Chapter 5. Focus and perspectives

Building on the CropWatch analyses presented in chapters 1 through 4, this chapter presents first early outlook of crop production for 2019 (section 5.1), as well as sections on recent disaster events (section 5.2), Mozambique floods based on satellite data (5.3) and an update on El Niño (5.4).

5.1 CropWatch food production estimates

Methodological introduction

Table 5.1 presents the first estimate by the CropWatch team of global maize, rice, wheat and soybeans production in 2019. It is issued at a time when many winter crops in the northern hemisphere are still growing and summer crops are in very early stages, or even to be planted; in the southern hemisphere the harvest of the summer season/monsoon season has been completed. Updates will be published in the August 2019 and November 2019 CropWatch bulletins.

The estimate is based on a combination of remote-sensing models (for major commodities at the national level) and statistical trend-based projections for minor producers and for those countries which will harvest their crops later during 2019, for which no directly observed crop condition information is as yet available. In Table 5.1 below, the percentage of modelled global production varies according to crops: 18% for maize, 56% for rice, 71% of wheat (most of it being northern hemisphere winter wheat) and 39% for soybeans. When considering numbers of countries, the percentages are much smaller: 7%, 8%, 13% and 1%, respectively. While the percentage of countries will increase only marginally in the next bulletins, the share of modelled production will gradually increase and reach to 80% to 90% in the final bulletin of the year that will be issued in November.

The 41 countries for which production estimates are provided are described in detail in chapter 3 while a whole chapter is devoted to China (Chapter 4). The 41 + 1 countries are referred to conventionally as the “Key Targeting Countries”. “Others” include the 142 countries from Albania, Algeria, Armenia [...] to Venezuela, Yemen and Zimbabwe. The total output for “other” countries was obtained by adding national projections for 2019 rather than projecting the sum. The reason for doing so is that countries sometimes phase out crops for a variety of reasons (e.g. soybean in Macedonia or Syria) and production projections that turn negative can be set to zero. This effect remains hidden when sums are projected.

The calibration of production model is crop-specific, i.e. based on different crop masks for each crop and that, for each crop and country; both yield variation and cultivated area variation are taken into account when deriving the production estimates. The key targeting countries represent at least 80% or production and 80% of exports.

CropWatch production estimates differ from other global estimates by the use of geophysical data in addition to statistical and other reference information such as detailed crop distribution maps.

Production estimates

CropWatch estimates the global 2019 production of the major commodities at 1005 million tonnes of maize, up 0.7% over 2018, 731 million for rice (up 1.1%), 733 million tonnes of wheat (a 1.5% increase) and 331 million tonnes of soybeans, a 1.2% increase over last year's output(table 5.1). The current estimate is one of the most optimistic issued by CropWatch over the recent cropping seasons, in that all crops show positive variations compared with the previous campaign.

Maize

Countries that experienced large production increases include mostly Argentina (+7%) and Mexico (+8%) as well as three South-east Asian countries including Bangladesh (+8%), Myanmar (+9%) and Vietnam where the estimated increase reaches 12%, the highest national increase, equivalent to about 624,000 tonnes. Vietnamese maize exports have fluctuated a lot over the last ten years, from 100 to 50,000 tonnes. It is likely that the country will make more maize available internationally. In Argentina, the increased production represents 3.6 million tonnes while Brazil, another traditional maize producer, stayed approximately at the level of the previous season (+1%), at the same level as Angola and Indonesia.

All countries with a significant drop in maize production are located in Africa, starting with Egypt (-1%) and Mozambique (-2%). The regions of southern and eastern Africa experienced difficult conditions including drought and excess precipitation associated with two tropical cyclones. As a rule, the effect of drought is more severe than cyclones because the impact of the second is limited in space, even if it can be very destructive. South Africa is the main maize producer in the region. Its output is down 5%, on par with Kenya but less severe than Zambia (-10%).

Rice

A major observation is the increase in rice production in south and South-East Asia, starting with India (+1%), Indonesia (+2%), Bangladesh (+6%) and Vietnam (+8%). The volume is up 1.4 million tonnes in all countries, except in Bangladesh where the increase reaches 2.7 million tonnes. Argentina, a relatively minor producer, mainly for export, recorded a 9% increase after a poor year when production dropped by about 5%.

In clear relation with weather conditions, production dropped 1% in Mozambique, Myanmar and the Philippines, but by 3% in Thailand and by 8% in Cambodia.

Wheat

Several European producers of wheat show decreases below 2018 output, some of them significant: Romania -17%, Turkey -15%, Belarus -13% Hungary -11%, Poland -5% and Germany and France -1%. Positive values are observed for Italy (+7%) and Great Britain (+8%).

The positive changes that occur in some eastern European and western to central Asian countries, including Ukraine (+4%) and Russia (+9%) are somewhat uncertain because of very unusual winter conditions characterized by unseasonably high temperatures; this may have affected crops in a way that is not yet fully understood.

Production increases are also inferred for China (+1%), Egypt, Brazil, Ethiopia and Pakistan (+4% to +10%). The largest increases are projected for Pakistan (+10%), Morocco (+12%), South-Africa

(+14%), Mexico (+17%), and Iran (+19%) where floods have destroyed crops and infrastructure but also supplied much needed water.

Production decreases are projected for two southern Hemisphere wheat growers, Argentina and Australia, -3% and -13%, respectively. In the United States, the wheat production will increase 10%.

Soybean

In the northern hemisphere the crop is still to be planted, so that only Argentina and Brazil can be meaningfully mentioned here. Similar to the other rain-fed summer crop, the Argentinian Soybean crop is up (+9%) while Brazil stayed at the level of the 2018output.

Major importers and exporters

Table 5.2 shows the performance of the major importers and exporters of maize, rice as paddy, wheat and soybeans according to the data in table 5.1, both in terms of volume and of percentage. About 15 countries that are not covered in Table 5.1 are part of the top ten importers or exporters. They include Bolivia, Paraguay and Uruguay among the exporters and, among the importers, Algeria, Benin, Colombia, Côte d'Ivoire, Iraq, Japan, Korean Republic, Netherlands, Nigeria, Saudi Arabia, Senegal, and Spain.

Since the 10 top exporters dominate the production landscape, the percentage change in their output relatively closely follows table 5.1: +0.3% for maize exporters and +0.7% for producers, 1.4% for rice exporters and +1.1% for producers, 1.7% for wheat exporters and 1.5% for producers and, for soybean, 0.3% for exporters and 1.2% for producers.

Overall, the top 3 exporters increased their maize output by 2.3%, while the increases reach 1.6% for rice, a significant 6.5% for wheat and 0.4% for soybean. For wheat, the top exporter, the United States, is expected to outperform all immediate competitors.

For maize, the exporters ranking 6 to 10 did relatively better (+4.6%) than the countries in ranks 1 to 5 (+1.4%). For rice the corresponding percentages are 1.3% and 1.7%; they are mainly due to the drop in Thailand (-3%) and the increase in Argentina (+9%). For maize, the first group includes Ukraine (-7%) and France (-14%) while the second has Hungary (-10%) and Paraguay (+12%). Negative values in the second group (ranks 6 to 10) for Wheat (-0.2%) and soybean (-4.3%) are due to the poor performance of wheat in Romania (10th exporter, production down 17%). For soybean, difference is brought about by Uruguay (6th exporter) which has suffered a negative trend in soybean production in recent years. In terms of production volumes, the top 5 producers of soybean have increased their output by 1.5 million tonnes, while those ranking 6 to 10 have a deficit of 643 thousand tonnes.

Even if production volumes of importers are obviously lower than those of exporters, the volumes have increased, mostly by percentages larger than those of exporters, illustrating the efforts some countries are making to reduce their dependence on foreign markets. For soybean in particular, China – the first global soybean importer – has recently reversed the negative production trend and the trend-based production for 2019 is up 2.6%. For importers 3 to 4 (Mexico, Germany, Spain) the increases amount to 5%, 34% and 15%, respectively.

Altogether, Table 5.2 presents a situation where no particular tension is expected to affect the trade of maize, rice, wheat and soybean, as far as supply and demand is concerned. However, since many productions in the Table are trend-based, the situation may evolve as more modelled data

become available. The changes will be reflected in the revised Table 5.2 in the August 2019 CropWatch bulletin.

Table5.1 2019 cereal and soybean productions estimates in thousands tonnes

	Maize		Rice		Wheat		Soybean	
	2019	Δ%	2019	Δ%	2019	Δ%	2019	Δ%
Angola	2813	1						
Argentina	53154	7	1849	9	18009	-3	51459	9
Australia					21456	-13		
Bangladesh	2368	8	47593	6				
Belarus	2337	4.1	48063	6.2	240.9	-13	118	7.1
Brazil	86556	1	12194	5	4572	7	97656	0
Cambodia			8111	-8				
China					117259	1		
Egypt	5477	-1	6276	3	11226	4		
Ethiopia					4388	9		
France					36124	-1		
Germany					26500	-1		
Hungary					4422	-12		
India			156321	1	90267	-1		
Indonesia	17138	1	66707	2				
Iran			2607	5	16462	19		
Italy					7817	7		
Kenya	3309	-5						
Mexico	25436	8			4188	17		
Morocco					7902	12		
Mozambique	2044	-2	374	-1				
Myanmar	1859	9	24907	-1				
Nigeria			4915	5				
Pakistan					26310	10		
Philippines			19555	-1				
Poland					9576	-5		
Romania					6255	-17		
Russia					57549	9		
South Africa	12466	-5			1792	14		
Sri Lanka			2470	2				
Thailand			370130	-3				
Turkey					16888	-15		
Ukraine					21965	4		
United Kingdom					14883	8		
USA					39497	10		
Vietnam	5769	12	48441	8				
Zambia	2125	-10						

	Maize		Rice		Wheat		Soybean	
	2019	Δ%	2019	Δ%	2019	Δ%	2019	Δ%
Sub-total	220515.3	3	439334.6	1.9	567719.0	1.9	149115.1	2.8
Global	1005434.5	0.7	730716.8	1.1	733264.4	1.5	331047.4	1.2

Note: All the national production values in the table of remote sensing model based estimates while the global production was projected by adding up the model-based production and trend-based model for all other countries. Δ is the percentage of change of 2019 production when compared with corresponding 2018 values

Table5.2 Comparison of 2019 and 2018 production of major importers and exporters as well as the change in the offer and demand 2017 and 2018.

		Change in production volume in 1000 tonnes				Change in production in %			
		Maize	Rice	Wheat	Soybean	Maize	Rice	Wheat	Soybean
Exporters	Top1	7122	1401	3687	-3025	1.9	0.9	10.3	-2.7
	Top3	11838	3709	8093	993	2.3	1.6	6.5	0.4
	Top 10	10999	4066	4577	861	1.7	1.4	1.7	0.3
	1 to 5	7685	3345	4734	1504	1.4	1.3	2.6	0.5
	5 to 10	3314	721	−157	−643	4.6	1.7	−0.2	−4.3
Importers	Top1	0	1456	436	366	0	0.7	4	2.6
	Top3	1788	1679	41	41	7.5	0.8	3.1	3.4
	Top 10	1354	3232	3848	234	3.2	1.1	7.7	2.8
	1 to 5	1181	1733	1241	411	3.5	0.8	5	3.4
	5 to 10	172	1499	2607	−177	2.1	2.2	10.3	−15.0

Note: The table lists percent changes as well as absolute amounts based on table 5.1

5.2 Disaster events

Introduction

According to the WMO report, 2018 was the fourth warmest year on record and 2015–2018 were the four warmest years on record; the long-term warming trend continues: ocean heat content is at a record high and global mean sea level continues to rise while Arctic and Antarctic sea-ice continues melting. Extreme weather had an impact on lives and sustainable development on every continent with average global temperature now about 1°C above pre-industrial levels. Most worryingly: we are not on track to meet climate change targets and temperature increases are literally out of control, gradually eroding many habits of wasteful use of climate resources. This year, for instance, after the “day zero” alert in Cape Town during 2018, similar situations of urban water shortage risks have been developing in Australia.

For the current reporting period, the main disasters in terms of their human impact include the continued drought conditions in the Horn of Africa and southern Africa, western Asian floods at the end of March and April (Afghanistan, Iran and Pakistan), and especially the two tropical cyclones (Idai and Kenneth) which struck Mozambique in April. It is a constant observation among many flooded areas during the reporting period that floods are made worse when they occur after prolonged periods of drought, illustrating the fact that flood and drought management plans need to be developed concomitantly (see below).

Extreme conditions by type

Drought and fires

Up to the impact of cyclones Idai and Kenneth in the western areas of southern Africa, the prevailing situation was one of drought, affecting mostly southern Angola, southern Zambia, the northern half of Namibia and the north of Zimbabwe, with the situation described as severe by FEWSNET in south-west Angola and adjacent north-west Namibia and the border area between Zambia and Zimbabwe. In Namibia, close to 150,000 people lived in drought affected regions at the beginning of the reporting period, according to UNICEF.

In the Horn of Africa many populations continue to suffer from the precarious situation that developed during in 2018 and during the previous reporting period, including south-east Ethiopia and south-east South Sudan and the northern half of Uganda. According to FAO/SWALIM reports, large parts of the central and northern regions in Somalia were suffering from abnormally dry conditions and river flows were below average and below the values recorded during the two previous seasons. ReliefWeb reported at the beginning of April that 1.5 million people were in IPC phase 3 or 4. According to FEWSNET, rainfall was insufficient (except in the south) during April, which coincides with the beginning of Gu season (April-June). In Kenya, the condition of pastures kept declining in 15 districts of the semi-arid areas during February, according to the Bulletin issued by the National Drought Management Authority

Drought is also reported in March-April from the Dominican Republic and over the western coastal areas of Panama, Costa Rica and Nicaragua and from the Southern Island of New Zealand where fires destroyed 2500 Ha of vegetation in the first half of February. Still in Oceania, Western Australia and the Northern Territory had the warmest March on record at +2.1°C above average, in spite of some cooling brought about by two severe tropical cyclones (Trevor and Veronica), which also affected Queensland. Bush-fires affected the east of Victoria, destroying more than 10000 Ha of bush. In Tasmania, 3% of the area was burned (200000 Ha). Elderly people and wildlife were affected severely. At the end of April and early May, the dams supplying Sydney, Darwin, Melbourne and Brisbane had reached critical levels close to 50% of capacity and water conservation measures had to be implemented.

The general area covering western Iran, Pakistan and Afghanistan has been suffering from dry conditions during the winter crop season. In Pakistan, dry conditions prevailed mostly over north-west Baluchistan. According to Muslim Aid, 270,000 Families and 3.5 million heads of cattle were affected in 18 districts of Baluchistan. The drought manifests itself by falling water levels in wells which have not been replenished due to shortage of rains over several years. In early March, the International Federation of Red Cross and Red Crescent Societies reported “Alarmingly high rates of disease and malnutrition in drought-affected areas” in Pakistan, especially southern Sindh and Baluchistan. Due to shortage of irrigation water, the food production in the affected areas was reported to be down about one third compared with average years.

Before the cyclone hit the province (Manicaland), the area had been classified as IPC 3 due to drought, with some limited areas in IPC 4 (Buhera district, north-east of Chimanimani and Chipinge). Next to water stressed crops in the field, which had reached harvest, stored food and cattle suffered as well.

Cold weather and severe winter conditions

Algeria suffered from several episodes of cold weather which started in January 2019; two of them occurred from 4 - 7 February (affecting 15 Departments) and from 21-22 March, affecting 5 Departments. About 800 families were affected.

Tropical cyclones, storms, tornadoes, heavy rainfall and floods

More than 20,000 families (about 100,000 people) suffered from flash floods in Philippine Region XI (Davao Oriental) at the beginning of February. During mid to late to mid-February, floods affected California while in Colombia, the end of February suffered floods when the San Juan and other rivers in the Chocò department made more than 3000 families homeless; at the end of April, the south-western Department of Nariño suffered from floods affecting 5,500 families.

From 8 to 12 February an estimated 500000 heads of cattle died due to floods in Queensland (which is about 5% of the State's livestock population) due to rainfall with a return period of about 1 in 500 years, after prolonged drought.

Just after mid-March, cyclone Trevor destroyed 85 houses in Papua New Guinea, where 15,000 people faced food shortages. In the western half of the Island (Eastern Indonesia) flash floods and landslides killed at least 50 people in Papua province.

The United States were struck by several extreme events, including at the beginning of March in Alabama where a tornado killed 23. Nebraska had floods around mid-April while in the Southern US tornadoes and floods left 6 people dead in Texas (especially in the central Texan town of Franklin), Mississippi, Louisiana, Arkansas and Georgia.

Cyclones are a relatively rare occurrence in continentalsouthern Africa, with the exception of Madagascar. In 2000, for instance, cyclone Eline affected Malawi, Mozambique, Zambia, and Zimbabwe through heavy rainfall, but there has been no prior occurrence of a disaster like the one caused by Idai. The cyclone first made landfall on 4 March in the north of the country (Figure 5.1), but then moved back into the Mozambique channel where it gained strength and eventually turned west again when it hit central Mozambique on 14 March, then Zimbabwe and Malawi the following day. At least1000 people were killed directly, more than half (602) in Mozambique. 1.85million people are in need of assistance in Mozambique, of which 1.7 millionneed urgent food supplies in Sofala, Manica, Tete and Zambezia provinces. The disaster occurred at the time close to harvest; destroying many crops that had previously been struck by drought (2.4 million Zimbabweans are in need of food aid due to drought).

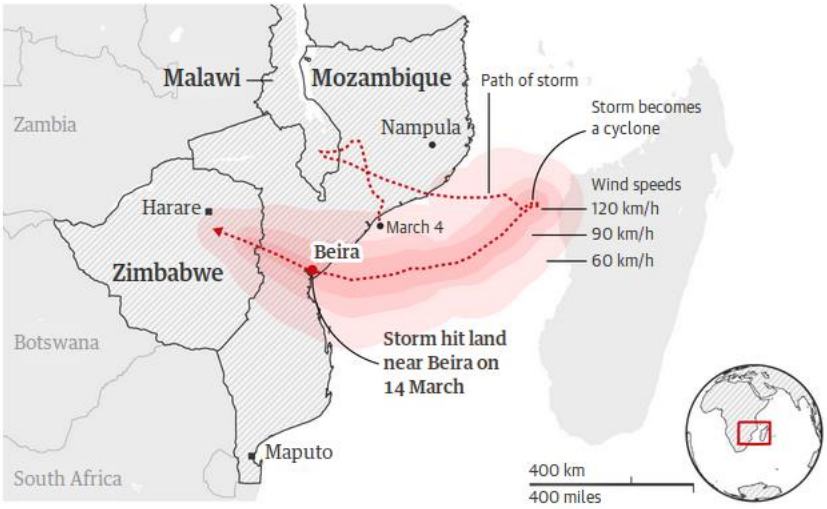

Figure 5.1 Track of cyclone Idai

Secondary source: https://www.theguardian.com/world/2019/mar/23/families-stranded-without-aid-in-wake-of-mozambique-cyclone; Primarysource: GDACS

According to the International Federation of Red Cross and RedCrescent Societies, 90 % of the area of Central Mozambique and Beira was "destroyed" (Figure 5.2), including houses, food, communications and roads. Indirect deaths due to landslides and diseases include at least 180 people in Zimbabwe, in Chipinge and especially in Chimanimani district, where 15,000 peoplewere affected (Figure 5.3). In Malawi, Mozambique and Zimbabwe the damage isestimated by the World-bank at US$ 2 billion in terms of recovery costs of infrastructure and livelihoods. In particular, the infrastructure was damaged in the Beira corridor which connects the harbour of Beira with Zimbabwe, Malawi and Zambia, affecting the supply of food, fuel and other goods in the region.

Figure 5.2 Destruction in Beira following cyclone Idai.

Source: https://media.ifrc.org/ifrc/press-release/mozambique-cyclone-90-per-cent-beira-surrounds-damaged-destroyed/

Five weeks after Idai, in the final days of April, cyclone Kenneth hit mostly the Comoros archipelago (185,000 affected) and, in Mozambique (200,000 affected), the northern area of Cabo Delgado, especially Ibo Island and the coastal districts of Macomia and Quissanga. Wind speeds reached 220 km/h; 38 people died and flash floods contaminated boreholes, especially on Ibo. Kenneth led to abundant rain in parts of South Africa but largely spared southern Tanzania. 70 people are reported dead in KwaZulu-Natal province, including some in Eastern Cape Province due to mudslides. On Comoros Island, ACAPS reported on 30 April that the cyclone had severe impacts on livelihoods as an estimate of 60-80% of staple crops have been destroyed and over 1600 livestock lost. 45,000 people were affected and 10,000 houses were destroyed.

Interestingly, both Idai and Kenneth caused limited damage in Madagascar.

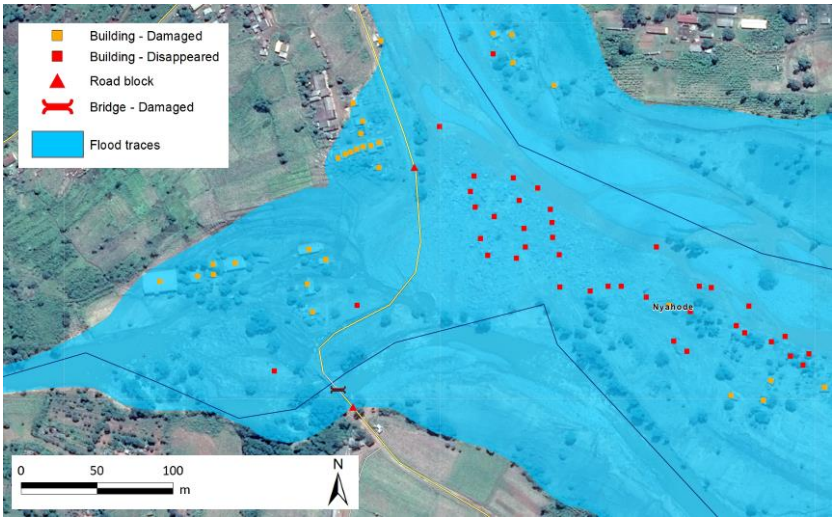

Figure 5.3 Satellite-based assessment of the extent of Idai flooded land in south-east Zimbabwe.

Approximate coordinates of the centre of the map: 32.85833°E and 20.05694°S. Based on a Disaster Charter map available at https://disasterscharter.org/image/journal/article.jpg?img_id=1553526&t=1553179274100

Repeated episodes of floods-over-drought affected Afghanistan: on 6 March 20 died in 8 provinces including Kandahar, at a time when 13 million people were food insecure and just under 4 million on the verge of famine due to drought and violence, with over 250,000 displaced people. Livestock suffered badly from the excess water.

Later in March and early April widespread floods occurred again in a larger area in western Asia, in northern Pakistan, west Afghanistan, Turkmenistan and especially west Iran. The timing coincided with Nowruz, the Persian New Year, when families reunite and extensively travel. Khuzestan province and most of South-west Iran were particularly severely hit. Floods affected four fifths of the country's 31 provinces, mostly in the western half bordering Afghanistan and Pakistan. All three countries had previously experiencing rainfall shortages, which worsened the impact of floods and landslides. 78 people died in Iran, 1140 were injured with tens of thousands displaced, and many houses, roads and bridges destroyed in about a 1/3 of the national road network (including highways). According to FAO, the most affected provinces include, next to Khuzestan, also Mazandaran, Golestan and Lorestan and Khuzestan, just before the harvest of the main winter wheat crop and at the time when summer crops are emerging. Damage in the agricultural sector is estimated at US% 1.5 billion and between 2 and three times more globally. At mid-April, ReliefWeb estimated that 12 million people were affected, with 2 million in need of direct assistance and 370,000 displaced. 65,000 houses were destroyed and more than 110,000 were damaged.

Figure 5.4 Afghan Red Crescent Society volunteers rescuing people affected by the floods.

Source: http://adore.ifrc.org/Download.aspx?FileId=233279.

In neighboring Afghanistan, the New Humanitarian reported at the end of March that flash floods that swept away thousands of homes (Figure 5.4) and killed dozens in the two north-western provinces of Herat and Badghis, and seven more provinces, with more than 280,000 people affected and 63 killed, not to mention innumerable sheep. According to the Afghan Red Crescent Society, more than 650,000 people lack basic needs, including sanitation and health care and 1.6 million children suffering acute malnutrition.

5.3 Mozambique floods based on satellite data

The Cyclone IDAI brought intense rains over 1000mm during the period of 13th to 26th March 2019 and resulted in severe disaster for Mozambique, particularly in central and southern provinces. Based on Sentinel-1 SAR imageries, water extent during flooding periods and ten days after the flooding was retrieved, compared to water extent at the normal season.

Flood water extent occupied a total of 2,761,245.4 hectares (corresponding to 3.5% of the total country's area) of land from 13th – 26th March and 1,057,214.4hectares (corresponding to 1.3% of the total country's area) by 9th April. Figure 1 shows the remaining water extent by 9th April and the changes from the flooding period before 26th March. Gaza, Maputo, Inhambane and Sofala (about 12.3%, 6.1%, 5.9% and 5.6% of the whole province flooded are highlighted as the most affected provinces with 928,087.0ha, 137,047.7ha, 406,225.4ha and 381,248.8haof land inundated during the flooding period.

Atdistrict level, Chicualacuala, Chigubo and Mandlakazi in Gaza (with 238,891.0ha,226,816.0ha and 72,239.5ha land flooded respectively), Matutuine, Moamba and Magude in Maputo province (flooded area at 53,654.0ha, 28,895.3ha and 26,924.3ha,respectively),Panda, Mabote and Inharrime in Inhambene province (with 121,547.3ha, 53,460.7haand 47,171.4ha of land flooded, respectively) and Buzi, Machanga and Nhamatandain Sofala (with 130,259.9ha, 128,257.3ha and 30,611.5ha of land flooded, respectively) are highlighted as the most severe flooding districts.

By April 9th, about 61.7% (corresponding to 1,704,030.9 hectares) of flood water retreated after the flooding period. But Gaza, Maputo and Inhambane are still suffering, with an area of 462,872.5ha, 81,514.0haand 229,821.0ha of land flooded, accounting for about 6.1%, 3.6% and 3.3% of the whole province, respectively. Among these three provinces, Chicualacuala,Mandlakazi,

Chockwe, Matutuine, Moamba, Magude, Panda, Inharrime, and Mabote stillhave large areas of land that have been flooded and not subsided yet..

Observations from the satellite showed that croplands were severe damaged. A total of 251,060.0 hectares of cropland were under water during the flooding period, and 157,897.5hectares still remained flooded by April 9th, 2019. Croplands in Gaza province were mostly affected, accounting for 48.8% of total flooded cropland area nationally during the flooding period and 62.2% by April 9th.For each province, about 16.4%, 8.3%, 3.7% and 27% of cropland in Gaza, Inhambane, Maputo and Sofala provinces were covered by flooding water, corresponding to 122,501.2ha, 31,010.8ha, 11,020.8haand 15,391.4ha, respectively.

The districts where cropland were severely affected include Chibuto and Mandlakazi districts in Gaza province (with 25,281.9ha, 19,723.4haof flooded cropland area respectively),Jangamo and Homoine in Inhambane province (13,305.4ha and 3,753.2ha), Moamba and Magude in Maputo province (4,421.5ha and3,132.8), Buzi and Nhamatanda in Sofala province (9,724.7ha and 1,682.6ha).

Gaza, Inhambane and Maputo were still suffering from floodingand about 7.8%, 3.7% and 2.3% of cropland in each province were covered by flood water, corresponding to 58,590.7ha, 13,822.7ha and 6,744.9ha, respectively. The statistics for this period show that Chockwe and Chibuto districts in Gaza province (with 10,999.0ha and 9,862.47ha of flooded cropland area respectively), Jangamo and Panda in Inhambane province (with 8,270.7.1ha, 1,223.1ha of flooded cropland area respectively) and Moamba and Magude in Maputo province (with 2,897.19ha and 1,724.9ha of flooded cropland area respectively) are highlighted as the most affected ones.

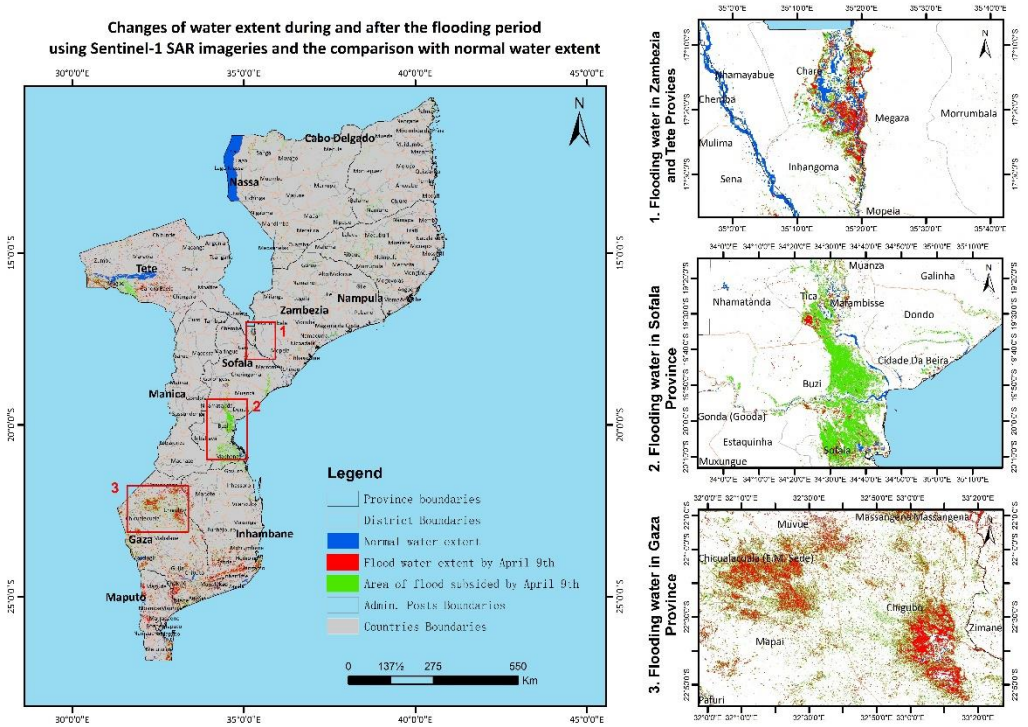

Figure 5.5 Waterextension in over Mozambique between 13th -26th March2019 and 26th March to 09th April 2019.

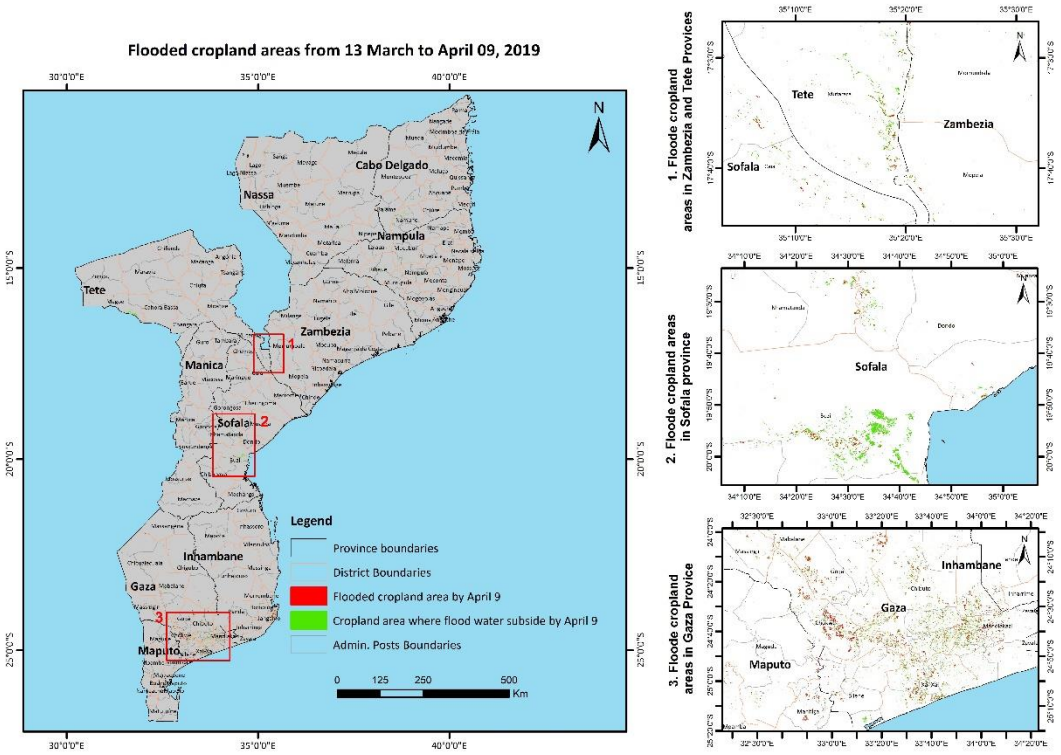

Figure 5.6 Affected cropland areas by floods from 13th March to 9th April 2019

5.4 Update on El Niño

A weakening El Nino trend has occurred across the Pacific Ocean so far. Figure 5.7 illustrates the behavior of the standard Southern Oscillation Index (SOI) of the Australian Bureau of Meteorology (BOM) from April 2018 to April 2019. Sustained positive values of the SOI above +7 typically indicate La Niña while sustained negative values below −7 typically indicate El Niño. Values between about +7 and −7 generally indicate neutral conditions.

During the current season, SOI decreased sharply from -0.6 in January to -13.5 in February, then increased to -6.8 in March, and increased to -1.3 in April 2019, indicating a weak El Nino condition.

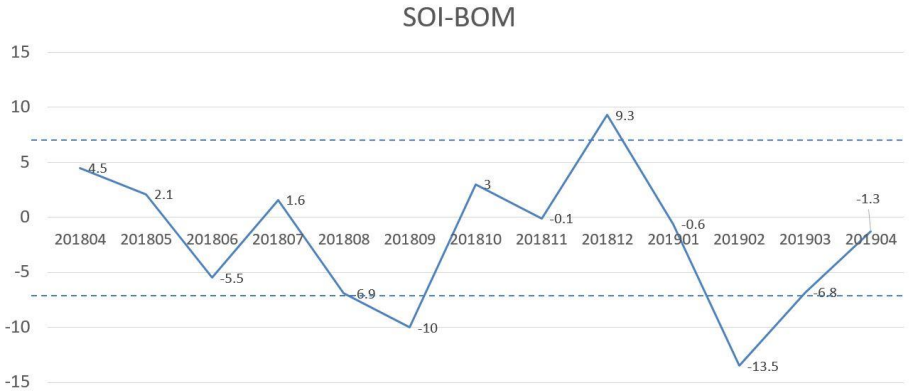

Figure 5.7 Monthly SOI-BOM time series from April 2018 to April 2019

The sea surface temperature anomalies in April 2019 for NINO3, NINO3.4, and NINO4 regions are +0.7°C, +0.7°C, and +0.6°C in sequence, a litter warmer than the 1961-1990 average according to BOM (see Figure 5.8-5.9). Both of BOM and NOAA conjecture that the warmer condition indicates a weak El Niño trend. CropWatch will keep monitoring the situation.

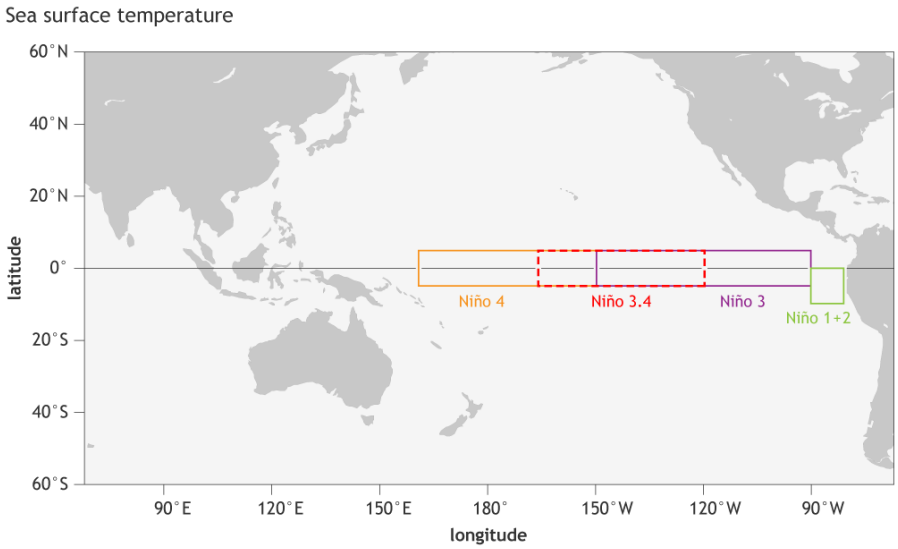

Figure 5.8 Map of NINO Region

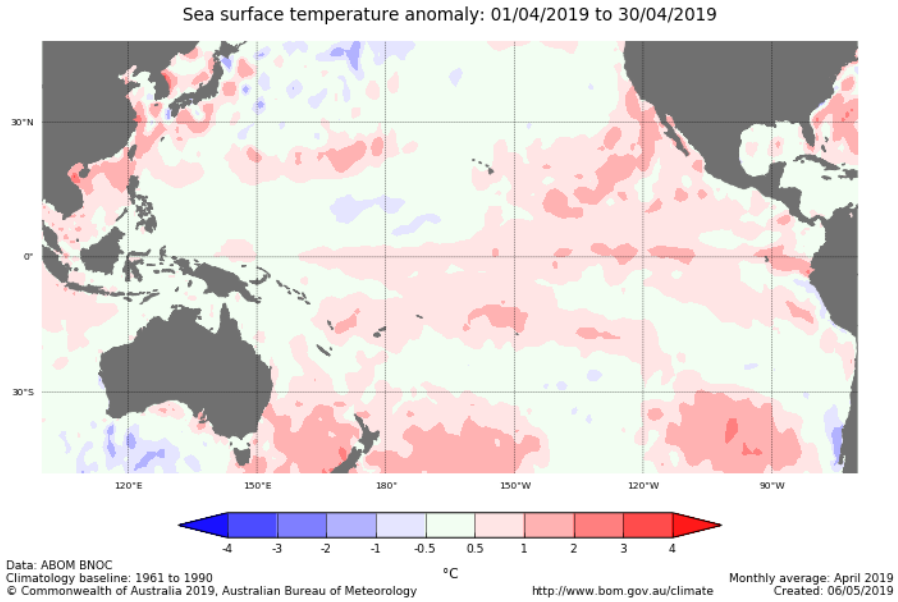

Figure 5.9 April 2019 of sea surface temperature departure from the 1961-1990 average

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