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 2020(section 5.1), as well as sections on recent disaster events (section 5.2), and an update on El Niño (5.3).

5.1 CropWatch food production estimates

Methodological introduction

Table 5.1 presents the final revision by the CropWatch team of the global maize, rice, wheat and soybeans production estimates for 2019. It is issued at a time when all 2018-2019 winter crops and 2019 summer crops in the temperate northern hemisphere have been harvested; in the southern hemisphere winter crops are growing and the planting of the summer season/monsoon season is underway or about to start. The planting of the second crop is ongoing or about to start in equatorial areas.

CropWatch production estimates differ from most other global or regional estimates by the use of near-real time geophysical data and models. They are 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 in the two last months of 2019, for which no directly observed crop condition information is as yet available. In Table 5.1 below, modeled outputs are in red bold font. The percentage of modeled global production varies according to crops: 85% for maize, 94% for rice, 89% of wheat (most of it being northern hemisphere winter wheat) and 82% for soybeans.

The 42 countries for which production estimates are provided are described in detail in chapter 3 while a whole chapter is devoted to China (Chapter 4). Kyrgyzstan was added for the first time in this bulletin. The 42 + 1 countries are referred to conventionally as the “Major producers”. “Others” include the 141 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.

Production estimates

This production outlook focused on major cereal and oil crops (maize, rice, wheat and soybean) countries in the southern Hemisphere and some tropical and sub-tropical countries. Production estimates and predictions in CropWatch are based on time series vegetation index dataset covering the period from sowing up to end of January 2020, combining the crop masks of those countries. The calibration of the yield prediction model is carried out for different crops (Table 5.1), which is based on the statistical indicators over different crop masks and the historical production information. The remote sensing-based annual variation of the planted area is also taken into consideration when calculating crop production.

Table5.1 2019 cereal and soybean productions estimates in thousands tonnes. Numbers in black are trend-based while red bold numbers corresponds to modeled crops that have been harvested or were growing at the time of reporting. Rice is expressed as paddy. Δ is the percentage of change of 2019 production when compared with corresponding 2018 values.

	Maize		Rice		Wheat		Soybean	
	2019	Δ%	2019	Δ%	2019	Δ%	2019	Δ%

	Maize		Rice		Wheat		Soybean	
	2019	Δ%	2019	Δ%	2019	Δ%	2019	Δ%
				Africa				
Angola	2917	5	46	3				
Egypt					12348	5		
Ethiopia	7206	0			3830	-1		
Kenya	3101	13						
Morocco					5018	-25		
Mozambique	2100	1	391	2				
Nigeria	11811	3	4620	1				
South Africa	14012	20						
Zambia	1788	-5						
				Asia				
Bangladesh			50934	6				
Cambodia			8747	8				
India					94186	4		
Indonesia			62083	-3				
Myanmar			29093	5				
Pakistan			10885	0	27543	4		
Philippines			21362	4				
Sri Lanka			2410	0				
Thailand			40785	3				
Vietnam			46616	2				
				America				
Argentina	53672	1	1837	-1			51927	1
Brazil	87773	3	11202	-4			103155	2
Mexico	20571	-7						

Maize

Table 5.1 lists the results of the maize production prediction for seven countries in Africa and three countries in the America, including Brazil and Argentina, the 2nd and 3rd largest exporters of maize. CropWatch predicts that maize production in Argentina and Brazil will grow by 1% and 3% compared to 2019, respectively, which is beneficial to the maize supply on the international market. Of the 10 maize producing countries being monitored, only Zambia and Mexico showed decreases in maize production, which were down by 5% and 7% respectively. Zambia was mainly affected by the poor soil moisture during the maize sowing period as a result of rainfall deficit; Maize production in Mexico decreased as a result of the reduced planted area and low yield due to the delayed growth at early stage. Maize production in other African countries is flat or slightly increasing; it is noteworthy that South Africa recovered from the drought year in 2019, with a significant recovery (+20%) in maize production. Angola also recovered from a drought-affected 2019 with a 5% increase of its maize production. Although local areas of Horn of Africa including Kenya and Ethiopia were affected by desert locust disasters, most of the maize had been harvested when the locusts infested and the pests had limited impact on production.

Rice

This current production prediction covers 14 rice-producing countries, including most of the key producing countries in South and South-East Asia. Except for 3% drop of rice production in Indonesia, rice production in other Southeast Asian countries is expected to recover from the dry and hot year of 2019. Rice productions of Bangladesh, Cambodia, Myanmar, the Philippines, Thailand and Vietnam are expected to increase by more than 3% while Pakistan and Sri Lanka are expected to be stable. Rice production of Nigeria, Mozambique and Angola increased by 1% to 3%. Rice outputs in Argentina and Brazil decreased by 1% and 4%, respectively, but the two countries were not among the top 10 key rice exporters, and the production decreases in both countries has limited impact on the global rice market.

Wheat

Table 5.1 lists wheat production in five countries: Egypt, Ethiopia, Morocco, India and Pakistan. Harvest of wheat in the southern hemisphere countries (Australia, Argentina, Brazil, South Africa, etc.) already concluded by 2020 and wheat production in those countries has been revised in the previous bulletin. This bulletin focuses on the countries where wheat is either being harvested in early 2020 or still in development stage but will soon reach maturity.

Of the five wheat-producing countries monitored in the current bulletin, Morocco's wheat production decreased the most by 25% compared to 2019, mainly due to difficulties in sowing caused by persistent less rainy weather which affected the early growth of wheat, leading to the decrease of wheat cultivation and yield.

The agroclimatic conditions during the sowing and early growth stage of wheat in Egypt is generally conducive to wheat growth and development. Wheat production increased slightly by 5%. As the world's largest wheat importer, the increase of wheat production in Egypt might result in lower import this year. Wheat production in India and Pakistan is generally self-sufficient. Although parts of India and Pakistan are affected by desert locust disasters, the impact is concentrated in the arid areas of northwest India and the lower Indus River basin in Pakistan, with limited impact on the main wheat-producing areas of the Ganges Basin. Wheat production in both countries increased by 4%. Also, the areas affected by desert locust are currently in dry season which will prevent the reproduction and further spread of desert locusts. In Ethiopia, only parts of Oromiya Zone of Amhara Region are affected by desert locust disasters during wheat harvesting period. Crop losses have been very limited and national wheat production merely dropped by 1% compared to 2019.

Soybean

Brazil has overtaken the United States as the world's largest soybean producer in 2019. Argentina's soybean production ranks as the fourth in the world. CropWatch expects soybean production in Brazil and Argentina to increase by 2% and 1% in 2020, reaching 103.16 million tons and 51.93 million tons, respectively. Soybean production in Brazil and Argentina has increased by about 2.88 million tons that will only have a good effect on the global supply. The international soybean market is therefore expected to remain stable.

5.2 Disaster events

Introduction

The tense humanitarian situations are interlinked with fast and apparently accelerating climatic warming conditions. In the wake of a series of global temperature records reported in the previous CropWatch Bulletins, January 2020 was the warmest January on record globally, with large positive temperature anomalies in parts of Scandinavia, Asia and Central and South America. In the United States, January was the 5th warmest on record, as well as one of the wettest. Temperature was as much as 5°C above the recent averages over large swathes of Russia, Scandinavia and eastern Canada.

The financial cost of coping with the increasing frequency of extremes was described in a much quoted December 2019 report issued by Christian Aid under the title "Counting the cost 2019: a year of climate breakdown." The report identifies 15 of the most destructive weather events of the year, mostly on the basis of insured losses, which is to say that actual impacts are largely underestimated. All of the disasters listed in the Christian Aid report caused damage of over US$1 billion, and four of them cost at least $10 billion. All have been reported on in the previous CropWatch bulletins, including (1) Floods in Argentina and Uruguay, in Queensland , Midwest and South US, Iran, China, Northern India , Spain; (2) Storms and tropical cyclones in Europe (Eberhard), Southern Africa (Idai), Asia (Bangladesh, Fani; China, Lekima; Japan: Faxai and Hagibis) and Central and Northern America (Dorian, Imelda).

The list also includes California fires, the first category in the list of disasters below. Fires seem to have become a recurrent feature: the previous bulletin provided details about northern hemisphere and Amazon fires, while the current reporting period was characterised by the huge south-west Australian fires that were essentially out of control until rain helped extinguish them. Their impact extended well beyond Australia through atmospheric pollution (which reached South America) and through their impact on local and global trade.

During the current reporting period, floods constituted the major group of disasters, mostly in Africa, while also creating conditions conducive to the development of desert locusts as vegetation develops in normally arid desert areas. Following a common scenario, locusts then move into agricultural areas and feed on crop biomass. Their potential population explosion and expansion into wide areas in western Asia and western Africa arguably constitute the major threat to food security in the immediate future.

Extreme conditions by type

Fires

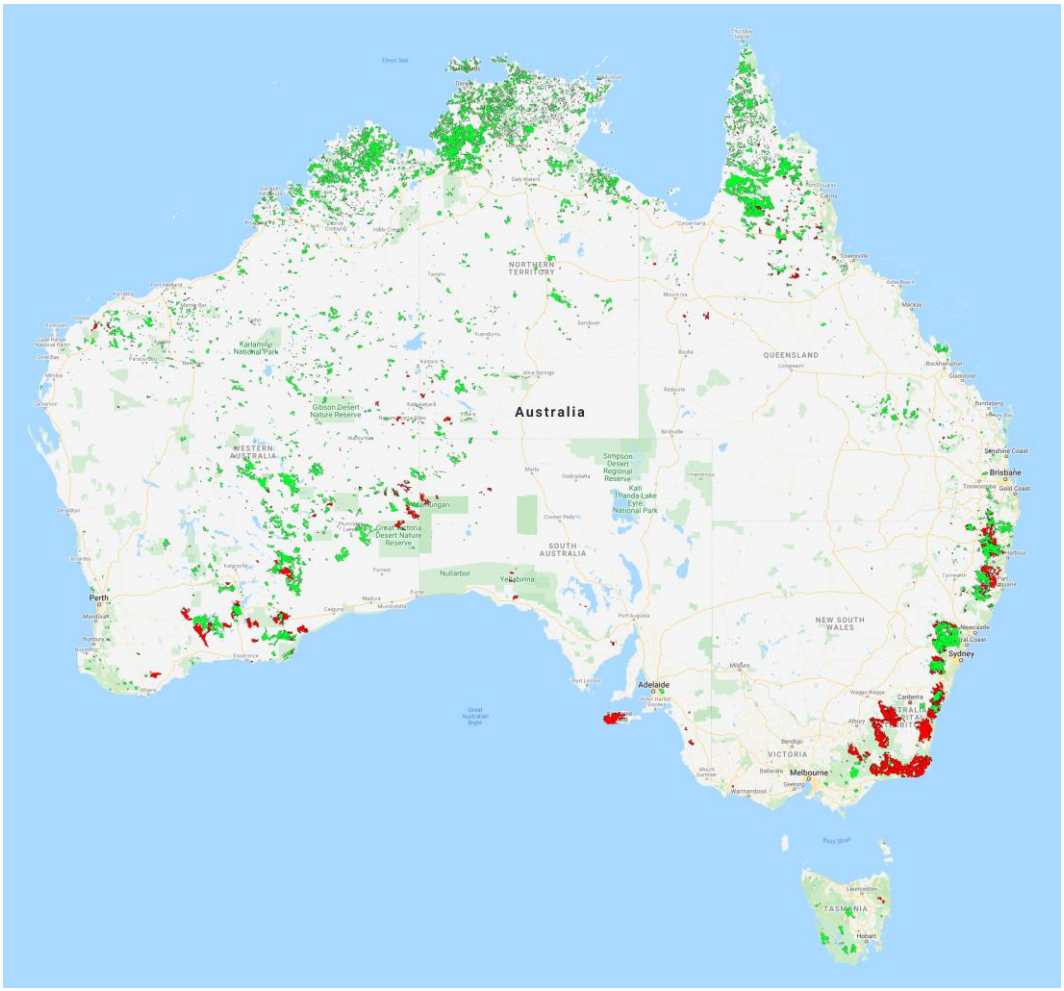

Figure 5.1 Location of Australian fires during this year (red) and last year (green). Map based on data captured from https://myfirewatch.landgate.wa.gov.au/map.html on 2020-02-18.

The Australian fires (Figure 5.1) have caused the death of 25 people (mostly in New South Wales) and destroyed 2500 buildings in six States. More than half of all Australians have been directly affected through respiratory problems. Recent estimates put the burnt area at 10.7 million hectares. This includes mostly “forest and bush” but in a country where much grazing of sheep takes place on “natural pastures”, it is difficult to define the loss of “agricultural areas.” Some sources state that agricultural land makes up 14% of total area burnt, and that 9% of the national cattle herd and 12% per cent of the national sheep flock live in areas impacted by the fires. Mercado, an agricultural market analyst company estimates that 8.6 million head of sheep and 2.3 million cattle live in areas impacted by the bushfires across Victoria and New South Wales.

In addition to farm infrastructure, the Australian Agriculture Ministry mentioned that stock losses probably exceed 100,000, as farmers around the country begin to assess the fires' impacts to their properties and livestock. This compares with livestock numbers (from FAOSTAT) of 400,000 for sheep and 2 million for beef cattle. The economic damage is still being assessed but is likely to exceed 3 billion US$.

In the immediate future, the dairy industry and live animal and meat exports will be affected. Reports also stress longer term effects linked with increased stream flow (and resulting loss of water) do to reduced vegetation as well as water pollution due to ashes.

Cold wave

Unusually severe winter conditions and abundant snowfall have been reported from several countries in western Asia during January, including Pakistan, Afghanistan and Iran. In Pakistan, the cold wave claimed 109 lives; Azad Jammu-Kashmir (AZK) and Balochistan were hit hardest. On 10 January as many as 700 villages in AJK were inaccessible. According to the National Disaster Management Authority (NDMA) 19 people have died in avalanches and 49 in collapsed buildings in Muzaffarabad (AZK).

During the same period, Afghanistan suffered from snow, floods and avalanches, mostly in the southern Provinces of Helmand, Kandahar, Zabul and Uruzgan and in the Center and West: Laghman, Herat, Badghis, Ghor, Daykundi, Bamyan and Baghlan Provinces. Houses were damaged or destroyed and people had to be helped to relocate by the Afghan Red Crescent Society (ARCS).

Floods

Heavy and widespread floods have affected close to fifteen African countries in mostly unrelated events as rainy seasons do not coincide in west, central, eastern and southern Africa. On other continents, floods are essentially reported from Indonesia and isolated locations in south America, which are not included. Since the timing of the floods coincides with the respective rainy seasons, this provides a simple, albeit somewhat schematic way to structure the narrative below.

Central-west Africa

October and early November floods occurred at the end of the west-African monsoon season in the Sahel and some adjacent central African areas. This includes essentially Chad, Nigeria and the Central African Republic. In some areas, precipitation excesses started well before the current reporting period, as in Chad, where heavy rainfall was recorded between July and October in several provinces. Almost 200,000 people were affected, about half of them in Mayo-Kebbi Est Region along the Logone River near the Cameroon border, resulting in destroyed houses and loss of life. In neighbouring Nigeria, abundant precipitation from September caused high water flows in the Niger and Benue rivers to the extent that 32 of 36 States and the Federal Capital Territory were severely affected at the beginning of October. The heaviest downpours between August and October affected an estimated 200,000 people in the States of Borno, Adamawa and Yobe. Rainfall continuing until November, well into the northern dry season, led to flash floods and prevented the flow of humanitarian assistance required by Boko Haram activity in Borno and Adamawa States. Somewhat similar climatic conditions prevailed the Central African Republic between late October and mid-November, to the extent that government declared a natural catastrophe on 25 October and issued an appeal for international assistance. By mid-December, close to 100,000 people suffered from the floods, which also affected the capital Bangui. At least 10,000 houses were lost.

Horn of Africa

Heavy precipitation leading to damage and direct and indirect suffering is also reported across much of the Horn of Africa, at different points in time ranging from October (Somalia, Kenya, Uganda) to

November (Somalia, Kenya, Ethiopia, south Sudan) to December (Uganda, Sudan), where large numbers of internally and internationally displaced people are particularly exposed.

At the end of October, floods, mud and landslides affected border areas with Kenya in Uganda, especially in the districts of Balambuli and Butaleja. In South Sudan, intense seasonal rains destroyed shelters and infrastructure and 420,000 people have been displaced, creating added constraints to humanitarian assistance. In Kenya, seasonable but intense short rains in October triggered landslides, flash floods and floods in 29 counties. Close to 200,000 people were affected and just fewer than 20,000 were displaced. Mandera, Wajir, Marsabit, and Turkana counties suffered most as the communications infrastructure was damaged and access to services reduced. South Sudan had unusually heavy rain from September to the extent that the government had to declare a state of emergency in eight States at the end of October, including Eastern Equatoria, Central, Jonglei, Lakes, Northern Bahr el Ghazal, Unity, Upper Nile, and Warrap. According to UN OCHA, more than 600,000 people were in need of immediate humanitarian assistance.

At the beginning of December Uganda and South Sudan again suffered heavy rains causing floods and landslides, cutting some major roads.

Excess precipitation that often started in October was reported during the first half of November in Somalia and Ethiopia, the easternmost countries in the Horn that are also linked by the fact that heavy rains in Ethiopian highlands eventually reach the Shabelle and Juba rivers in Somalia and increase their water levels. About 300000 people were displaced.

Southern Africa, Tanzania and Madagascar

The region is currently at the peak of its summer (maize) season. About 70% of Angolan Provinces recorded excess precipitation that affected more than 10,000 people, damaging thousands of houses and killing 41 during December and early January. In Mozambique, late January floods left 28 dead and disrupted the lives of 60000, especially in Zambezia, Cabo Delgado and Sofala Provinces. Lindi Region in Tanzania, which borders Cabo Delgado, lost three people due to floods, which also left 5000 homeless. Large scale Malagasy floods also occurred late in January, killing 31 and displacing 16,000 people, inundating 10,000 homes and destroying about 50.

Indonesia

At the very end of December, seasonable but excessive monsoons lead to floods in 74 districts of West Java, Banten, and Djakarta provinces. The floods were compounded by landslides, high tides and debris left behind by the water. About 70 people were left dead and close to 30,000 were displaced and had to be accommodated in emergency shelters. At the end of January 7 people were killed by floods in Sumatra while others were injured as Aek Sirahar river flowed over.

Desert locust outbreak

Largely brought about by above-average rainfall in arid areas (see “Floods” above), desert locust outbreaks currently affect the Horn of Africa and Pakistan, causing loss of crops and pastures and endangering the livelihoods of crop and livestock farmers. FAO stresses that desert locusts are considered the most destructive migratory pest in the world and that a small swarm covering one square kilometre can eat the same amount of food in one day as 35,000 people. The locust infestation in Africa is now reportedly FAO’s top priority (Figure 5.2).

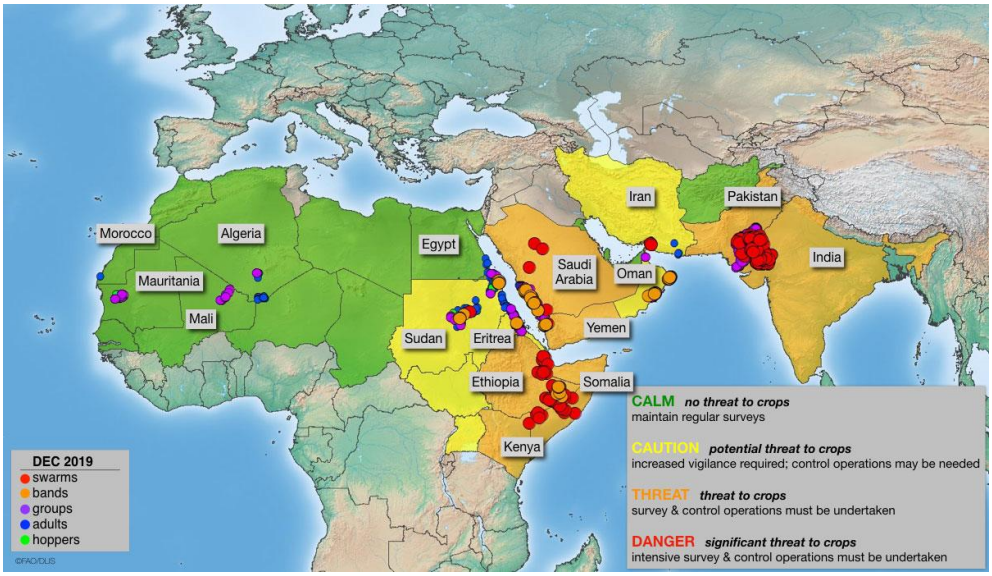

Figure 5.2. Desert Locust risk map as for December 2019 issued on 6 January 2020 by FAO. Source of image: http://www.fao.org/ag/locusts/common/ecg/2518/en/DLrisk495e.jpg

In Somalia, at least 70,000 hectares of land have been infested so far, primarily in Gadung, Puntland, and Somaliland. In Ethiopia, locust presence has been reported in the regions of Afar, Amhara, Dire-Dawa, Oromia, Somali, and Tigray. In Kenya, the outbreak is reportedly the worst in 70 years, with swarms 60 km long and 40 km wide in the north of the country. Locust populations started developing in July 2019 due to favourable environmental conditions and the limited control capacity of countries. Djibouti, Eritrea, and Sudan have also reported swarms. Breeding of the locusts is projected to intensify into mid-2020 (with populations increasing up to 400 times) and to expand internationally if no measures are taken. They could reach Iran and India, all the more so since Pakistan is also experiencing a locust infestation assessed as “the worst since 1990”. The Chamber of Agriculture estimates that up to 40% of crops may have been destroyed, including wheat, vegetables and cotton, threatening the livelihoods of many farmers.

On 30 January FAO issued an appeal to the international community to donate 76 million US$ required to tackle the outbreak in Ethiopia, Somali, Kenya, Djibouti and Eritrea and prevent its extension to Oman, Saudi Arabia, Sudan, Yemen and beyond.

By integration of up-to-date multi-source remote sensing data, agro-climatic information till the end of January 2020, CropWatch assesses the impact of Desert locusts in Ethiopia, Kenya, Somalia, Pakistan, and India. The impact of the Desert locusts on cereal production in Horn of Africa and South-Asia is limited, but locusts damaged rangeland and orchards and threated the livestock in those countries.

Since June 2019, desert locusts have continued to breed and spread. The monitoring results using high-resolution remote sensing data show that the impacts are mainly concentrated in Ethiopia, Kenya, Somalia, Pakistan, and India.

In Ethiopia, most of the maize had been harvested as the locusts pass through, so desert locusts had no impact on the country's maize production. Nevertheless, in mid-to-late November 2019, in some areas of Ethiopia, 2.4% of the country's wheat-growing area was affected by desert locust swathes, mainly in eastern Amhara region, eastern Oromia region and central to north of Southern Nations, Nationalities, and Peoples' Region (Southern Region). Figure 1 shows the proportion of wheat affected by locusts in various regions in Ethiopia, of which the eastern part of Amhara Region is the main wheat-producing region, but the overall proportion of affected wheat is less than 1%. About 16.9% of wheat fields in the Gamo Gofa zone in southern region was affected by locusts, although it is not the major wheat producing

area. Ethiopia's national wheat production is predicted at 1% drop from year previous season, and desert locusts had limited impact on national wheat production.

Pastures in Somalia were damaged by desert locusts, which threats livestock. Although the rainfall in Somalia's pastoral areas has increased significantly by 78% over the past four months (October 2019 to January 2020), the ravages of desert locusts had a devastating impact on pastures, the greenness of rangelands in Bay and Jubbada Dhexe drop by 9.2% and 4.1% respectively in late November when locusts passed through. The spread of locusts is curbing the recovery of pasture lands from early dry conditions.

Desert locusts entered in Kenya from southern Ethiopia and Somalia in late December 2019 to early January 2020. Since the harvesting of maize during long rainy season already concluded, locusts had a limited impact on maize outputs. However, local pastures were affected by locust plagues. The most severely damaged rangelands were observed in Turkana and Wajir in northern Kenya where the greenness of pastures dropped by 4.9% and 4.2%. If locusts further spreed to southern directly, they will also threat maize production during short rainy season.

India and Pakistan were both affected by desert locusts in the second half of 2019, but the impact was concentrated in the Rajasthan of India and the northern part of Sindh province in Pakistan, which are not core wheat producing areas in both countries. Wheat production in both countries increased by 4%. However, substantial losses on pasture in Nawabshah and orchards in Hyderabad, Tando Allahyar, Matiari, and Mirpurkhas were observed. About 8.4% of decline in greenness in the above mentioned zones was caused before of desert locusts.

At present, proper measures to control the desert locusts in both countries are undergoing. The areas affected by desert locust are currently in dry season which will prevent the reproduction and further spread of desert locusts.

Cyclones and tropical depressions

Several relatively weak depressions and cyclones are not covered in detail below. They include mostly Nakri (early November) which affected Luzon (Philippines) through heavy rainfall, causing about 15 deaths and damage amounting to about 35 million US$; and Belna (early to mid-December) which made landfall in Soalala district of Boeny Region on the western coast of Madagascar. Damage and casualties were limited.

Matmo/Bulbul, early November; Vietnam, India, Bangladesh

Tropical depression Matmo formed over the South China Sea on 29 October then crossed south-east Asia, losing power and releasing abundant precipitation on the way, and reformed over the Bay of Bengal as a cyclonic storm (Bulbul) during the first days of November. Although the different phases of the depression affected Thailand, Myanmar, Andaman and Nicobar Islands, most damage occurred in Vietnam, India and Bangladesh, when wind gusts reached 120 km/h. The Central Steering Committee for Natural Disaster Prevention and Control of Vietnam reported 179 houses destroyed and 2,314 buildings damaged in the Provinces of Quang Ngai, Binh Dinh, Phu Yen, Gia Lai and Thua Thien Hue. One person was reported missing and 20,000 were displaced. In north-east India, at least 12 people died between West Bengal and Odisha States, where 26,000 houses were damaged. In Bangladesh, mostly in Khulna and Bagerhat Districts, about 30 people died (most of them fishermen) and 17,000 houses have been damaged.

The total damage is put at about 3.5 billion US$ with heavy losses in the agricultural sector in Bangladesh through flooding of cropland and shrimp enclosures. Impact estimates vary significantly among sources.

Some sources estimate that 14% of the country's cropland was affected (just under 300,000 hectares), resulting in the loss of about 100,000 tons of crop. Reliefweb lists flooded cropland in Barguna (55 thousand hectares), Patuakhali (28) and Satkhira (16) districts, with less than 10 in Khulna, Bagerhat and Bhola Districts (total: 120 thousand hectares) and a value of 31 million US$. Shrimp enclosures also suffered.

Tisoy (or Kammuri), late November-early December), Philippines

At the beginning of December, typhoon Tisoy (international name: Kammuri) repeatedly made landfall from 2 December, with strong winds (gusts up to 230 km/H) and rain, resulting in flooding. Preliminary impact assessments issued by mid-December by the National Disaster Risk Reduction and Management Council (NDRRMC) report that Tisoy affected 5 regions and close to 2 million people. The Department of Agriculture estimates of losses in the agriculture sector (crops, freshwater and marine) at close to 60 million US$, of which about half results from damage to high-value crops (HVC) like mango, bananas and papayas, while affecting lives and income of some 40,000 farmers in five regions. With early harvest of crops in several areas anticipated to be on the path of the typhoon, greater damage was to a large extent prevented. For example in Nabua, Camarines Sur, 70 per cent of rice was already harvested before the typhoon stroke. Nevertheless, 14,600 hectares of land in Calabarzon and Bicol Region was damaged, with an estimated production loss of some 18,500 tons.

Phanfone (Ursula in the Philippines), mid to late December; Philippines

Typhoon Phanfone made its first landfall on 23 December over the eastern Visayas, affecting close to three million people regions in regions IV-B (now referred to as MIMAROPA or Southwestern Tagalog Region), V or Bicol, VI or Western Visayas, VII or Central Visayas, VIII or Eastern Visayas and XIII (Caraga Region). Phanfone has destroyed more than 60,000 houses and damaged about 10 times more. More than 90% of the destruction has been recorded in two regions: VI (Western Visayas: East Java and Bali) and especially VIII (the five provinces of West and East Nusa Tenggara, West, South and Southeast Sulawesi) where more than 50% of the population was affected. Region VIII was severely affected by Typhoon Haiyan in 2013 (refer to February 2014 CropWatch Bulletin, http://www.cropwatch.com.cn/htm/en/files/2014241647486651.pdf, where the typhoon is covered in detail.)

Phanfone "hopped islands" in repeated landfalls between 24 and 25 December, leaving 57 dead 369 injured and more than 3 millions affected, more than half a million houses damaged. The total damage reached about 70 million US$ of which 21 in agriculture. For the Southwestern Tagalog Region, Bicol, Western, Central and Eastern Visayas the agricultural damage is distributed about equally between infrastructure and production loss for rice, maize, fisheries. OCHA reported at the end of December that the majority of agricultural losses are in the fisheries sector, threatening the livelihoods of 43,000 fisherfolk through damage to fishponds, fish cages and pens, fishing boats and seaweed farming.

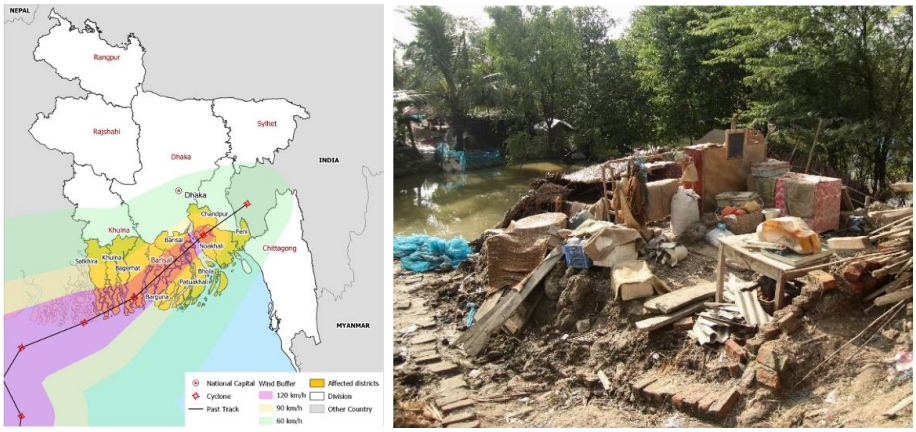

Figure 5.3. Track of Very Severe Cyclonic Storm Bulbul over Bangladesh on 9 November 2019 (left) and damaged houses in Satkhira district. Map issued on 12 November by the International Federation of Red Cross and Red Crescent Societies and quoted by https://reliefweb.int/sites/reliefweb.int/files/resources/MDRBD023do.pdf; damage photograph by IFRC, https://reliefweb.int/sites/reliefweb.int/files/resources/MDRBD023do.pdf.

Volcanic eruptions

Volcanic eruptions receive usually limited attention in the CropWatch disaster overviews as their impact on agriculture tends to be limited. However, the Taal eruption in the Philippines from 12 January produced large amounts of ash which reached Manila (100 km away) and led to the precautionary evacuation of populations from municipalities south-west and west of the volcano (covering a 14 km "danger zone"), because of the high risk of a hazardous explosive eruption (Figure 5.4). Large ash plumes have destroyed homes, killed livestock and caused an increase in respiratory diseases. Close to 100,000 families (just under 400,000 people) had been affected at the end of January when the risk was downgraded from level 4 (out of 5) to 3.

According to the Ministry of Agriculture the losses have exceeded 60 million US$, affecting 15,790 hectares and about 2000 farm animals, mostly in Batangas, Cavite and Laguna provinces (Calabarzon, also referred to as Region IV-A, southern-central Luzon island). High value crops (HVC) were affected, especially coffee, cacao, pineapple and other fruits and vegetables, in addition to maize, rice, coconut fish farms (mostly Tilapia). In terms of losses, fisheries were the most affected sector, with an estimated loss of 15,000 tons of product. On 24 January, the National Disaster Risk Reduction and Management Council (NDRRMC) estimated the damage (million US$ equivalent) at 1.8 for maize, 0.1 for rice, 27.6 for HVC, 2.5 for livestock and 31.7 for fisheries.

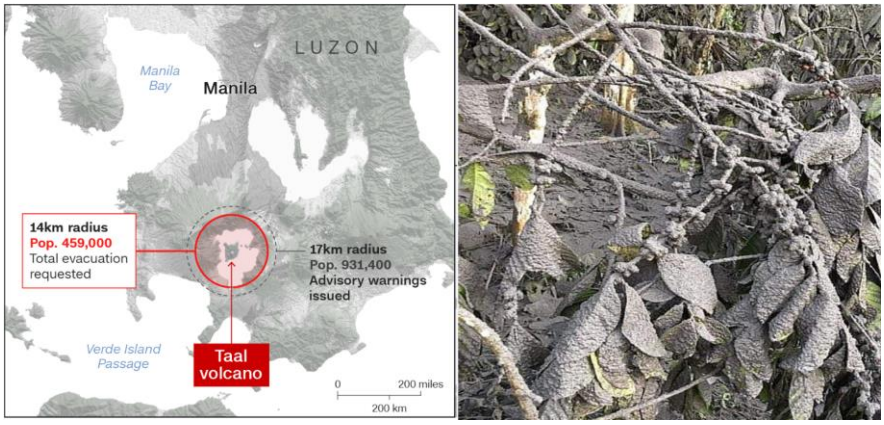

Figure 5.4. Location of Taal on south-western Luzon and coffee plant covered with volcanic dust in Laguna Province. The map was prepared by https://edition.cnn.com/2020/01/15/asia/philippines-taal-volcano-animals-shelters-intl-hnk/index.html based on Philippines Government and UNOCHA data. Source of coffee plant: http://www.da.gov.ph/agri-damage-from-taal-eruption-reaches-php3b/.

5.3 Update on El Niño

Neutral El Nino condition prevails across the Pacific Ocean continuously. Figure 5.5 illustrates the behavior of the standard Southern Oscillation Index (SOI) of the Australian Bureau of Meteorology (BOM) from January 2019 to January 2020 [1]. 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 this monitoring period, SOI decreased from -5.6 in October to -9.3 in November, then increased gradually to -5.5 in December, further to +1.3 in January, 2020, indicating a neutral El Nino situation. The sea surface temperature anomalies in January 2020 for NINO3, NINO3.4, and NINO4 regions were +0.3°C, +0.5°C, and +0.9°C, respectively, somewhat warmer than the 1961-1990 average according to BOM (see Figure 5.6-5.7) [2-3]. Both BOM and NOAA conjecture that the warmer condition indicates a neutral El Niño [4]. CropWatch will keep monitoring the situation.

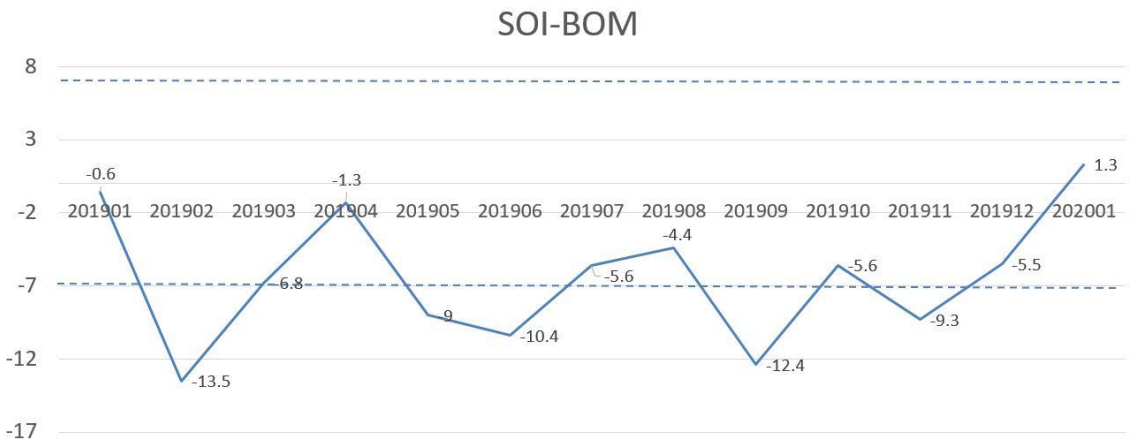

Figure 5.5. Monthly SOI-BOM time series from October 2018 to October 2019

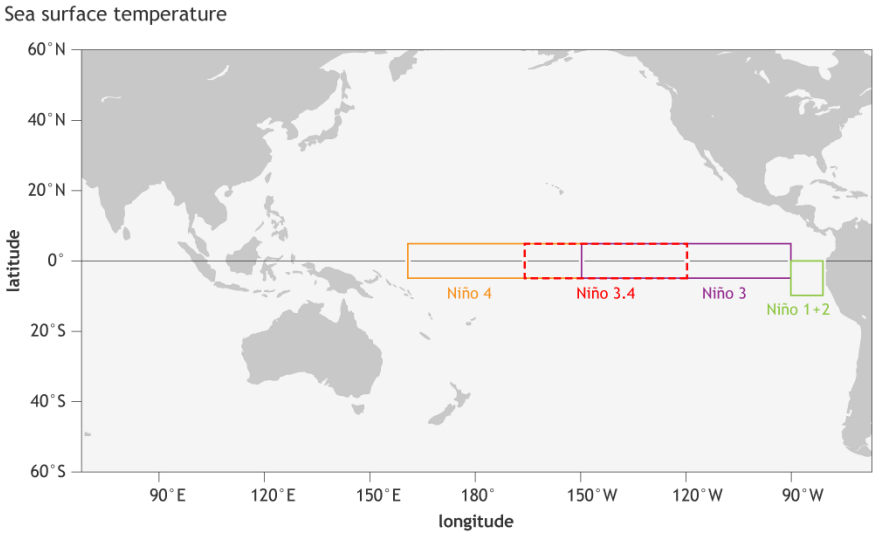

Figure 5.6 Map of NINO Region

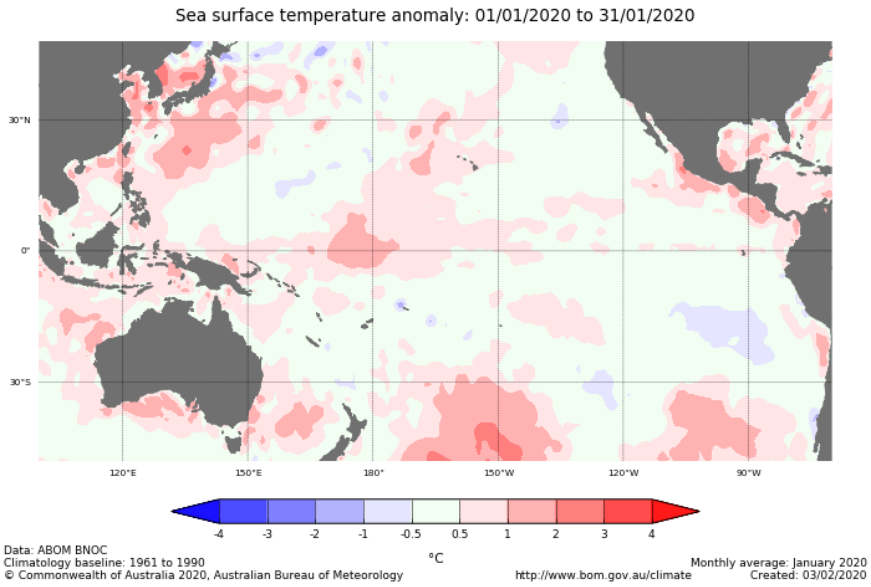

Figure 5.7. July 2019 sea surface temperature departure from the 1961-1990 average

Main Sources:

[1] **http://www.bom.gov.au/climate/current/soi2.shtml**

[2] **https://www.climate.gov/sites/default/files/Fig3_ENSOindices_SST_large.png**

[3] **http://www.bom.gov.au/climate/enso/wrap-up/archive/20200204.ssta_pacific_monthly.png?popup**

[4] **www.climate.gov/enso**