Chapter 3. Main producing and exporting countries

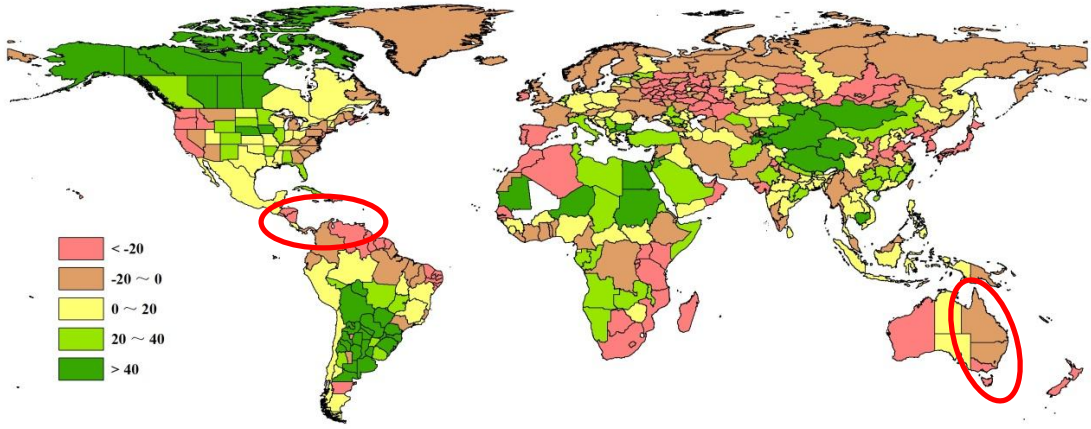
Building on the global patterns presented in previous chapters, this chapter assesses the situation of crops in 30 key countries that represent the global major producers and exporters or otherwise are of global or CropWatch relevance. For each country, maps present maximum VCI, spatial NDVI patterns, associated NDVI profiles, and an NDVI-based crop condition development graph. 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

Similar to the global findings presented in Chapters 1 and 2, rainfall—in terms of either abundance or lack of it—was a key variable for the reporting period. The global maps for rainfall, temperature, PAR, and biomass, presented in figures 3.1-3.4, show additional spatial detail at the national and sub-national level for the largest countries.

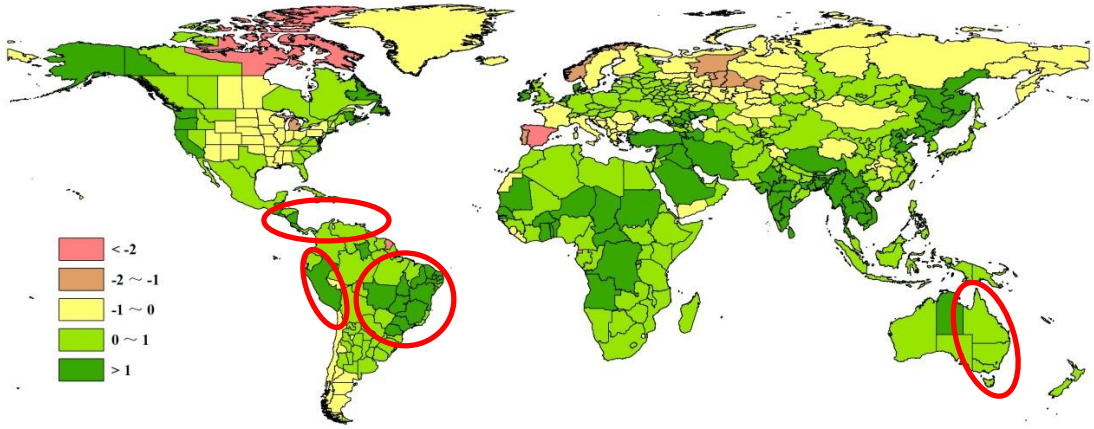
For rainfall, when analyzed by country, the largest positive departure for RAIN from the recent thirteen-year average was recorded over the agricultural areas of Jordan (+126%) and a cluster of areas in south America centered around Paraguay (+110%) and including (Bolivia, +84%), states of Brazil (Mato Grosso do Sul, +69%) and provinces of Argentina (figure 3.1). Compared to the recent thirteen-year average, the provinces of La Pampa, Catamarca, Cordoba, San Juan, Rio Negro, and Jujuy, had at least twice the average amount of rainfall. The rainfall benefited the crops of the current winter season; only limited areas reported floods. TEMP was average most of the time, but RADPAR often dropped by as much as 10%.

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



Note: Red circles indicate the areas coinciding with the “dry” areas of figure 5.2; see section 5.3 on El Niño.

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



Note: Red circles indicate the areas coinciding with the "warm" areas of figure 5.2; see section 5.3 on El Niño

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

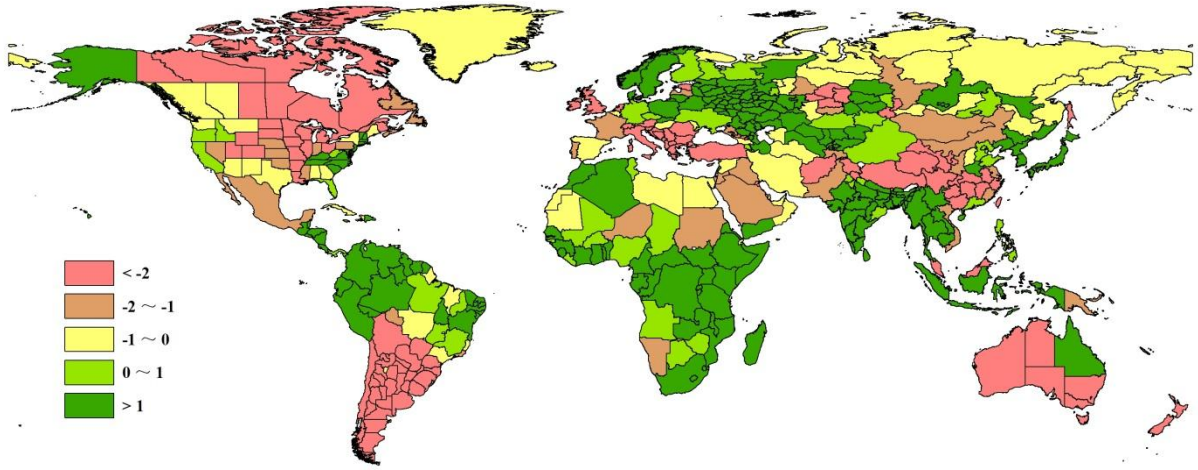
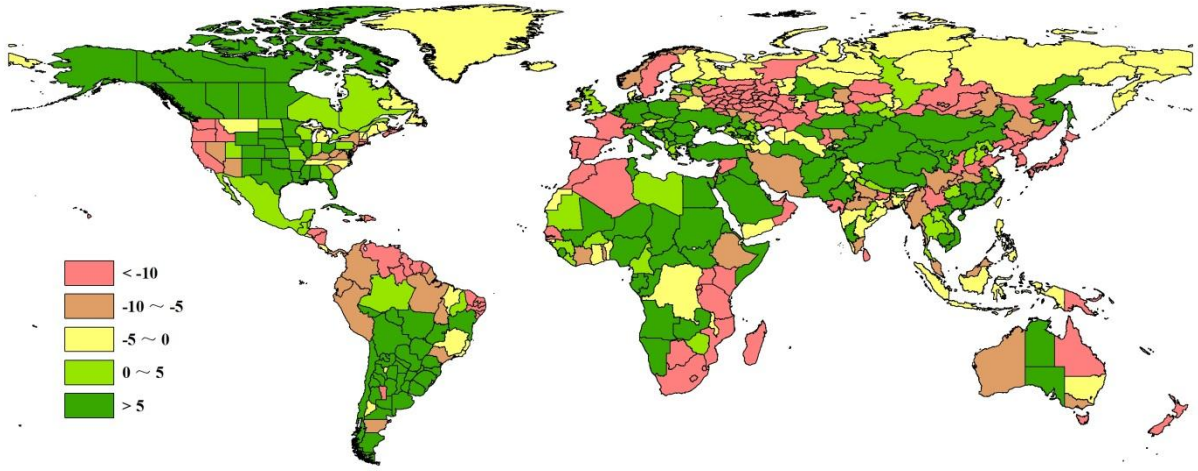


Figure 3.4. Global map of biomass (BIOMSS) by country and sub-national areas, departure from 13YA (percentage), April-July 2014



In North America, areas where rainfall benefited the summer season (with excesses in rain of +30% to +95%) include Saskatchewan, British Colombia, and Manitoba in Canada, as well as Iowa, Nebraska, South Dakota and Arkansas in the United States. TEMP was slightly below average (above -1°C) and the decrease in sunshine usually did not exceed 5%.

Two additional areas with high rainfall include parts of central Europe and central Asia. In the first, floods were frequent and damaged summer crops especially in Macedonia (RAIN +65%), Bulgaria (+51%), Serbia (+35%), and Bosnia-Herzegovina. The floods were brought about by a single, very intense but short duration rainfall episode, except in Bulgaria and some neighboring Black Sea areas where two such events happened (see also section 5.2). Less damaging to crops was high rainfall in Cyprus (+77%) and Turkey (+34%). The area enclosed between Switzerland to Austria, Romania, Turkey, and Italy was characterized by low RADPAR (-5 to -7%). In Asia, places to mention include Kyrgyzstan (RAIN, +68%), Tajikistan (+51%), and some adjacent areas in China (Qinghai, +70%; Jiangxi, +35%; Fujian, +32%; Inner Mongolia, +26%), and Kazakhstan (Vostochno kazachstanskaya, +41%; Kyzylordinskaya, +36%).

Despite the excessive rainfall in many locations, the following areas experienced water stress:

- *Sahel.* In at least three Sahelian countries (Mali, -91%; Senegal, -27%; Gambia, -43%) rainfall was below average. Especially in Senegal and Gambia, the departures may point at a delayed onset of the season and warrant a closer monitoring. In the central and eastern Sahel, conditions are more favorable with close to average or above average precipitation (RAIN usually around +10%, with a maximum of +51% in Niger).
- *South America.* In both the Brazilian Nordeste (Sergipe to Ceara; -30 to -40%) and in an area from Amapa (Brazil) to Venezuela across the Guianas (-40%), RAIN was below average. In the Brazilian Nordeste, this was combined with large temperature anomalies such as in Rio Grande do Norte (TEMP, +1.9°C).
- *North America.* Below average rainfall was seen for the coastal areas in the western United States (Washington, Oregon and California, -30% to -40%) and eastern part of the country (Maine and New-York to Georgia, about -10% for RAIN). For California, this was combined with the second largest positive temperature departure of all locations examined by CropWatch (+2.5°C).
- *Mediterranean.* Below average rainfall was reported for the western Mediterranean (-51% in Portugal, -39% in Spain, and about -30% in Algeria and Morocco).
- *Africa.* Below average rainfall occurred in southern and eastern Africa up to Kenya and Uganda, with departures highest in the south (-60% in South-Africa to -90% in Swaziland; -30% to -40% from Mozambique to Kenya).
- *Russia.* Most of Russia experienced below average rainfall, with two areas in particular affected. The first area is centered around Nizhegorodskaya Oblast, from Smolensk Oblast to Aktyubinskaya in Kazakhstan; the second on the Oblasts of Tomsk, southern part of Krasnoyarsk and Irkutsk, as well as bordering areas to the south.
- *Eastern Asia.* In particular Japan (-34%), the Democratic People's Republic of Korea (-48%), the Republic of Korea (-52%), and eastern China (Shandong, -31%; Henan -25%; Shaanxi, -22%; Laoning, -21% and Hubei -16%) had below-average rainfall, mostly accompanied by low RADPAR.
- *Australia and New Zealand.* Both Southern Australia (RAIN about -20%) and New-Zealand (-40%) experienced below-average rainfall.

Only minor below average departures of temperatures were observed during the reporting period (in Norway, Lebanon), which, in itself is remarkable. The largest temperature anomalies are reported from

Belize (+3.4°C), the middle-east (Syria and Iraq, +2.2°C and +2.4°C respectively), in addition to the areas specified above.

Table 3.1. CropWatch agroclimatic and agronomic indicators for April-July 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 (%)	Maximum VCI
Argentina	72	0.5	-8	37	-0.7	0.83
Australia	-17	0.8	-3	-17	8.3	0.89
Bangladesh	2	1.6	9	0.2	-0.3	0.82
Brazil	12	1.1	-0.5	4	-0.4	0.86
Cambodia	43	1.0	3	13	4.7	0.85
Canada	29	0.3	-3	15	0.1	0.91
China	10	0.7	-2	3	1.6	0.87
Egypt	60	0.2	-0.3	49	2.8	0.84
Ethiopia	-10	0.3	1	-2	4.9	0.76
France	-15	-0.5	-1	-11	0.0	0.87
Germany	4	0.7	0.2	8	0.0	0.87
India	8	1.1	3	-3	8.6	0.68
Indonesia	3	0.7	2	-5	0.0	0.88
Iran	-10	1.2	-1	-9	1.1	0.69
Kazakhstan	5	0.0	1	4	2.2	0.74
Mexico	5	0.4	-2	9	2.1	0.80
Myanmar	-11	1.5	6	-3	0.0	0.78
Nigeria	4	0.4	1	6	5.5	0.76
Pakistan	-7	0.2	-2	4	8.3	0.76
Philippines	2	0.7	0.6	-7	0.0	0.87
Poland	12	0.4	1	8	0.0	0.88
Romania	0.3	-0.4	-4	3	0.2	0.89
Russia	-12	0.1	3	-5	4.1	0.87
South Africa	-60	0.3	3	-54	-12.6	0.83
Thailand	6	1.0	6	4	0.3	0.88
Turkey	34	1.1	-2	4	-6.7	0.76
United Kingdom	-10	0.3	-3	2	0.0	0.91
Ukraine	-0.5	0.3	0.9	8	0.0	0.88
United States	12	-0.1	-1	5	0.4	0.83
Uzbekistan	-5	0.4	1	2	0.7	0.68
Vietnam	17	1.2	-1	5	-0.1	0.86

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 (April-July).

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) Maximum VCI (over arable land mask) for April 1-July 31, 2014 by pixel; (b) Spatial NDVI patterns from January or April (according to local cropping patterns) up to July 2014 (compared to the 5YA); (c) NDVI profiles associated with the spatial pattern under (b); and (d) Crop condition development graph based on NDVI average over crop areas, comparing the October 2013-September 2014 period to the previous season, to the five-year average (5YA), and the five-year maximum. 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 April-July 2014

[ARG] Argentina

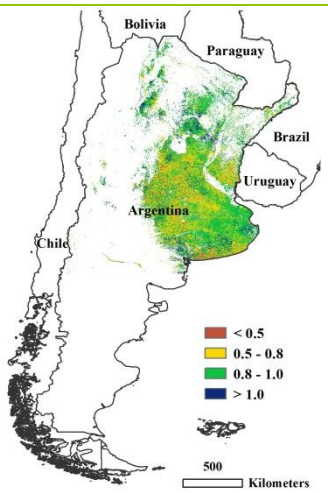
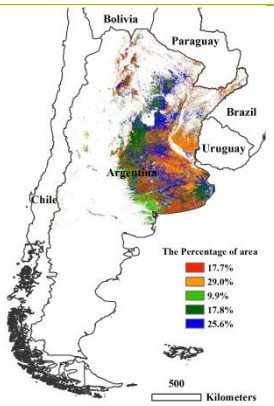


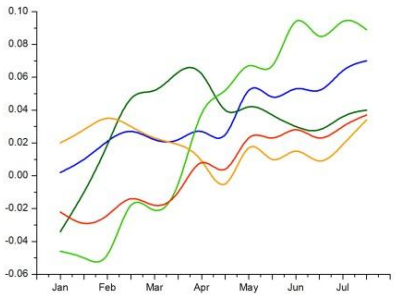
Figure 3.5. Argentina crop condition, April-July 2014

(a) Maximum VCI

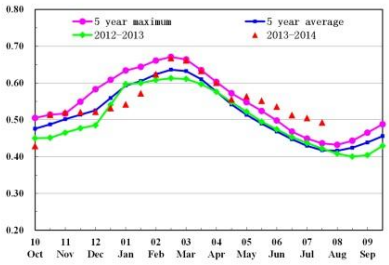
Crop condition in Argentina was generally favorable from January to July in 2014. Currently, the harvesting of maize and soybean and the planting of winter wheat are complete, while the planting of maize and soybean is still ongoing. From April to July, Argentina experienced wet and warm climatic conditions. The emergence and development of recently planted crops benefited from 72% more rainfall, 0.5°C degree higher temperature, and only slightly below average PAR. The VCIx map indicates that crop condition of most arable land in Argentina was above average (pixel value higher than 0.5). Favorable conditions can be confirmed by the significant above average BIOMSS indicator at both national and provincial levels. The only exception is San Luis, with 23% lower BIOMSS due to shortage of rainfall. As shown by the NDVI profiles, crop condition is either above or at the five-year average level, except for south-eastern Buenos Aires and southern La Pampa from January to mid-March, central Córdoba, and scattered regions in Salta in January. Below normal NDVI in those regions is due to the hot weather and insufficient rainfall before March. The low maximum VCI in the same regions also confirms the impact of the persistent high temperature and shortage of rainfall on crop development. Although the national NDVI development graph shows crop condition well above last year and the five-year average, the persistent high temperature and shortage of rainfall during the grain filling stage hampered both maize and soybean yield. CropWatch revised down the yield of maize and soybean to the same level as last year. Since early April, generally favorable climatic conditions dominated most of Argentina. Winter wheat development was accelerated. Accordingly, crop condition is well above that of last year and the five-year average. CropWatch forecasts a wheat yield up 5.7% over the previous season. (See also table B.1 in Annex B.)



(b) Spatial NDVI patterns compared to 5YA



(c) NDVI profiles



(d) Crop condition development graph based on NDVI

[AUS] Australia

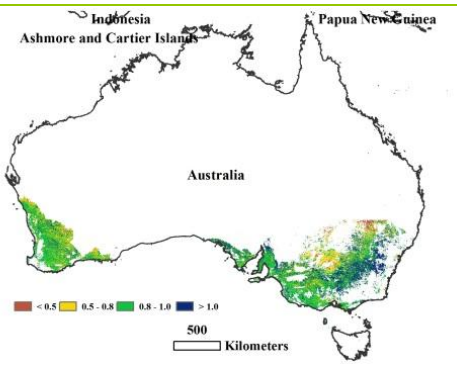
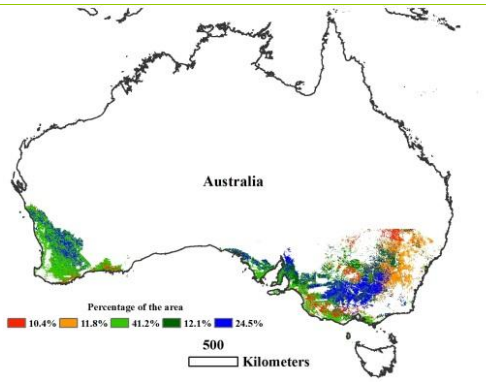
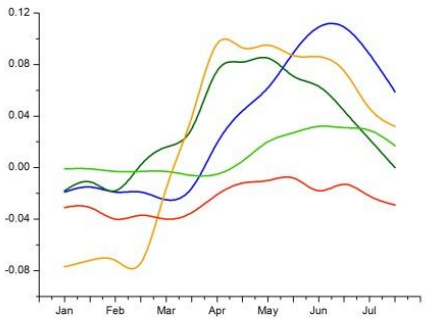


Figure 3.6. Australia crop condition, April-July 2014 (a) Maximum VCI

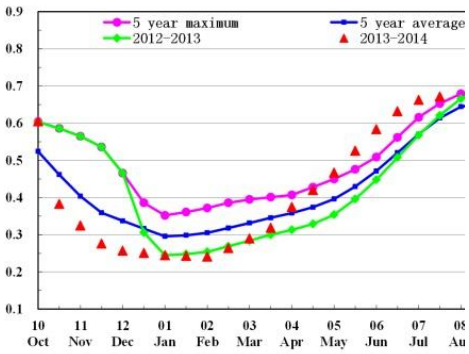
The crops in Australia showed generally average conditions during the reporting period from April to July. The country's spatial NDVI indicates a situation that on the whole is slightly better than the five-year average, except for some small patches in the central part of New South Wales, the southern part of Victoria, and the western border area between New South Wales and Victoria. This spatial pattern was also reflected by the maximum VCI in the different areas, with a VCIx of 0.89 for Australia overall. According to the crop condition map based on NDVI, Australia enjoyed a better situation than the five-year average throughout the reporting period and even better than the five-year maximum starting in May. The cropped arable land fraction increased by 8.3%, compared to the five-year average. The CropWatch TEMP indictor exceeded average by 0.8°C and RADPAR was 3% below the previous thirteen-year average. Although rainfall decreased by 17%, the agronomic indicators mentioned above all indicate a favorable condition for most winter crop areas of Australia for the time being. NDVI profiles, however, have been dropping in all areas starting in June, with the approach of winter. (See also table B.2 in Annex B.)



(b) Spatial NDVI patterns compared to 5YA

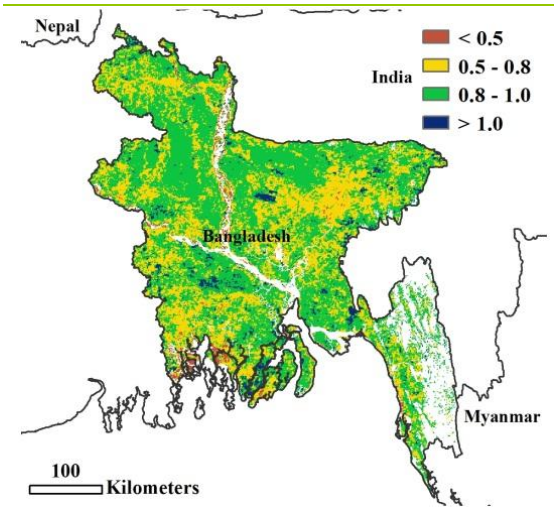


(c) NDVI profiles



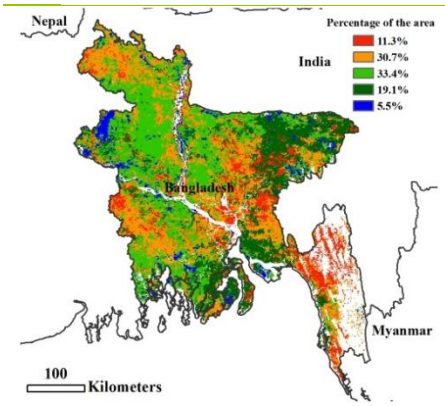
(d) Crop condition development graph based on NDVI

[BGD] Bangladesh

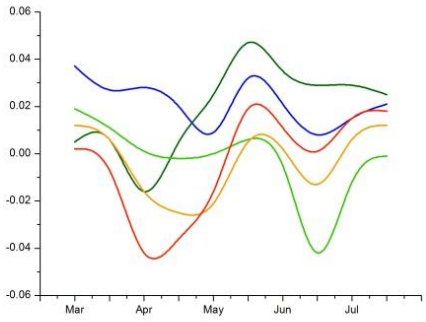


The reporting period covers the planting of Aman and Aus rice crops, as well as sorghum. Harvesting of Boro rice has been completed in June. During the monitoring period, crop condition was favorable over the main producing areas with a VCIx value of 0.82. At the national level, crop condition development was low when compared with last year and the five-year average. Biomass accumulation (BIOMSS) was also slightly below the thirteen-year average (-3%). The fraction of cropped arable land decreased 0.3%, again compared to the five-year average. CropWatch agroclimatic indicators show favorable conditions for crops due to increased RAIN, TEMP, and RADPAR.

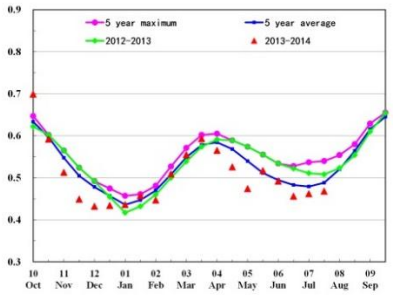
Figure 3.7. Bangladesh crop condition, April-July 2014 (a) Maximum VCI



(b) Spatial NDVI patterns compared to 5YA



(c) NDVI profiles



(d) Crop condition development graph based on NDVI

[BRA] Brazil

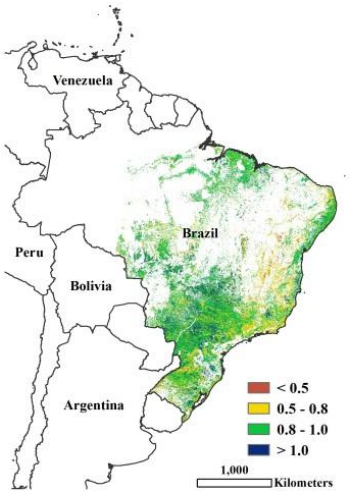
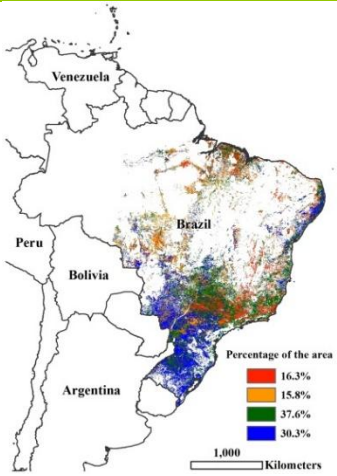


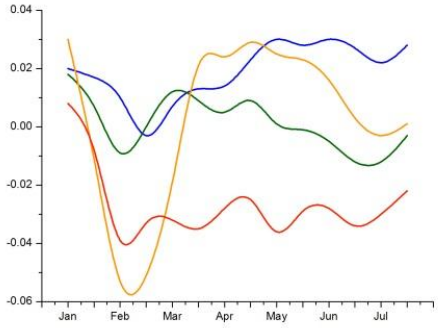
Figure 3.8. Brazil crop condition, April-July 2014

(a) Maximum VCI

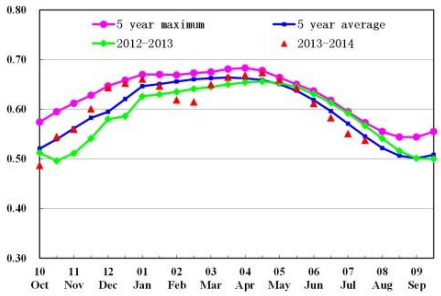
Crop condition in Brazil was generally average from January to July. Currently, the harvesting of maize, rice, and soybean and the planting of wheat have been completed. From April to July 2014, above average (5YA) precipitation (RAIN) and higher temperature (TEMP) dominated most of Brazil, resulting in well above average BIOMSS for most states except Ceara, São Paulo, and Minas Gerais. The first two are the only two states that experienced a shortage of rainfall, while Minas Gerais suffered from persistent high temperature. The maximum VCI map confirms that crop condition in São Paulo and Minas Gerais was not as good as other regions in Brazil, but still above the five-year average. Considering the spatial patterns of NDVI profiles, the south, central-west, and north-east regions of the country all experienced average to favorable conditions since April, while crop condition in the north and south-east, especially in São Paulo and Minas Gerais, was well below average from February to July. This is confirmed by the VCIx map. Generally, at the national scale, the crop condition development graph indicates the crop condition from April to July was slightly above last year and the five-year average. The rapid decrease of the NDVI profile in the crop condition development graph shows the advanced harvesting progress. CropWatch puts the yield for the country's second maize crop at 1.5% up from last year and estimates the average maize yield in 2014 to be comparable with 2013. (See also table B.3 in Annex B).



(b) Spatial NDVI patterns compared to 5YA



(c) NDVI profiles



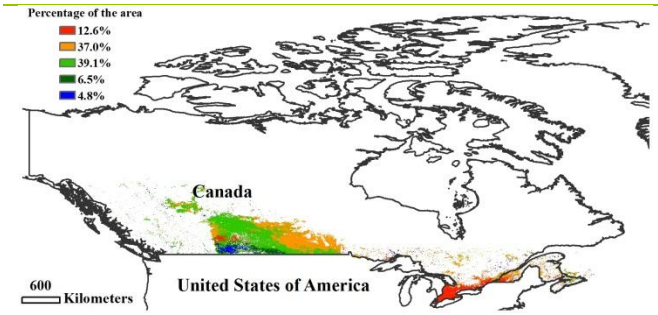
(d) Crop condition development graph based on NDVI

[CAN] Canada

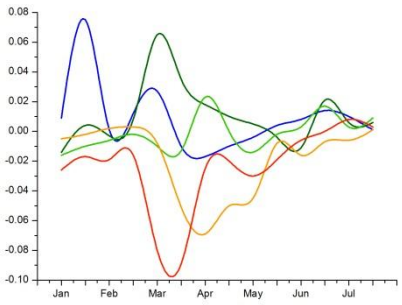
Figure 3.9. Canada crop condition, April-July 2014

(a) Maximum VCI

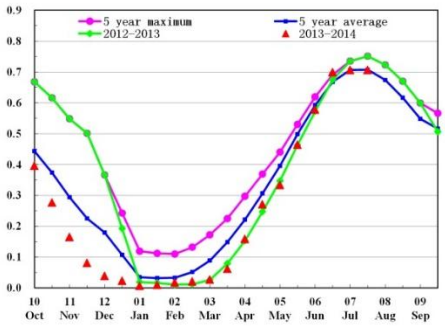
Spring wheat and maize are the main grain crops of Canada; the crops are planted in early May for harvesting in October and the current monitoring period thus covers the initial stages. The condition of crops shows below-average to average conditions compared to the five-year average and conditions far below last year's, especially in the main maize zone in the south of Quebec and Ontario provinces. In the spring wheat zone, located in the south of Manitoba, Saskatchewan, and Alberta provinces, crop condition is below the last five-year average as well. However, in Saskatchewan and Alberta, spring wheat is doing fine, above average. For the environmental indices in general, temperature (TEMP) increased by 0.3°C, rainfall (RAIN) increased 29% (Alberta, +42%, Manitoba, +59%, and Saskatchewan, +71%), while PAR (RADPAR) decreased -3% (Saskatchewan, -5%, Manitoba,-3%) compared to the thirteen-year averages. The next CropWatch monitoring period will cover the harvesting season of spring wheat and maize; for now, below-average maize and average to above-average spring wheat productions are expected. (See also table B.4 in Annex B.)



(b) Spatial NDVI patterns compared to 5YA



(c) NDVI profiles



(d) Crop condition development graph based on NDVI

[DEU] Germany

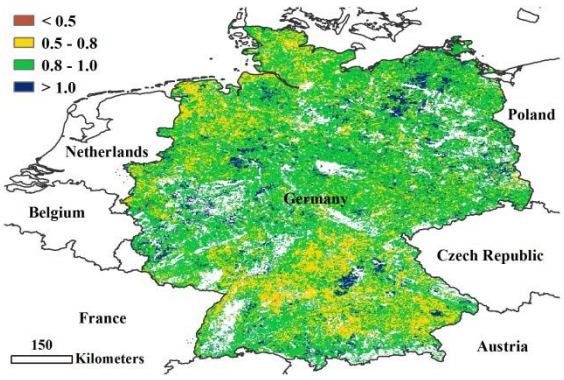
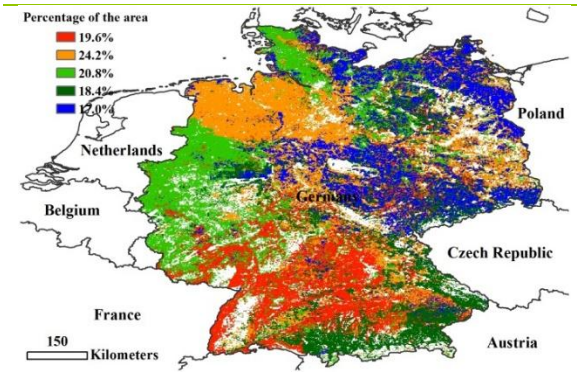


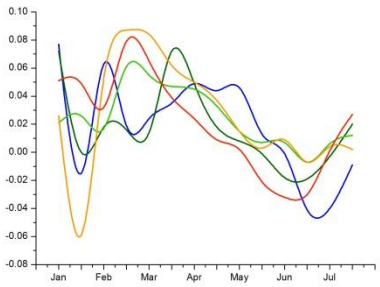
Figure 3.10. Germany crop condition, April-July 2014

(a) Maximum VCI

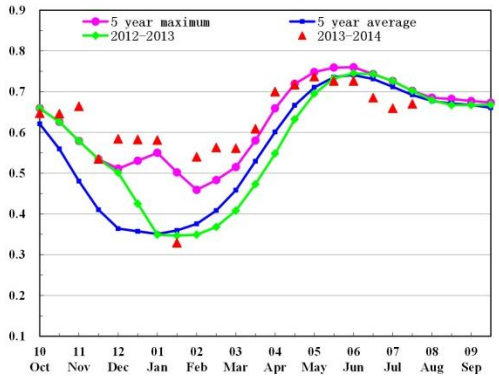
Compared with the thirteen-year average, total precipitation (RAIN, +4%), average temperature (TEMP, +0.7°C), and PAR (RADPAR, +0.2%) were above average, resulting in above average BIOMSS. Currently, winter wheat has been harvested, while spring barley is in the vegetative stage. The CropWatch agroclimatic indices indicate generally favorable condition at the national scale for the period between April and July in 2014, which is confirmed by the BIOMSS increase of 8% and a VCIx of 0.87. As shown by the NDVI profiles, national NDVI values were well above average and even higher than the five-year maximum in April, after which they were close to average from May to June. A sharp drop in NDVI in June was found in more than 50% of the country, especially central and northwestern Bavaria, northeast Baden-Wuerttemberg, Saxony, northern Brandenburg, and Thuringia. The maximum VCI map presents good crop condition everywhere, except in the northwest of Lower Saxony, north Baden-Württemberg, and in Bayern, which is confirmed by the NDVI cluster map. In spite of some temporary variations in the indicators, CropWatch estimates winter crop did well and summer crop are fair.



(b) Spatial NDVI patterns compared to 5YA

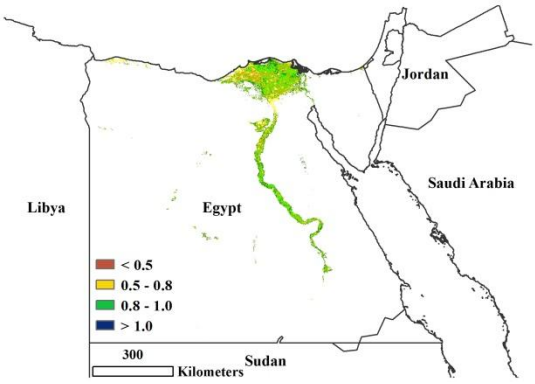


(c) NDVI profiles



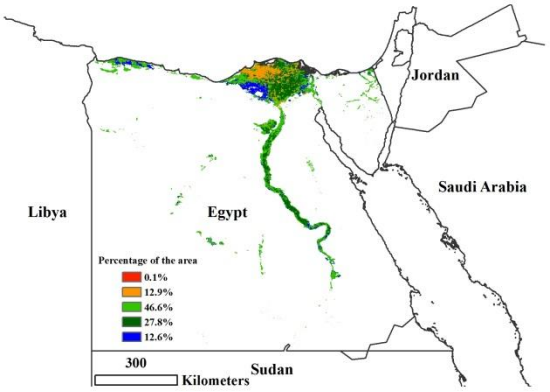
(d) Crop condition development graph based on NDVI

[EGY] Egypt

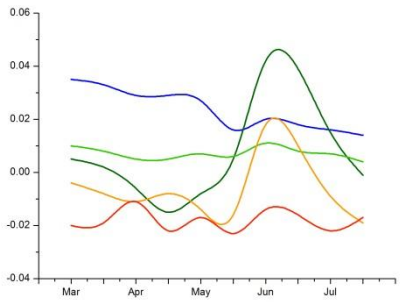


May is a central month for the harvesting of winter wheat and barley and for the sowing of summer crops, especially maize and rice. Throughout the winter wheat season, average NDVI has remained relatively low, reaching the lowest absolute values in May, which coincides with the harvest period. For the current monitoring season, for about half of the cropped areas (46.6%) NDVI was just above average, with a spot of lower than average conditions in the north western Delta, east of Al Gharbiyah (12.9% of agricultural pixels). For the ongoing summer crop season, production prospects appear to be average to slightly above average (VCIx at 0.84) due to increased cropland (+2.8%).

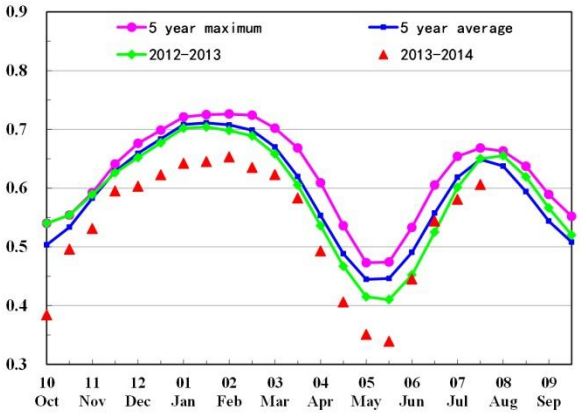
Figure 3.11. Egypt crop condition, April-July 2014



(b) Spatial NDVI patterns compared to 5YA



(c) NDVI profiles



(d) Crop condition development graph based on NDVI

[ETH] Ethiopia

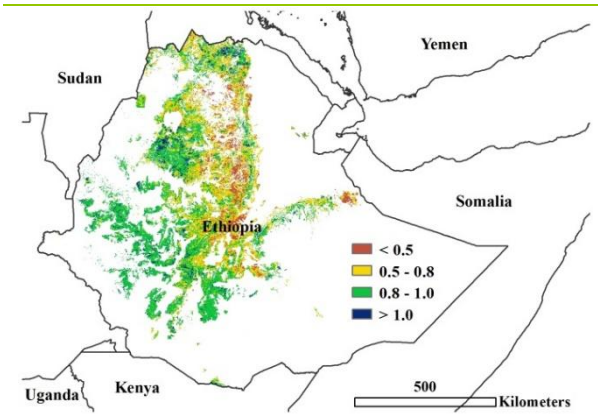
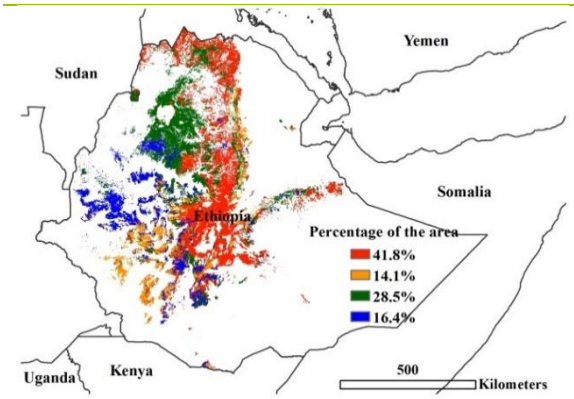
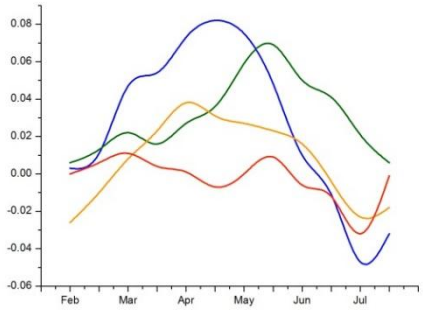


Figure 3.12. Ethiopia crop condition, April-July 2014
(a) Maximum VCI

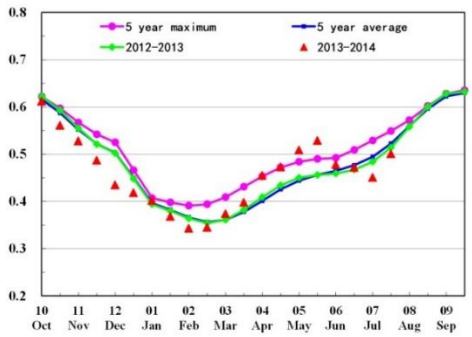
No environmental indicators very significantly depart from average conditions. RAIN is 10% below average, which, with slightly better than average RADPAR and TEMP, results in an overall drop of the BIOMSS indicator by 5%. Average national NDVI has generally been close to or even above the recent five-year period, but dropped to below-average values at the end of July. Altogether, conditions thus appear to have been conducive to belg crops. The low July NDVI values do not affect the whole country in the same way. NDVI was particularly favorable between and east of Wag Hemira and west Shewa up to the Sudanese border. South of west Shewa and as far as Gamo Gofa, conditions were favorable too, but only in Aril and May. In a large portion of the center of the country (about 42% of cropped areas), NDVI was just average up to early June, after which it deteriorated until early July, returning to average at the end of the month. The area concerned stretches from central Tigray to East Shewa and Arsi and corresponds to some of the major production areas. The corresponding VCIx values are average or low (e.g., in South Wollo, west Shewa, and Jijiga) but recovering. Altogether, the assessment is positive for Belg crops and still uncertain for the late Meher season due to poor rainfall, in spite of cropped arable land fraction increases by 4.9% and maximum VCI at 0.76.



(b) Spatial NDVI patterns compared to 5YA



(c) NDVI profiles



(d)
Crop condition development graph based on NDVI

[FRA] France

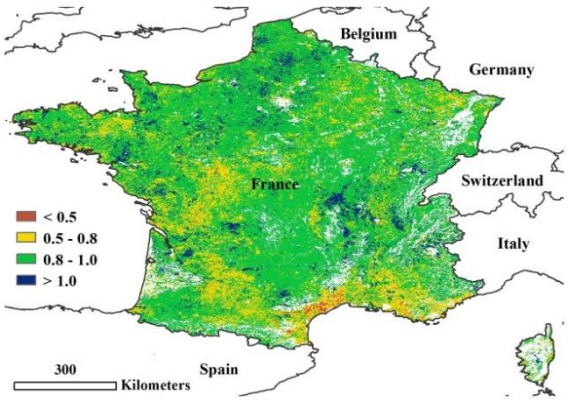
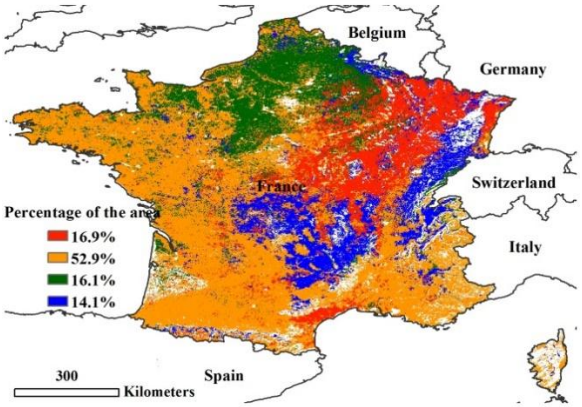


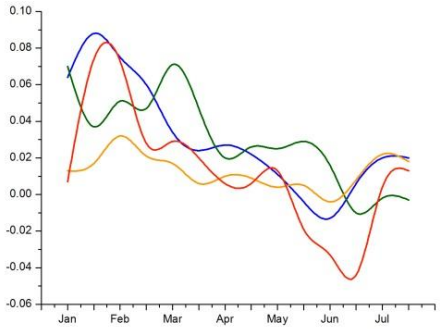
Figure 3.13. France crop condition, April-July 2014

(a) Maximum VCI

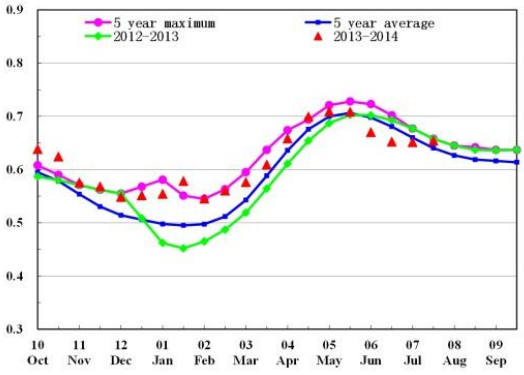
Compared with the thirteen-year average, total precipitation (RAIN, -15%), temperature (TEMP, -0.5°C), and PAR (RADPAR, -1%) were below average, resulting in below average BIOMSS. According to HGCA, 97% of the soft wheat area and 96% of spring barley was harvested, while maize is in the vegetative stage. The CropWatch agroclimatic indices indicate generally unfavorable condition at the national scale during the period between April and July in 2014, in spite of high VCIx (0.87), which is confirmed by the BIOMSS decrease of 11%. Crop condition was below average from early May to late June in the area of the Lorraine, Alsace, Champagne-Ardenne, Bourgogne, Franche-Comté, and east Languedoc-Roussillon, covering approximately 16.9% of the national territory (see the NDVI cluster map). The area, however, had mostly favorable conditions from April to May, or returned to normal after July. In general, the winter crop did well, but the summer crop shows some pockets of below average condition.



(b) Spatial NDVI patterns compared to 5YA



(c) NDVI profiles



(d) Crop condition development graph based on NDVI

[GBR] United Kingdom

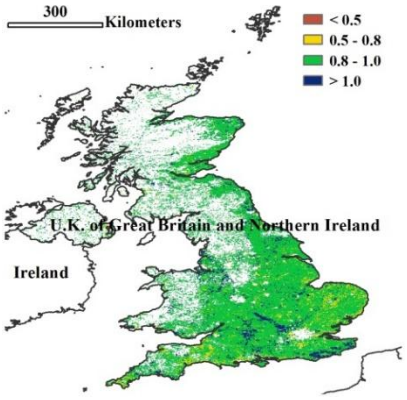
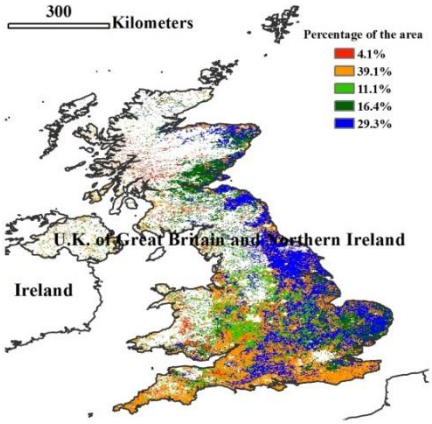


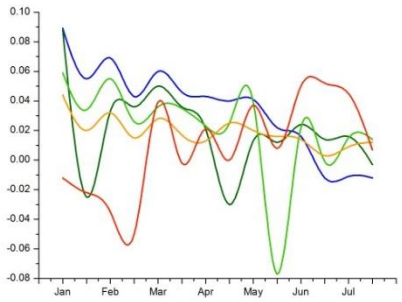
Figure 3.14. United Kingdom crop condition, April-July 2014

(a) Maximum VCI

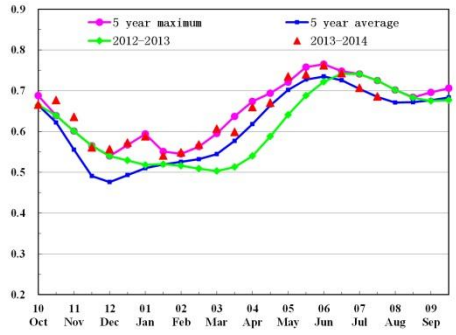
Compared with the thirteen-year average, temperature (TEMP) over the reporting period was above average. Although radiation (RADPAR) and total precipitation (RAIN) were below average, this higher temperature still results in above average BIOMSS. According to HGCA, 55% of the winter wheat area, all of the winter barley area, 40% of the spring barley area, 60% of the oat area, and 99% of the winter oilseed rape area have been harvested. The CropWatch agroclimatic indices indicate generally favorable condition at the national scale between April and July in 2014, which is confirmed by the BIOMSS increase of 2% and the VCIx of 0.91. This is also consistent with the NDVI profile, which shows that the national NDVI average is well above the recent five-year average and close to the five-year maximum value. According to the NDVI clusters, the NDVI values across the country are above average, with the exception of the southeast and northern regions (Edinburgh, West Lothian, Falkirk, Dumfries and Galloway, Fife, Cambridgeshire, Suffolk and Kent), where NDVI values are below average in April (covering approximately 16.4% of the national territory), and the central and southern regions (South Yorkshire, Gloucestershire and Worcestershire), where NDVI values are below average in May (covering approximately 11.1% of the national territory). These findings are confirmed by the VCIx map. In general, the outcome of the winter crops was good; the outlook for summer crops is average.



(b) Spatial NDVI patterns compared to 5YA



(c) NDVI profiles



(d) Crop condition development graph based on NDVI

[IDN] Indonesia

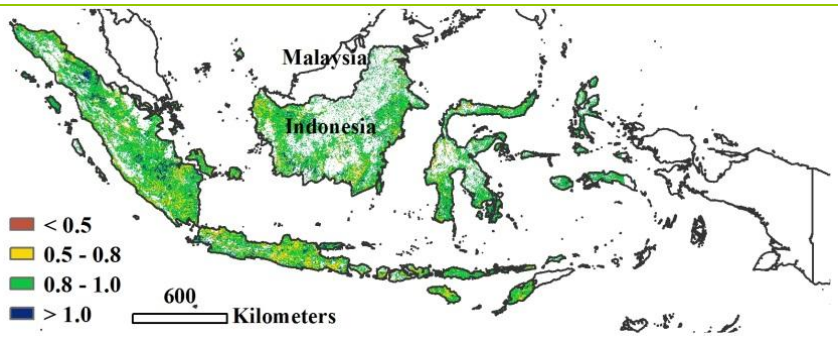
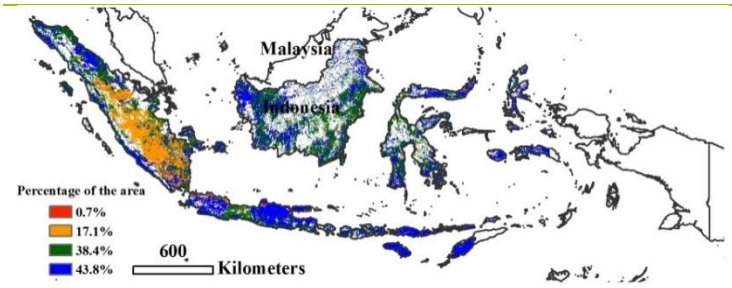
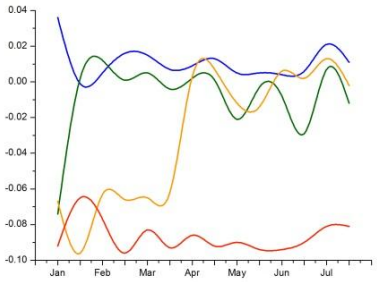


Figure 3.15. Indonesia crop condition, April-July 2014 (a) Maximum VCI

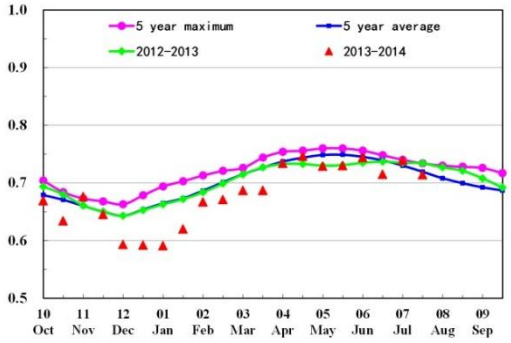
The crops in Indonesia generally show poor condition between May and July. The monitoring period covers the whole harvest of the main rice and rainy season maize, as well as the secondary rice that is sowed starting in July. Compared with the recent thirteen-year average for the same period, precipitation (RAIN) and temperature (TEMP) were slightly above average (3% and 0.7◦C, respectively). Nevertheless, influenced by the low agroclimatic indicators at the beginning of the year (the key crop growing season), biomass accumulation (BIOMSS) was still below average. This is consistent with the NDVI profile, which shows that the average NDVI is slightly below the five-year average. According to the NDVI clusters, crops in Sumatra have recovered from poor growing conditions and reached average condition in the recent four months, which is confirmed by the maximum VCI map. Overall prospects are for an average to above average crop.



(b) Spatial NDVI patterns compared to 5YA



(c) NDVI profiles



(d) Crop condition development graph based on NDVI

[IND] India

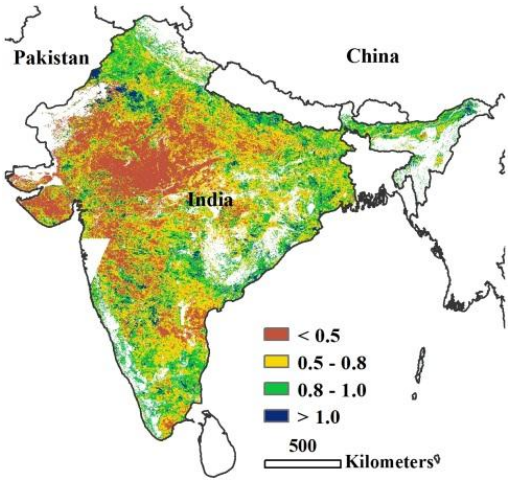
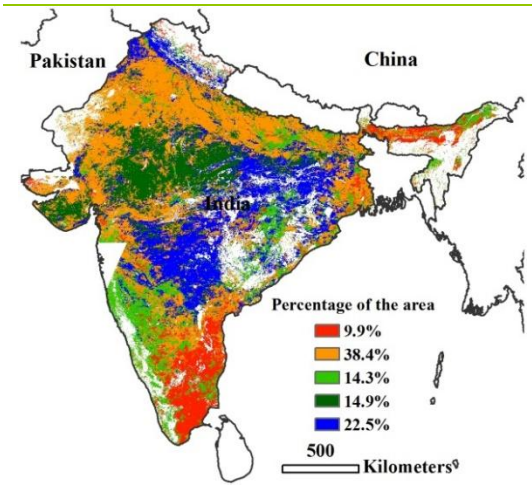
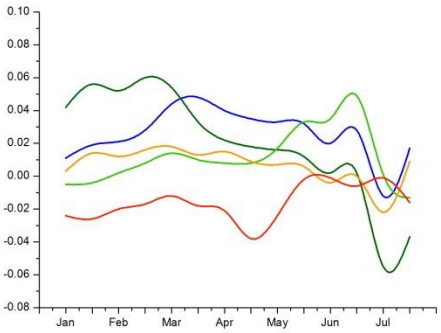


Figure 3.16. India crop condition, April-July 2014 (a) Maximum VCI

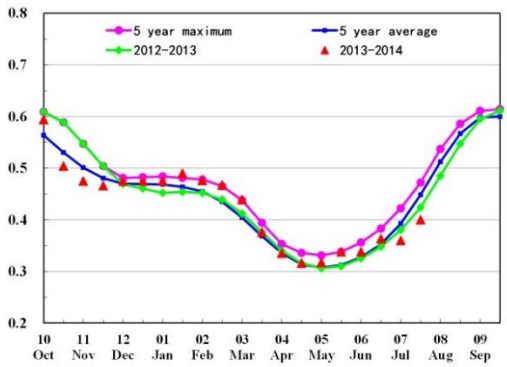
During the monitoring period, crop condition was favorable except in parts of Rajasthan, Madhya Pradesh, and Gujarat. The period corresponds mostly to the planting of Kharif (summer) rice and maize crops. The Rabi (winter) rice and wheat crop was harvested by June. Overall crop condition was average in India with a VCIx value recorded as 0.68; in comparison with the recent thirteen years, TEMP was average and RAIN increased 8%. Crop development progress was satisfactory, in spite of a shortage of rainfall in June and July in the main producing areas, as also evidenced by the NDVI profiles. Biomass accumulation (BIOMSS) was slightly lower than average (-3%). Cultivated arable land fraction increased 8.6% compared to the five-year average, pointing at satisfactory output from the current season.



(b) Spatial NDVI patterns compared to 5YA



(c) NDVI profiles



(d) Crop condition development graph based on NDVI

[IRN] Iran

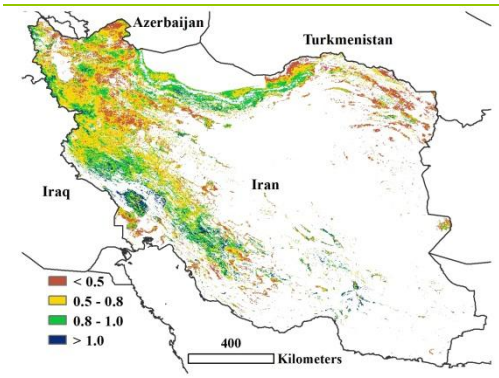
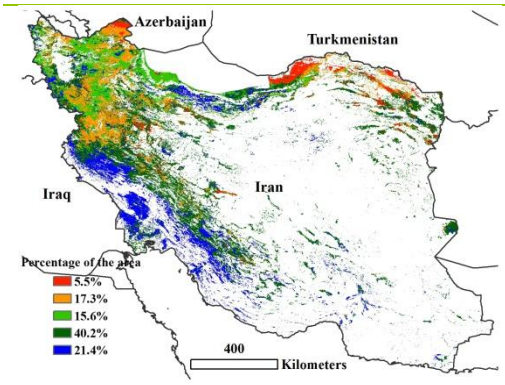
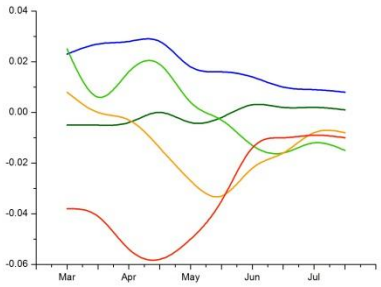


Figure 3.17. Iran crop condition, April-July 2014

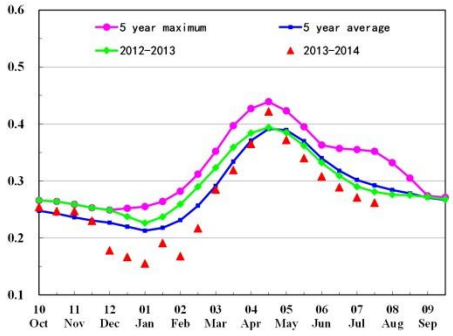
Accumulated rainfall and RADPAR for April to July 2014 were below the five-year and thirteen-year averages, while temperature was above average. Winter wheat was harvested from June to July, and the summer crops (potato and rice) were sown from May. The CropWatch agroclimatic indices for the current season indicate unfavorable conditions for winter and summer crops, which are confirmed by the decrease of biomass by 9%. The national average of VCIx (0.69) indicates just above average conditions. Poor growth conditions occurred in the Razavi Khorasan, north Khorasan, and the center of Golestan provinces of the northeast region, and the Ardabil, Zanjan, and Hamadan provinces of the northwest regions. Conditions close to or above the five-year average are mainly distributed in the Khuzestan, Kermanshah, and Fars provinces of the southwest region, and the Mazandaran and Gilan provinces of the central-north region. The major rice producing areas (the Mazandaran and Gilan provinces near the coast of the Caspian Sea) experienced favorable crop conditions. Overall, the outcome of winter crops and most summer crops is poor or mixed. The outcome of the rice season, however, is expected to be favorable.



(b) Spatial NDVI patterns compared to 5YA



(c) NDVI profiles



(d) Crop condition development graph based on NDVI

[KAZ] Kazakhstan

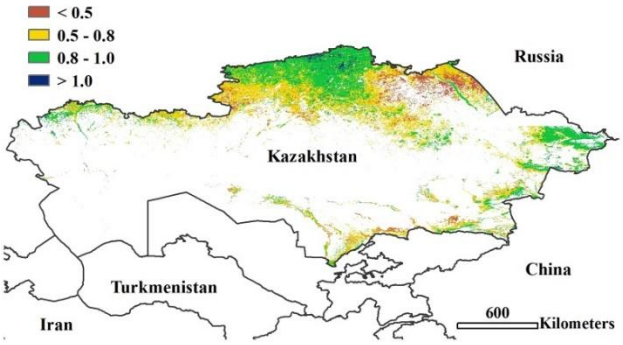
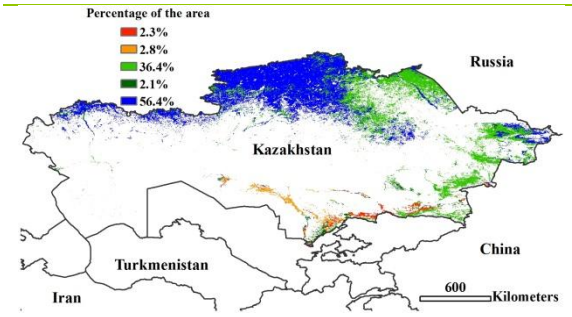


Figure 3.18. Kazakhstan crop condition, April-July 2014

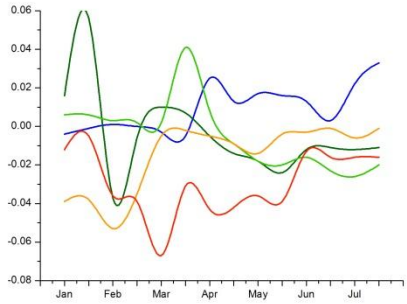
(a) Maximum VCI

Spring barley and wheat were sowed before June and are currently growing; other cereals also entered into the vegetative stage. During the reporting period, crop condition was generally mixed.

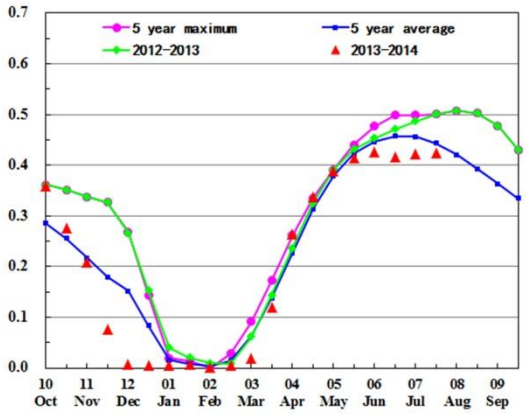
Among the CropWatch agroclimatic indicators, RAIN and RADPAR were slightly above the past thirteen-year average (5% and 1% respectively), while TEMP was average. The crop condition development graph indicates a gradual drop below the five-year average from late May to July. Considering the NDVI profiles and spatial NDVI patterns, the areas that are below average after May include the oblasts of Severo-kazachstanskaya, Akmolinskaya, Kustanayskaya, Pavlodarskaya, and Vostochno-kazachstanskaya in the east; and Jambylslkaya and Almatinskaya in the south. The poor crop condition in these areas resulted from uneven rainfall distribution in time and space. Thanks to national average rainfall above the past thirteen-year average in other areas, the center north and north-west of the country enjoy good crop condition.



(b) Spatial NDVI patterns compared to 5YA



(c) NDVI profiles



(d) Crop condition development graph based on NDVI

[KHM] Cambodia

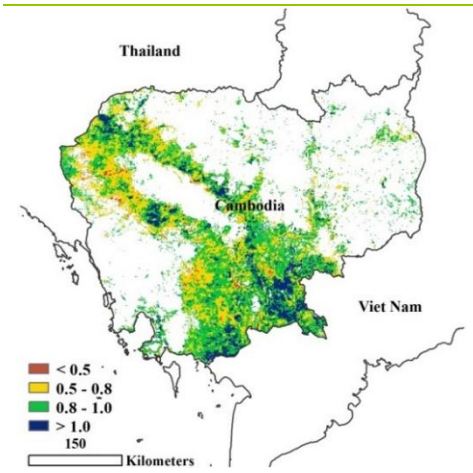
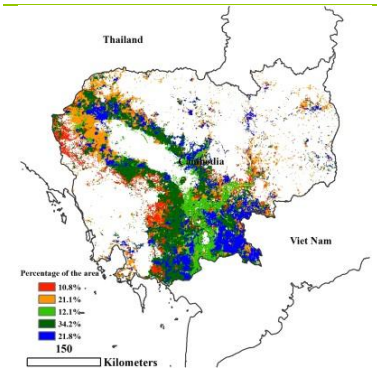


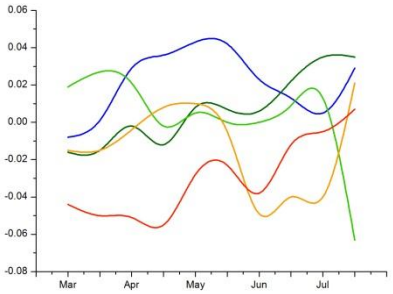
Figure 3.19. Cambodia crop condition, April-July 2014

(a) Maximum VCI

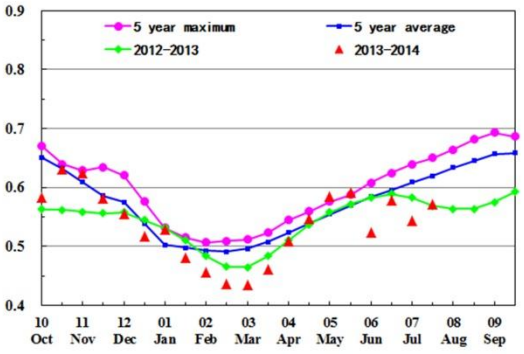
The period from April to July 2014 covers the harvest of the second (dry season) rice, the early stage of the main (wet season) rice, and the growing period of maize. Compared to the five-year average, crop condition changed from below average to above average in April and then turned to below average again in June and July. The CropWatch agroclimatic and agronomic indicators shows that Cambodia enjoyed high but favorable rainfall (as measured by RAIN), which was 43% above the thirteen-year average, while TEMP and RADPAR roughly kept balance with the average. BIOMSS shows a 13% decrease compared to average. On the contrary, the fraction of cropped arable land increased 4.7% compared to average. NDVI clusters and profiles show that 31.9% of the agricultural areas, mainly distributed in western Cambodia in Banteay Meanchey, Battambang, and Pailin provinces, have below average crop condition. VCIx ranges from 0.5 to 0.8. Well-above average crop condition was experienced by 21.8% of the areas from April to July, with VCIx values greater than 1.0 in Cambodia's Southeast, Kampot, Takeo, Prey Veng, and Kampong Cham. The national VCIx of the current period is 0.85, indicating good conditions over the whole period. Although unfavorable conditions affected the early stages of the main rice crops, they have since benefitted from abundant precipitation, leading to a rice production level comparable with last year's crop.



(b) Spatial NDVI patterns compared to 5YA



(c) NDVI profiles



(d) Crop condition development graph based on NDVI

[MEX] Mexico

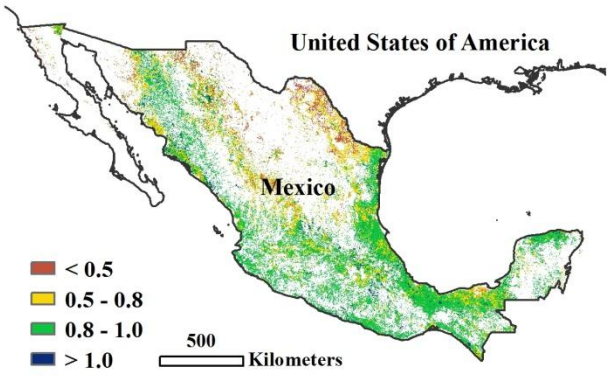
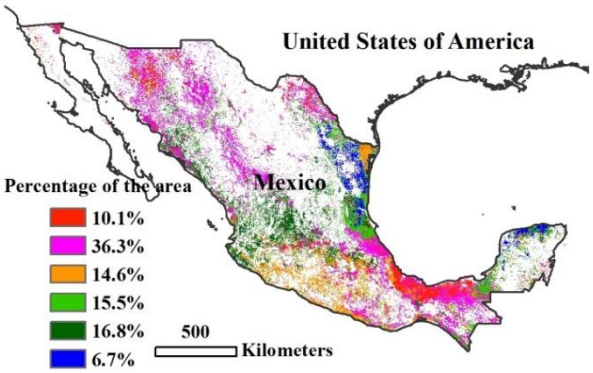


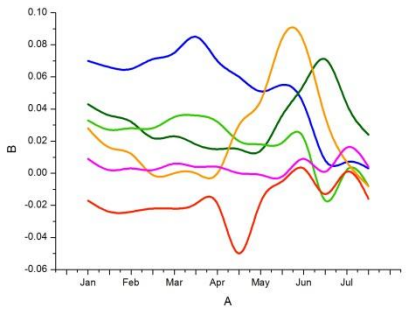
Figure 3.20. Mexico crop condition, April-July 2014

(a) Maximum VCI

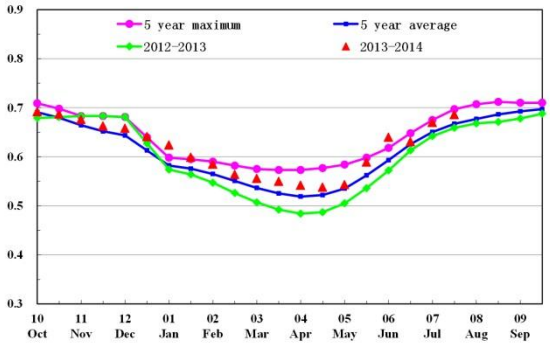
Maize and winter wheat are the main crops of Mexico. Winter wheat is planted in early October and harvested in late June, while the main maize crop grows from late May to late November. The current CropWatch monitoring period from May to July is the harvesting season of winter wheat and early growth stage of maize. Agroclimatic indices show an increase in RAIN of 5% compared to thirteen-year average, a slight decrease of RADPAR (-2%), and an insignificant increase in TEMP (0.4°C). The dry conditions were limited to the northern region. In general, rainfall was sufficient for maize. Currently, NDVI profiles and spatial clusters indicate that the condition of Mexican crops is above the last five-year average except in Veracruz-Llave and Tabasco states. The accumulation of biomass increased 9% compared to five-year average. VCIx is 0.8, indicating good crop condition. If the favorable weather continues, a good production can be expected.



(b) Spatial NDVI patterns compared to 5YA

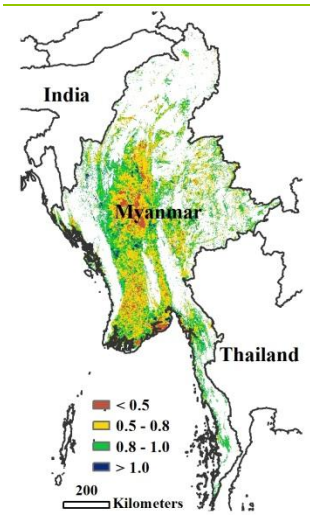


(c) NDVI profiles



(d) Crop condition development graph based on NDVI

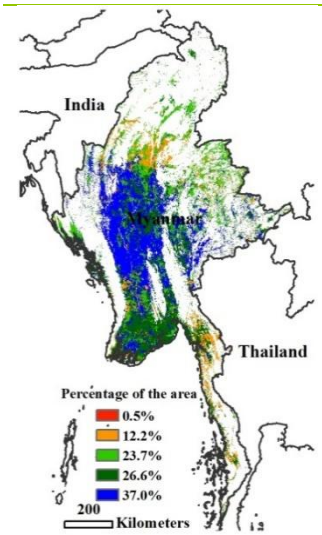
[MMR] Myanmar



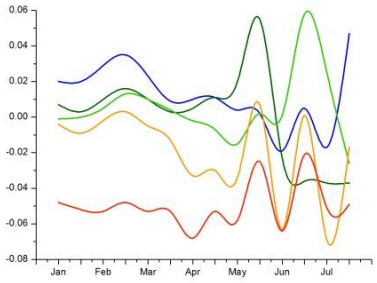
The crop condition from April to July was comparable to the situation in 2012-2013. During the reporting period, the harvesting of wheat and second rice has been completed, while the sowing of the main rice was done in May. NDVI shows a sharp increase from June to mid-July due to the growing period of the main season rice crop. For the period under consideration, the CropWatch agroclimatic and agronomic indicators show an increase in RADPAR (+6%), accompanied by an increase in TEMP (1.5°C), compared to the thirteen-year average. BIOMSS decreased by 5% compared to that same average as a result of the 11% below average precipitation (RAIN). The El Niño event has adversely affected and delayed crop growth. The NDVI profile sharply decreased to below average values in Bago and Yangon provinces in mid-May. NDVI profiles were well above average at mid-July in most of the central dry zone (almost 40% of the cropland area). The value for VCIx increased to 0.78, but presents low values in the central dry zone and in Bago and Yangon provinces, a finding consistent with the NDVI profiles.

Figure 3.21. Myanmar crop condition, April-July 2014

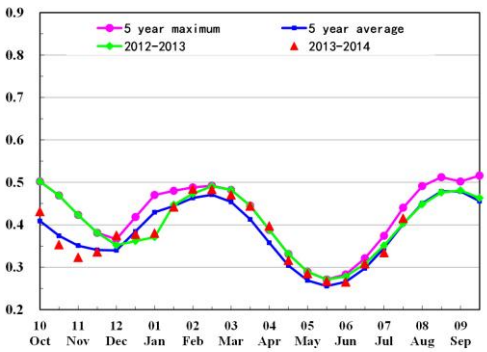
(a) Maximum VCI



(b) Spatial NDVI patterns compared to 5YA



(c) NDVI profiles



(d) Crop condition development graph based on NDVI

[NGA] Nigeria

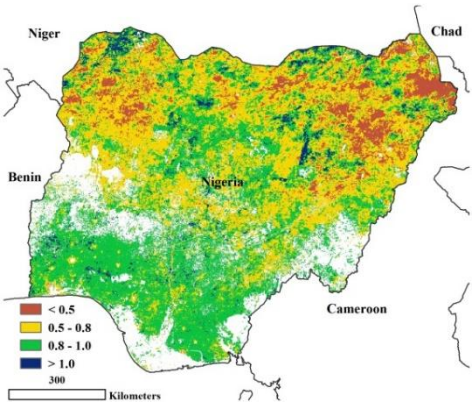
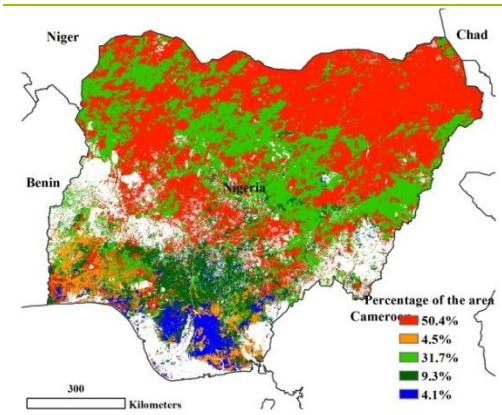


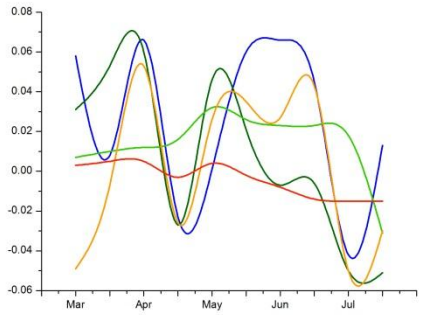
Figure 3.22. Nigeria crop condition, April-July 2014

(a) Maximum VCI

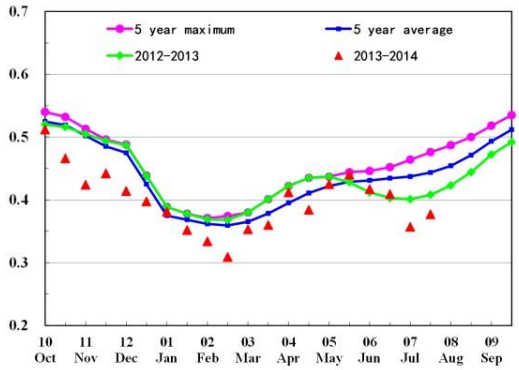
Climatic conditions vary greatly in Nigeria where the south enjoys a very long rainy season between April and November, while the northernmost areas usually plant maize in July to harvest in September. The major maize producing areas cover an east-west oriented area roughly between the latitudes of 7 and 11 degrees northern latitude, with planting varying from March-April (in the south of the area) to May (in the north). National CropWatch agroclimatic indicators have been close to average during most of the reporting period; national NDVI, indicating crop condition development, was close to the recent five-year average, except during the last two dekads of July when it dipped below average in about two thirds of the country. Negative departures for all CropWatch indicators do not play any major part in the main maize producing areas; instead, they tend to occur in the south, where plantations, cassava, and yams play a dominant role. These negative departures mostly affect parts of Kogi and Benue states. Altogether, crop condition in Nigeria appears to be average, with favorable production prospects (VCIx is 0.76) due to cropped arable land fraction increasing by 5.5% over the recent five-year average.



(b) Spatial NDVI patterns compared to 5YA

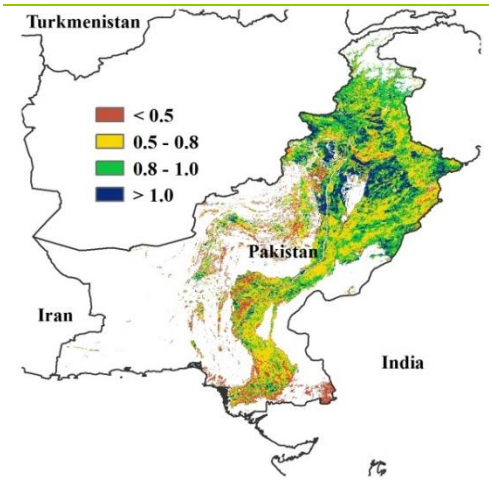


(c) NDVI profiles



(d) Crop condition development graph based on NDVI

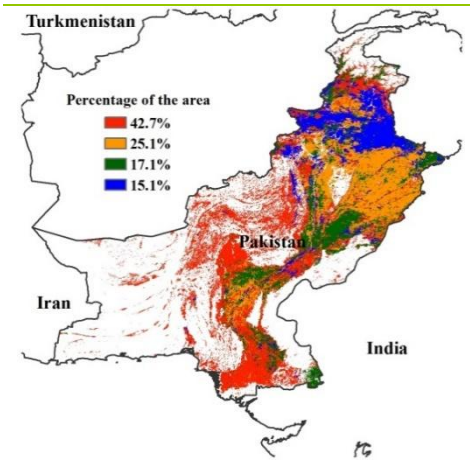
[PAK] Pakistan



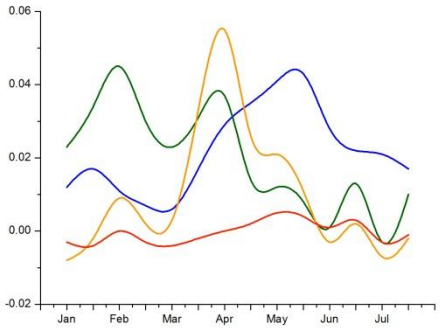
This monitoring period covers the harvesting stage of winter wheat and barley. Maize and rice have been sowed and are now growing. Generally, crop condition was favorable from April to July. Compared with the past thirteen-year average level, TEMP shows a slight increase (0.2%), while RAIN and RADPAR decreased more significantly (-7% and -2°C respectively). From June to July, crop condition gradually deteriorated in south and central Pakistan due to a drop in rainfall, but spatial NDVI patterns and clusters indicate that crop condition was still better than during both the previous year and the recent five-year average. Rice is the main crop in Pakistan. Most is planted in the provinces of Punjab and Sindh, representing 91% of the national planting area and 88% of national production. The high maximum VCI in two provinces confirms good crop condition. Currently, all available indicators concur to rank the crop as average or above throughout the country.

Figure 3.23. Pakistan crop condition, April-July 2014

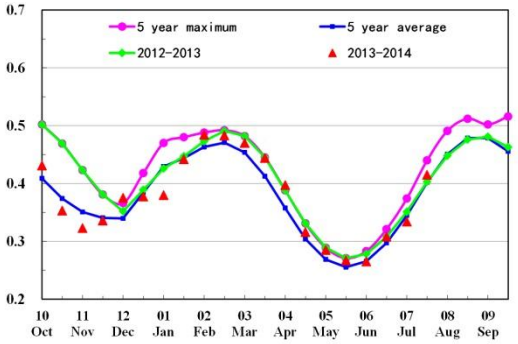
(a) Maximum VCI



(b) Spatial NDVI patterns compared to 5YA

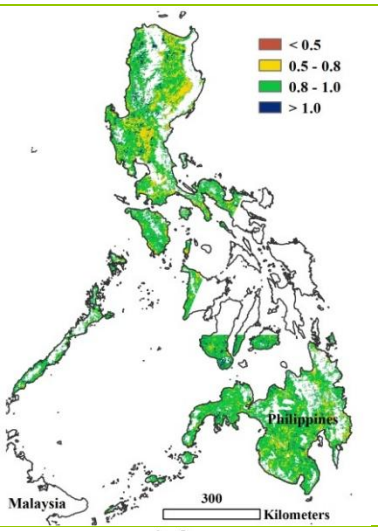


(c) NDVI profiles



(d) Crop condition development graph based on NDVI

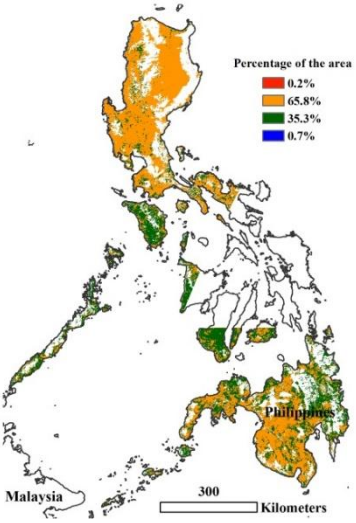
[PHL] The Philippines



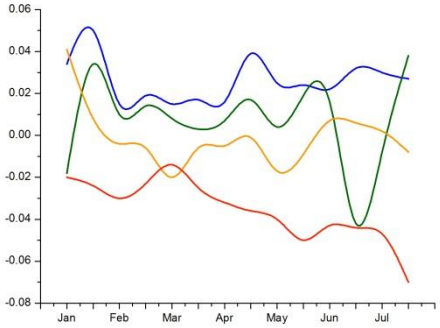
Crop condition in the Philippines was generally average from May to the end of July. The main rice crop is currently growing, while maize has reached maturity and is about to be harvested. During the monitoring period, CropWatch agroclimatic indicators were slightly above the recent thirteen-year average, which leads to favorable crop condition. The biomass accumulation (BIOMSS) shows an insignificant 1% decrease compared to that same average. Considering the spatial patterns of NDVI profiles, crop condition in Mimaropa and Visayas was below average in July and soon recovered, after having been affected by cyclone Rammasun (Glenda) in July (see also section 5.2), while other areas remained at an average level. The maximum VCI map shows good crop condition over the whole country. NDVI in July was close to the average of the recent five years and CropWatch estimates that the production of main rice will be average.

Figure 3.24. Philippines crop condition, April-July 2014

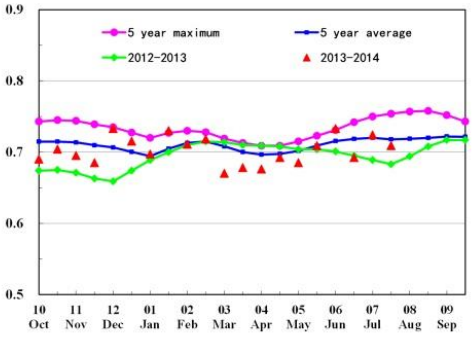
(a) Maximum VCI



(b) Spatial NDVI patterns compared to 5YA



(c) NDVI profiles



(d) Crop condition development graph based on NDVI

[POL] Poland

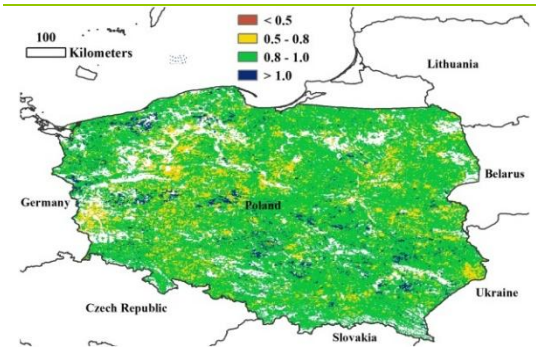
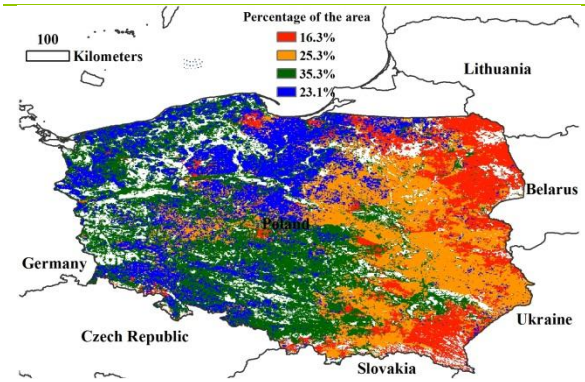
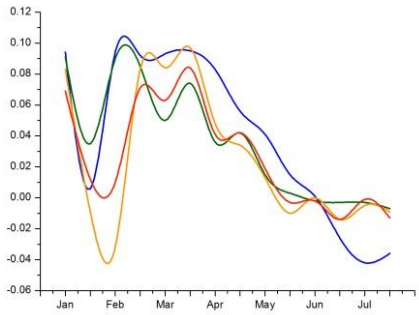


Figure 3.25. Poland crop condition, April-July 2014 (a) Maximum VCI

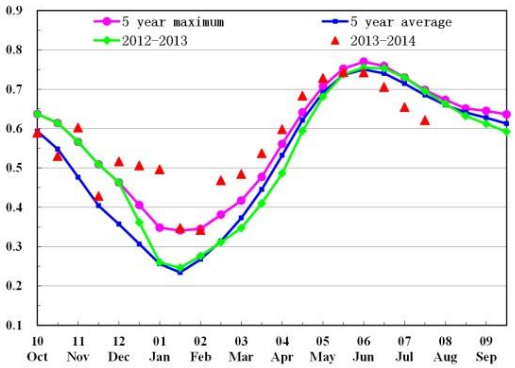
Poland presents favorable crop condition during April to July (VCIx=0.88), during which period most maize was planted. The fraction of cropped arable land was about the same as the last five-year average. Agroclimatic conditions were also better than the thirteen-year average, with TEMP up 0.4◦C, RADPAR up 1%, and especially RAIN up 12%. The national NDVI patterns showed a downward trend in most parts of Poland from April to July. Because the winter and beginning of spring were warmer than usual, the peak of crop conditions was advanced by about 15 days. Altogether, conditions were favorable for winter crops and mixed—for the time being—for summer crops, particularly in the western half of the country.



(b) Spatial NDVI patterns compared to 5YA



(c) NDVI profiles



(d) Crop condition development graph based on NDVI

[ROU] Romania

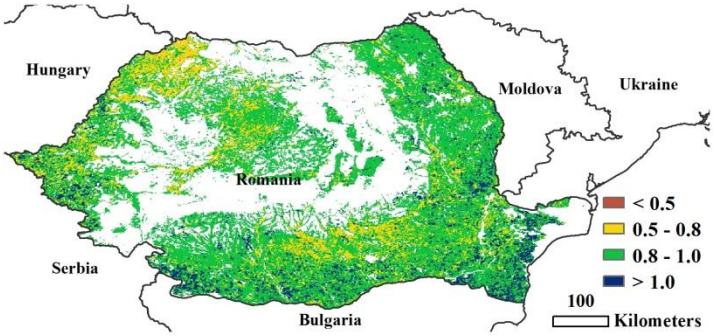
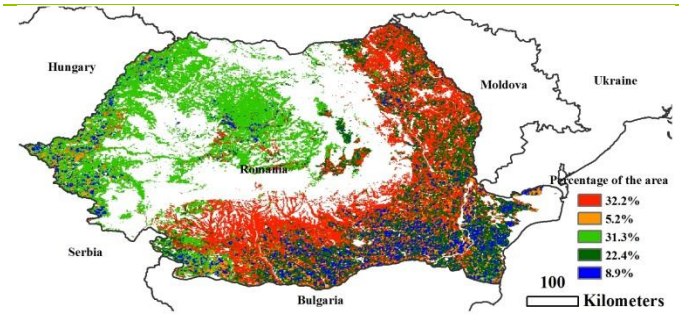


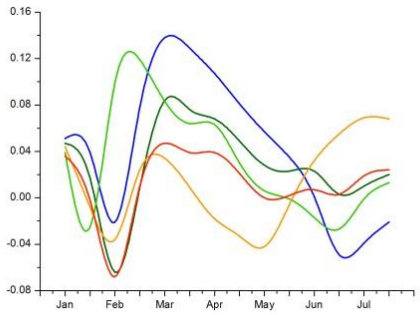
Figure 3.26. Romania crop condition, April-July 2014

(a) Maximum VCI

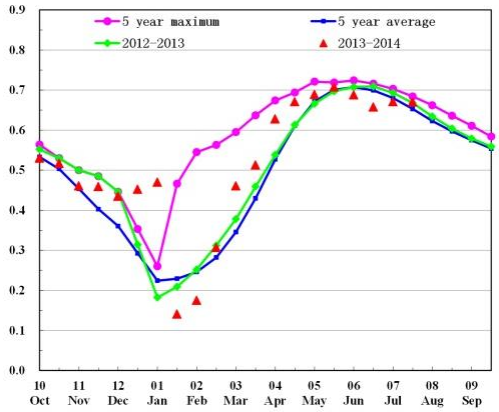
Romania presents favorable crop condition during the reporting period (VCIx=0.89), which covers the harvest of winter wheat and the planting of summer crops, especially maize (planted before May). According to the CropWatch agroclimatic indicators, Romania experienced close to average environmental conditions: RAIN was up 0.3%, TEMP down 0.4°C, and RADPAR down 4% compared with the recent thirteen-year average. Due to the wet conditions, the potential biomass accumulation (BIOMSS) increased 5%. The area of actually cropped land was close to the five-year average. As the NDVI patterns show, in most parts (more than 85%) of Romania, the NDVI trend was similar to the last five-year average from April to July. In the central south and south-east (including Constanta, Bucharest, and Craiova), the NDVI trend was below average starting in the end of June, due to excess rainfall. Altogether, the output of the summer season is expected to be close to the recent five-year average.



(b) Spatial NDVI patterns compared to 5YA



(c) NDVI profiles



(d) Crop condition development graph based on NDVI

[RUS] Russia

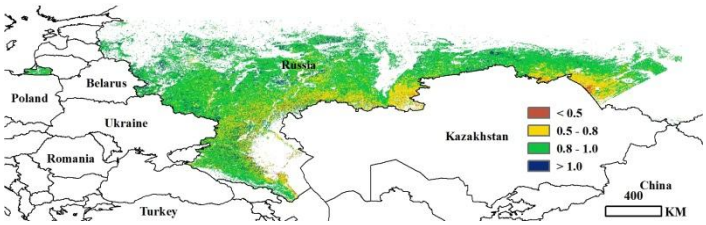
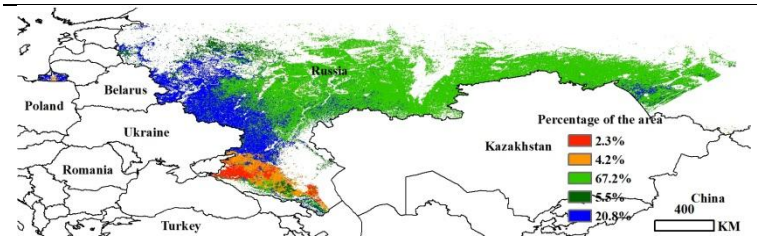
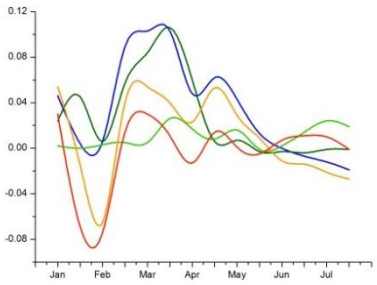


Figure 3.27. Russia crop condition, April-July 2014
(a) Maximum VCI

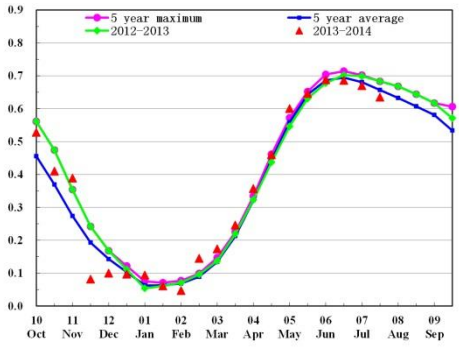
During this monitoring period, about half of the wheat (48.5%) and barley (45.3%) in Russia have been harvested. RAIN was down 12%, while TEMP was up 0.1°C, and RADPAR up 3%, compared with the thirteen-year average. In most parts, crop condition was favorable (VCI_x=0.87). Winter and spring wheat conditions are still generally favorable. The fraction of cropped arable land in this period increased as much as 4.1% compared to the five-year average. Most spring crop areas were cropped during this period. The NDVI patterns show that in about 67% of the area in southern Russia, the NDVI profile is close to normal in April and May and above average in June and July. In other parts of southern Russia (about 21%, including Rostov Oblast, Voronezh Oblast, and Belgorod Oblast), the NDVI profile is significantly above average in April and May, before falling in June and July. In these areas, the potential biomass accumulation is significantly higher than the five-year average (20%). In the southeast of Russia (including Orenburg Oblast, Samara Oblast, and Saratov Oblast), the potential biomass is lower than average due to the cold and dry weather. As shown in the crop condition development graph, crop condition is close to average from April to July. Therefore, average to good yields can be expected for the spring crop in Russia.



(b) Spatial NDVI patterns compared to 5YA



(c) NDVI profiles



(d) Crop condition development graph based on NDVI

[THA] Thailand

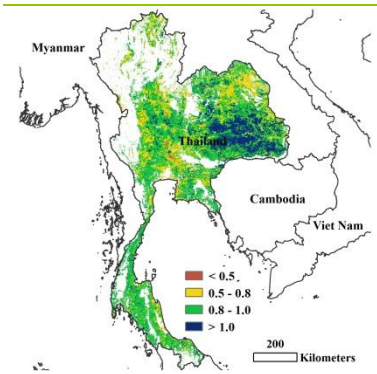
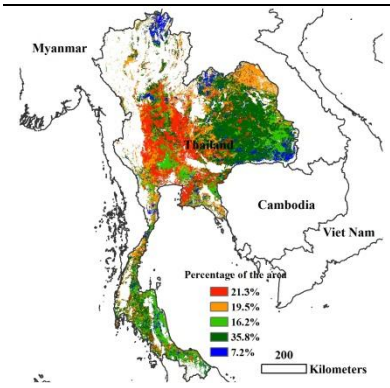


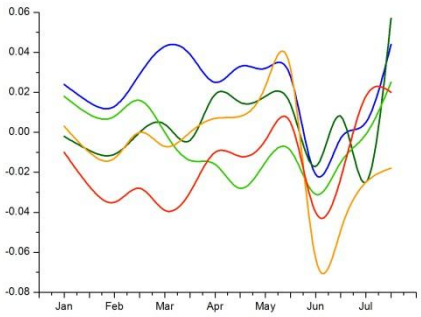
Figure 3.28. Thailand crop condition, April-July 2014

(a) Maximum VCI

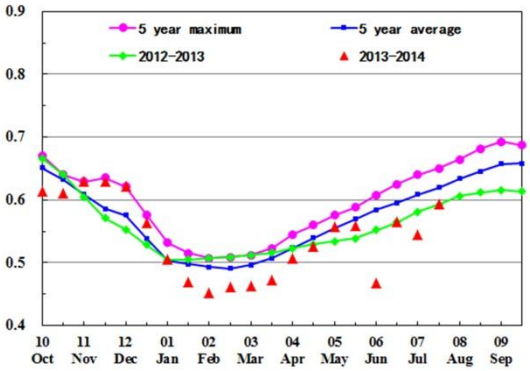
The main rice in most regions of Thailand is in the sowing stage, particularly in the Northeastern region. Meanwhile, the harvest of the country's second rice crop has concluded in May. For the period under consideration, crops show below average condition compared to the five-year average. The CropWatch agroclimatic and agronomic indicators show an increased PAR accumulation (RADPAR, +6%), rainfall (RAIN, +6%), biomass (BIOMSS, +4%), and temperature (TEMP, +1°C) compared to the thirteen-year average. NDVI gradually increased from February to mid-July, with a drop in June due to drought conditions, which reduced actually cultivated areas. The profiles also confirmed that crop condition was mostly below average, particularly in the area around the Chao Phraya river basin and in the northeastern region. Crop condition returned to average in July, as a result of increased precipitation. The overall VCIx index of 0.88 is compatible with overall good crop condition, which is the case especially in Sisaket, Surin, Burirum, Roiet, and Yasothon provinces.



(b) Spatial NDVI patterns compared to 5YA



(c) NDVI profiles



(d) Crop condition development graph based on NDVI

[TUR] Turkey

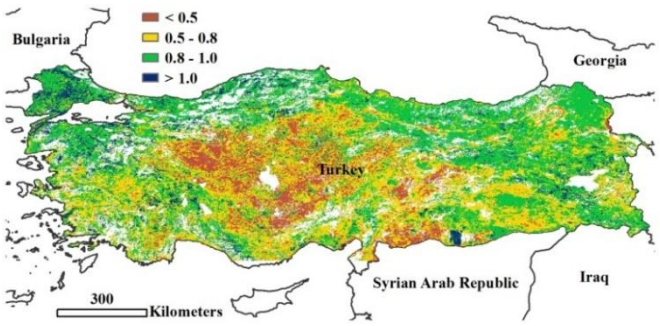
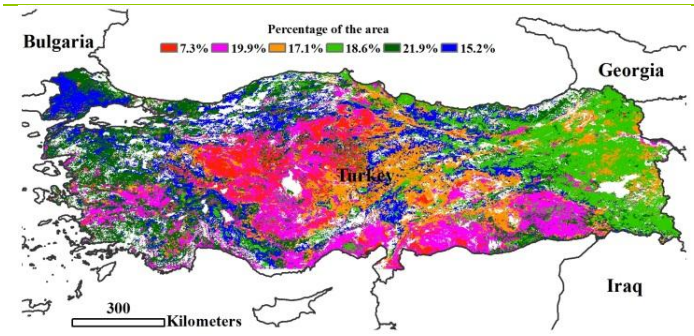


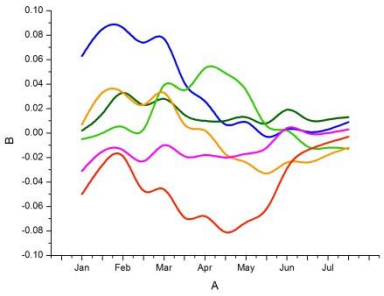
Figure 3.29. Turkey crop condition, April-July 2014

(a) Maximum VCI

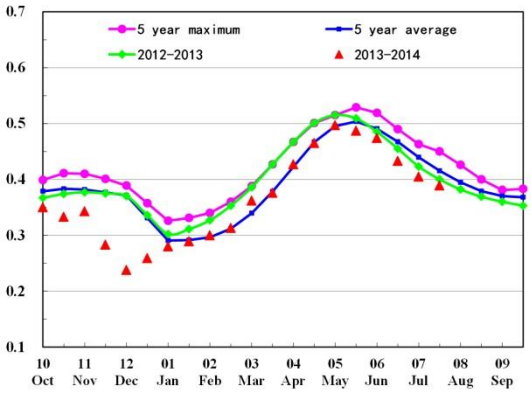
In Turkey, both accumulated rainfall and average temperature were above average for the reporting period (although less so for temperature), resulting in slightly above average BIOMSS in spite of lower than average RADPAR. During the monitoring period, the winter wheat harvest was completed, and summer crops (maize, rice, and potato) sown from April are still growing. The agroclimatic indices indicate favorable climate conditions for the crops in the current season, which is confirmed by the biomass increase of 10% over the five-year average and the average VCIx of 0.76. The VCIx map presents a spatial pattern consistent with that of the cluster map of NDVI compared to the five-year average. Crop condition below average for May to July is found in the area from Eskisehir to Sivas and extending south and south-east as far as the Syrian border (Gaziantep and Sanliurfa), covering approximately 25% of the national territory. Other regions located in central-eastern Anatolia, Thrace, and north of the Bosporus underwent favorable conditions mostly from March to April, or returned to normal from May to July. Overall, the outcome of the winter crops is poor and the outlook for this monitoring season is mixed.



(b) Spatial NDVI patterns compared to 5YA



(c) NDVI profiles



(d) Crop condition development graph based on NDVI

[UKR] Ukraine

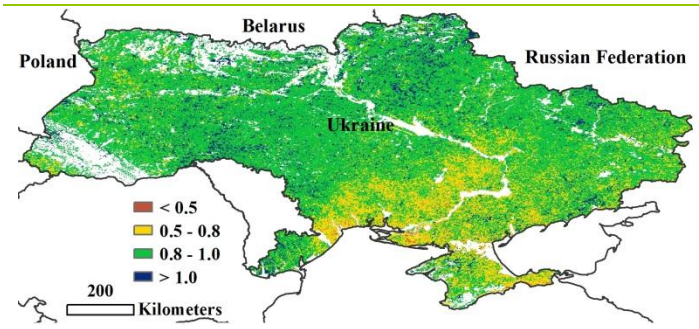
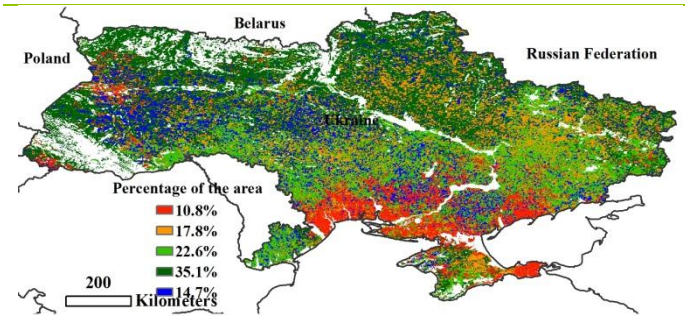


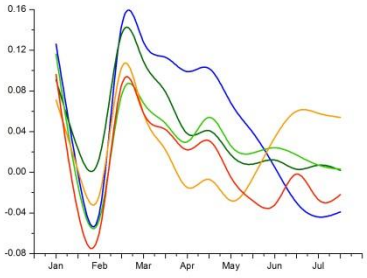
Figure 3.30. Ukraine crop condition, April-July 2014

(a) Maximum VCI

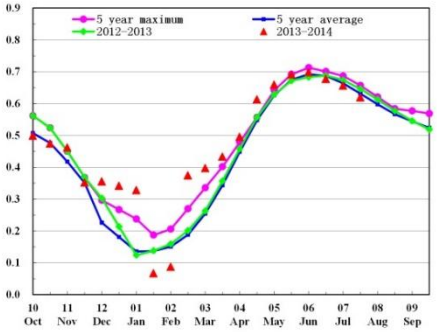
Over the reporting period, Ukraine recorded very close to average rainfall conditions, with slightly above average temperature (+0.3°C) and RADPAR (+1.0%), resulting in an estimated biomass increase of 5%. As illustrated in the section on the central Europe and western Russia MPZ, the BIOMSS increase is largest in the center and the east of the country (up to +20%) while the western third had less favorable conditions with expected BIOMSS decreases usually around -10%. The countries suffered little from the large excess precipitation in some neighboring countries affected by the "Balkan floods" (see also section 5.2). The harvest of winter wheat started in July and is currently still underway, while NDVI is close to the reference values. Planting of summer crops (especially maize and soybeans) took place in April and May; very limited areas of arable land were not cultivated at the end of July (the average area of cropped arable land is comparable to that of the previous five years), mostly in the oblasts of Kherson and Mykolayiv. This area along with some areas to the east (from Kherson to Donets) show below average NDVI starting in May, possibly in relation with the prevailing security situation. In the west (Ternopil and east of the Oblast to central Ukraine) low NDVI was noted from June. In the east, many areas had positive NDVI departures since June. Altogether, with the exception of uncropped land, the situation of both winter and summer crops is generally favorable.



(b) Spatial NDVI patterns compared to 5YA



(c) NDVI profiles



(d) Crop condition development graph based on NDVI

[USA] United States

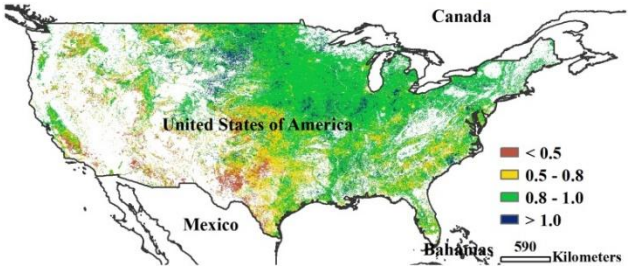
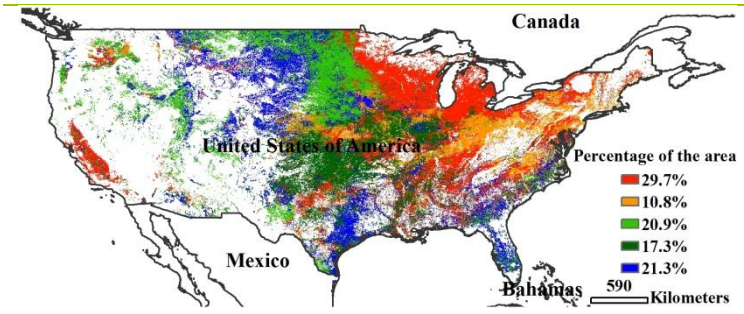


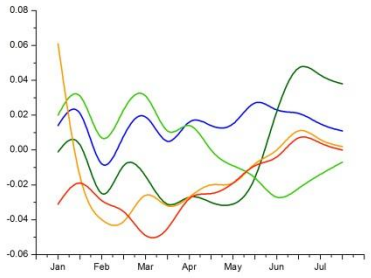
Figure 3.31. United States crop condition, April-July 2014

(a) Maximum VCI

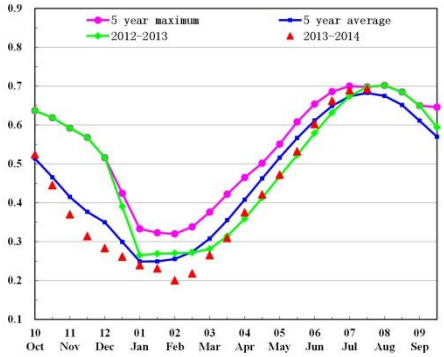
Winter wheat was planted in early October and harvested in late June. Other crops are currently on the field, with maize and rice planted in early May (harvesting in late September) and soybean planted in late May (harvesting in middle October). May to July is thus the main harvesting season of winter wheat and the key growing season of maize, rice, and soybean. For the period under consideration, the condition of crops is below-average to average compared to the last five-year average (2009-13), but above last year's conditions. The corn belt shows average conditions after June, including Minnesota, Wisconsin, Illinois, Iowa, Indiana, Michigan, Ohio, and Kentucky; abundant rainfall in this region provided enough water for crop growth, but caused a correlated decrease of RADPAR. It negatively interfered with crop growth in Minnesota (RAIN, +33%, RADPAR, -7%), Iowa (RAIN, +58%, RADPAR, -6%), Wisconsin (RAIN, 14%, RADPAR, -6%), Nebraska (RAIN, +44%, RADPAR, -2%) and Illinois (RAIN, 20%, RADPAR, -2%). The decrease in PAR (RADPAR) reduced crop photosynthesis in the corn belt. According to the CropWatch environmental indices (national values), TEMP decreased by -0.1°C and RAIN increased 12%. Extreme drought occurred in the west of the country, especially in California (RAIN, -33%), Oregon (-41%), Washington (-28%), the Midwest (west part of Texas), and Southern Plains (Northern Texas, some regions of Oklahoma and Kansas). National RADPAR decreased 1% compared to the five-year average. CropWatch results also indicate that the accumulation of biomass (BIOMSS) increased 5% compared to the five-year average. The next CropWatch monitoring period is the harvesting season of maize, soybean and rice. Unless weather turns favorable, crop production is expected to be below-average. (See also table B.5 in Annex B.)



(b) Spatial NDVI patterns compared to 5YA



(c) NDVI profiles



(d) Crop condition development graph based on NDVI

[UZB] Uzbekistan

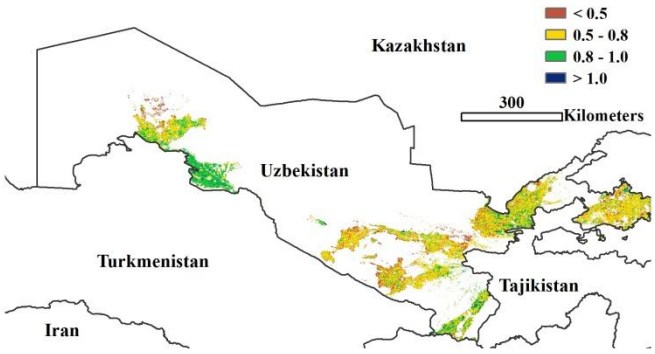
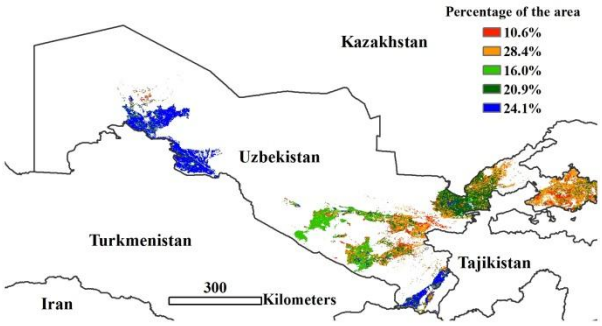
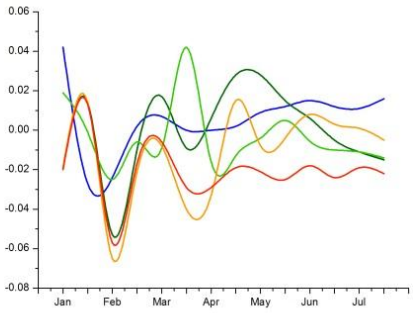


Figure 3.32. Uzbekistan crop condition, April-July 2014
(a) Maximum VCI

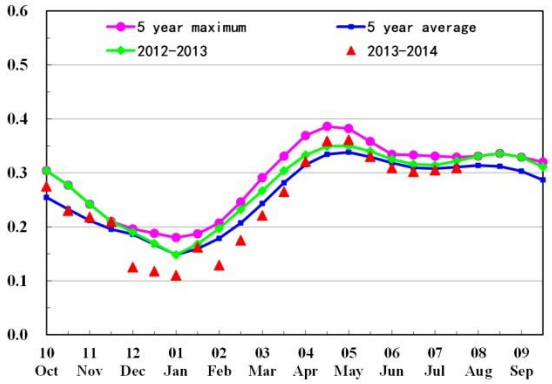
This analysis covers the growing and harvesting stages of winter cereals, along with the sowing and key growth period of coarse grains and maize in Uzbekistan. Crop condition is generally poor. The country as a whole showed a decrease of rainfall (RAIN) and biomass (BIOMSS) (-5% and -0.6% respectively), while temperature (TEMP) and PAR (RADPAR) were just above the average (0.4°C and 1%, respectively) of the past thirteen-year. A detailed look at the indicators shows that maximum VCI is below 0.5 for areas throughout the country except for southeast Qoraqalpoghiston and Termez, generally indicating poor crop condition. The national NDVI development graphs suggest that crop condition was good in April, but from May to July dropped to slightly below the recent five-year average as a result of low rainfall and high temperature. More precise spatial information is provided by the NDVI clusters, which show that most areas (Bukhara, Kashkadarya, Samarqand, Jizzakh, Namangan, Andijan, and Fergana) have poor crops, except for parts in the west (mostly cotton areas) and south.



(b) Spatial NDVI patterns compared to 5YA

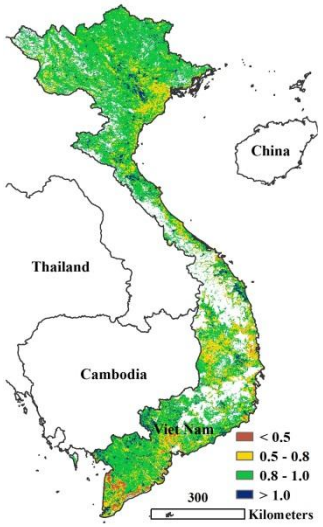


(c) NDVI profiles

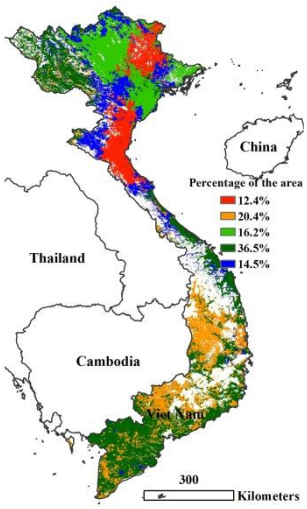


(d) Crop condition development graph based on NDVI

[VNM] Vietnam



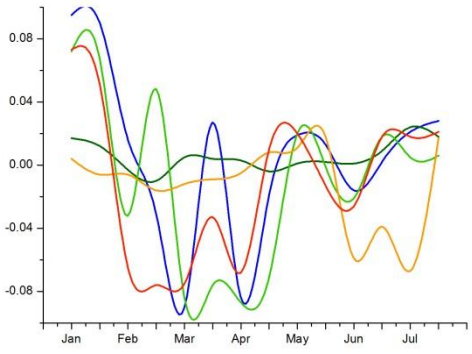
(a) Maximum VCI



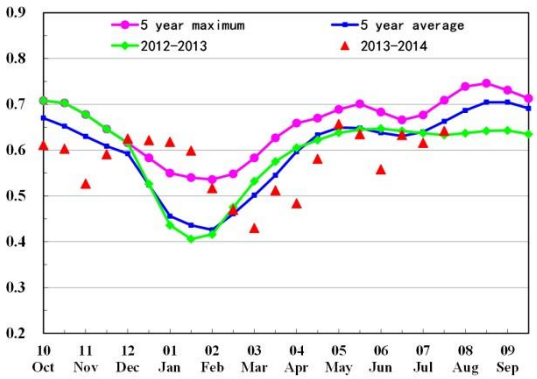
(b) Spatial NDVI patterns compared to 5YA

Figure 3.33. Vietnam crop condition, April-July 2014

The period from April to July 2014 mainly covers the harvesting period of winter/spring rice and also the sowing of the 10th month/North rice in Vietnam. Crop condition in April was inferior to the average of the previous five years, but reverted to close to average (except in early June). This is also confirmed by the profiles of NDVI: All five profiles of the NDVI clusters show below average conditions before and after May. More than 20% of the crops show fair conditions from late May to end of July, with those crops mainly distributed in Gia Lai, Phu Yen, Dak Lak, Binh Phuoc, and Lam Dong provinces, where the maximum VCI value ranges from 0.5 to 0.8. The average VCIx of the current period is 0.86, indicating acceptable overall conditions. As can be seen from the results of the CropWatch agroclimatic and agronomic indicators monitoring, both RAIN (17%) and TEMP (1.2°C) were above the thirteen-year average. In contrast, RADPAR was slightly below that average. The ample rainfall and moderate temperature led to a 5% increase in biomass accumulation (BIOMSS). CropWatch forecasts an average 2014 rice production level in Vietnam.



(c) NDVI profiles



(d) Crop condition development graph based on NDVI

[ZAF] South Africa

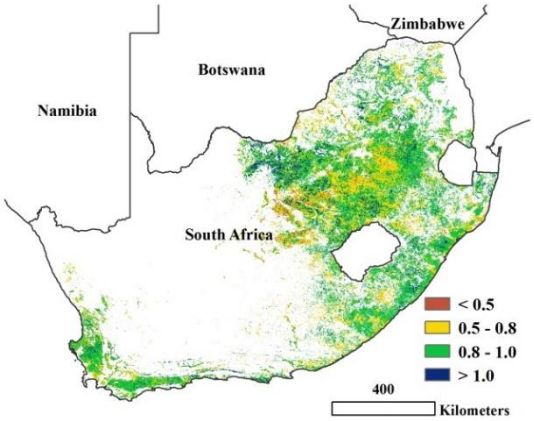
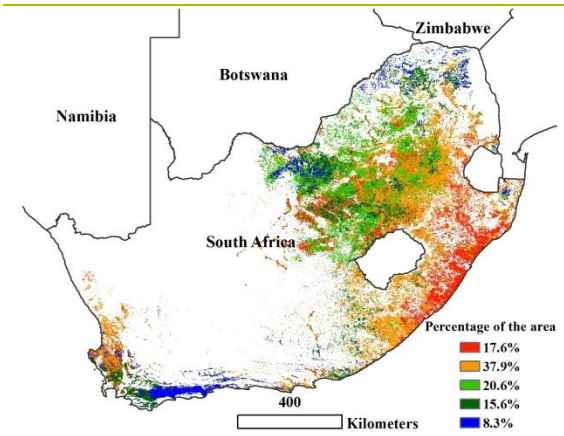


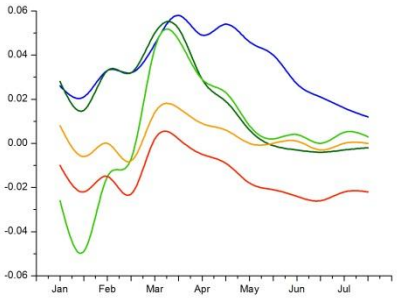
Figure 3.34. South Africa crop condition, April-July 2014

(a) Maximum VCI

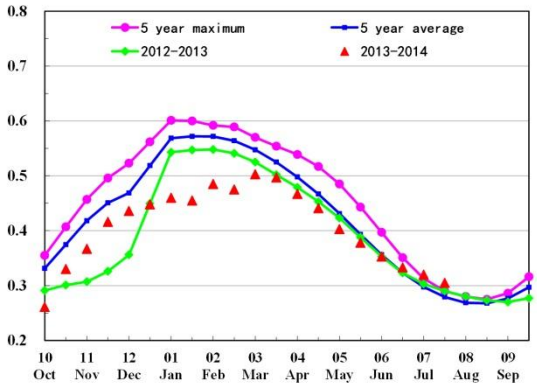
The period from May to June coincides with the planting of winter wheat in the very south and the harvest of summer crops, especially maize, which starts in the north east in May and reaches the north-western areas in June. The maize crop was favorable, as confirmed by maximum VCI at 0.83. During that period, NDVI was close to last year's values and the average of the last five years, but well below the last five years' maximum. Based on the NDVI profiles, there is a clear gradient of crop condition between the south-eastern coast (north of Eastern Cape and Kwazulu-Natal provinces, where NDVI was already below average at the end of last year) and the north-east, northern-central part (east of North-West Province), and the Northern Province. Although there are some regional differences, the South African maize crop can thus be described as good. Current cropped arable land estimates stay at -12.6% compared with the recent five years; combined with poor rainfall over the last 4 months (-60% for ZAF and -48% for the MRU-10 MRU, Western Cape), prospects are definitely below average for wheat.



(b) Spatial NDVI patterns compared to 5YA



(c) NDVI profiles



(d) Crop condition development graph based on NDVI