Chapter 5. Focus and perspectives

This focus section complements CropWatch analyses presented in chapters 1 through 4 by presenting additional information about topics of interest to global agriculture. Section 5.1 summarizes disaster events that took place during the reporting period for this bulletin. Sections 5.2 and 5.3 respectively focus on agricultural developments in Africa (Section 5.2) and provide an update on El Nino (5.3).

5.1 Disasters

The price of disasters

Globally, more than 90% of disasters are due to natural geophysical causes. According to Swiss Re, one of the major global reinsurance companies, the total worldwide economic loss from disasters amounted to US$113 billion in 2014, including US$34 billion of insured losses. About eleven thousand people lost their lives.

Although the numbers are large, 2014 actually witnessed a 25% decrease in insured disaster losses compared with 2013, and a 50% reduction in terms of loss of life. 2014 was also an improvement over the average of the previous ten years.

Insured losses are losses covered by insurance, which is to say that only one third of losses due to disasters are actually compensated. It also happens that the sum of all micro-disasters in all sectors by far exceeds the losses due to the large, spectacular disasters. As a result, losses due to unfavorable natural conditions are much larger than losses estimated by insurers. In the area of agriculture, micro-disasters include, among others, isolated pockets of drought, mild pest and disease attacks, hail, and frost. Floods, which typically affect valley bottoms, are associated with water logging and root asphyxiation in much of the catchment basins. While floods get the attention of the media, it is the inconspicuous water logging that causes volumes of production losses far larger than the losses due to actual submersion of fields.

According to the databases maintained by CRED (Centre for Research on the Epidemiology of Disasters) the largest loss due to a disaster in 2014 was caused by the floods that affected Jammu and Kashmir, Azad Kashmir, Gilgit-Baltistan, and Punjab in India and Pakistan in September, with effects extending well into the current CropWatch reporting period. CRED and other sources estimate the damage at US$16 billion, with 300,000 people affected in about 3000 villages.

The second most costly disaster resulted from the impact of cyclone Hudhud in east India in October. CRED puts the total loss at US$7 billion, with 920,000 people affected. According to the Financial Express of India, the combined “loss” to insurance companies due to Jammu and Kashmir floods and Hudhud reaches 40,000 million rupees, which is equivalent to approximately US$650 million. The “insured loss” for these event appears to be only 3% of the total loss, suggesting that the losses of this disaster are mostly carried by poor people, who suffer the largest relative losses and are generally uninsured, with only access to some temporary assistance to support them.

In addition to cyclone Hudhud in October, other major disasters during the current CropWatch reporting period include floods in east and southeast Africa, more cyclones, droughts, floods and landslides, and severe winter conditions. Many of these so called “minor” disasters can only be called as such in terms of global economic loss, not in terms of local human suffering.

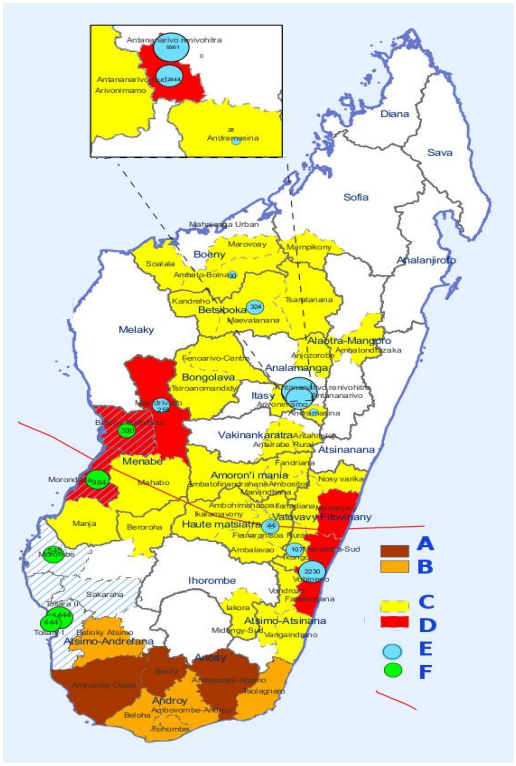
Cyclones

As already reported in the recent November 2014 bulletin, cyclone Hudhud was the most destructive cyclone that has ever affected India. Most damage occurred in coastal Andhra Pradesh and Odisha, and

crops that suffered most include kharif sugarcane, rice, and pulses still growing at the time of the event. The latest official Indian estimates of total losses due to Hudhud amount to US$3.5 billion, which is only half of the amount listed by CRED[1]. These Indian estimates include losses of US$150 million in agriculture (238,000 hectares lost) and US$220 million in horticulture (from 88,000 hectares damaged to varying degrees). Altogether, the loss to the sector is 10% of the total loss. Indian sources list Hudhud as the main factor behind the country's drop in national rice production this season and as a significant contributing factor for the drop in maize output[2]. In Odisha, for example, it is estimated that 250,000 hectares were directly affected while 50,000 hectares lost most than 50% of yield.

Three additional cyclones deserve mentioning, two for the Philippines and one for Madagascar (see also floods and landslides below). In the Philippines, typhoon Hagupit (known locally as Ruby) first made landfall in Eastern Samar province on 6 December 2014 and again on 7 December in Masbate province. Impacts included 18 casualties and US$114 million in losses, most of it in agriculture (US$82 million). The second tropical storm, known as either Jangmi or Seniang, crossed the center of the country on the very last days of December, causing 66 deaths but relatively little damage to infrastructure. In Madagascar, cyclone Chedza affected large areas (figure 5.1).

Figure 5.1.
Situation in Madagascar on 15 February 2015.



Source: OCHA and Reliefweb.int.
Note: A and B: Districts affected by drought, with highest risk in A; C and D: Districts affected by Chedza ,with D indicating the most affected districts; and E and F: Displaced people due to storm Chedza (E, blue) and Fundi (F, green). The red line indicates the track of Chedza. Hatched areas are those affected by Fundi. Fundi was a moderate tropical storm that occurred from 5 to 9 February 2015.

Drought

Significant drought was reported from the eastern Santa Cruz department in Bolivia at the end of October; according to early estimates about 20,000 hectares were affected. Australia reported wildfires resulting from drought at the beginning of January.

Floods and landslides

Heavy rains started in September in eastern Africa, causing floods in September and October in Ethiopia, in particular in its Afar, SNNP and Somali regions. According to the UN Office for the Coordination of Humanitarian Affairs (OCHA), by the end of 2014, 320,000 people had been displaced by flooding. In Somalia, heavy rains in the south-central region, upper parts of the Shabelle basin, and on the Somali-Ethiopian border caused floods of the Shabelle and Juba rivers. According to ReliefWeb, "many" people were in need of humanitarian assistance.

Floods and landslides were also reported from a number of locations on all continents. In Europe, Switzerland (in November) and especially Slovenia (in October) were affected, as were France, Greece, Italy, and Albania. The European parliament has approved an aid packet in the amount of 127 million Euros.

[1] The different estimates result from methodological differences, for example whether or not loss of life and medical expenses are included and whether or not "agriculture" covers such items as livestock, inland fisheries, and marine fisheries. The mentioning of the affected area in the Indian estimates confirms that the losses are only those that occurred in field crops. Indeed, preliminary damage assessments list losses of US$189 million in field crops; US$267 million in horticulture; US$6.4 million in farm animals and poultry; US$13.4 million in fisheries; and US$0.3 million in silk farming. The estimates excluded damage to agricultural infrastructure.
[2] Estimated at -13% for maize and -1% for rice by CropWatch; refer to November 2014 bulletin.

The Caribbean and neighboring areas (Haiti, the Dominican Republic, Puerto Rico, and Colombia) suffered from rainfall at the beginning of October. In Colombia, the intense precipitation continued into 2015, making thousands of people homeless and killing 38, especially in Antioquia, Valle de Cauca, and Cauca states.

In Asia, floods and landslides took place in China's Yunnan province in October. In November and December excess precipitation created havoc in Indonesia (Nanggroe, Aceh, Darussalam) where more than 120,000 people were temporarily displaced and 40,000 hectares of fish-ponds and 6,000 hectares of agricultural land were damaged. According to OCHA, accompanying landslides on the islands of Sumatra and Java killed at least 171 people between October and December. During the last dekad of December, floods were also reported from Malaysia (Kelantan) and Sri Lanka. In Sri Lanka, by early January, more than 1 million people had been affected in 22 districts, with 39 deaths reported.

The most serious floods in terms of casualties and other impacts during the reporting period were those that affected southeast and southern Africa in January 2015. Several hundreds of people lost their lives, and hundreds of thousands were rendered homeless in Malawi alone where the worst affected districts were Nsanje and Chikwawa in the southern area of the Lower Shire, Phalombe, and Zomba. Rains actually started in December and affected the countries between and including Zimbabwe and Madagascar across the Mozambique Channel. Crops, livestock and agricultural infrastructure were badly damaged. In Mozambique, flooding surpassed the government's capacity to respond to the emergency, according to Reliefweb. A total of 65,000 hectares of crops were destroyed, putting the food security of half a million people at risk in the coming months. In Zimbabwe, flooding affected mostly the provinces of Manicaland, Mashonaland Central, Mashonaland East, Mashonaland West, and Midlands. Finally, in Madagascar, the situation was exacerbated by tropical storm Chedza, which hit the country on 16 January.

Severe winter conditions

Cold spells with typical associated phenomena are reported from various parts of North America (in November) but mostly from several locations in Asia. In Nepal, blizzards and avalanches killed 32 people in October, while in Japan, in December, a heavy snowstorm killed six.

In north India, a cold wave on 25th December did not reach the freezing point, but with temperatures around 3°C nevertheless claimed 12 lives in an area where cold weather rarely occurs (the previous time was in 1991). In the Middle East—in Turkey, Lebanon, Syria, Jordan, and north Egypt—snowstorm Huda (also called Zeina) brought severe winter conditions with cold and snow, adding to the hardship of thousands and freezing several refugees to death in December. In Lebanon alone, one million people were affected, but many more suffered due to their precarious living conditions in refugee camps across the region.

5.2 New optimism for African agriculture?

Recent trends

Many African countries have recently achieved sizeable GDP improvements, with growth rates above 3% for 41 of Africa's 53 countries; Moreover, growth rates are even above 5% for 25 countries and above 7% for 9 countries (2010 data[3]). In few countries, however, did improving agricultural production significantly contribute to this growth. Among the countries with a GDP increase above 5%, the largest contribution of agriculture was achieved by Liberia (77%), followed by Chad (50%), Sierra Leone (49%), Tanzania (42%) and the Democratic Republic of Congo (37%). For most countries, the major contributor to GDP growth was the service sector.

Despite this relatively minor contribution of agriculture and partially driven by high prices after the 2008 crisis, some analysts have declared an "end to the pessimism" about African agriculture. This perspective

[3] http://en.wikipedia.org/wiki/List_of_African_countries_by_GDP_%28PPP%29_per_capita

was voiced in particular by the World Bank (2009) in a joint report with FAO about the "awakening of the sleeping giant" and in a report by Ferguson et al. (2011), in which Africa is dubbed "the other Eden."

These observations are in line with some recent successes with African agriculture in terms of production. As shown in table 5.1, since 2001 per capita productions of maize and rice (as paddy) in East and West Africa have increased by values comparable or larger than the world average. Wheat production per capita also grew significantly in these two regions, as well as in middle Africa. The most typical example is wheat in Nigeria, where wheat is grown as an irrigated dry season crop in the north between November and March. Even here, however, production remains low in absolute terms (about 60,000 tons), while the estimated national demand is at least 50 times larger (Magaji, 2012). Table 5.1 also illustrates that per capita potato output more than doubled in north and middle Africa, while cassava production rose 56% in North Africa, where the crop is used as animal feed and often compensates barley production deficits during unfavorable years.

Table 5.1. Percent change in per capita production of major food crops between 2001 and 2013.

		Africa					
	World	**Total**	**North**	**East**	**West**	**Middle**	**South**
Barley	−18	24	38	20	9	38	42
Maize	38	31	−4	41	51	32	21
Paddy	13	31	−18	43	69	29	−26
Wheat	7	6	18	53	100	92	−29
Other Cereals	−15	−13	−21	40	−30	31	−40
Total Cereal	14	12	3	41	3	32	10
Cassava	32	16	56	8	14	10	n.a.
Potatoes	4	69	114	61	54	122	21
Other R&T	−23	2	25	10	−6	22	3
Total R&T	3	15	103	16	4	13	17
Soybeans	30	63	−4	64	−11	72	436

Note: Data based on FAOSTAT data. "Other cereals" are based on the difference between "total cereals" and the sum of barley, maize, paddy, and wheat; similarly, other roots and tubers (R&T) were calculated by subtracting cassava and potato production amounts from total R&T. Percentages were obtained based on the linear trend of per capita production between 2001 and 2013. Refer to figure 5.2 for the definition of the regions.

Soybeans production increases are among the largest in the world, with a 64% increase in east Africa, 72% in middle Africa, and a more than fourfold increase in southern Africa, in particular South Africa. Per capita production drops affect mostly traditional drought staples (millets and sorghum), rice, and especially wheat in South Africa, where the low demand for wheat compared to maize and soybean has negatively affected production.

Despite these considerable increases in production for some crops, the continent is still very dependent on cereal imports. On the level of the continent, the dependency rate[4] is 30%, with the highest values of this rate in northern Africa (48%), followed by middle Africa (28%), and values close to 20% in southern Africa, western Africa and eastern Africa (20, 19 and 16 percent, respectively).

Could Africa join the major exporters?

For a few crops, world agriculture has been dominated by a limited number of major producers. This is in particular the case for maize (80% of exports from four major producers and 90% from eight) and soybean (80% from three countries; 90% from four). For rice (80% from five countries and 90% from ten) the situation is somewhat different because the major producers (China and India) are not the major exporters, but rather the major consumers. No African country plays any part as a top exporter of maize, or even as a top producer, with the exception of South Africa (11th producer, with about 1% of global production). In terms of production, South Africa is followed by Nigeria (13th), Egypt (17th), Ethiopia (20th), and Tanzania (24th), all with a share in global production well below 1%. Little doubt, however, exists that the situation is bound to change, though the change will likely take decades rather than years.

[4] Computed based on FAOSTAT data as the ratio in percent between imports/(imports + production).

Whether or not African countries can become major exporters, also depends on their own national consumption. The recent upward revision of African population projections (UN, 2013) foresees a fourfold population increase by 2100 compared with 2010, to reach 4.2 billion people (with 1.6 billion each in East and West Africa)—most earlier projections had the 2100 African population at just under two billions. Major increases are projected to take place in Nigeria, Tanzania, Niger, and the Congo, of which only Nigeria and Tanzania are significant producers for maize. This raises the risk of production increases being absorbed by national consumption, leading to situations not unlike the current case of rice in China and India characterized by local consumption and little exportable surplus. Indeed, the data reviewed by Alexandratos (2011) projects that 5.8 to 12.6% of people in Africa will still be undernourished by 2050.

Compared to other continents, ample room exists for the expansion of agriculture in Africa. Table 5.2 compares current land use with areas potentially available for agriculture according to the IIASA/FAO Global Agroecological Zones study (Fischer et al., 2002); it also compares the potential for growth of agricultural areas with projected increases in population.

Table 5.2. Comparison of current agricultural land use with available land by regions in Africa (million hectares)

	Current area with annual and perennial crops (A)	Area suitable for rainfed cereals (B)	Potential increase in cereal area (%) (C)	Area suitable for rainfed cultivation all crops (D)	Potential increase in area for all crops (%) (E)	Projected population increase (percentage)	
						By 2030	By 2050
North	48	75	56%	104	117%	29%	55%
East	75	199	165%	286	281%	71%	159%
West	101	126	25%	194	92%	69%	167%
Middle	28	185	561%	311	1011%	67%	153%
South	14	16	14%	41	193%	15%	27%
Africa	265	601	127%	936	253%	58%	132%
World	1548	2487	61%	3560	130%	22%	38%

Note: (A) Current areas of arable land with annual and perennial crops, 2010-2012 data from FAOSTAT; (B) Area suitable for rainfed cereals; (C) Potential increase in cereal area is calculated as ((B-A)/A)*100%; (D) Area suitable for rainfed cultivation if all crops are included, calculated as ((D-A)/A)*100%. Columns (B) and (D) are from tables 5.14 and 5.15 in Fischer et al. (2002). Projected percent population increases to 2030 and 2050 are based on data from FAOSTAT. The area of "available land" is a gross number, in the sense that uses other than agriculture (such as settlements, infrastructure, or protected areas) have not been considered. In some countries, actual available land areas may be lower by 10 to 30% compared with the listed values.

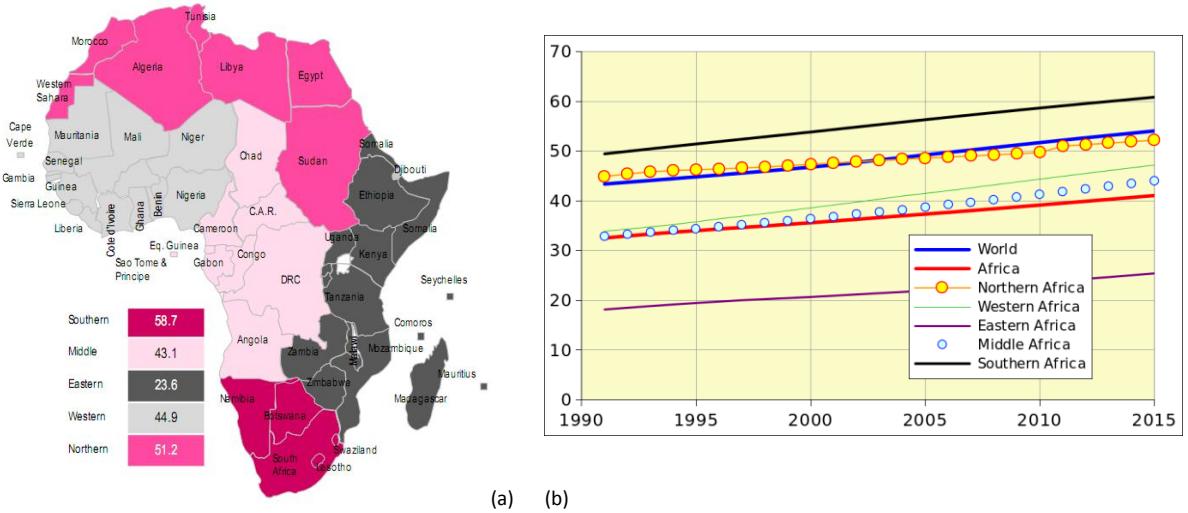
The table, of course, only shows a very crude comparison, as area change is only one of several components of production increase; other aspects, in particular yields, irrigation potential, and climate change impacts, have also been extensively studied (IAC 2004, 2006; You et al., 2010; Asenso-Okyere and Jemaneh, 2012). According to FAO data, from 1961 to 1999, production increases in sub-Saharan Africa were achieved by area increases, better yields, and cropping intensities exceeding 100%,with each of these three factors contributing about one third. It is foreseen that, during the period leading up to 2030, the share of yield for increasing production will rise to about 60% while the share of cropping intensity will drop to just 10%. This also shows that hypothetical production rises based on area increase alone are bound to be pessimistic.

Many regions in Africa do have a significant potential to increase their agricultural production for cereals and other crops. This includes maize in the whole continent, rice in middle and western Africa, and "other" cereals (including drought staples) in southern Africa (Fischer et al., 2002). The potential for increasing crop area and production is present in most of the continent (with the exception of the north), in particular in the middle.

Labor, “superfarms,” and development corridors

The availability of labor is also important for agricultural growth. Africa is currently the least urbanized continent, although with marked differences between the regions (figure 5.2a). The likely shortage of agricultural labor in rural areas that will follow increased urbanization (figure 5.2b) has been interpreted in contrasting ways by different authors. Collier and Dercon (2009) and Drechsler (2011) tend to see the

trend as an opportunity to move away from traditional smallholder agriculture and, perhaps paradoxically, thus reduce poverty in the continent. Migration to cities will stimulate the improvement of farm productivity, mostly through mechanization and modern techniques. It is open to debate, however, to what extent this will eventually benefit the people of Africa. Extreme options for a modernization of agriculture include the setup of large cooperatives or “superfarms,” an option seen as inevitable by Ferguson et al. (2011). Superfarms resulted essentially from “superinvestments.” These superinvestments are often perceived as a geopolitical as much as an agricultural development issue.



(a) (b)

Figure 5.2. Urbanized population for regions in Africa, map (a) and trends (b).

Note: (a) Percentage of urbanized population in 2010 (slightly modified from Ferguson et al., 2011); (b) Recent trends (data based on FAOSTAT).

It is clear that African agriculture needs large investments, but investments are needed as well in a number of supporting and related sectors directly aimed at "people", which may be much less appealing to “superinvestors.” For instance, in East Africa, where the population is projected to reach 1.6 billion in 2100, smallholders currently produce 75% of farm output—while also providing 75% of employment. While Benin (2012) concludes that, overall, many African governments are “serious about agriculture,” it is obvious that the challenges are huge.

A recent report by the African Development Bank (Salami et al., 2010) lists many bottlenecks to the development of commercial agriculture, including inadequate infrastructure and difficult access to credit and markets, not to mention severe land tenure constraints. Experiences from other parts of the world (such as from northeast Thailand and the Brazilian Cerrado) have shown that investment in “general” infrastructure (transports, harbors, and energy supply) is a prerequisite for creating favorable conditions for agricultural development (World Bank, 2009). Moreover, those experiences have shown that the results can be very spectacular, but that increasing food production for national consumption and export is a long-term project. It took about thirty years to multiply soybean production by hundred in Brazil, while cassava production (to be followed by other crops) grew tenfold in Thailand over a similar period.

Africa’s agricultural (and other) development will likely be best achieved in its limited and spatially organized areas dubbed “development corridors.” Two such corridors have received a fair amount of positive and negative media attention (Paul and Steinbrecher, 2013): the Southern Agricultural Growth Corridor of Tanzania (SAGCOT) and the Beira corridor in Mozambique. Both were established in 2010 and constitute attempts at developing infrastructure and people's capacity in whole regions, basically reproducing the Thai and Brazilian success stories.

Conclusion

In the wake of the 2008 high food price crisis and some substantial successes achieved in terms of GDP growth by several African countries (mostly in the services sector), the prospects of improved earnings

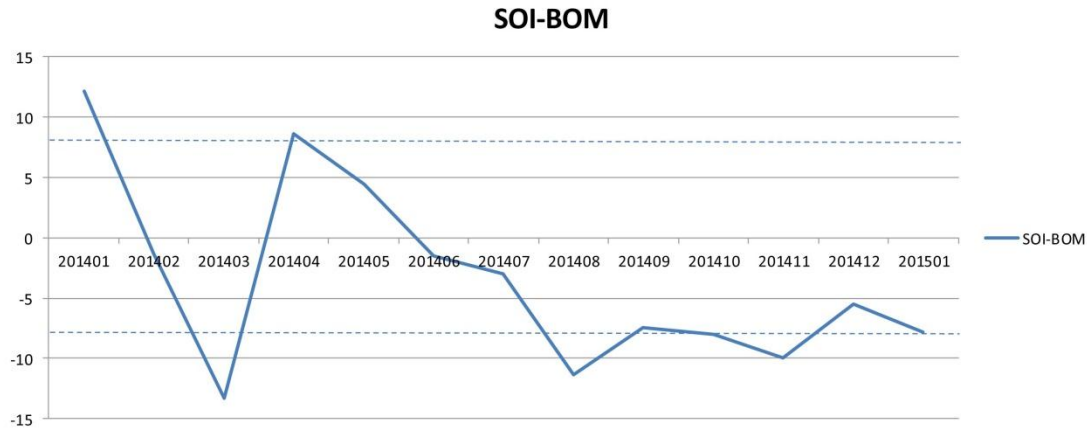
from agriculture have resulted in renewed attention being devoted to the continent by businesses and development agencies alike. It appears that the potential for improved agricultural production is really due to land availability and the low current level of development of agriculture in large areas of the continent, especially in the east, west and middle parts of the continent. But poverty and small-scale agriculture still dominate the landscape, and significant efforts will be needed to create the conditions (including the infrastructure) that will make African agriculture take off and contribute to feeding growing international demand, in addition to feeding itself.

The current "development corridors" that have been established in east and southeast Africa in 2010 are reminiscent of the mechanism which turned the Brazilian Cerrado and northeast Thailand into major food exporters, which took about thirty years. The very broad basis of partners in the initiatives can possibly ensure that the process does permanently lift farmers out of the poverty cycle, even if financial, institutional and societal constraints are severe.

5.3 El Nino

El Niño reports have turned to reporting a “neutral” condition during this monitored season. Figure 5.3 illustrates the behavior of the Southern Oscillation Index (SOI) of the Australian Bureau of Meteorology (BOM) from January 2014 to January 2015. Sustained negative values of SOI below -8 may indicate an EI Niño event, while sustained positive values above +8 are typical of La Niña. Values within the range (-8 to +8) indicate neutral conditions. During the current season, SOI fluctuated between -13.3 and +12.2 from January 2014 to April 2014. The index then dropped gradually until August and reached a value of -11.4. From August 2014 to January 2015, SOI fluctuated around the "inconclusive" value of -8.0 (in January 2015, SOI was at -7.8). Although the SOI was continuously low in the later half year of 2014 and beginning of January 2015, the ENSO tracker status of BOM is “Neutral” as of January 2015, as the SOI does not show sustained negative values below -8.

Figure 5.3. Monthly SOI time series from January 2014 to January 2015



Source: Australian Bureau of Meteorology (http://www.bom.gov.au/climate/glossary/soi.shtml)