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, Brazil, Canada, and the United States.

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 last year's July-October period. Details by country are presented in table 3.1.

Two countries—Iraq and New Zealand—underwent extreme conditions during the reporting period; Iraq experienced rainfall at a level of 178% of average and a TEMP increase of +2.6°C (RAIN +178%, TEMP +2.6°C), while New Zealand experienced a decrease in both (-85%, -0.6°C). Negative effects on crops are unlikely in Iraq, but in New Zealand the period coincides with the end of the winter crop season and negative impacts are likely on wheat and barley. Less extreme conditions are reported for French Guyana (-31%, -1.8°C) and Portugal (-33%, -0.7°C, with a drop in RADPAR of 5%), where both rainfall and temperature were below average. In Spain, temperature was low as well (-1.7°C), but rainfall was closer to average than in neighboring Portugal.

The following countries all experienced varying degrees of excess rainfall: Macedonia (+55%, -0.4°C, -5% RADPAR), Mauritania (+58%, +1.7°C), Lebanon (+60%,-1.6°C, +11% RADPAR), neighboring Syria (+105%, +2.1°C), and Uzbekistan with a record +175% of rainfall and -0.2°C temperature departure. For Uzbekistan, CropWatch indices also list a biomass potential (BIOMSS) increase of 175%. For all countries, the extra rainfall constitutes a positive factor, either for the end of the summer season (for example in Mauritania), or to replenish soil moisture before the winter crop season in Europe and Asia.

Countries with below average precipitation but otherwise average conditions are mostly located in southern Africa and include Botswana (RAIN -56%), Swaziland (-51%), and South Africa (-39%). The reduced rainfall may point at a late onset of the main growing season (October-March/May). It is compatible with El Niño patterns and may negatively affect the growing season through low initial soil moisture storage. Other countries that deserve mentioning are Suriname (RAIN -41%) and, among the major producers, Ukraine with a drop in rainfall of -29%.

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

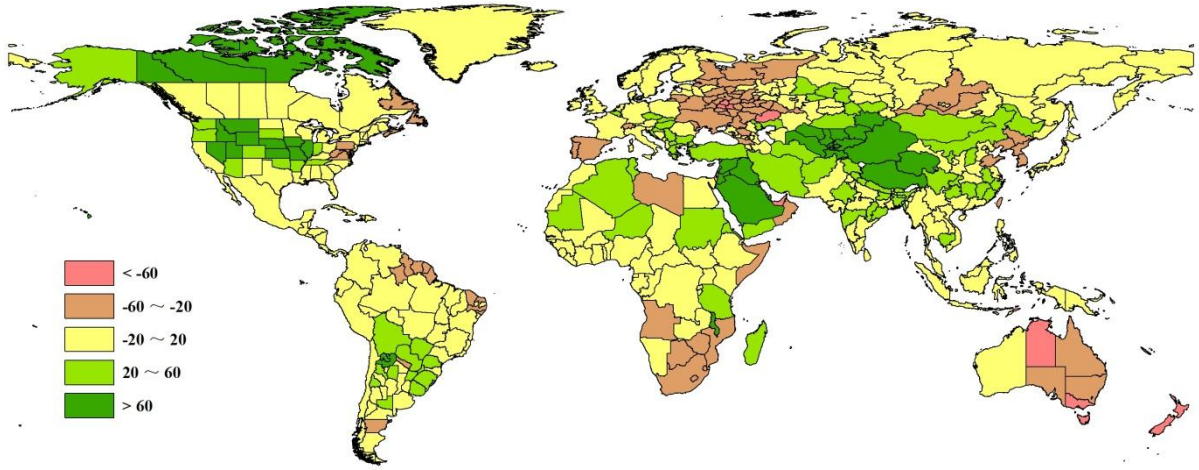


Figure 3.2. Global map of temperature (TEMP) by country and sub-national areas, departure from 13YA (degrees), July-October 2014

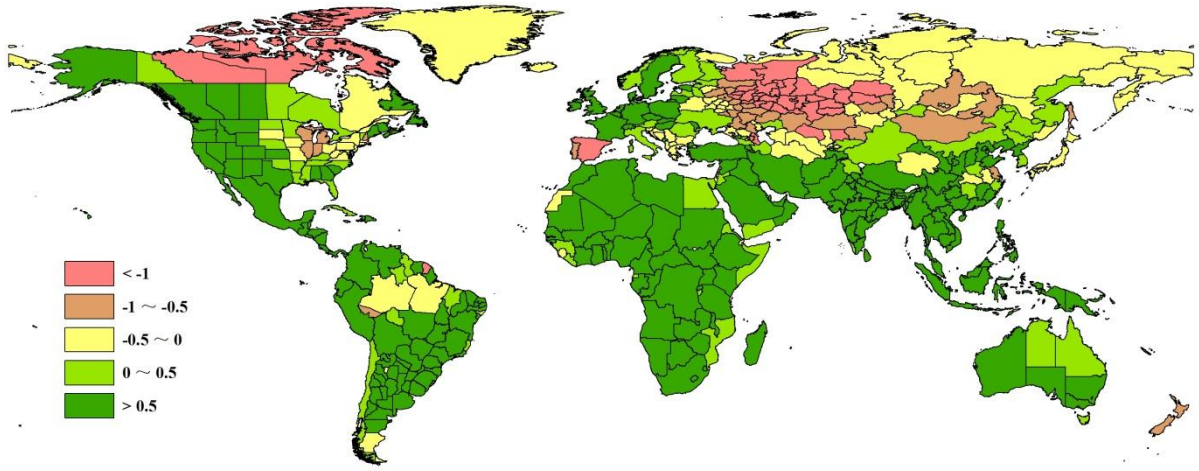


Figure 3.3. Global map of PAR (RADPAR) by country and sub-national areas, departure from 13YA (percentage), July-October 2014

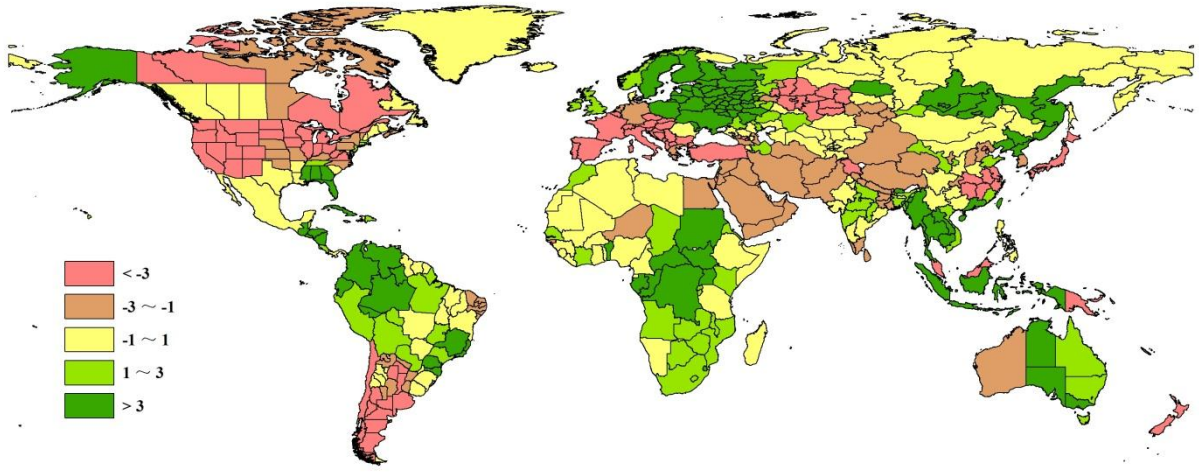


Figure 3.4. Global map of biomass (BIOMSS) by country and sub-national areas, departure from 13YA (percentage), July-October 2014

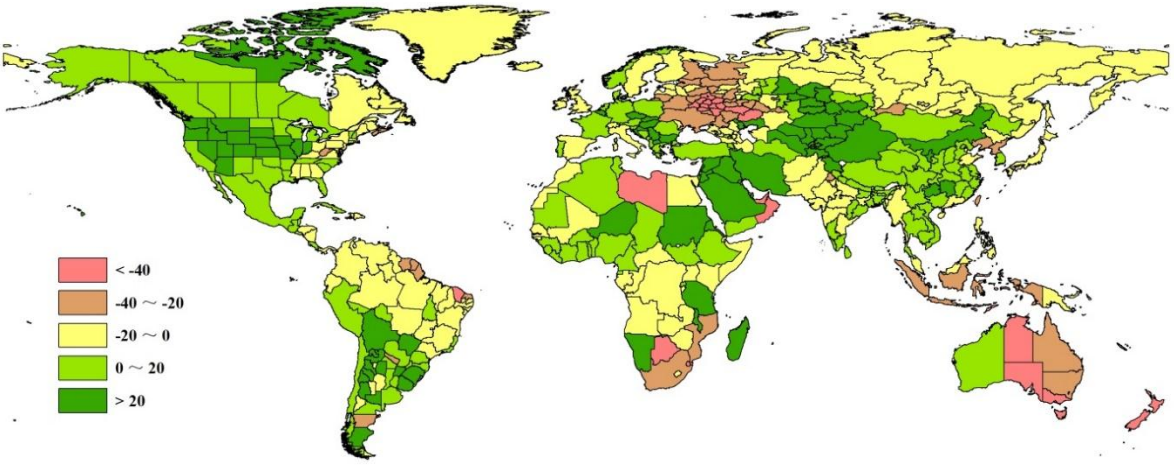


Table 3.1. CropWatch agroclimatic and agronomic indicators for July-October 2014, departure from 5YA and 13YA

Country	Agroclimatic indicators			Agronomic indicators			
	Departure from 13YA (2001-13)			Departure from 5YA (2009-13)			Current
	RAIN (%)	TEMP (°C)	RADPAR (%)	BIOMSS (%)	CALF (%)	Cropping Intensity (% points)	Maximum VCI
Argentina	12	1.9	-4	14	10	2	0.72
Australia	-37	0.9	1	-31	12	2	0.79
Bangladesh	23	1.1	2	4	-1	-5	0.86
Brazil	4	1.7	1	1	12	5	0.71
Cambodia	26	1.3	4	8	2	-18	0.87
Canada	6	1.0	-2	6	2	-2	0.91
China	14	0.7	-1	12	0	-6	0.86
Egypt	-17	0.0	-1	0	5	0	0.82
Ethiopia	-2	0.7	0	2	2	0	0.87
France	-3	1.1	-5	6	0	-4	0.85
Germany	18	1.1	-2	17	0	-8	0.88
India	18	1.2	0	-3	-1	0	0.84
Indonesia	-20	0.8	4	-21	0	-12	0.87
Iran	37	1.0	-1	30	0	-3	0.65
Kazakhstan	40	-0.7	-2	33	2	0	0.67
Mexico	-1	0.8	1	8	5	5	0.86
Myanmar	-8	1.2	5	-5	0	-15	0.90
Nigeria	8	0.7	0	6	0	-4	0.81
Pakistan	1	1.3	-1	-15	-2	-1	0.66
Philippines	5	0.6	0	-3	0	-14	0.89
Poland	10	1.0	4	10	0	5	0.80
Romania	-9	0.4	0	13	1	5	0.78
Russia	-17	-0.8	2	-10	1	-1	0.78
S. Africa	-39	0.9	2	-24	-18	6	0.44
Thailand	7	0.9	5	1	0	-16	0.93
Turkey	35	1.1	-3	19	2	-3	0.78
U.K.	4	0.9	3	-6	0	-13	0.81
Ukraine	-29	0.1	7	-22	0	-2	0.75
U.S.A.	16	0.4	-2	14	3	-1	0.83
Uzbekistan	175	-0.2	-1	175	-2	0	0.67
Vietnam	1	1.1	1	2	0	-15	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 (July-October).

Large excess of water affected Malawi (+159%) and a group of countries in Central Asia (Uzbekistan was already mentioned; Kyrgyzstan, +181%; and Tajikistan, +311%), where it will benefit winter crops and especially rangelands.

The South-American heat wave was already mentioned in chapter 1 in relation to Brazil and Argentina. This heatwave also affected other countries in the region, such as Uruguay (+2.3°C), Paraguay (+2.6°C) and, further north, Guatemala (+2.6°C) and Belize (+3.9°), the record among all countries monitored by CropWatch. The heat wave was often accompanied by a lot of sunshine, for instance in Colombia (+6% RADPAR) and Ecuador (RADPAR +8%).

Larger than average sunshine is also mentioned for central Africa (the Democratic Republic of Congo, Uganda, Gabon, Sudan, South Sudan, and the Central African Republic), with values between 6 and 11% excess RADPAR. This can only benefit crop production and food security in countries where water is rarely limiting but cloud cover limits available sunshine. A group of countries in Europe were exposed to record low sunshine between -7% and -10% RADPAR, including Slovenia, Croatia, Switzerland, Austria, and Bosnia and Herzegovina, among others. With the low sunshine values often correlated with high rainfall, low RADPAR is not necessarily negative at this time of the year. However, water logging has certainly interfered with late harvest operations as well as with the land preparation for the coming winter season.

3.2 Country analysis

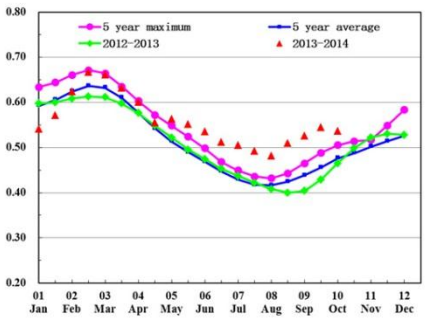
Subsequent pages present CropWatch results for each of the thirty key countries (China is addressed in Chapter 4). The maps refer to crop growing areas only and include (a) Crop condition development graph based on NDVI average over crop areas, comparing the January-October 2014 period to the previous season, to the five-year average (5YA), and the five-year maximum. (b) Maximum VCI (over arable land mask) for July 1-October 31, 2014 by pixel; (c) Spatial NDVI patterns from January or April (according to local cropping patterns) up to October 2014 (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.5, 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 July-October 2014

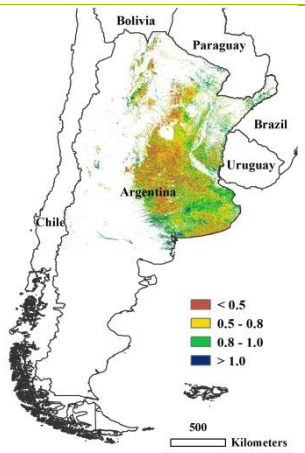
[ARG] Argentina

Crop condition in Argentina was generally favorable in 2014. Currently, the harvesting of winter wheat is ongoing. The planting of maize is virtually over, while the planting of soybean is still ongoing. From July to October, Argentina experienced wet and warm climatic conditions which are beneficial for the emergence and development of maize and 1st season soybean. Compared with the average, Argentina experienced 12% more rainfall, 1.9°C degree higher temperature, and average PAR. Spatial NDVI patterns compared to the 5-year average and the corresponding NDVI departure cluster profiles reveal that NDVI of most arable land in Argentina is above average. Major wheat producing regions (including southern Buenos Aires, Cordoba, and Santa Fe) are even better off. Crop condition development graphs based on NDVI present the evolution of winter crops since August. The higher than the previous five years' maximum NDVI series confirms above average winter crop condition. However, the 1.5°C degree and 2.2°C degree higher air temperature in the two top wheat producing states (see also figure 2.3(c, d)) shortens the grain filling stage and accelerates wheat maturity, thus hampering yield formation. Compared with the assessment carried out in August, CropWatch revised down the winter wheat production to 13 million tons, still 22% up over last year but 4% down from the August estimates. The increased production is due to the expanded planting area because of high domestic prices. (See also table B.1 in Annex B.)

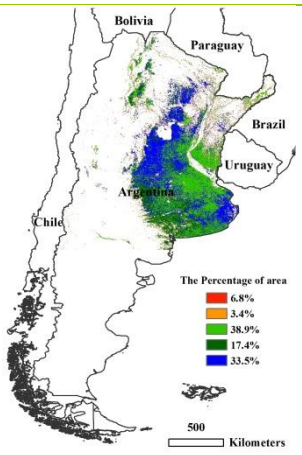
Figure 3.5. Argentina crop condition, July-October 2014



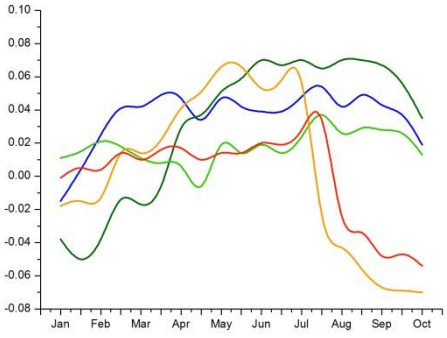
(a) Crop condition development graph based on NDVI



(b) Maximum VCI



(c) Spatial NDVI patterns compared to 5YA

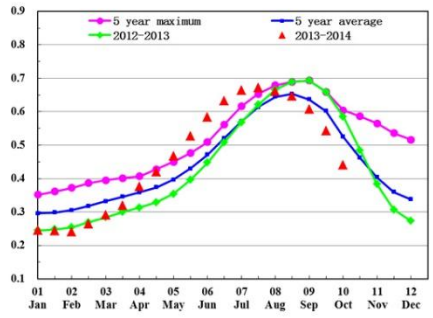


(d) NDVI profiles

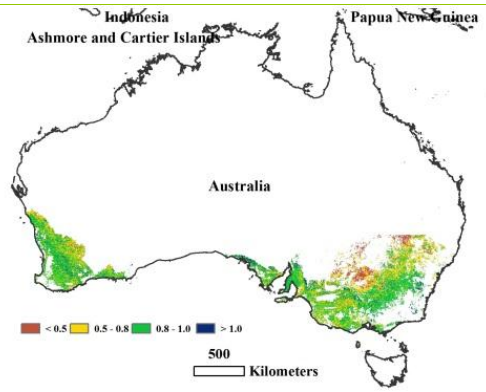
[AUS] Australia

In general, crop condition was slightly below average in Australia from July to October, which was the main growing season for winter wheat and barley. The spatial NDVI patterns showed that in southeastern New South Wales (24.8% of the arable land), winter wheat and barley enjoyed above average condition until the middle of September, while in southwestern Western Australia, southern South Australia, and northwestern Victoria (52.7% of arable land), condition was a little below average from August. In the southeast of South Australia, South Victoria, west of the border area between New South Wales and Victoria (15.4% of the arable land), crop condition was slightly below average throughout the monitoring period. This analysis was further confirmed by the crop condition development graph based on NDVI, which shows that wheat and barley were, on the whole, above average in July, but that both deteriorated gradually from August, although crop condition was above average during the planting and early growing season from May to June. The below average condition was due to a general 37% decrease of precipitation compared with average, as mentioned in the MPZ analysis (section 2.6), confirming that irrigation could not compensate the decreased rainfall from July to October. In summary, CropWatch estimates that the production of wheat in Australia will decrease by 4%, but that wheat production in Western Australia would increase by 3%. (See also table B.2 in Annex B.)

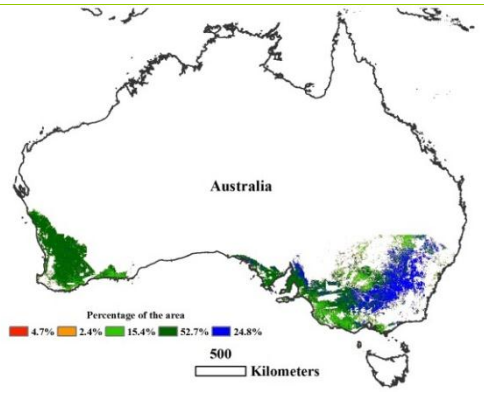
Figure 3.6. Australia crop condition, July-October 2014



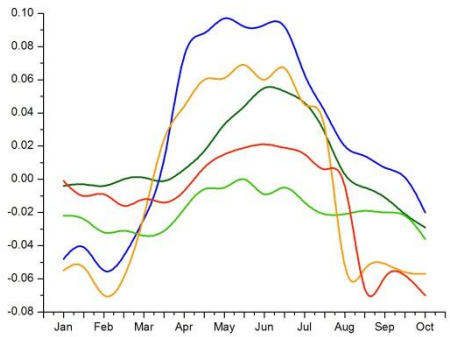
(a) Crop condition development graph based on NDVI



(b) Maximum VCI



(c) Spatial NDVI patterns compared to 5YA

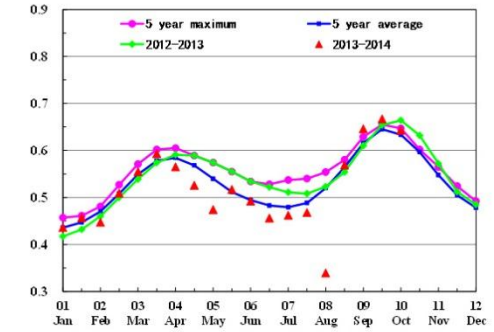


(d) NDVI profiles

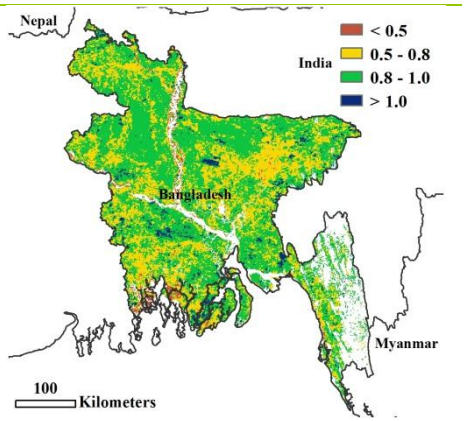
[BGD] Bangladesh

CropWatch indicators show average crop condition in the northeastern and southern regions (including Sylhet and Khulna), but above average conditions elsewhere. The maximum VCI values observed were above 0.8 in most areas, except in the two mentioned regions of Sylhet and Khulna where VCIx was between 0.5 and 0.8. The low NDVI values around July indicate the completion of Aus harvesting and the sowing of Aman rice and sorghum. Crop condition development was similar to the previous five years' maximum. Rainfall (RAIN) was 23% higher than average, which benefited the sowing and growing of Aman rice. Temperature (TEMP) and PAR (RADPAR) were average, but biomass (BIOMSS) was 4% higher than the recent five-year average.

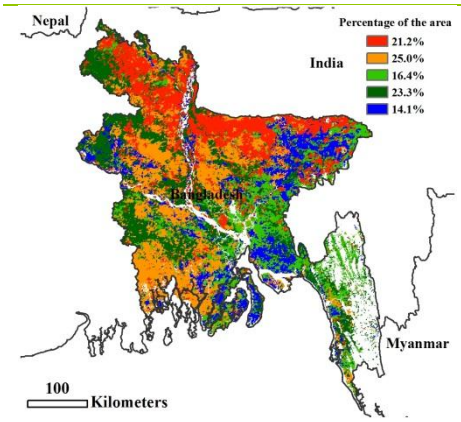
Figure 3.7. Bangladesh crop condition, July-October 2014



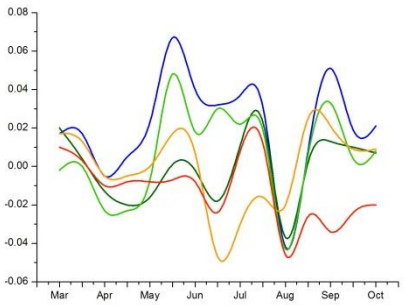
(a) Crop condition development graph based on NDVI



(b) Maximum VCI



(c) Spatial NDVI patterns compared to 5YA

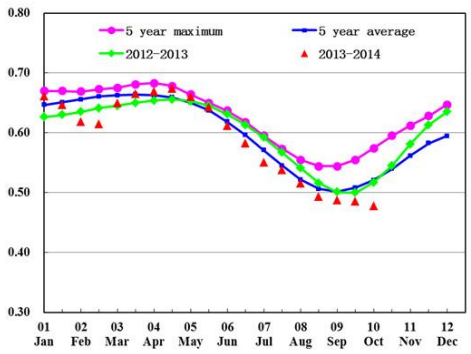


(d) NDVI profiles

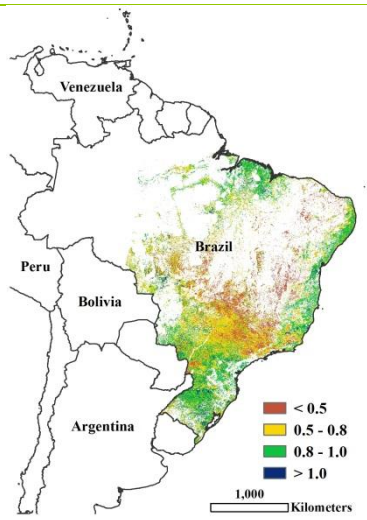
[BRA] Brazil

Crop condition in Brazil was generally average from July to October. Currently, the harvest of wheat and second maize (mostly in central and southern Brazil) is almost completed. The planting of rice, soybean, and first maize are ongoing. From July to October 2014, above average TEMP dominated in Brazil and altogether average (13YA) precipitation was observed at national level, even if conditions sometimes varied from place to place. Southern Brazil, including Rio Grande Do Sul, Paraná and Mato Grosso Do Sul experienced 20% more rainfall than average while central Brazil (Mato Grosso to Minas Gerais) suffered from a water deficit. Water was the key limiting factor for crops over the July to October period as confirmed by the maximum VCI map. Crop condition in central Brazil including Mato Grosso, Goias, and Minas Gerais is either at or below average due to shortage of rainfall. The top two wheat producing states (Rio Grande Do Sul and Paraná) show above average vegetation condition and BIOMSS (see also figure 2.3(f)). However, the persistent high temperature (2°C degree above average) shortens the grain filling stage and hampers yield accumulation. The harvest of wheat was well advanced due to high temperature, which can be confirmed by the rapid decrease of the NDVI profile in the crop condition development graph. Overall, wheat production has been revised downwards to 6.6 million tons, 6% down from the CropWatch August forecast, but still 16% above last year's production due to expanded area supported by high domestic and regional prices. Wheat yield is revised from average to 6% below last year's harvest (see also table B.3 in Annex B).

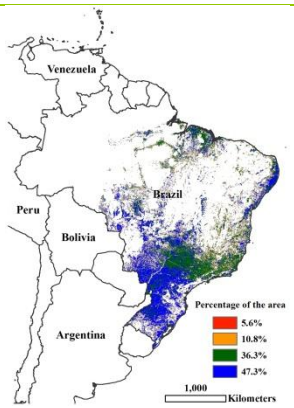
Figure 3.8. Brazil crop condition, July-October 2014



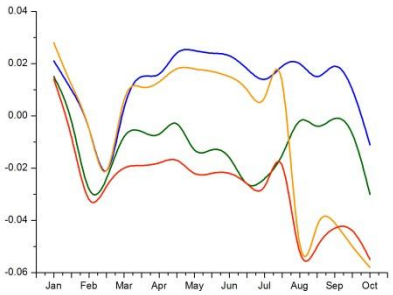
(a) Crop condition development graph based on NDVI



(b) Maximum VCI



(c) Spatial NDVI patterns compared to 5YA



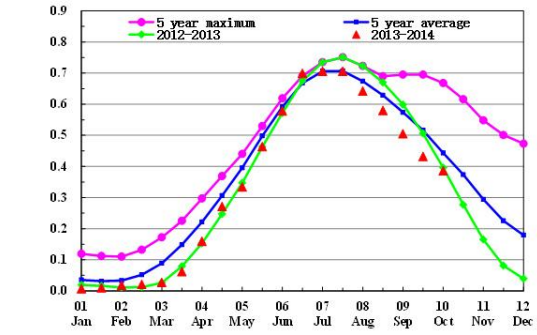
(d) NDVI profiles

[CAN] Canada

In general, crop condition was below average in Canada from July to October 2014. This monitoring period is the key growing and harvesting season of spring wheat and soybean. Overall weather conditions were close to average with rainfall rising 6% above average, temperature increasing 1°C, and RADPAR 2%. In the major production provinces, abundant rainfall fell over Alberta (+19%), Manitoba (+8%), and Saskatchewan (+15%) and provided sufficient water for crop growth, generally making up for increased water requirements deriving from above average temperature in Manitoba (+1.4°C) as well as Alberta and Saskatchewan (both 1.1°C). RADPAR was close to average.

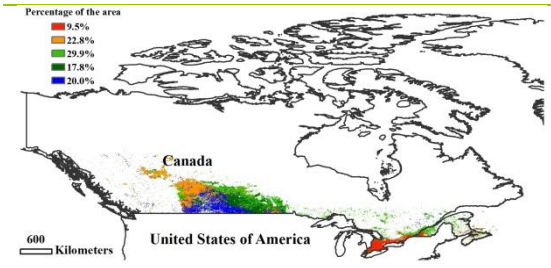
Conditions were favorable to crop growth and development, as confirmed by NDVI clusters and profiles. Biomass (BIOMSS) increased by 6%, CALF increased by 2%, and cropping intensity decreased by 2% compared to the five-year average. Unfortunately, serious floods were recorded in Southern Alberta, Manitoba, and Saskatchewan during the monitoring period (especially in Southern Alberta), resulting in crop damage. The national NDVI average of croplands indicates that crop condition is below the average of the last five years and far below conditions in 2013. Below average production can be expected for this year. (See also table B.4 in Annex B.)

Figure 3.9. Canada crop condition, July-October 2014

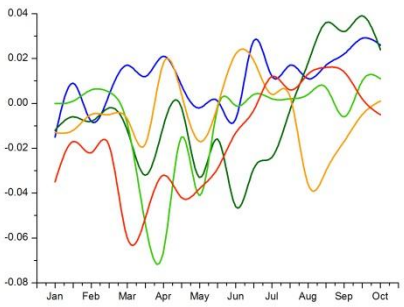


(a) Crop condition development graph based on NDVI

(b) Maximum VCI



(c) Spatial NDVI patterns compared to 5YA

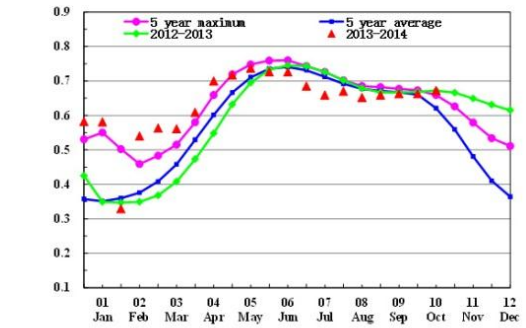


(d) NDVI profiles

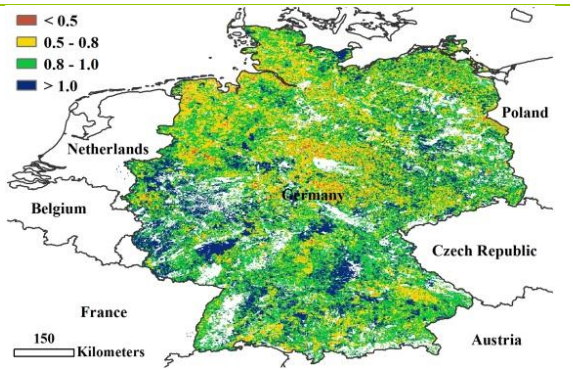
[DEU] Germany

The crops in Germany showed generally average conditions during the reporting period from July to October. The country's spatial NDVI indicates a situation that on the whole is better than the five-year average, except for limited patches in the Central-East and Northern Germany (Saxony, Lower Saxony, Sachsen-Anhalt and Mecklenburg-Vorpommern). This spatial pattern is also reflected by the maximum VCI in Lower Saxony and Sachsen-Anhalt, with a VCIx of 0.88 for Germany overall. According to the crop condition map based on NDVI, Germany enjoyed an average season compared with the five-year average throughout the reporting period, but less favorable than the five-year maximum. The CropWatch TEMP indicator exceeded average by 1.1°C and RAIN increased by 18%. Although RADPAR decreased by 2% compared with the previous thirteen-year average, BIOMSS increased by 17% (over the five-year average). Cropping intensity decreased by 8%, compared to the five-year average. Due to the suitable temperature and adequate rainfall, the agronomic indicators mentioned above all indicate an average condition for most summer crop areas of Germany.

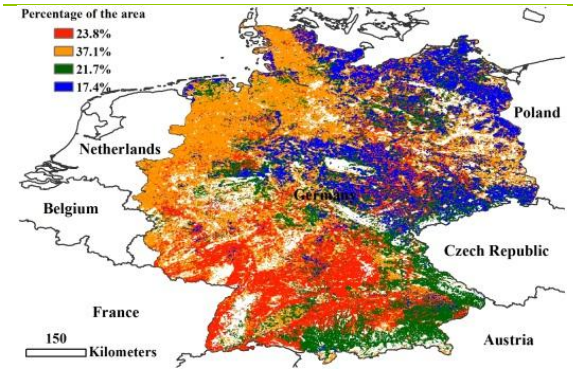
Figure 3.10. Germany crop condition, July-October 2014



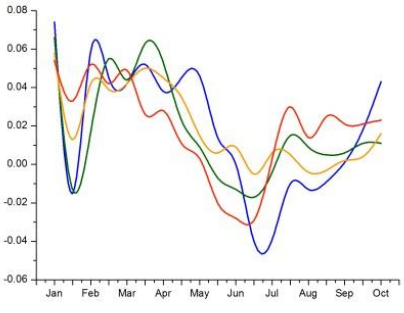
(a) Crop condition development graph based on NDVI



(b) Maximum VCI



(c) Spatial NDVI patterns compared to 5YA

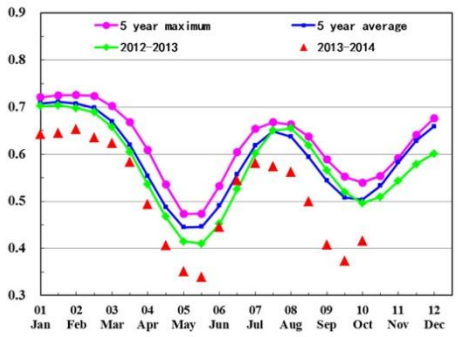


(d) NDVI profiles

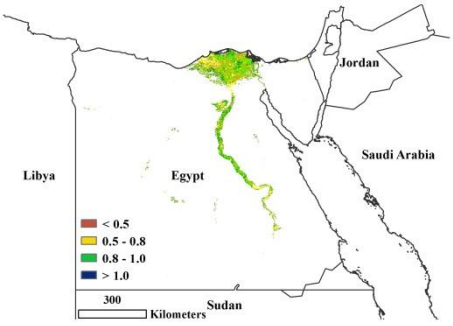
[EGY] Egypt

Agroclimatic indicators were somewhat unfavorable for Egypt, with RAIN at -17% and RADPAR at -1% (TEMP and BIOMSS are both average). However, because virtually all crops are irrigated, this situation is no cause for concern. The fraction of cropped arable land (CALF) increased by 5%, but cropping intensity was average; average VCIx stands at 0.82. According to NDVI profiles and clusters, the Nile valley experienced almost perfectly average conditions throughout the summer crop and early winter crop season, the latter of which just started. Conditions in the Nile delta are more contrasted, but average NDVI is now just above average, indicating a favorable condition of the early winter crop.

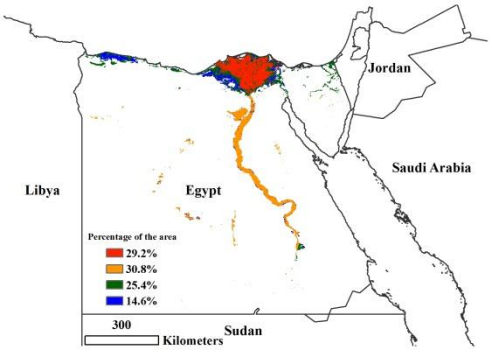
Figure 3.11. Egypt crop condition, July-October 2014



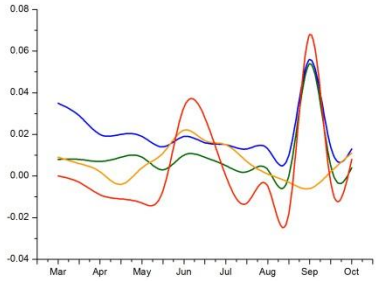
(a) Crop condition development graph based on NDVI



(b) Maximum VCI



(c) Spatial NDVI patterns compared to 5YA

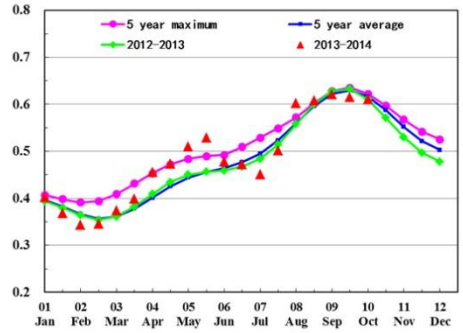


(d) NDVI profiles

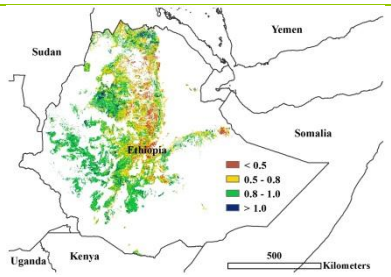
[ETH] Ethiopia

During the Belg season—Belg crops are harvested before August—NDVI fluctuated around the level of the reference values with departures close to 0.1. The Meher crops appear to be generally average, as the late stages occurred in conditions that were average as well (RAIN -2% RAIN, TEMP +0.7°C, RADPAR +0%, and BIOMSS +2%). The NDVI profiles illustrate that the current season was rather similar throughout the country, with differences between areas related to the behavior of NDVI between May and July (with a positive or negative peak in June). In about 20% of the agricultural areas, located in the eastern fringe of agricultural areas bordering Afar and in the central south-west (SNPP), NDVI behavior was average. In about 2.6% of croplands, in the south of SNPP, behavior was very poor. Finally, NDVI behavior in about 75% of the country, particularly in central Amhara and west Oromyia, can be considered favorable to very favorable. The fraction of cropped arable land (CALF) increased by 2%. VCIx values in large part confirm the analysis above based on the NDVI profiles, which means that most Belg and Meher season crops can be ranked as average to above average.

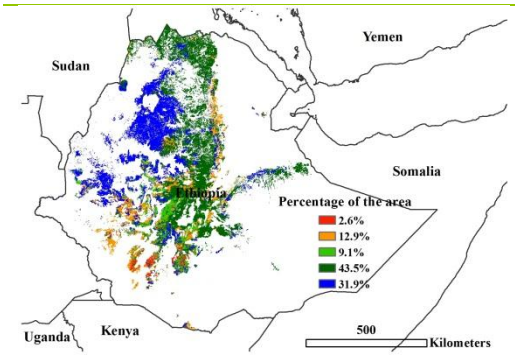
Figure 3.12. Ethiopia crop condition, July-October 2014



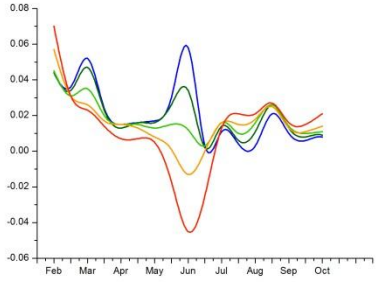
(a) Crop condition development graph based on NDVI



(b) Maximum VCI



(c) Spatial NDVI patterns compared to 5YA

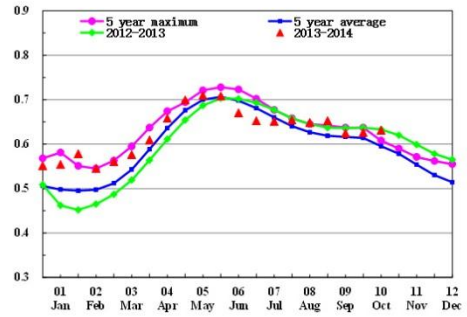


(d) NDVI profiles

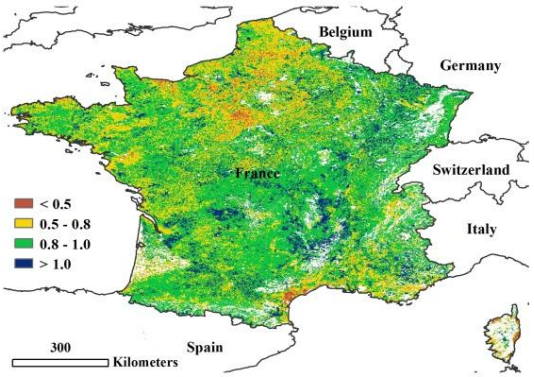
[FRA] France

Crops in France showed generally favorable conditions during the reporting period from July to October. Currently, summer crops have been harvested. As shown by the NDVI profiles, national NDVI values were well above average and even higher than the five-year maximum in July and August, after which they were close to maximum from September to October. 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. This spatial pattern was also reflected by the maximum VCI in the different areas, with a VCIx of 0.85 for France overall. The CropWatch TEMP indicator exceeded average by 1.1°C, RADPAR and rainfall decreased by 5% and 3%, respectively, below the thirteen-year average, while BIOMSS increased 6% compared to the five-year average. Cropping intensity decreased by 4%, compared to the five-year average. Generally, due to the suitable temperatures, the agronomic indicators mentioned above indicate a favorable condition for most summer crop areas of France.

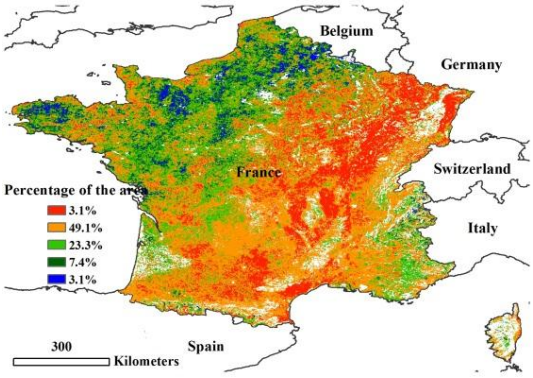
Figure 3.13. France crop condition, July-October 2014



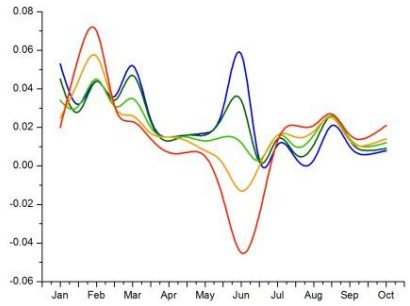
(a) Crop condition development graph based on NDVI



(b) Maximum VCI



(c) Spatial NDVI patterns compared to 5YA

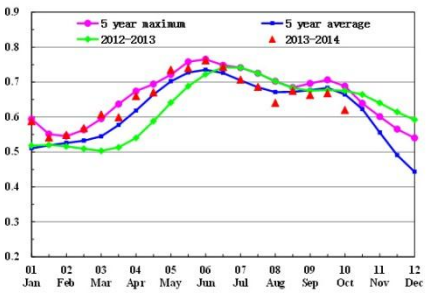


(d) NDVI profiles

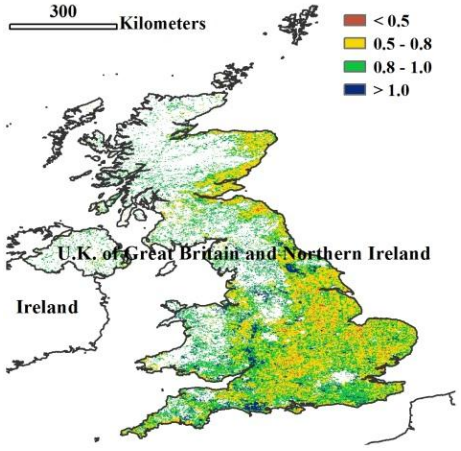
[GBR] United Kingdom

The crops showed generally unfavorable conditions during the reporting period from July to October. Currently, summer crops have been harvested. As shown by the NDVI profiles, national NDVI values were close to average in early July, after which they were all below average from mid-July to October. According to the crop condition map based on NDVI, more than 50% of the country's spatial NDVI was lower than average from July to September, especially in southern and eastern England (Oxford, Cambridge, York, Birmingham, Edinburgh). This spatial pattern is also reflected by the maximum VCI in the different areas, with a VCIx of 0.81 for the country overall. The CropWatch agroclimatic and agronomic indices indicate total precipitation (RAIN, +4%), average temperature (TEMP, +0.9), and PAR (RADPAR, +3%) were above average, while BIOMSS decreased by 6%, reflecting the above-mentioned crop conditions in the country. Cropping intensity decreased by 13% compared to the five-year average. Overall, the agronomic indicators all indicate an unfavorable condition for most summer crop areas of the United Kingdom.

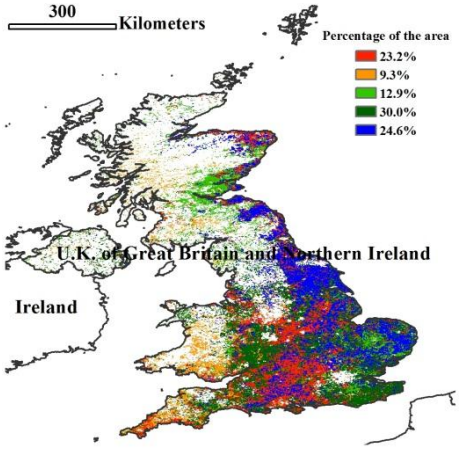
Figure 3.14. United Kingdom crop condition, July-October 2014



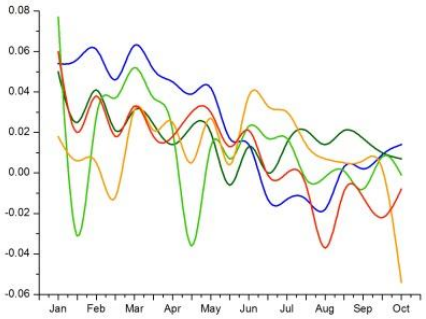
(a) Crop condition development graph based on NDVI



(b) Maximum VCI



(c) Spatial NDVI patterns compared to 5YA

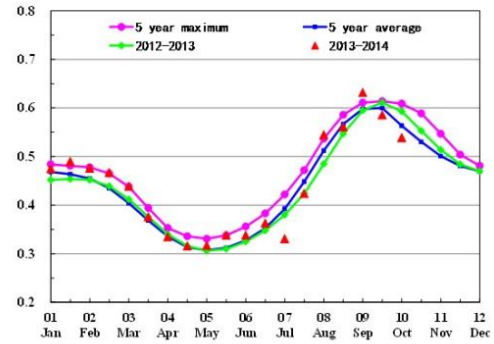


(d) NDVI profiles

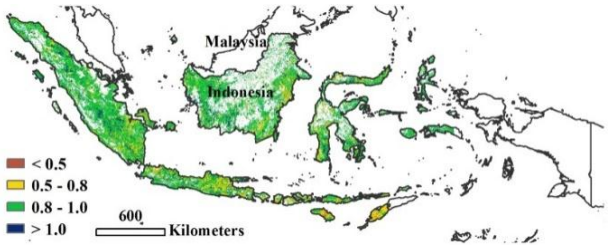
[IDN] Indonesia

Indonesia underwent close to average conditions between August and October, while the dry season maize and rice is entering generative or early ripening stage. Compared with the recent thirteen-year average for the same period, precipitation was significantly (20%) below average--the possible result of El Niño conditions building up. The CropWatch agroclimatic indices also indicate warmer than average weather and a RADPAR increase of 4%. Nevertheless, influenced by the lack of rain, biomass accumulation was still much below average (-21%). This is consistent with the NDVI profile, which stayed slightly below the five-year average for the recent two months. Additional spatial information provided by NDVI clusters shows mostly below average conditions in Nangroe, Aceh, Darussalam, and Nusatenggara Timur, but generally average for most of the country's islands.

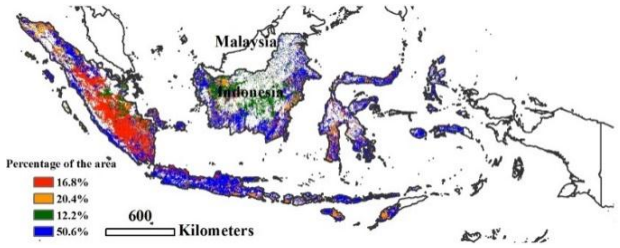
Figure 3.15. Indonesia crop condition, July-October 2014



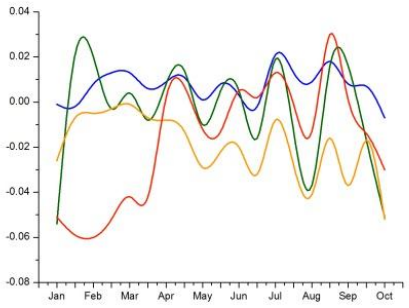
(a) Crop condition development graph based on NDVI



(b) Maximum VCI



(c) Spatial NDVI patterns compared to 5YA

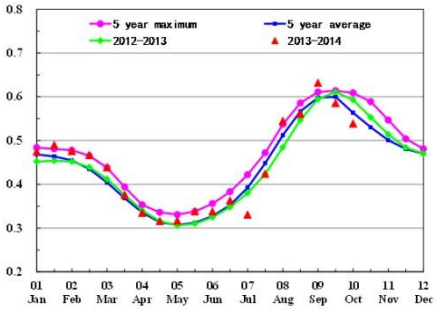


(d) NDVI profiles

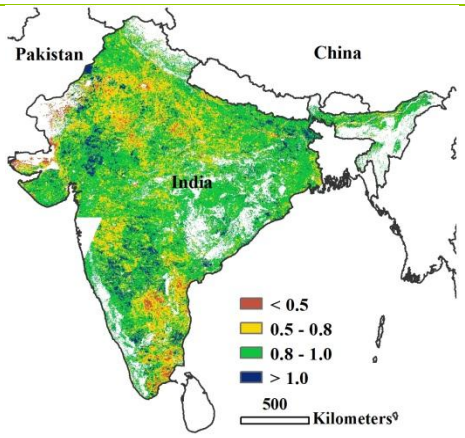
[IND] India

CropWatch indicators show overall above average crop condition for the entire country. The monitoring period was the main growing season of kharif crops, including rice and maize. India's maximum VCI value never dropped below 0.5, except in some isolated areas in southern and northern India; in most states VCIx ranged between 0.8 and 1.0, indicating above average crop condition. Considering the spatial patterns of NDVI profiles, most areas experienced below average condition in July, but recovered around mid-August. Crop condition then declined again in parts of Maharashtra, Andhra Pradesh, Karnataka, Madhya Pradesh, and Odhisa, and improved by the end of September. This probably happened due to erratic rainfall and increases in temperature as both rainfall and temperature were higher than average in central and East India, while lower than average rainfall was recorded in Punjab, Haryana, Kerela, and Uttar Pradesh. The low NDVI values from May to June are a result of the completion of the rabi crop harvest (by June), followed by the cultivation of kharif crops. Crop condition development was generally above average with crops at an advanced stage of maturity. Rainfall was 18% above average for the country, which led to localized floods in July and September in places such as Assam and Bihar, hampering the development of crops. However, main rice growing states like Andhra Pradesh, Odisha, Madhya Pradesh, Tripura, and West Bengal received slightly higher than average precipitation, which increased the yield potential. RADPAR values were average, while temperature was 1.2°C higher than average for the country. BIOMSS was slightly below (-3%) the previous five-year average. In October, cyclone Hudhud seriously damaged agriculture in Andhra Pradesh and Odisha, among other states, the exact costs of which are still being assessed (see section 5.2).

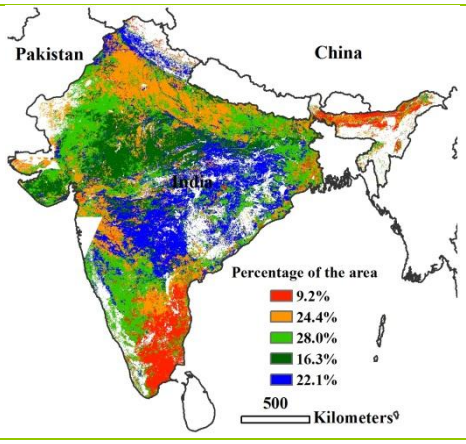
Figure 3.16. India crop condition, July –October 2014



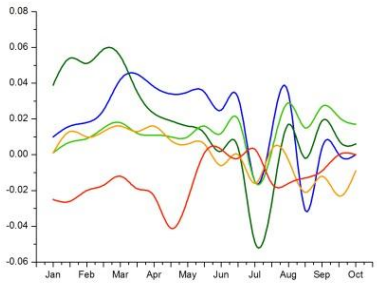
(a) Crop condition development graph based on NDVI



(b) Maximum VCI



(c) Spatial NDVI patterns compared to 5YA

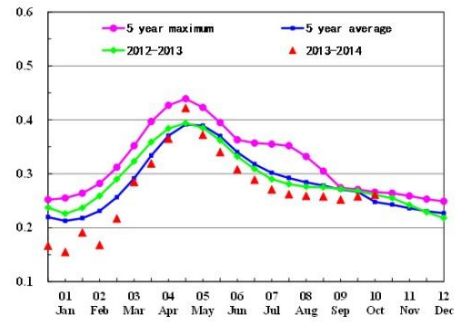


(d) NDVI profiles

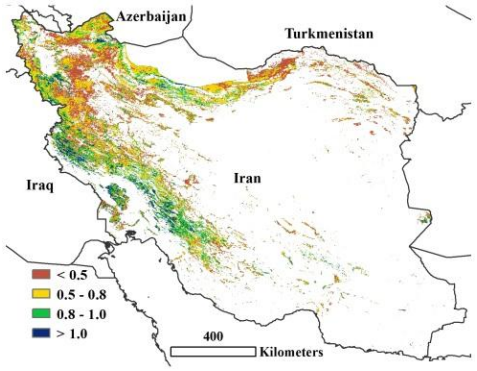
[IRN] Iran

For July to October 2014, accumulated rainfall in Iran was above the thirteen-year average, while temperature and RADPAR were close to average. The harvest of summer crops (potato and rice) was completed before October; winter wheat and barley were planted from September. The CropWatch agroclimatic indices for the current season indicate favorable conditions for summer crops, which is confirmed by the increase of the BIOMSS index by 30%. The national average of VCIx (0.65) indicates just above average conditions. Poor growth conditions occurred in the Razavi Khorasan, north Khorasan, and the center of Golestan provinces in the northeast region, and the Ardabil, Zanjan, and Hamadan provinces of the northwest region. Conditions close to or above the five-year average are mainly distributed in the Khuzestan, Kermanshah, and Fars provinces in the southwest and in Mazandaran province in the central-north. Overall, the situation of most summer crops is poor and the outcome is below last year and the five-year's average. The outcome of the rice crop, however, is favorable in Mazandaran province, a province accounting for about half of the rice producing areas in the country.

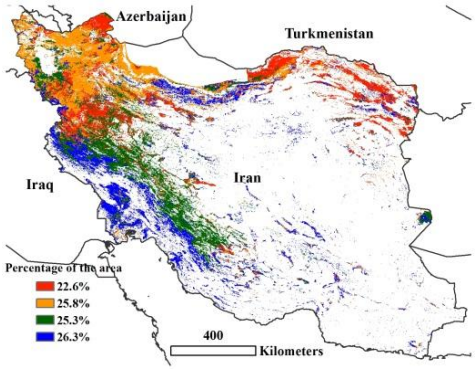
Figure 3.17. Iran crop condition, July-October 2014



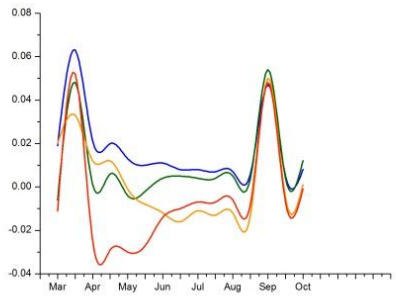
(a) Crop condition development graph based on NDVI



(b) Maximum VCI



(c) Spatial NDVI patterns compared to 5YA

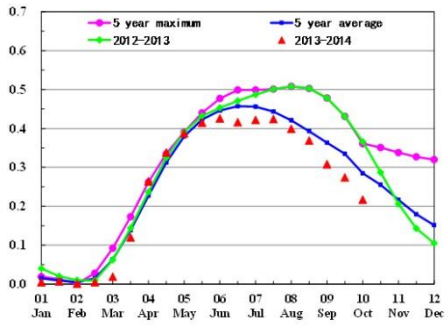


(d) NDVI profiles

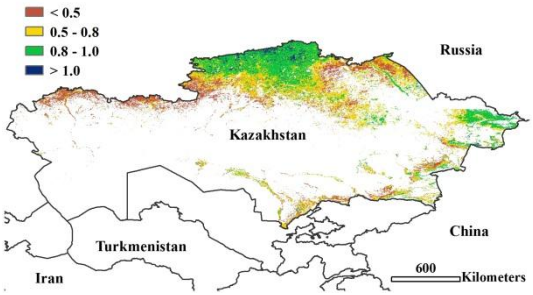
[KAZ] Kazakhstan

For this monitoring period, crop condition was generally unfavorable during the growing and harvesting stage of spring barley and wheat. Among the CropWatch agroclimatic indicators, RAIN was above average (40%), and TEMP and RADPAR below (-0.7% and 2%, respectively). The maximum VCI indicates that crop condition of most arable land in Kazakhstan was below average (pixel value below 0.5) except for the north and east. Excessive rains affected almost the entire country, except for Zapadno-kazachstanskaya. Spatial NDVI patterns and profiles show that crop condition in 55% of the agricultural areas was below average, mainly in Akmolinskaya, Karagandinskaya, Kustanayskaya, Pavlodarskaya, Severo kazachstanskaya, and Vostochno kazachstanskaya. The low maximum VCI in the same regions also confirms the impact of excessive rains on crop development. Other areas, such as the north and east, enjoyed good crop condition. According to the crop condition development graph, however, overall crop condition is both below last year's and the five-year average. CropWatch puts the wheat production at 1% below last year's.

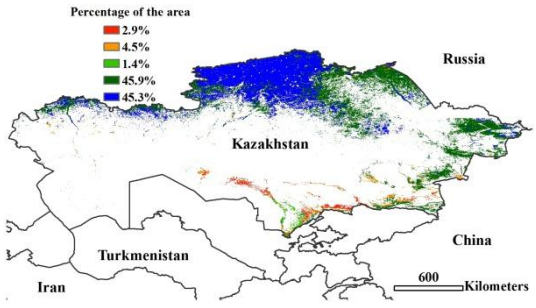
Figure 3.18. Kazakhstan crop condition, July-October 2014



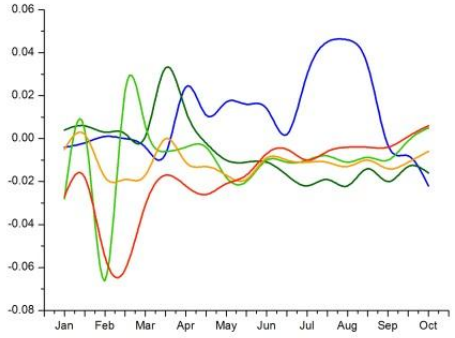
(a) Crop condition development graph based on NDVI



(b) Maximum VCI



(c) Spatial NDVI patterns compared to 5YA

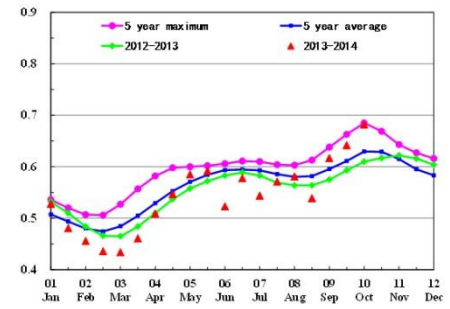


(d) NDVI profiles

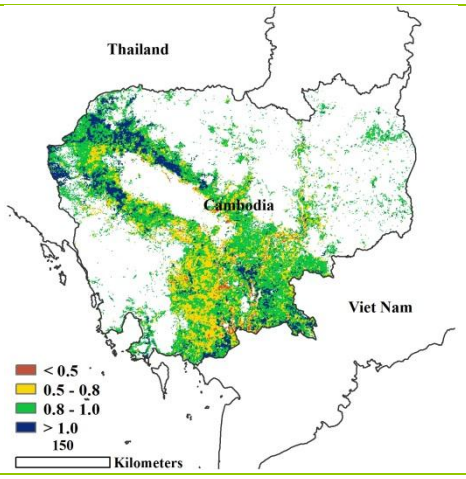
[KHM] Cambodia

Crops in Cambodia displayed slightly above average condition over the reporting period, which coincides with the planting season of main paddy crop. Overall, persistent rainfall in the period has been above average (26%) over much of the country, benefiting sowing activities and crop development. Climatic indicators and biomass monitoring by CropWatch indicate that the country enjoyed favorable PAR with values about 4% higher than the five-year average, as well as an 8% increase of biomass accumulation. Crop condition, which was worse than average during mid-August, soon recovered in the following two months. The maximum VCI reached 0.87 in the recent period. NDVI profiles show that crop condition was much below average in August in 6.3% of the cropped area (mainly Kandal, Kampong Chhnang, and Phnom Penh)—possibly a result of drought. Generally, the presence of favorable conditions during the early stages of rice suggests a good production of main wet season rice, which accounts for about 80 percent of annual production in Cambodia.

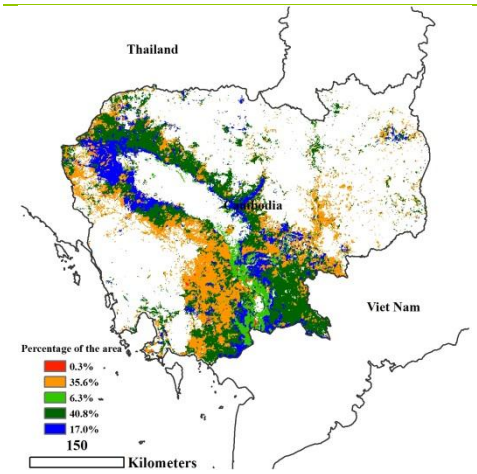
Figure 3.19. Cambodia crop condition, July-October 2014



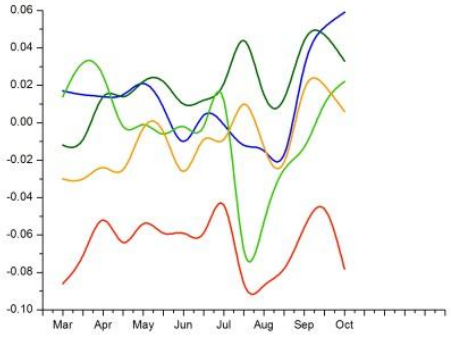
(a) Crop condition development graph based on NDVI



(b) Maximum VCI



(c) Spatial NDVI patterns compared to 5YA

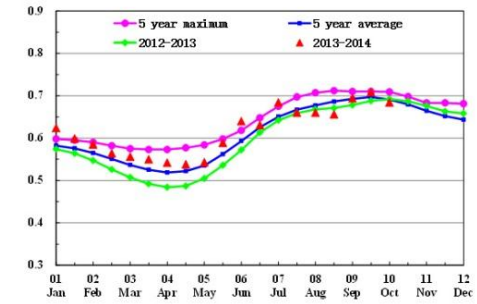


(d) NDVI profiles

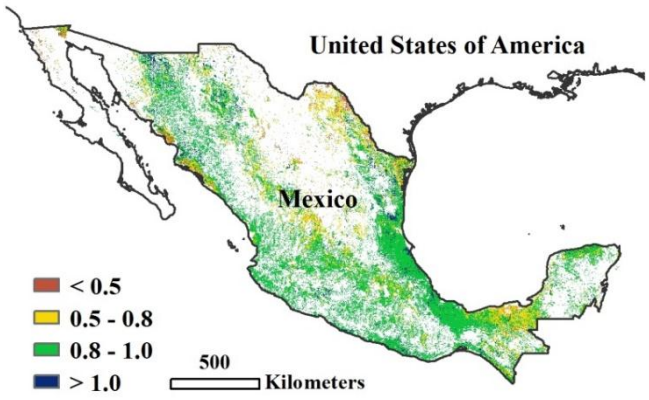
[MEX] Mexico

In general, crop condition was close to average in Mexico during the current monitoring period. Overall, and with the exception of Veracruz, the weather was average: rainfall decreased by 1%, temperature increased 0.8°C and PAR increased by 1%. CropWatch indicators also show that biomass accumulation (BIOMSS) increased by 8% and that the fraction of cropped arable land (CALF) and cropping intensity both increased by 5% compared to the five-year average. Thanks to the increase of CALF and cropping intensity, above average production can be expected in Mexico.

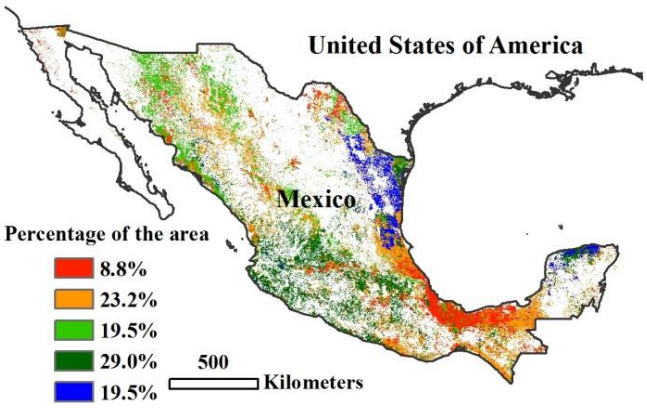
Figure 3.20. Mexico crop condition, July-October 2014



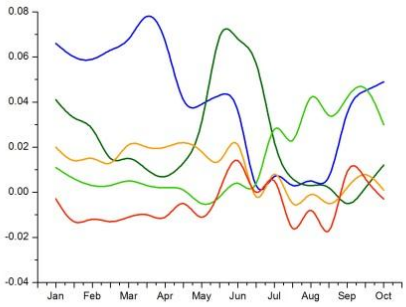
(a) Crop condition development graph based on NDVI



(b) Maximum VCI



(c) Spatial NDVI patterns compared to 5YA

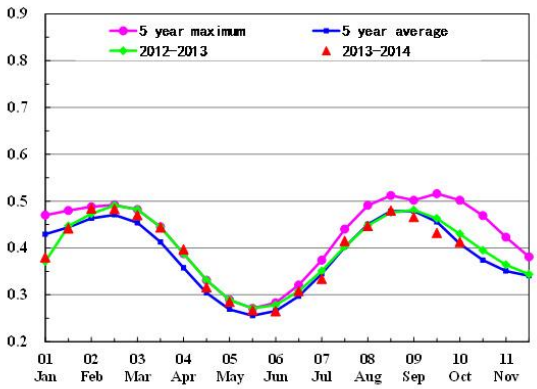


(d) NDVI profiles

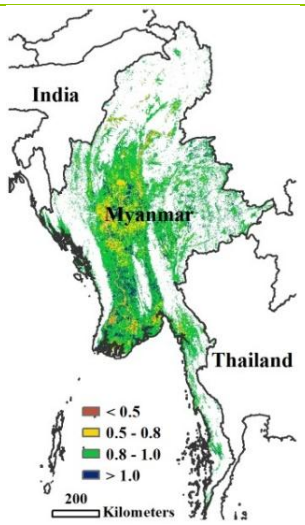
[MMR] Myanmar

Crop condition in Myanmar from July to October was comparable to the situation in 2012-2013. During the reporting period, the harvesting of main season rice started in October, while the sowing of wheat and maize occurs around mid-September. The NDVI profile sharply increased to near and above average values in most agricultural areas from July to August during the growing period of the main season rice crop, particularly in the central dry zone and Yangon region. Due to torrential rains at the beginning of August, the NDVI profile sharply decreased to below average values in almost 20% of the cropland area; the most affected areas are Bago region, Mon state, and Kayin state. For the period under consideration, the CropWatch agroclimatic and agronomic indicators show an increase in RADPAR (+5%), accompanied by an increase in TEMP (1.2°C) compared to average conditions. BIOMSS decreased by 5% compared to the same average as a result of the 8% below average precipitation (RAIN). The maximum VCI index increased to 0.90. VCI presents very good crop condition in Bago and Ayeyarwady regions. Based on CropWatch indicators, the crop situation of most arable land in Myanmar is rated as above average.

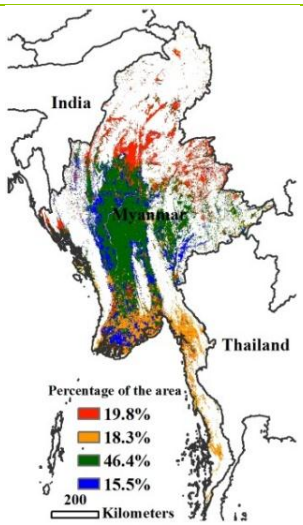
Figure 3.21. Myanmar crop condition, July-October 2014



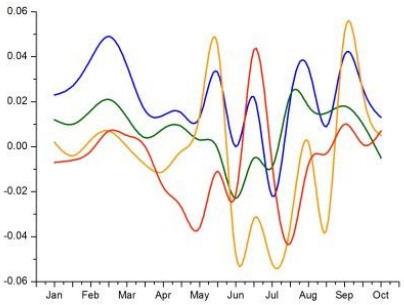
(a) Crop condition development graph based on NDVI



(b) Maximum VCI



(c) Spatial NDVI patterns compared to 5YA

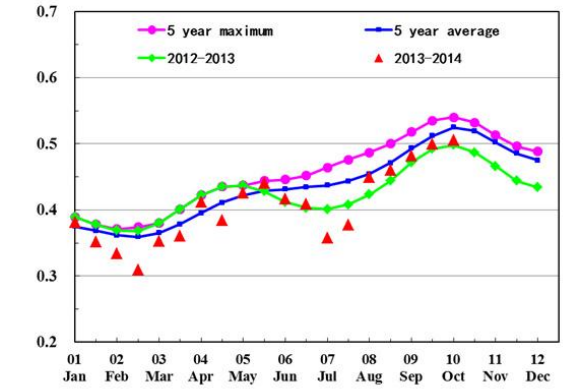


(d) NDVI profiles

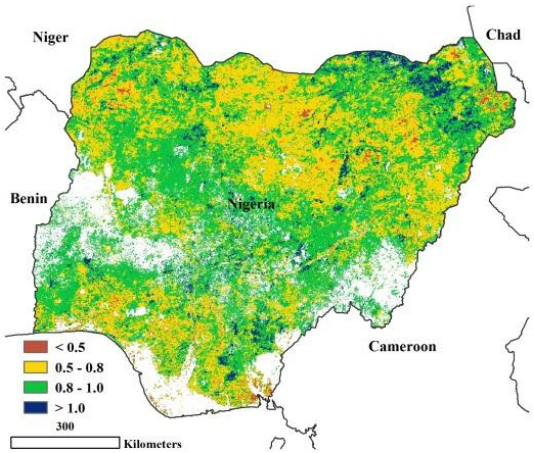
[NGA] Nigeria

In spite of the somewhat erratic behavior of average NDVI between May and July (due to a low NDVI peak in the south around Imo and Oyo in July and a high peak at the end of August in and around Kogi State), VCIx values in Nigeria are usually above 0.5, with an average VCIx of 0.81. VCIx values increase to above 1 in the north-east (Yobe and Borno states) and drop below 0.5 only in very limited patches. Altogether, conditions in more than 72% of the country are average, resulting also from average agroclimatic conditions (RAIN +8%, TEMP +0.7°C, RADPAR 0%, and BIOMSS +6%). While the fraction of cropped arable land (CALF) remained the same (0%), cropping intensity dropped by 4%, which may be linked to a somewhat late onset of the season in the north. The condition of the first maize crop and the condition of the crops still to be harvested (for example the second maize crop in the south) do not raise reasons for concern.

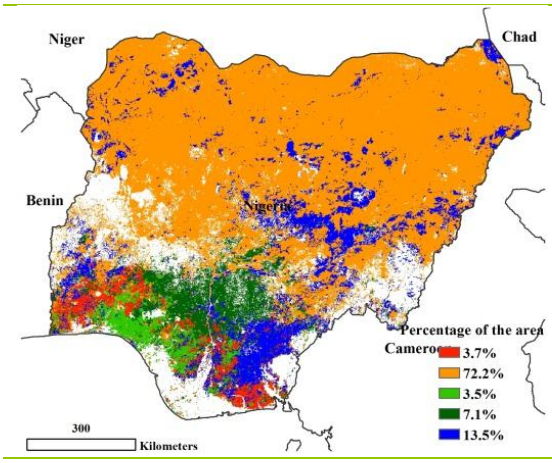
Figure 3.22. Nigeria crop condition, July-October 2014



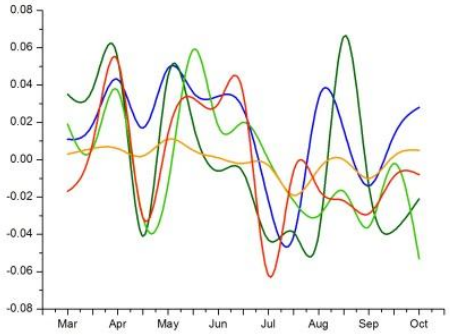
(a) Crop condition development graph based on NDVI



(b) Maximum VCI



(c) Spatial NDVI patterns compared to 5YA

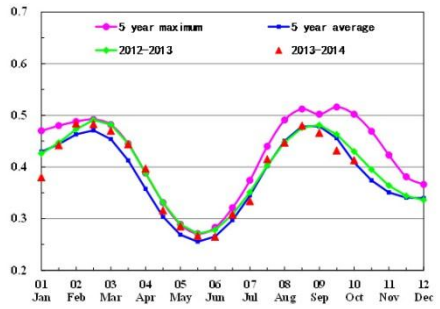


(d) NDVI profiles

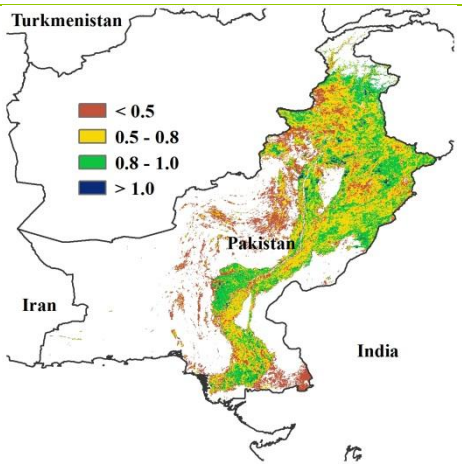
[PAK] Pakistan

Crop condition was generally unfavorable from July to October, which covered the growing and harvesting stage of maize and rice, as well as the sowing of barley and winter wheat. Compared with average, RAIN and TEMP showed a slight increase (1% and 1.3°C respectively), while RADPAR decreased (-1°C). The maximum VCI map indicates the areas where crop condition was below average (lower than 0.5), which mostly resulted from higher TEMP and low RADPAR. Unfavorable conditions resulted in low average BIOMSS (-15%) at the national scale. The fraction of cropped arable land (CALF) and cropping intensity slightly decreased (-2% and -1%, respectively), which may impact production. As shown by the crop condition development graph, crops were below the average of the last five-years from late August. Actually, spatial NDVI patterns and profiles showed that crop condition in about 67% of arable agricultural areas was below average from June. All available indicators concur to rank Pakistan's crops as below average throughout the country and CropWatch has put production below last year's levels (-2% for maize and -3% for rice).

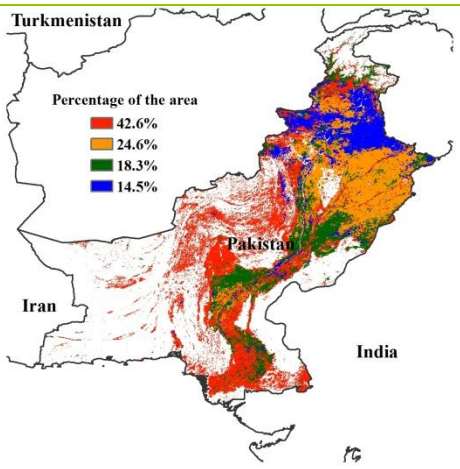
Figure 3.23. Pakistan crop condition, July-October 2014



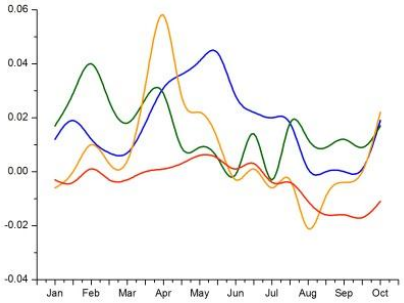
(a) Crop condition development graph based on NDVI



(b) Maximum VCI



(c) Spatial NDVI patterns compared to 5YA

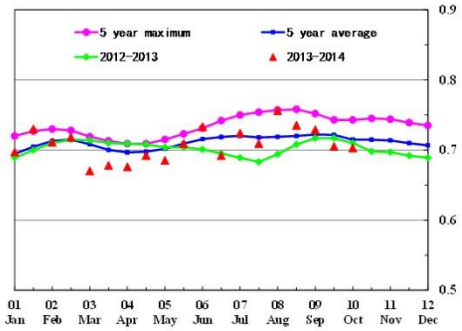


(d) NDVI profiles

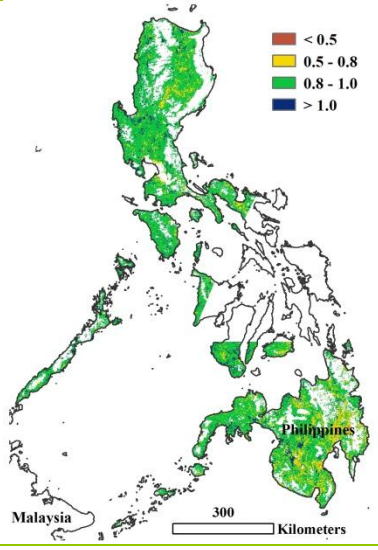
[PHL] The Philippines

The crops in the Philippines generally showed average condition between August and October. Harvesting of the main season paddy crop is currently underway, while seasonable showers are conducive to the planting of the secondary season crop. As illustrated by above average indices for temperature and rainfall, crops planted from October enjoyed favorable initial growing conditions. NDVI profiles indicate that throughout the season, especially in October, the country underwent mixed conditions roughly comparable with the recent five-year average level. According to the NDVI clusters, somewhat contrasted crop conditions characterized north and south in August, with favorable conditions in Luzon and poor conditions in Mindanao.

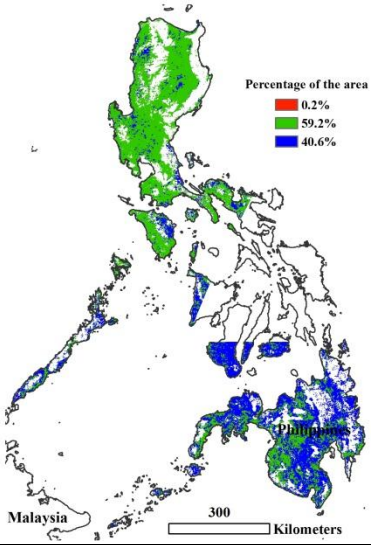
Figure 3.24. Philippines crop condition, July-October 2014



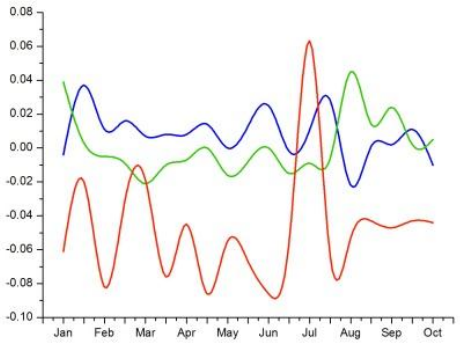
(a) Crop condition development graph based on NDVI



(b) Maximum VCI



(c) Spatial NDVI patterns compared to 5YA

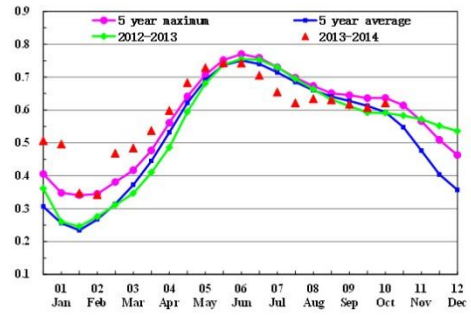


(d) NDVI profiles

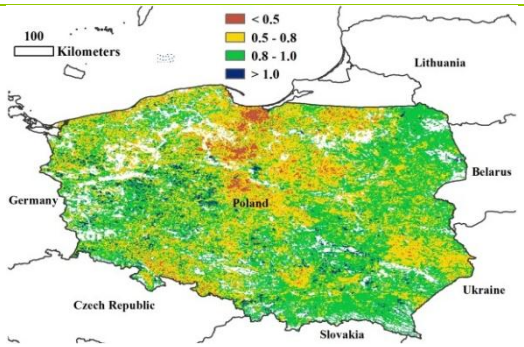
[POL] Poland

Poland enjoyed favorable conditions during this monitoring period (VCIx=0.8), which witnessed the harvest of winter wheat and maize. The cropped arable land fraction (CALF) was the same as during the last five years. The weather during July to October was wetter and warmer than the last thirteen years average with rainfall up 10%, temperature up 1.0°C, and PAR up 4%. Due to the impact of rainfall, the potential biomass was 10% higher than usual. As shown in the spatial NDVI patterns figure, in southwest Poland (including Wroclaw and Opole), the NDVI underwent a marked drop in July, which was caused by the harvest of wheat. Meanwhile, for the current monitoring period, most parts of the wheat planting area (including Poznan and Bydgoszcz) recorded NDVI values close to the recent five-year average. Because of the good climate condition from January to June, yields are forecast to be above average for wheat.

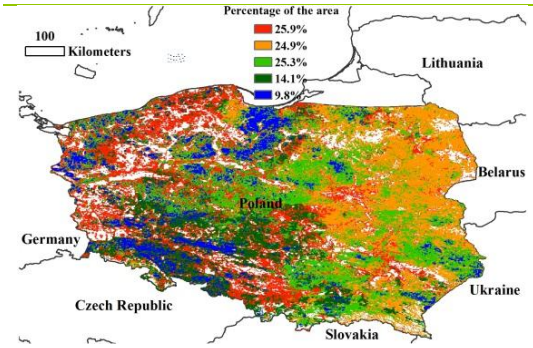
Figure 3.25. Poland crop condition, July-October 2014



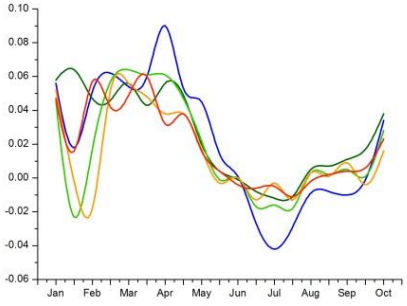
(a) Crop condition development graph based on NDVI



(b) Maximum VCI



(c) Spatial NDVI patterns compared to 5YA

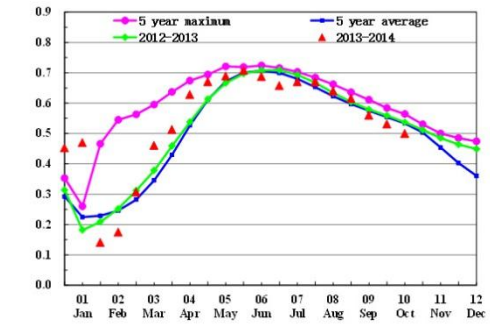


(d) NDVI profiles

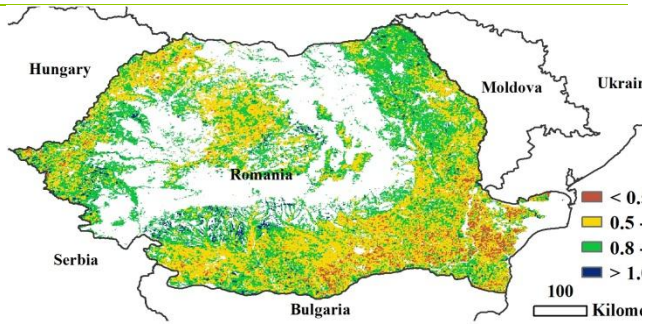
[ROU] Romania

Romania presented average crop conditions during July to October (VCIx=0.78). The winter wheat harvest was completed before July and planting took place in September and October. As to maize, the bulk of the harvest occurred from August to October. Cropped arable land was close to the last five years' average. Overall, weather was warm and dry in this period, with rainfall down 9% and temperature up 0.4°C compared with the average, conditions mostly favorable for the harvesting period. Crop development was normal, with biomass accumulation values 13% above the average of the recent five years. As illustrated, NDVI exceeded average values over most of Romania's cropland during spring, which led to an increase in winter wheat yields. During the reporting period, the whole country (except the southeast) enjoyed above average NDVI. In the west of Romania, near Hungary, the NDVI was significantly lower than usual due to insufficient rainfall in July. However, some parts of southern Romania (including Bucharest and Slobozia), recorded excess of rainfall in June and July, resulting in lower than usual NDVI and VCIx (<0.8). This is expected to negatively affect the yield of maize in Romania.

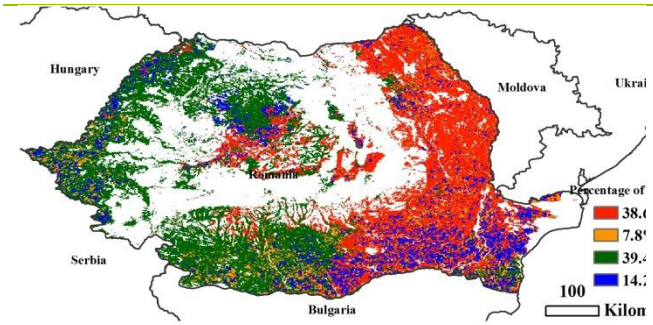
Figure 3.26. Romania crop condition, July-October 2014



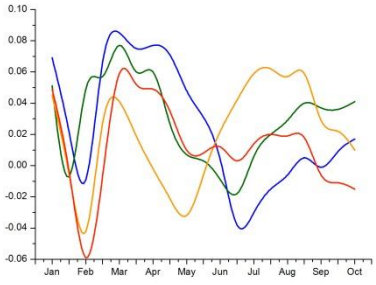
(a) Crop condition development graph based on NDVI



(b) Maximum VCI



(c) Spatial NDVI patterns compared to 5YA

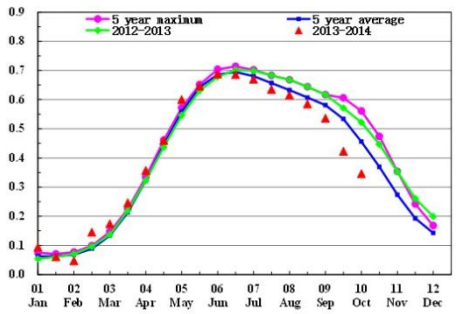


(d) NDVI profiles

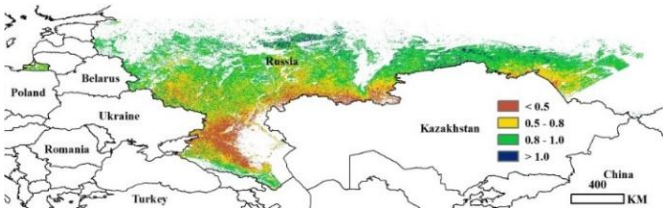
[RUS] Russia

Russia presented unfavorable crop and environmental conditions from July to October (VCI=0.78), the time (July and August) when winter and spring wheat are harvested. The maize harvest was also completed before October. Compared with average conditions, rainfall decreased 17% and temperature decreased 0.9°C. Both changes concur to account for a 10% drop in potential biomass compared with the last five-year average. As for the NDVI patterns, significantly above average values occurred in most parts of Russia's cultivation area (more than 70% of the area, mostly in the west including Moscow and Volgograd, and east including Novosibirsk) from February to June. Good crop condition indicators point at satisfactory crops. During this monitoring period, as shown by the crop condition development graph, NDVI was below values for the recent five-year average. Above average NDVI occurred in the center and south of Russia's cultivation areas, including Yekaterinburg; other regions where characterized by close to or slightly below average NDVI. The low NDVI values for the monitoring period describes dry conditions, which could lead to early harvesting. Overall, CropWatch estimates a positive outcome of the growing season.

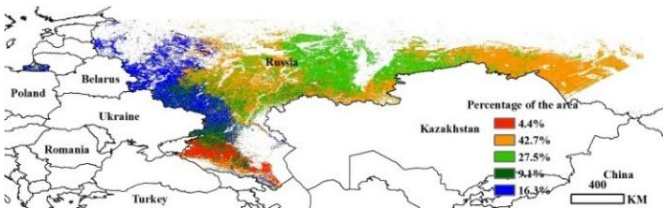
Figure 3.27. Russia crop condition, July-October 2014



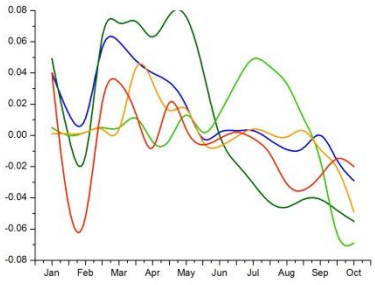
(a) Crop condition development graph based on NDVI



(b) Maximum VCI



(c) Spatial NDVI patterns compared to 5YA

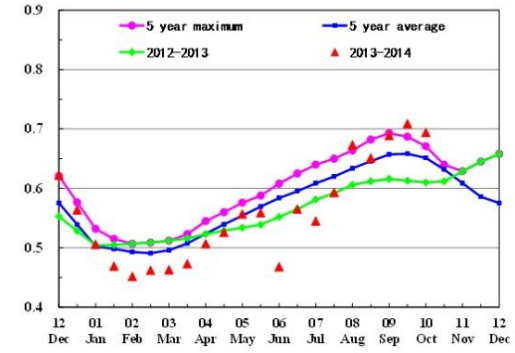


(d) NDVI profiles

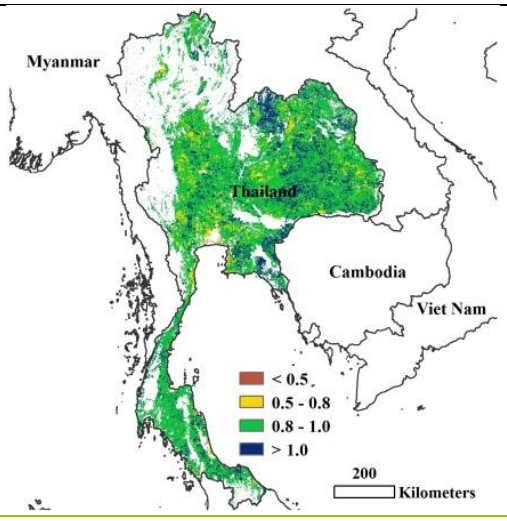
[THA] Thailand

The harvesting period of maize has been completed, while main rice harvest started in October. For the period under consideration, crops show above average condition compared to the previous year as well as the recent five-year average. The NDVI profile sharply increased to above average values in the area around the Chao Phraya river basin and in the Tung Kula RongHai region (a large plateau in Northeastern area) from July to August because of the adequate rainfall for rice crops. The NDVI profile sharply decreased to almost average values in most regions of cropped arable land from September to October due to the dry weather during harvesting. The CropWatch agro-climatic and agronomic indicators show an increased PAR accumulation (RADPAR, +5%), rainfall (RAIN, +7), biomass (BIOMSS, +1%), and temperature (TEMP, +0.9°C) compared to average. Compared with the other countries monitored by CropWatch, Thailand enjoyed very favorable conditions (VCIx=0.93). The VCIx values indicate that good crops occur throughout the country, particularly in the northeastern region. Based on CropWatch indicators, the situation of crops in Thailand is ranked as very favorable.

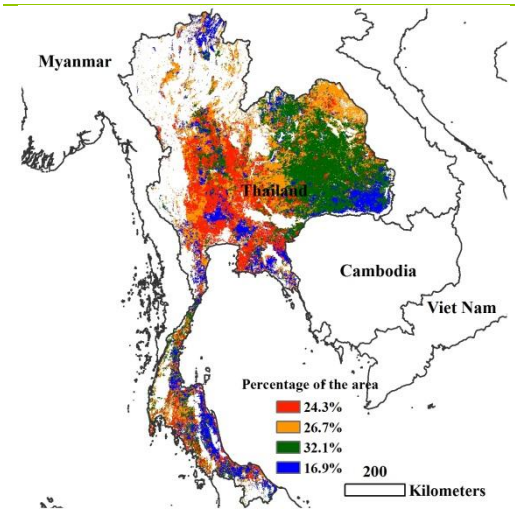
Figure 3.28. Thailand crop condition, July-October 2014



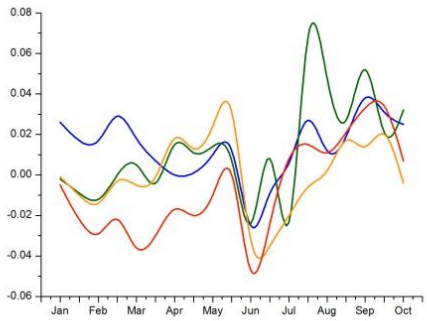
(a) Crop condition development graph based on NDVI



(b) Maximum VCI



(c) Spatial NDVI patterns compared to 5YA

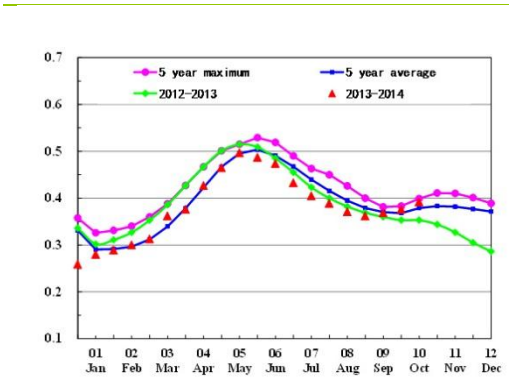


(d) NDVI profiles

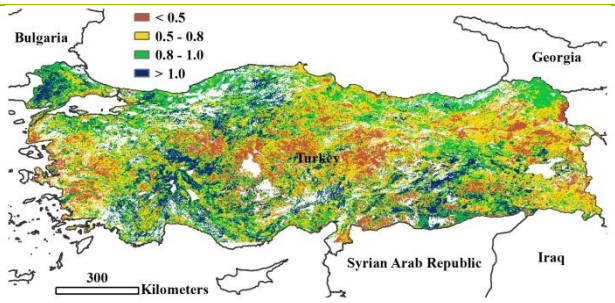
[TUR] Turkey

During the monitoring period from July to October 2014, accumulated rainfall was above the thirteen-year average. Temperature and RADPAR were close to their average values, which resulted in above average BIOMSS in Turkey. During the monitoring period, the summer crops (maize, rice, and potato) harvest was completed, and winter wheat and barley was sown from the middle of September. The agroclimatic indices indicate favorable growing conditions, which is confirmed by the BIOMSS increase of 19 percentage points. The national VCIx (0.78) was above average conditions. Except for western Anatolia and the south of Central-Eastern Anatolia, the VCIx map presents a spatial pattern that is consistent with the NDVI cluster map comparing to the five-year average. Crop condition below average for July to September is found in most regions of Anatolia, covering approximately 70% of the national territory. Other areas located in the Istanbul, Marmara, and Western Black Sea regions underwent favorable conditions for the monitoring period. Overall, the outcome of the summer crops is poor, while prospects for the winter crops are normal.

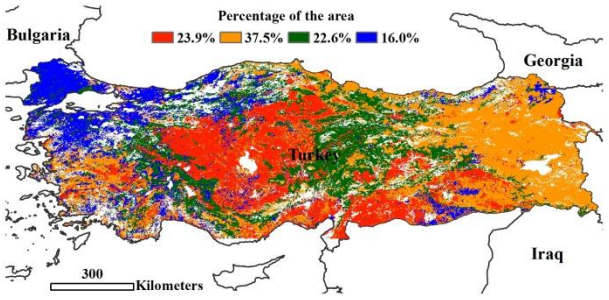
Figure 3.29. Turkey crop condition, July-October 2014



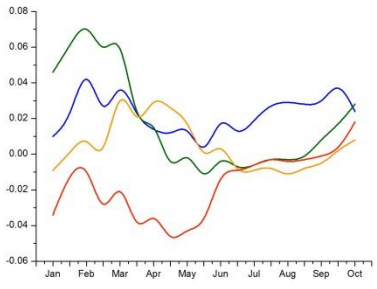
(a) Crop condition development graph based on NDVI



(b) Maximum VCI



(c) Spatial NDVI patterns compared to 5YA



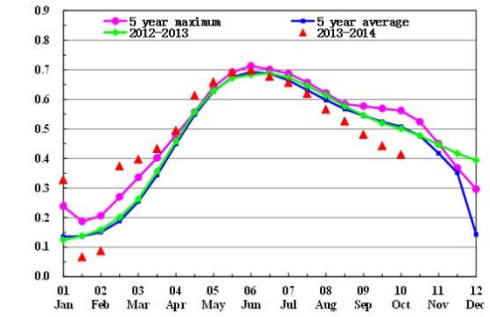
(d) NDVI profiles

[UKR] Ukraine

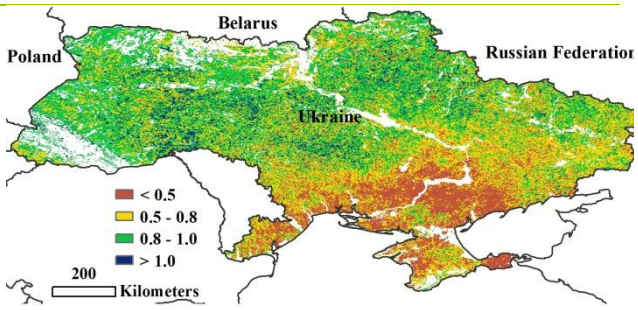
Ukraine presented unfavorable crop condition during this monitoring period (VCIx=0.75) and phenology was normal. The winter wheat's harvest was completed before August and seeding began in September. The maize harvest started in August. The climate conditions are characterized by poor rainfall from July to October (down 29% compared with the last thirteen years), while TEMP and RADPAR were close to average. The resulting potential biomass drop is 22%.

As shown in the crop condition development graph, the July-October NDVI was lower than during the last five years. The decrease mainly affects southern and eastern Ukraine. In most parts of western Ukraine, the NDVI is average compared to the previous five years. As most of the winter wheat has been harvested before August, the yield of wheat wouldn't be affected. The maize yield is expected to drop in eastern Ukraine (including Donetsk and part of Dnipropetrovsk).

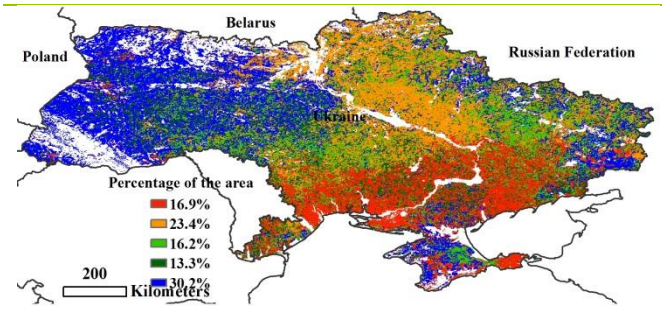
Figure 3.30. Ukraine crop condition, July-October 2014



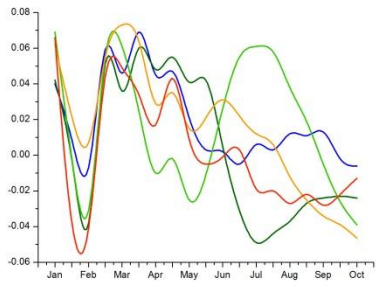
(a) Crop condition development graph based on NDVI



(b) Maximum VCI



(c) Spatial NDVI patterns compared to 5YA

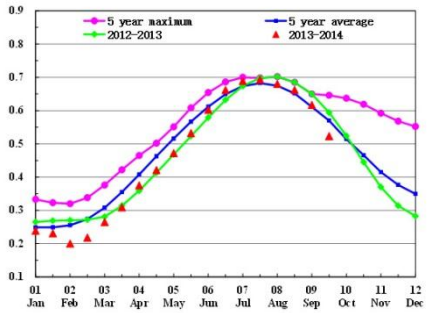


(d) NDVI profiles

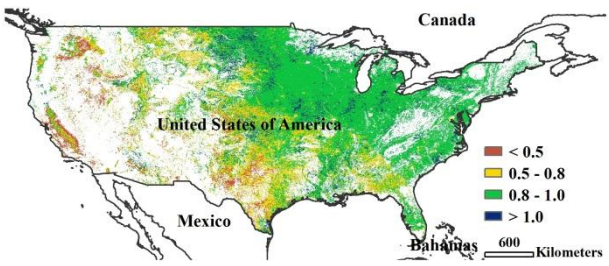
[USA] United States

Crops were slightly above average in the United States from July to October 2014, during which the winter wheat harvest was completed and other crops started being harvested. During the previous monitoring period (April to July), drought conditions caused the decrease of winter wheat production; the water shortage eased during the current period in the west of the country due to significant increase of rainfall, especially benefiting California (+17% or average), Oregon (+38%), and Washington (+28%). The drought continued in Texas (-5%). In soybean growing areas and the corn belt, abundant rainfall continued this monitoring period: Illinois (+68%), Iowa (+91%), Missouri (+77%), Nebraska (+90%), Indiana (+27%), Wisconsin (+13%), and Minnesota (+7%). Ample moisture was available for maize and soybean growth. RADPAR typically decreased when rainfall increased in temperate countries and the following RADPAR values were recorded in Illinois (-4%), Iowa (-7%), Missouri (-3%), Indiana (-4%), and Minnesota (-7%). As a result of reduced sunshine, soybean and maize were only slightly above average in the major production regions. However, in the major production states, in central Illinois, Iowa, and Nebraska, the crop condition is above average. CropWatch results indicate that, over the reporting period) the accumulation of biomass (BIOMSS) exceeded the average by 14% while the fraction of cropped arable land was increased by 3%. Cropping intensity, however, decreased (-1%) compared to the recent five-year average. Although winter wheat condition was below average for the United States, the analysis of the CropWatch indicators points at above average production of soybean and maize. (See also table B.5 in Annex B.)

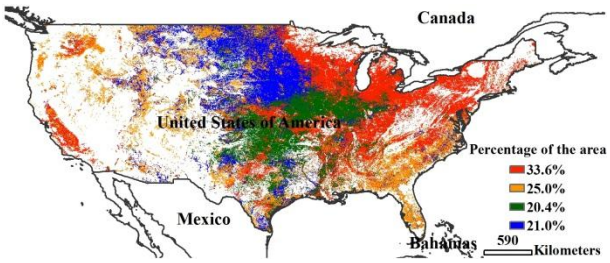
Figure 3.31. United States crop condition, July-October 2014



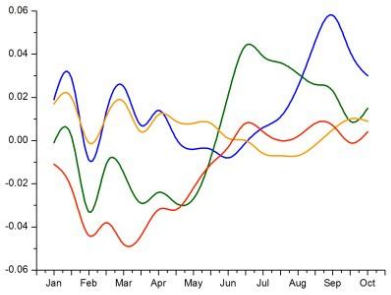
(a) Crop condition development graph based on NDVI



(b) Maximum VCI



(c) Spatial NDVI patterns compared to 5YA

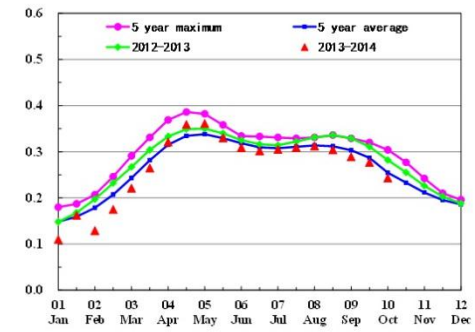


(d) NDVI profiles

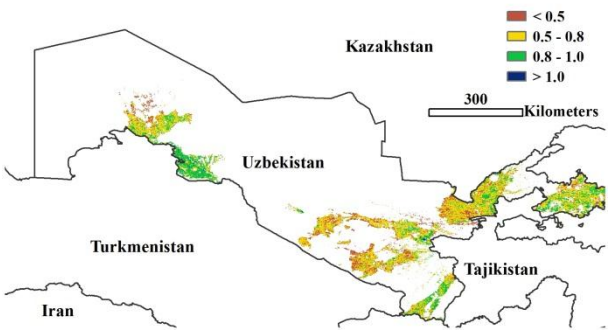
[UZB] Uzbekistan

This reporting period covers the harvesting and sowing stages of winter wheat, as well as the growing and harvesting stages of coarse grains and maize. Crop condition was general unfavorable. Among the CropWatch agroclimatic indicators, RAIN was well above average (175%). The country also experienced excessive rains and low TEMP, but these events were poorly distributed as confirmed by the spatial NDVI patterns and profiles. Throughout the growing season, crop condition was close to average or below in most areas (Navoiy, Bukhara, Kashkadarya, Jizzakh, Namangan, Andijan, and Fergana). Good crop conditions appear in the west—in an area with mostly cotton crops—and south. Winter wheat, which is the most important crop in Uzbekistan, was harvested in June; the next season crop is currently being planted. Unfavorable conditions during June severely affected crops. CropWatch estimates that the wheat production dropped 8% compared with the previous season.

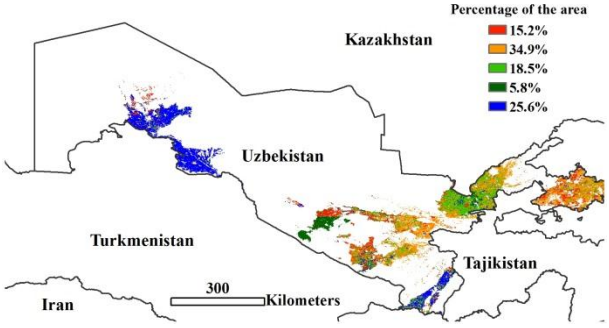
Figure 3.32. Uzbekistan crop condition, July-October 2014



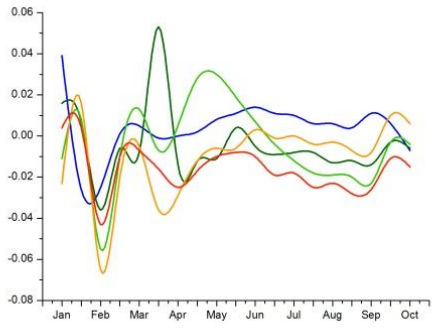
(a) Crop condition development graph based on NDVI



(b) Maximum VCI



(c) Spatial NDVI patterns compared to 5YA

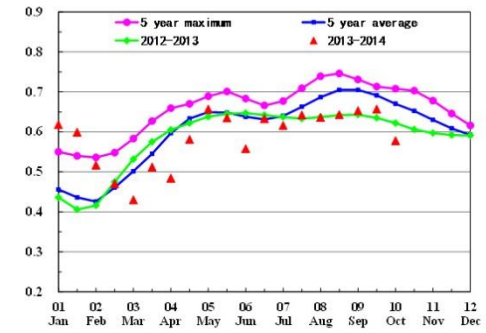


(d) NDVI profiles

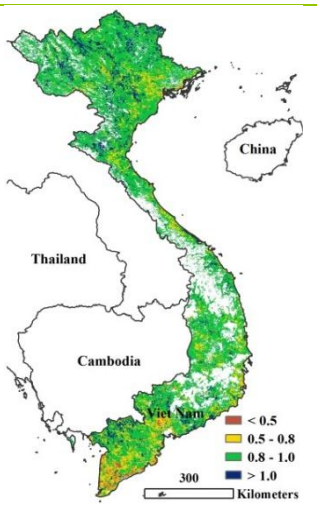
[VNM] Vietnam

The harvesting period of summer/autumn rice has been completed, while the 10th month rice was still growing in mid-October. The crop condition from July to October was generally comparable to the situation in 2012-2013 but below average in October. For the period under consideration, the CropWatch agroclimatic and agronomic indicators all show an increase over the average: RADPAR (+1%), TEMP (1.1°C), BIOMSS (+2%), and RAIN (+1%). Spatial NDVI profiles show that the crop condition in Tuyen Quang, Bac Kan, and Thai Nguyen provinces sharply decreased to below average values from July to August, followed by a rapid increase in September due to the precipitation that fell in the wake of typhoon Kalmaegi. The other record above average NDVI values, especially in the south, are probably due to favorable weather conditions. NDVI profiles show that crop condition was below average in 16.2% of the major rice plantation area, mainly the Red River delta from September to October. Crop condition was average in the Mekong River delta region, with VCIx ranging between 0.5 and 0.8. Based on CropWatch indicators, the crop situation in Vietnam is considered to be close to average.

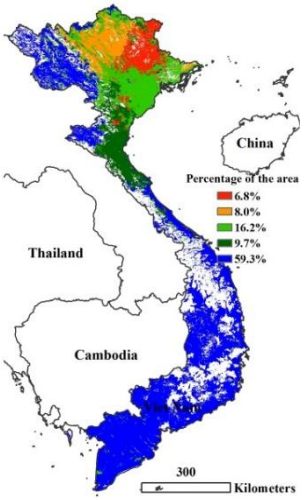
Figure 3.33. Vietnam crop condition, July-October 2014



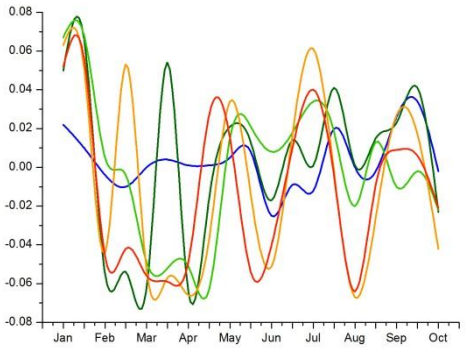
(a) Crop condition development graph based on NDVI



(b) Maximum VCI



(c) Spatial NDVI patterns compared to 5YA

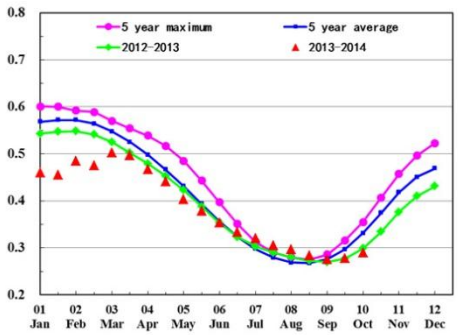


(d) NDVI profiles

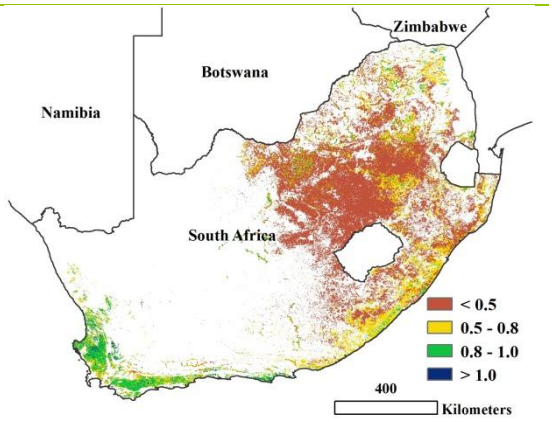
[ZAF] South Africa

The overall NDVI profile for South Africa shows conditions in September and October that are comparable to the 2012-2013 season and well below the recent five-year average. VCIx is low over the north-western areas, which includes the bulk of South African maize production. NDVI values are currently close to average after a marked peak at the beginning of September, probably due to some isolated early rain showers. At the end of October, NDVI was well below average in KwaZulu-Natal and—though less severely—in Gauteng and surrounding areas. In combination with the agroclimatic data (-39% RAIN, +0.9°C TEMP, +2% RADPAR, and -24% for BIOMSS), all indices concur in assessing the current conditions for the 2014-15 maize crop in South Africa as mixed at best.

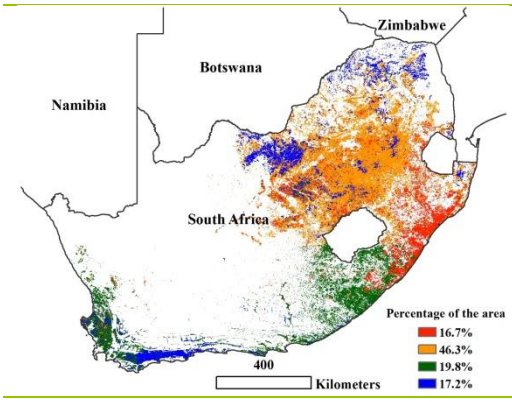
Figure 3.34. South Africa crop condition, July-October 2014



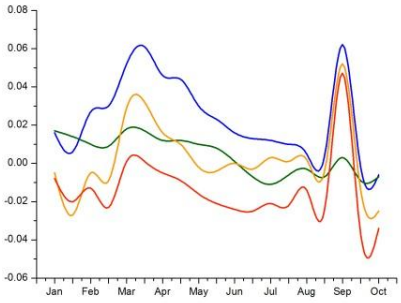
(a) Crop condition development graph based on NDVI



(b) Maximum VCI



(c) Spatial NDVI patterns compared to 5YA



(d) NDVI profiles