%) (with the exception of the Zapadno kazachstanskaya oblast where rainfall decreases by 10%), while temperature and radiation undergo slight (-0.8°C for TEMP) and sharp (-8% for PAR) decreases. The NDVI clusters indicate that crops were in poor condition from October to early November in the areas of Severo kazachstanskaya and Akmolinskaya. The maximum VCI indicates that crop condition of most arable land in Kazakhstan was below average (pixel values below 0.5), except for some areas of the north and east. No crop was planted since November, and from December the NDVI index has been close to zero. The crop condition development graph also shows that crops are clearly worse off than last year and the average of the past five years, but favorable rainfall has provided the soil moisture for the initial stages of the forthcoming crops.

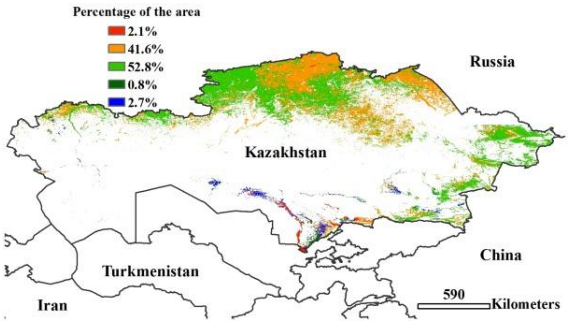
Figure 3.18. Kazakhstan crop condition, October 2014-January 2015



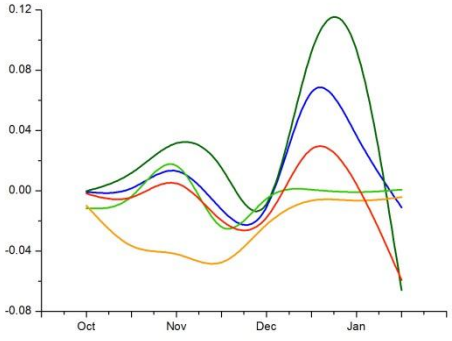
(a) Crop condition development graph based on NDVI



(b) Maximum VCI



(c) Spatial NDVI patterns compared to 5YA

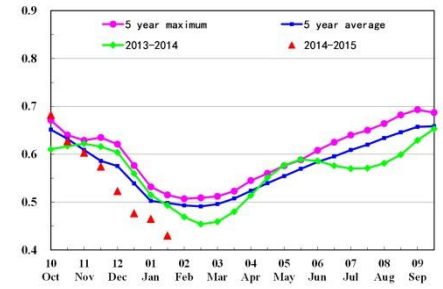


(d) NDVI profiles

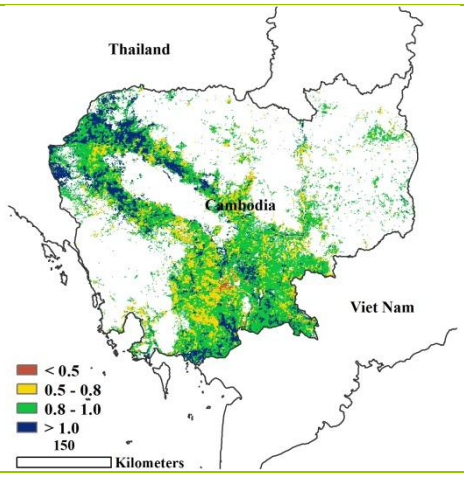
[KHM] Cambodia

October to January covers the growing period of the main (wet season) rice crop, and the early stage of the second (dry season) rice in Cambodia. The fraction of cropped arable land was consistent with the average of the previous five years. For the period under consideration, the CropWatch agroclimatic indicators show markedly above average rainfall and a slight increase in PAR, and temperature increased by 1.3°C compared to average. Favorable conditions increased the biomass accumulation expectations by 5% in comparison with the last five years. Sufficient rainfall is beneficial for the sowing and emergence of the second rice. Vegetation condition indices (VCIx) are very high (>1.0) in Banteay Meanchey and Battambang in the northwestern part of the country, the major rice cultivation area in the Tonle Sap basin.

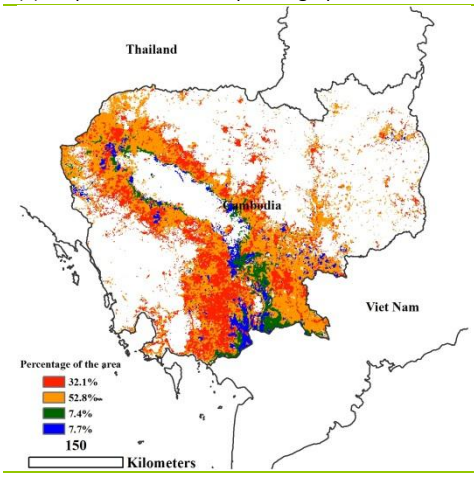
Figure 3.19. Cambodia crop condition, October 2014-January 2015



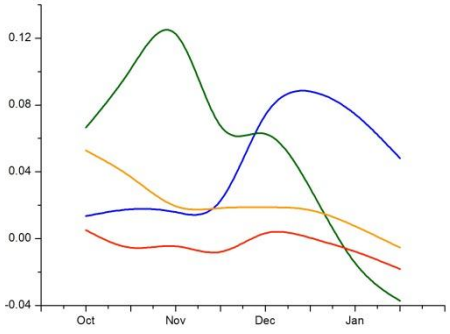
(a) Crop condition development graph based on NDVI



(b) Maximum VCI



(c) Spatial NDVI patterns compared to 5YA

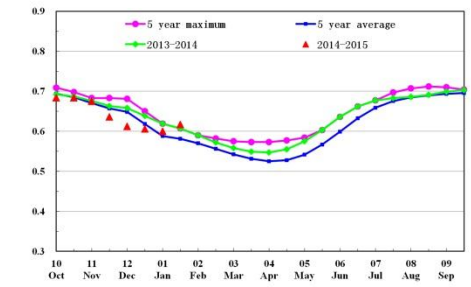


(d) NDVI profiles

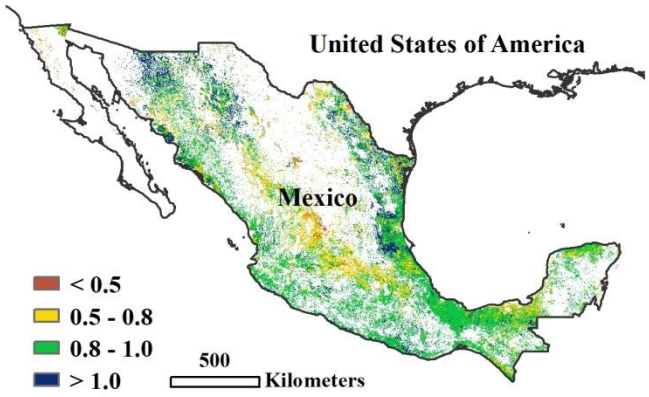
[MEX] Mexico

In general, crop condition was above average in this monitoring period (October 2014 to January 2015). This is the harvesting season of Mexico's 2014 main maize and the planting season of secondary maize and winter wheat. During the monitoring period, rainfall showed a positive departure (+9%) compared to average; temperature was slightly above average (+0.4°C), and photosynthetically active radiation decreased by 5%. The NDVI development profile indicates the average performance during the 2014 harvesting season and the favorable crop condition in January 2015. Maximum VCI in the north and northeastern regions of the country was much above the five-year average, which indicates the good performance of crops in those regions, as supported by the cluster of NDVI profiles (more than 40% of arable land shows good crop condition) and accumulation of biomass (+20%). On the contrary, crop condition is only average in some part of central Mexico, according to the average value of maximum VCI. The cropped arable land fraction showed a positive departure of 5%.

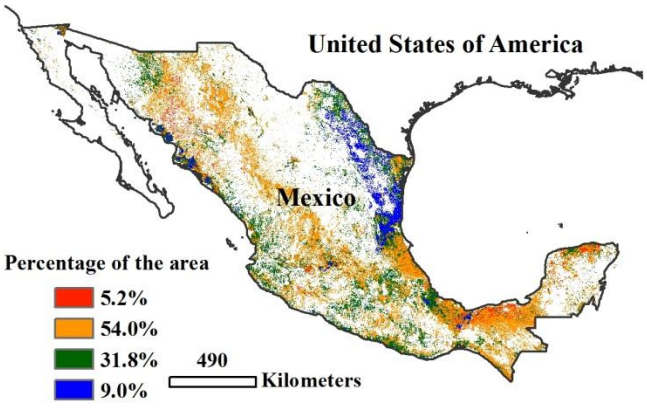
Figure 3.20. Mexico crop condition, October 2014-January 2015



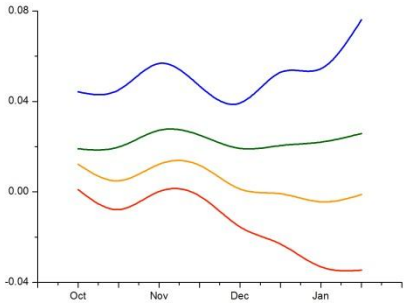
(a) Crop condition development graph based on NDVI



(b) Maximum VCI



(c) Spatial NDVI patterns compared to 5YA

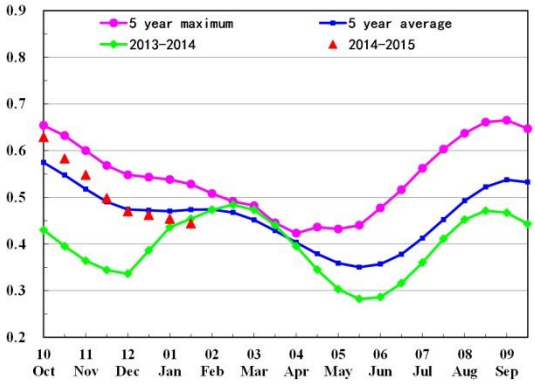


(d) NDVI profiles

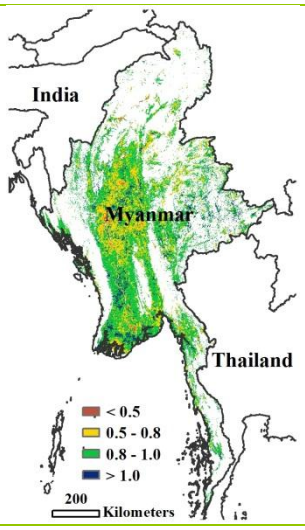
[MMR] Myanmar

Based on CropWatch indicators, the crop condition was favorable in Myanmar from October to January. The harvesting period of the main rice crop was completed in mid-November, with second rice crop starting to grow in early January. The growing period of maize and wheat begun around December. The CropWatch agroclimatic and agronomic indicators showed a decrease in radiation (-2%) but increases in rainfall (+25%) and temperature (+0.8°C. Biomass, expressed with the CropWatch BIOMSS indicator, increased by 29%. Crop growing condition showed values above average compared to the previous year because of the favorable weather condition of the main rice crop. The profiles of NDVI clusters were above average in all areas except Magway region, which is consistent with the maximum VCI map. The maximum VCI index increased to 0.85. The VCI map presents a very good crop condition in Ayeyarwady and Bago regions.

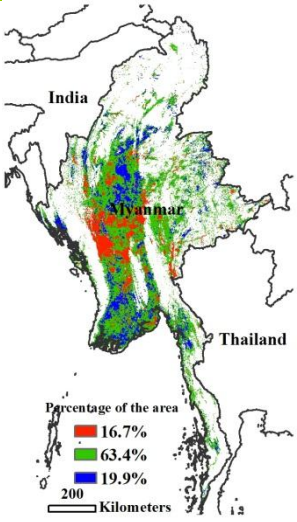
Figure 3.21. Myanmar crop condition, October 2014-January 2015



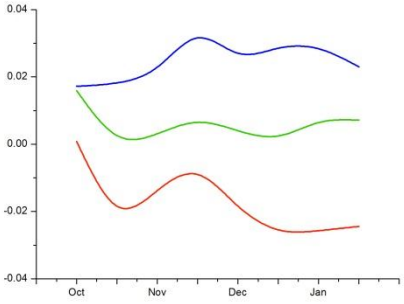
(a) Crop condition development graph based on NDVI



(b) Maximum VCI



(c) Spatial NDVI patterns compared to 5YA

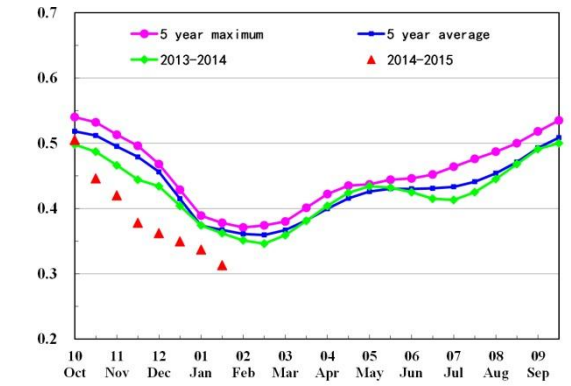


(d) NDVI profiles

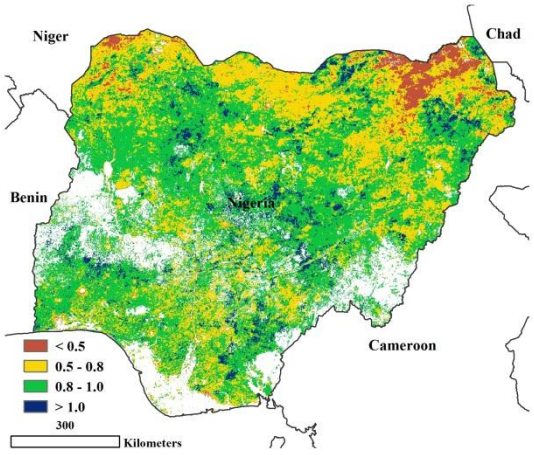
[NGA] Nigeria

The reporting period coincides with the harvesting of all crops, as indicated by the decreasing national NDVI profiles, which reach their minimum around February. Rainfall is above average (+12%), while radiation and temperature were globally average. Compared with the average of the recent five years, the biomass accumulation potential dropped 7%, which is contradicted by a rather favorable average value for maximum VCI (0.82). In fact, the VCI maps show favorable conditions everywhere but in the Sahelian northernmost areas, with especially favorable conditions in the northeast. The differences between indicators result from contrasting conditions in the southern third of the country. NDVI profiles were close to average in about 90% of the country, and they departed little from the reference value throughout the October to January period. In contrast, while globally average, they fluctuated a lot in the south, with low values in mid-October and early December in Kogi, Edo, and Ondo States, due to reduced precipitation, as mentioned in Chapter 1. Altogether, crop condition at harvest is favorable, but less so in some southern areas.

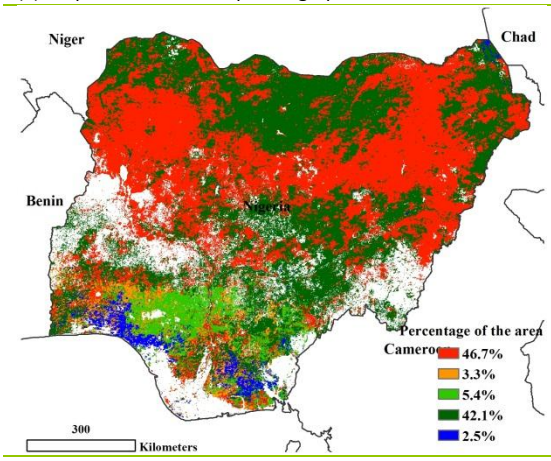
Figure 3.22. Nigeria crop condition, October 2014-January 2015



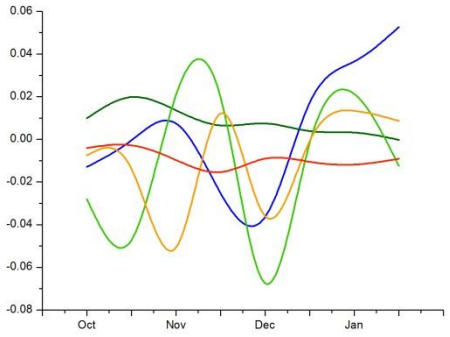
(a) Crop condition development graph based on NDVI



(b) Maximum VCI



(c) Spatial NDVI patterns compared to 5YA

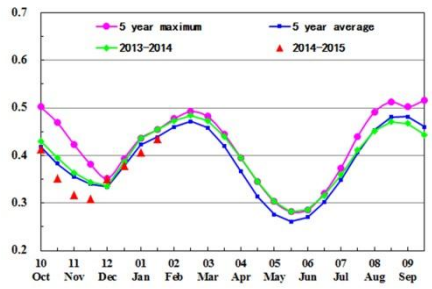


(d) NDVI profiles

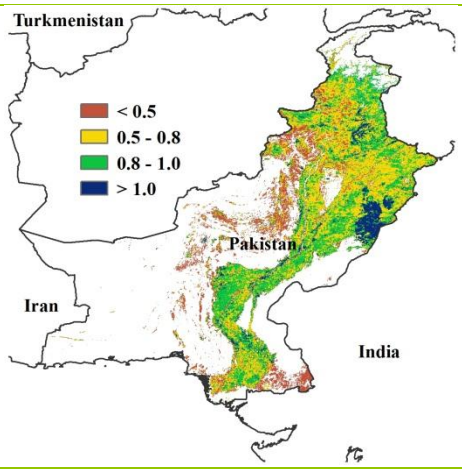
[PAK] Pakistan

This monitoring period covers the harvesting stage of last year's summer crops (maize, rice, and sorghum), as well as the sowing and growing stage of winter wheat and winter barley. Agroclimatic indicators show a decrease of rainfall (-16%) and radiation (-3%), and little above average temperature, while biomass is below the five-year average (-8%). Since October, the average NDVI development profiles indicate that crop condition was less favorable than during the five-year average from October to November; in early December, however, crop condition suddenly increased to close to and above this average, due to an increase in rainfall, as reported from other sources. Later periods experienced below average rainfall. Actually, spatial NDVI patterns and profiles show that crop condition in about 58% of arable agricultural areas in the country has been below average starting in October. All available indicators concur to rank Pakistan's crops as below average throughout the country, with the exception of areas in north and eastern Punjab and north Sindh.

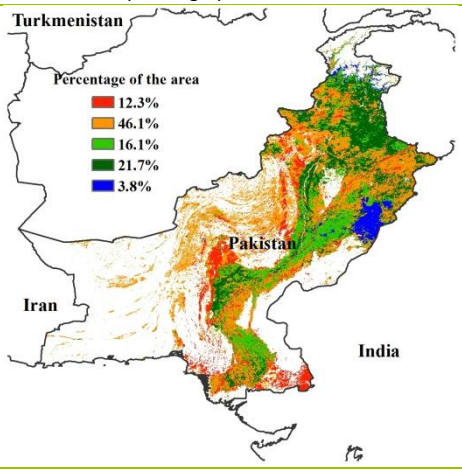
Figure 3.23. Pakistan crop condition, October 2014-January 2015



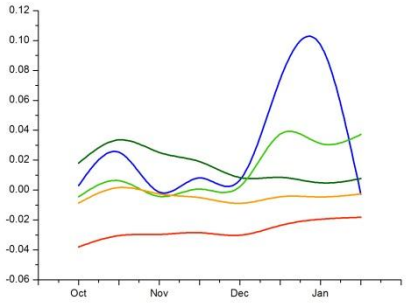
(a) Crop condition development graph based on NDVI



(b) Maximum VCI



(c) Spatial NDVI patterns compared to 5YA

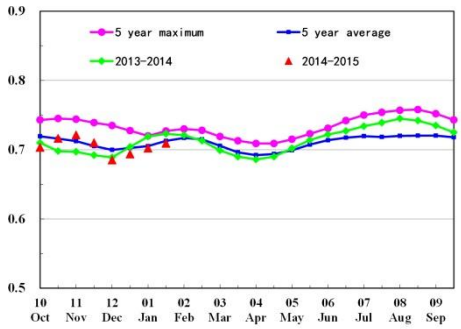


(d) NDVI profiles

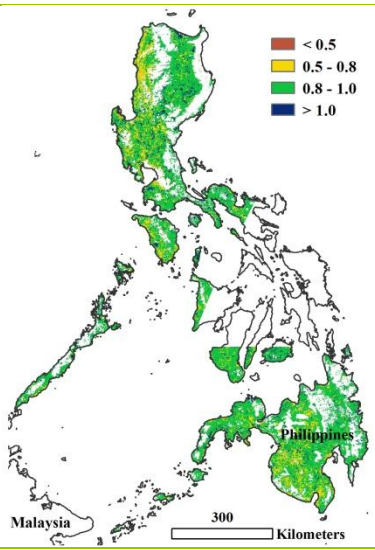
[PHL] The Philippines

Crop condition in the Philippines was generally average from October to January. The monitoring period covers the harvesting stage of last year's main rice, as well as the sowing and growing stage of secondary rice and maize. Environment indices show decreased rainfall (-5%) and slightly increased temperature (0.3°C) compared to average. As a result of rainfall deficit, the biomass accumulation shows a significant 9% decrease compared to that same average, which is also shown in the NDVI development graph: crop condition was the lowest among the curves in December. The overall maximum VCI index is 0.89, therefore, average to good yields can be expected for secondary rice.

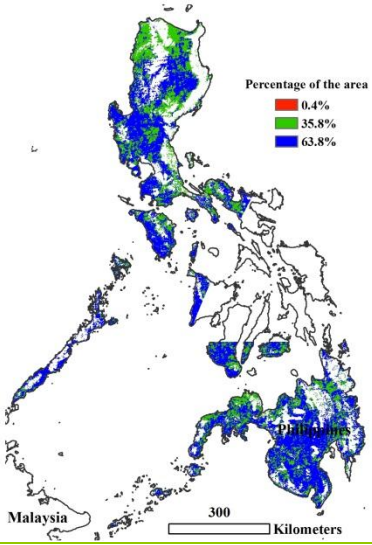
Figure 3.24. Philippines crop condition, October 2014-January 2015



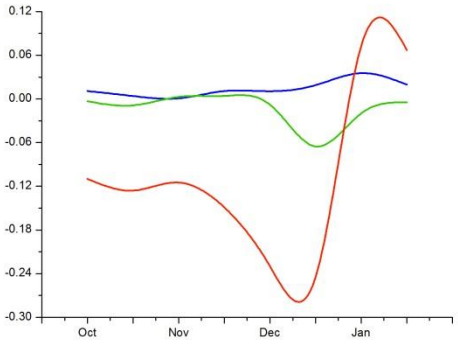
(a) Crop condition development graph based on NDVI



(b) Maximum VCI



(c) Spatial NDVI patterns compared to 5YA

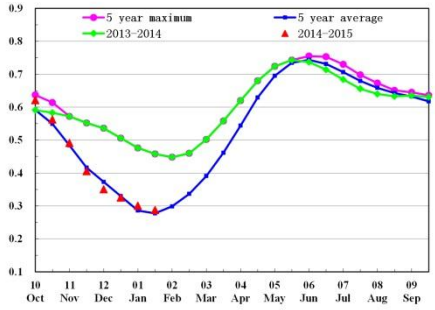


(d) NDVI profiles

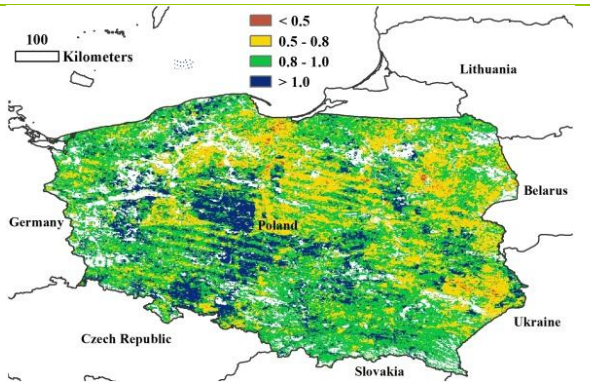
[POL] Poland

Poland enjoyed favorable conditions during this monitoring period, as indicated in part by a maximum VCI value (0.87). The country this period witnessed the harvest of maize (before October) and the sowing of winter wheat. The cropped arable land fraction was 4% above the five-year average. Weather during October to January was wetter and warmer than average, with rainfall up 8% and temperature up 1.6°C. Radiation was 5% below average, and the potential biomass increased 13% due to the abundant precipitation and mild weather. As shown by the spatial NDVI patterns, NDVI was above average in October and close to average in the next three months in most parts of Poland except the Northeast, including Poznan, Warsaw, and Cracow. Due to the warm condition in winter, Poland's winter crop was probably only slightly hardened but freezing risk was low.

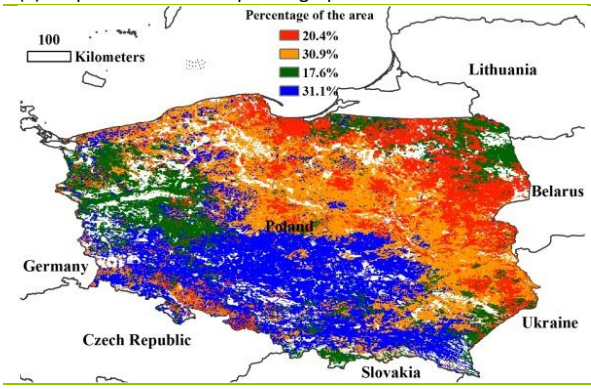
Figure 3.25. Poland crop condition, October 2014-January 2015



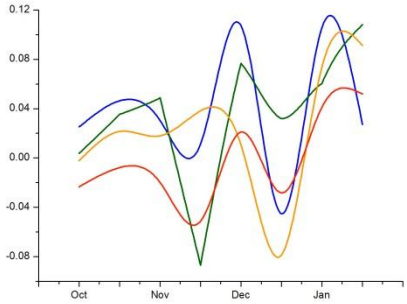
(a) Crop condition development graph based on NDVI



(b) Maximum VCI



(c) Spatial NDVI patterns compared to 5YA

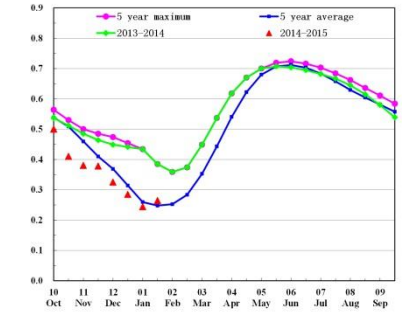


(d) NDVI profiles

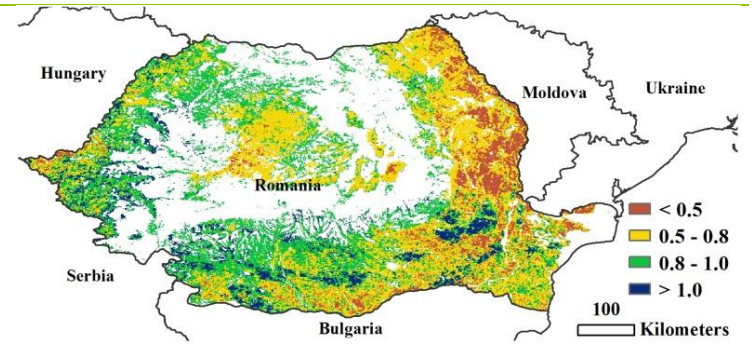
[ROU] Romania

Romania presented average crop conditions during October to January (VCIx=0.77). The winter wheat and maize harvest was completed before October; the next three months were the planting season for winter wheat. Cropped arable land was 7% above the five-year average. Overall, weather was warm with temperature up 0.4°C compared to average. Precipitation was abundant (42% above average), while the potential biomass was up to 17% higher than average due to the heavy rainfall. As a result of the cold weather over eastern Romania, including Chisinau and Bucharest, NDVI was significantly below the recent five-year average. In the west and southwest, including Oradea, Arad, Timisoara and Craiova, croplands benefited from warm conditions. Overall, the winter crops in Romania display very different conditions between west (favorable) and east (unfavorable).

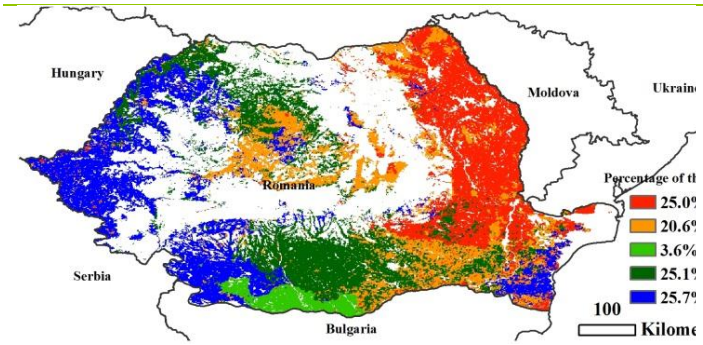
Figure 3.26. Romania crop condition, October 2014-January 2015



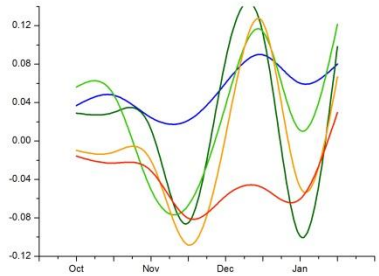
(a) Crop condition development graph based on NDVI



(b) Maximum VCI



(c) Spatial NDVI patterns compared to 5YA

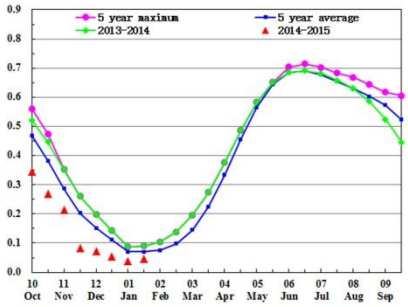


(d) NDVI profiles

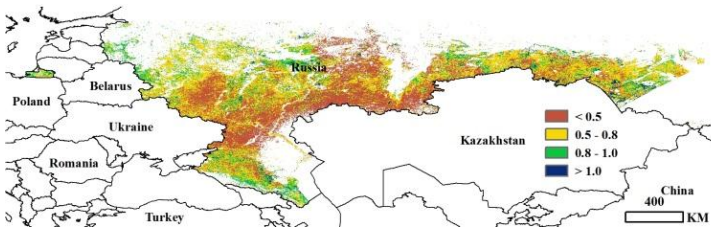
[RUS] Russia

Russia presented poor crop condition from October 2014 to January 2015 (VCIx=0.60). This reporting period covered the sowing of winter wheat, while maize and spring wheat were harvested before October. Compared with average conditions, Russia experienced slightly below average temperature (-0.6°C) and freezing weather conditions, but considerably above average precipitation (+7%). Mainly due to low temperature, a biomass drop of 11% below average is currently projected. As for the NDVI patterns, significantly below average values occurred in more than 85% of Russia's agricultural area between October and January. Only few areas concentrated in the southwest of Russia had favorable NDVI values after December (including Krasnodar and Stavropol). In most parts of southern Russia, including Volgograd, Saratov, and Orenburg, the crop condition is very poor, with a maximum VCI below 0.5. During this monitoring period, as shown by the crop condition development graph, NDVI was significantly below values for the recent five-year average. The low NDVI values result from freezing weather conditions, which affected the sowing of winter wheat.

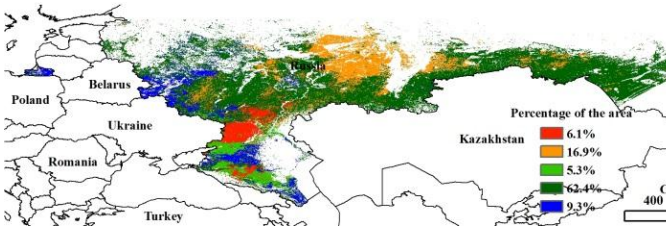
Figure 3.27. Russia crop condition, October 2014-January 2015



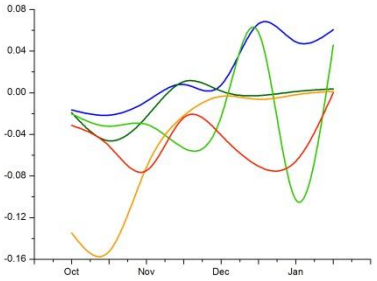
(a) Crop condition development graph based on NDVI



(b) Maximum VCI



(c) Spatial NDVI patterns compared to 5YA

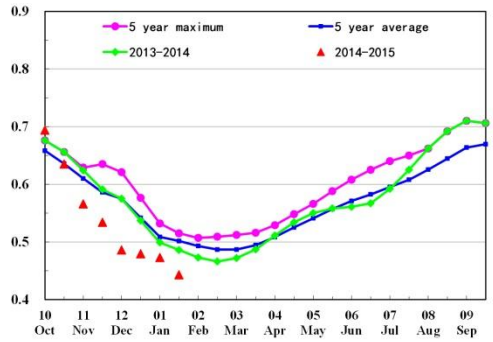


(d) NDVI profiles

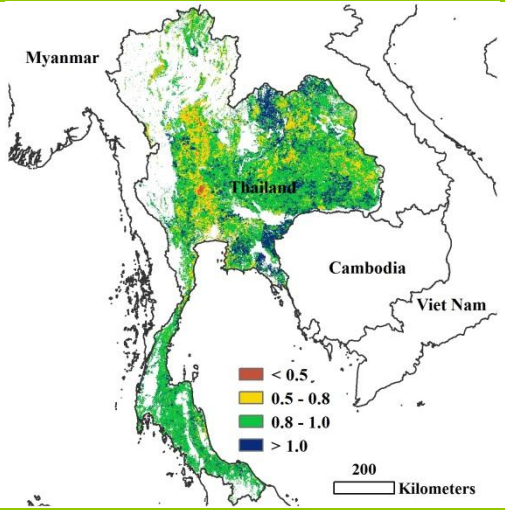
[THA] Thailand

The harvesting period of the main rice crop was completed in January, while planting of the second rice crop started in early January. Based on CropWatch indicators, the situation of crops during November to January in Thailand was average to above average compared the previous five years. The CropWatch agroclimatic and agronomic indicators showed an increase of radiation (+1%), rainfall (+17%), and temperature (+0.8°C) compared to average. Additionally, biomass showed a 2% increase compared with the recent five-year average. In early October, the crop condition was better than the previous year. From November to mid-January, the crop condition showed values below average compared to those of the recent five years and the previous year due to the erratic monsoon rains and unfavorable weather conditions during the main rice crop period. The NDVI profiles in the area around the Chao Phraya river basin gradually decreased to values below average, while the crop condition was mostly above average in the northeastern and eastern region. The maximum VCI index was very high (0.89), due to good crop condition throughout the country. Crop condition was favorable in Loei, Buengkan, Sisaket, Chonburi, Chanthaburi, and Sakaeo provinces, with the maximum VCI above 1.0. Low VCIx values occurred in the central part of Thailand, particularly in the province of Chainat, which was affected by severe drought.

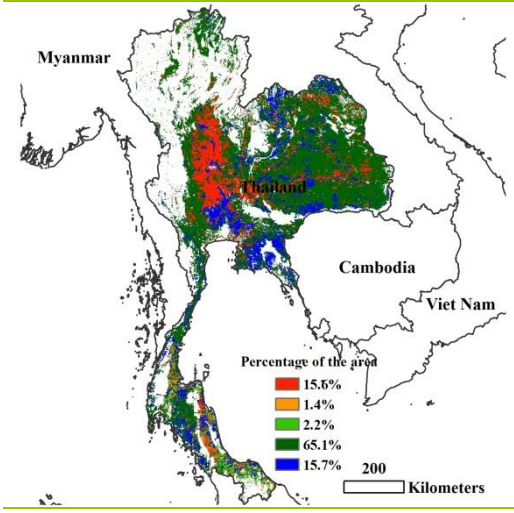
Figure 3.28. Thailand crop condition, October 2014-January 2015



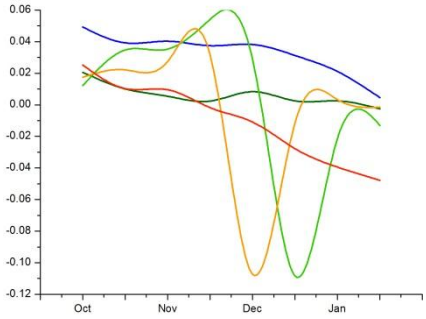
(a) Crop condition development graph based on NDVI



(b) Maximum VCI



(c) Spatial NDVI patterns compared to 5YA

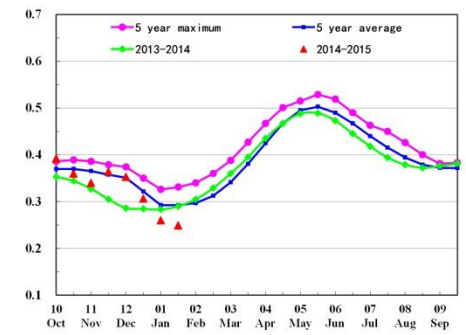


(d) NDVI profiles

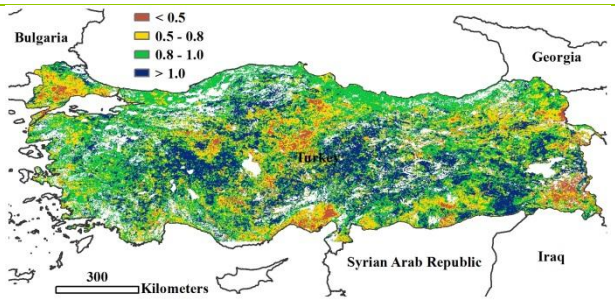
[TUR] Turkey

During the monitoring period for this bulletin, planting of winter grains was completed in Turkey. Rainfall and temperature were average, while radiation, as measured by the CropWatch RADPAR indicator, was below average. The agroclimatic indicators indicate poor growing conditions for winter crops, which are confirmed by the decrease of the biomass indicator by 2%. The maximum VCI (0.9) points to above average conditions, while the fraction of cropped arable land also showed a spectacular increase of 23% compared to the recent five-year average. These changes indicated a good start for winter crops. Below average conditions, however, occur in some areas of the western Marmara Region and Aegean Region, and the east of Eastern Anatolia. Most areas across Turkey experienced an above or a close to average crop condition from October to December 2014 and significant unfavorable conditions in January 2015. Altogether, Turkey's current winter crop so far underwent unfavorable conditions. The final outcome of the season will be largely determined by soil moisture in March, when vegetative grow will resume, and in the months that follow.

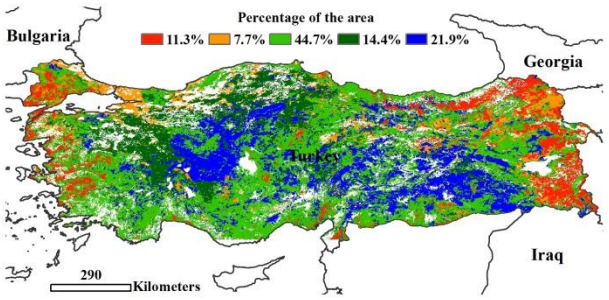
Figure 3.29. Turkey crop condition, October 2014-January 2015



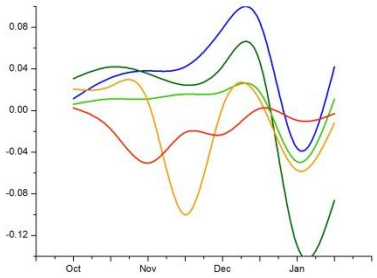
(a) Crop condition development graph based on NDVI



(b) Maximum VCI



(c) Spatial NDVI patterns compared to 5YA

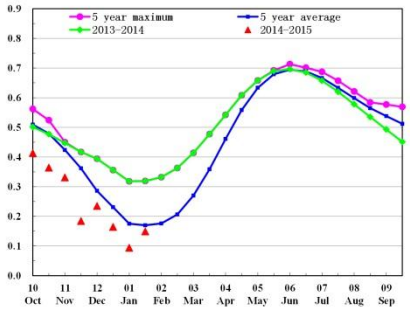


(d) NDVI profiles

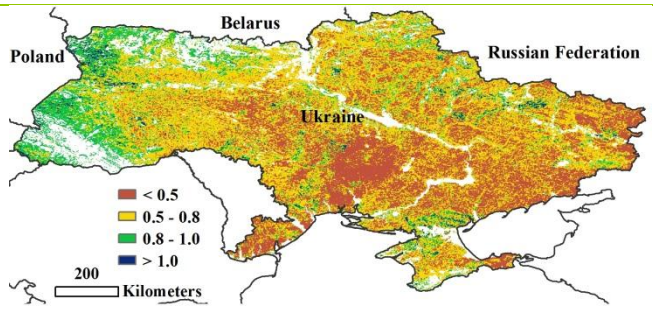
[UKR] Ukraine

Ukraine presents poor crop condition from October to January (VCIx=0.61). This analysis covers the late stages of maize (harvest completed in November) and the early vegetative stages of winter wheat and other winter cereals. In Ukraine most crops were into winter dormancy by mid-January, and cold weather has substantially affected crop establishment. Overall, October to January weather was cold and dry with rainfall down 8%, temperature about average (-0.1°C), and radiation up 5% compared to average. A significant drop in air temperature was recorded in the country from October to December. The central and northeastern regions of Ukraine were affected by frost kill, negatively impacting the emergence of winter crops (including Kirovohrads'ka, Mykolayivs'ka, Kharkivs'ka and Luhans'ka). The national NDVI profile also suggests that crop condition was below average during the winter months. From January on forward, crops in western Ukraine have gradually recovered. However, it is likely that the production of winter crops in Ukraine will suffer a loss this season.

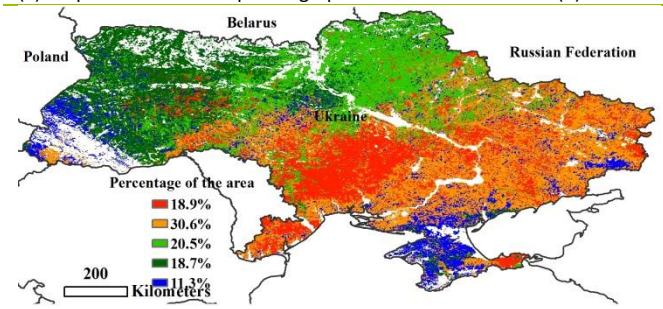
Figure 3.30. Ukraine crop condition, October 2014-January 2015



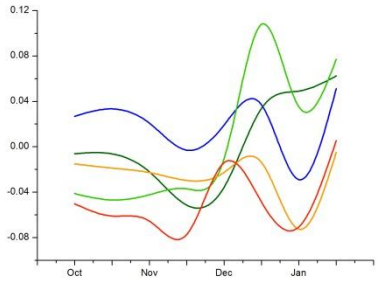
(a) Crop condition development graph based on NDVI



(b) Maximum VCI



(c) Spatial NDVI patterns compared to 5YA

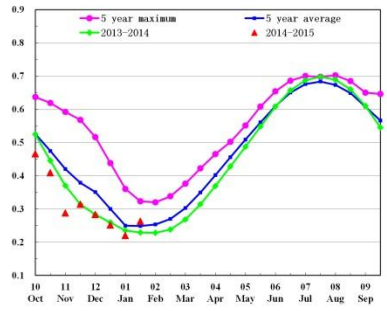


(d) NDVI profiles

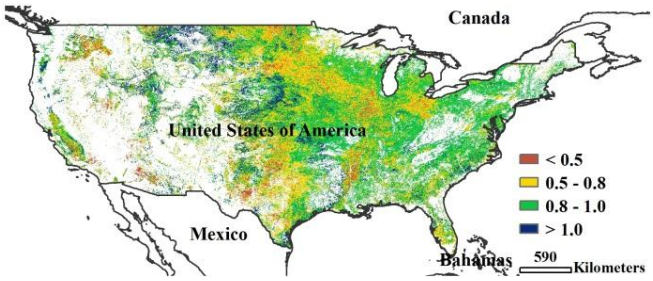
[USA] United States

In general, crop condition in the United States over the CropWatch monitoring period is abovebelow average. This monitoring period covered the harvesting season of 2014 summer crops and the planting season for 2015 winter crops. The agroclimatic indicators include a positive departure (17%) of rainfall (compared to average), average temperature (-0.4°C), and a 4% decrease in radiation. During this monitoring season, summer crops were completely harvested and winter crops were planted and stepped into wintering period. The main zone for winter crops, the south of the Great Plains, enjoyed abundant rainfall, including in Kansas (+62%), Oklahoma (+49%), northern Texas (+20%), and Arkansas (+42%). This replenished soil water for the growth of winter crops in the next monitoring period. In other regions, abundant rain also fell over Idaho (+49%), Iowa (+45%), Missouri (+53%), Montana (+152%), Nebraska (+71%), North Dakota (+95%), and South Dakota (+139%), which will benefit the planting of summer crops (Spring wheat, maize, and soybeans) in 2015. At the same time, the cluster of NDVI profiles indicates more than 62.6% of arable land shows slightly above average crops, these region is conherent with the main winter crop zones, as also indicated by the maximum VCI (0.82) and the increased accumulation of biomass (14%) compared to the recent five-year average. The cropped arable land fraction showed a positive departure of 3%. Altogether, prospects are favorable.

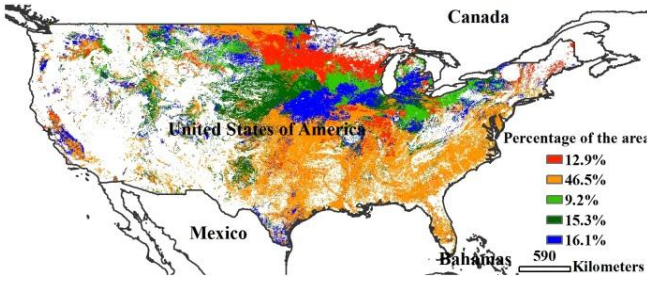
Figure 3.31. United States crop condition, October 2014-January 2015



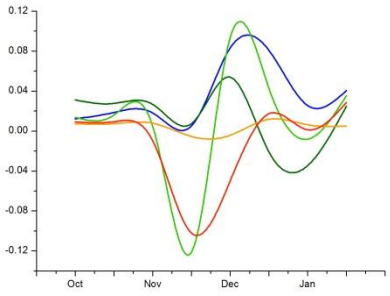
(a) Crop condition development graph based on NDVI



(b) Maximum VCI



(c) Spatial NDVI patterns compared to 5YA

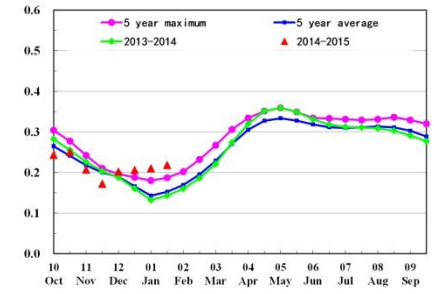


(d) NDVI profiles

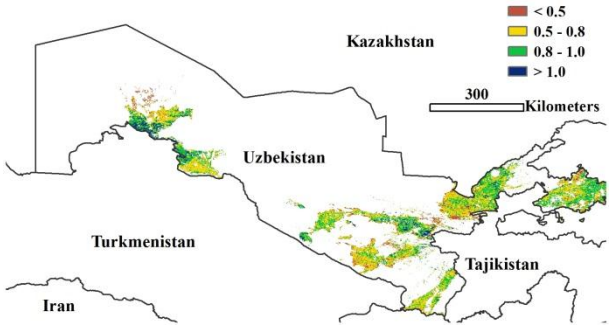
[UZB] Uzbekistan

This analysis covers the sowing and growing stage of winter cereals in Uzbekistan from October 2014 to late January 2015. Currently in the field are mostly winter wheat and barley. The country as a whole enjoyed a small increase of rainfall (+4%) and biomass (+10%), while temperature and radiation were below average. A detailed look at the indicators shows favorable conditions in most parts (such as in Ferghana, Andijan, Tashkent, Samarkhand, Nawoly, and Bukhara), with maximum VCI mostly above 0.5. In November, the national NDVI development graph indicates that crop condition was unfavorable, consistent with the lack of rainfall. More precise spatial information is provided by the NDVI clusters, which show a sharp drop in late November and a recovery thereafter in eastern and central areas (Ferghana, Andijan, Tashkent, Samarkhand, and Denow). From December to January, abundant rainfall benefited crops, the condition of which is now above the last five-year average level according to the NDVI development graph as well as the NDVI cluster profiles.

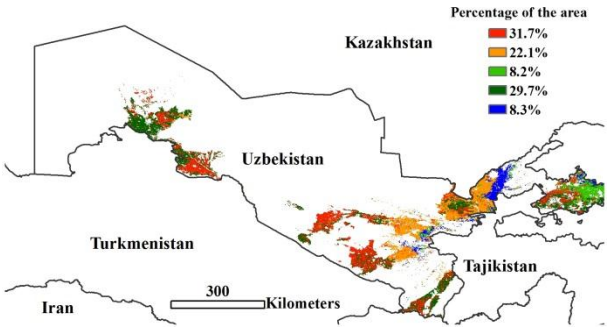
Figure 3.32. Uzbekistan crop condition, October 2014-January 2015



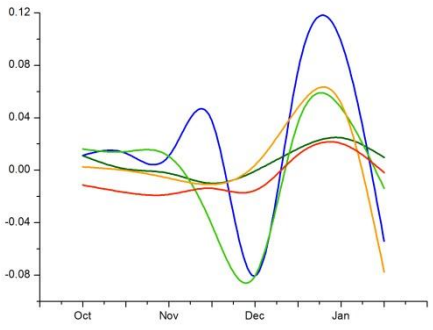
(a) Crop condition development graph based on NDVI



(b) Maximum VCI



(c) Spatial NDVI patterns compared to 5YA

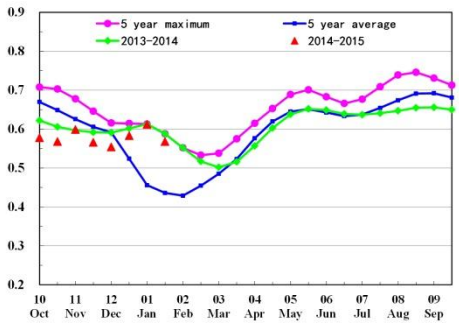


(d) NDVI profiles

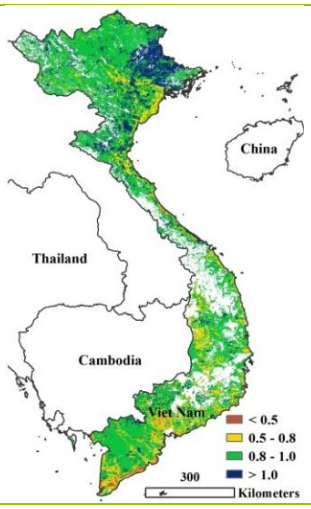
[VNM] Vietnam

The period from October to January covers the growing stages of the "10th month rice" and the sowing of the winter/spring rice in Vietnam. Most of the rice cultivation regions are distributed in the Red River delta in northern Vietnam and the Mekong River delta in southern Vietnam. The fraction of cropped arable land was similar to the average of the previous five years. Vegetation condition indices (maximum VCI) were seasonally low (<0.8). On the contrary, vegetation condition indices are very high (>1.0) in the northeastern tip of the country including in Lang Son and Thái Nguyênand Bắc Giang. For the period under consideration, the CropWatch agroclimatic indicators show clearly below average rainfall (-18%) and a correlated slight increase in radiation (+3%) and temperature (+0.8°C). The insufficient rainfall limited the biomass accumulation and resulted in a 15% decrease in BIOMSS compared with the recent five-year average. Crop condition was also below the five-year average until late November, after which it improved to above average. Correspondingly, the profiles of NDVI clusters also show late November as a turning point after which crop conditions in most of Vietnam are better than the average of the previous five years.

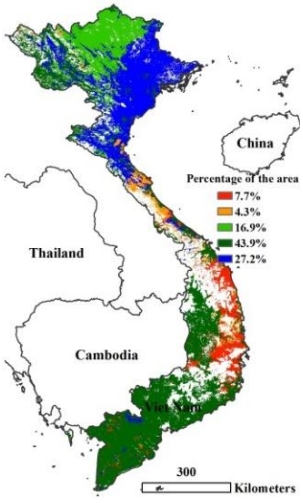
Figure 3.33. Vietnam crop condition, October 2014-January 2015



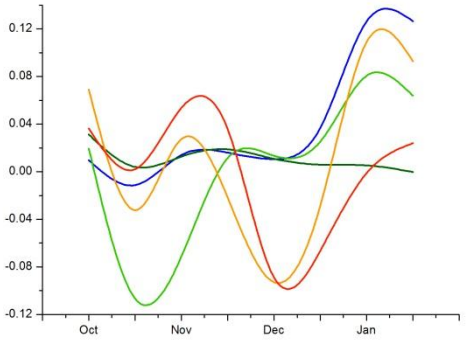
(a) Crop condition development graph based on NDVI



(b) Maximum VCI



(c) Spatial NDVI patterns compared to 5YA

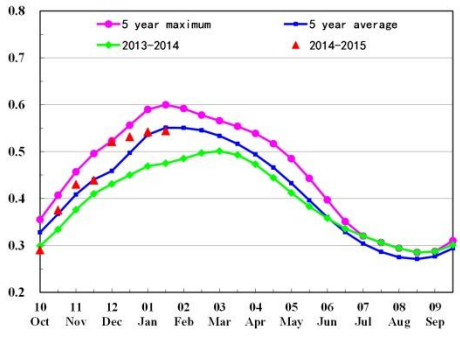


(d) NDVI profiles

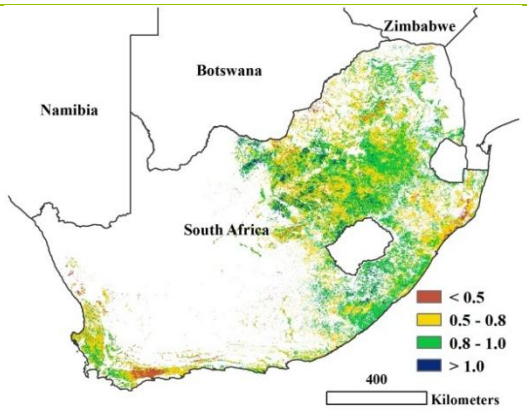
[ZAF] South Africa

Winter crops, essentially barley and wheat, were harvested in November and December, and the summer crops have reached mid-season stages. Rainfall was below average (-9%), with slightly above-average temperature and increased radiation. The biomass accumulation potential dropped 9% compared to the recent five-year average, while the area of cropped arable land underwent a significant plunge of 12% compared to average, with maximum VCI staying below 0.8. Altogether, summer crop condition, of which maize is the main one in South Africa, can only be qualified as below average. Although nationwide NDVI is still close to the recent five-year average, much still depends on rain at the time of flowering in February. As shown by the NDVI clusters, NDVI was consistently poor and particularly so in coastal Kwa-zulu Natal, but apparently recovering in the Northern province and north Mpumalanga.

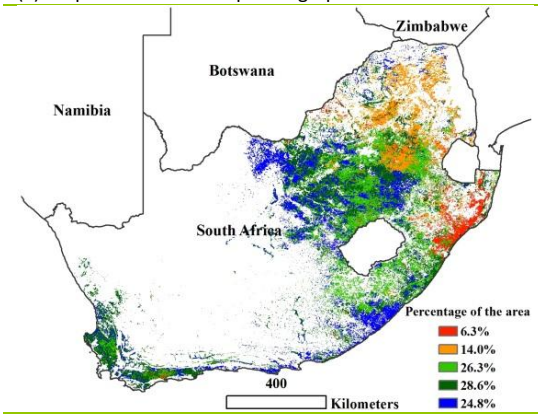
Figure 3.34. South Africa crop condition, October 2014-January 2015



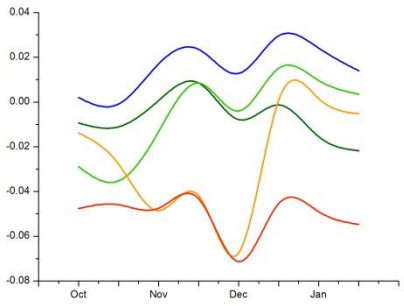
(a) Crop condition development graph based on NDVI



(b) Maximum VCI



(c) Spatial NDVI patterns compared to 5YA



(d) NDVI profiles