

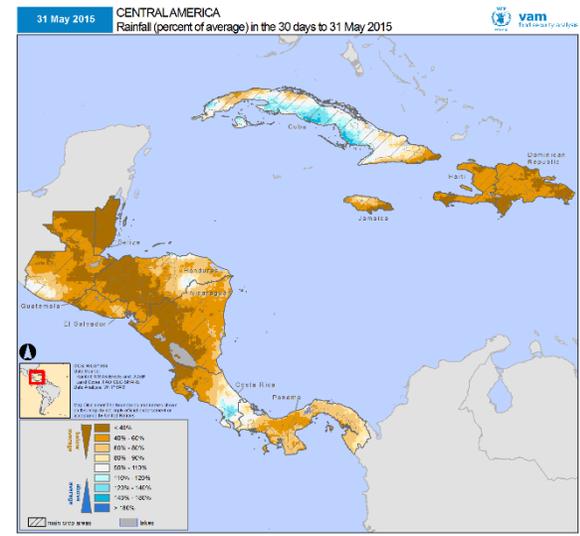
Central America: The 2015 Season



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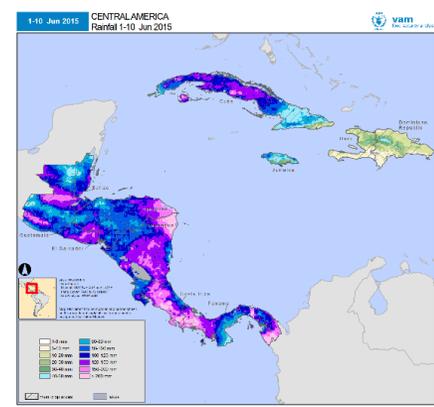
- The two growing seasons in Central America, *Primera* (taking place now) and *Postrera* (starting from August) will develop under an **evolving El Nino** event that will peak in late 2015 and may extend into early 2016. Historically, this region shows **strong linkages** between El Nino events and **seasonal rainfall deficits**.
- Significant negative impacts on the *Primera* season regional crop production are now unavoidable due to **continued seasonal rainfall deficits**, particularly across Guatemala, Salvador, Nicaragua and Panama.
- In **Haiti** (Hispaniola) rainfall deficits are even higher. Significant **negative impacts on crop production** are evident through signs of stressed vegetation.
- Seasonal forecasts for the *Postrera* season show a high likelihood of **below average rainfall**, raising the possibility that the region could face two consecutive poor growing seasons, adding to the lingering effects of the 2014 *Primera* season drought.



May rainfall as a percentage of the 20-year average. Orange and browns for drier than average, blue shades for wetter than average

A poor start to the season...

Rainfall was mostly below average across the region until the beginning of June. In May, a time when early crop development takes place was particularly dry, with large deficits dominant across the whole region.



Rainfall in June 1-10 (left) and June 11-20 (top). Blues shades for over 40mm, purples for over 120mm

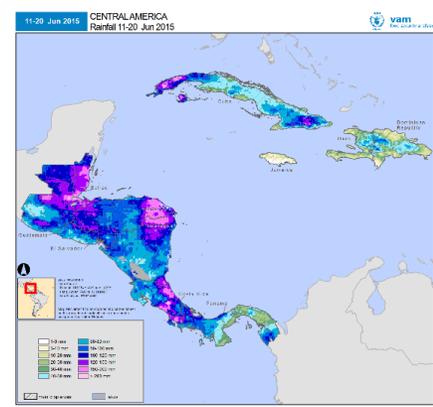
June brings short lived relief...

The first half of June brought better rainfall across most of the region. However, drier than average conditions returned in the second half, leading to continued rainfall deficits in Guatemala, Nicaragua and Panama.

In Haiti, conditions remained drier than average throughout June, resulting in even more intense seasonal rainfall deficits.



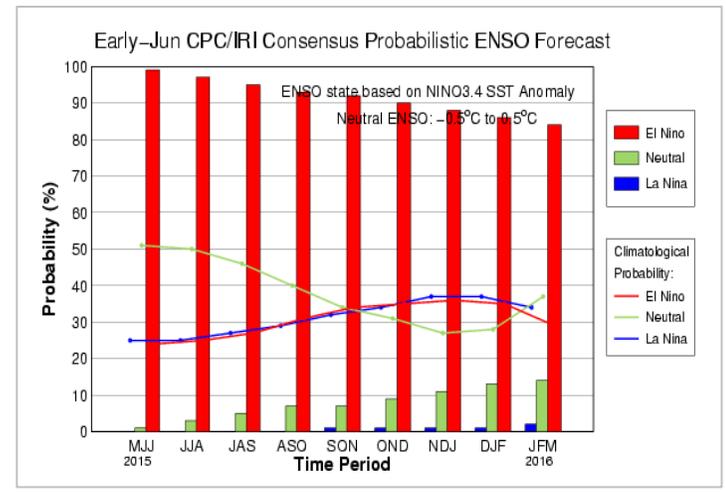
June rainfall as a percentage of the 20-year average. Orange and browns for drier than average, blue shades for wetter than average



El Nino will influence the remainder of 2015

The current Primera and the coming Postrera season will take place under a developing El Nino event.

Forecasts for the remainder of the year are pessimistic, indicating drier than average conditions as the most likely outcome for both seasons.



Probability of an El Nino developing (red bars) remain very high until early 2016

Current Status and near Future Perspectives



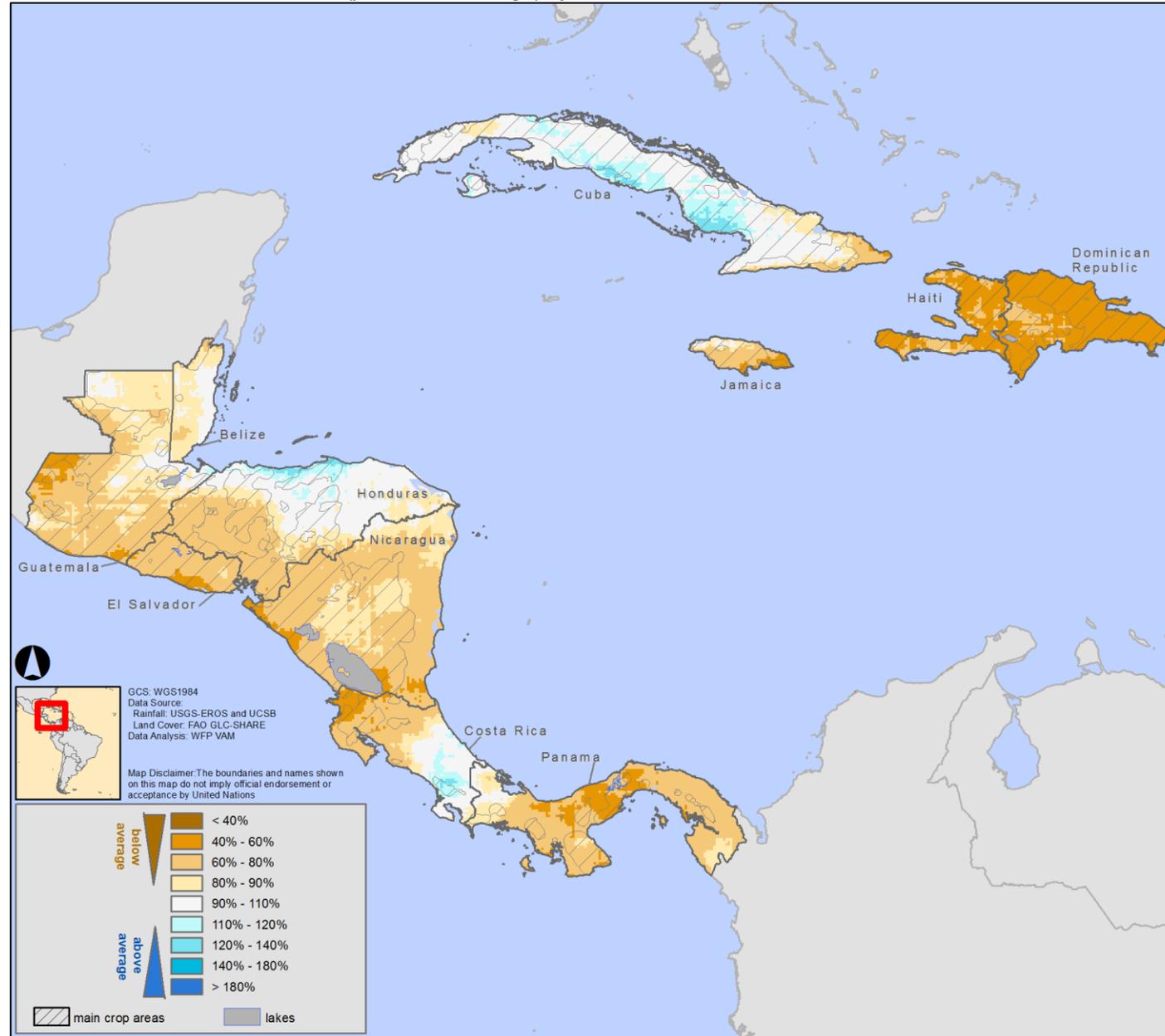
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CENTRAL AMERICA SEASONAL ANALYSIS – 2015

10 Jul 2015

CENTRAL AMERICA

Total Rainfall (percent of average) by 10 Jul 2015



Seasonal rainfall performance

Overall seasonal rainfall up to early July has been mostly below average across the region, except for Cuba and western Honduras.

In Hispaniola (Haiti and Dominican Republic) drier than average conditions have prevailed since the start of the agricultural season—seasonal rainfall is about 50 percent of the average. Significant negative impact on the main crop production is expected.

In Central America, rainfall deficits are more moderate—60-80 percent of the average. Drier than average conditions have prevailed throughout the season, except for short lived improvements in the first half of June. Worst affected areas include parts of Guatemala, Salvador, Nicaragua and Panama.

Early season rainfall deficits led to delays in the start of the first cropping season (*Primera*) and re-planting in places where the season had already started. Further losses will have accrued due to unfavourable mid season conditions.

Improved prospects for the *Primera* season depended on better rainfalls during July. However this has not materialised, possibly leading to an earlier than usual start of the mid-year dry period (*Canicula*). Negative impacts on regional crop production are increasingly likely. This is a significant development as the *Primera* season provides the bulk of the annual maize crop production.

Seasonal cumulative rainfall until early July 2015, as a percentage of the 20-year average.

Hashed pattern indicates main agricultural areas.

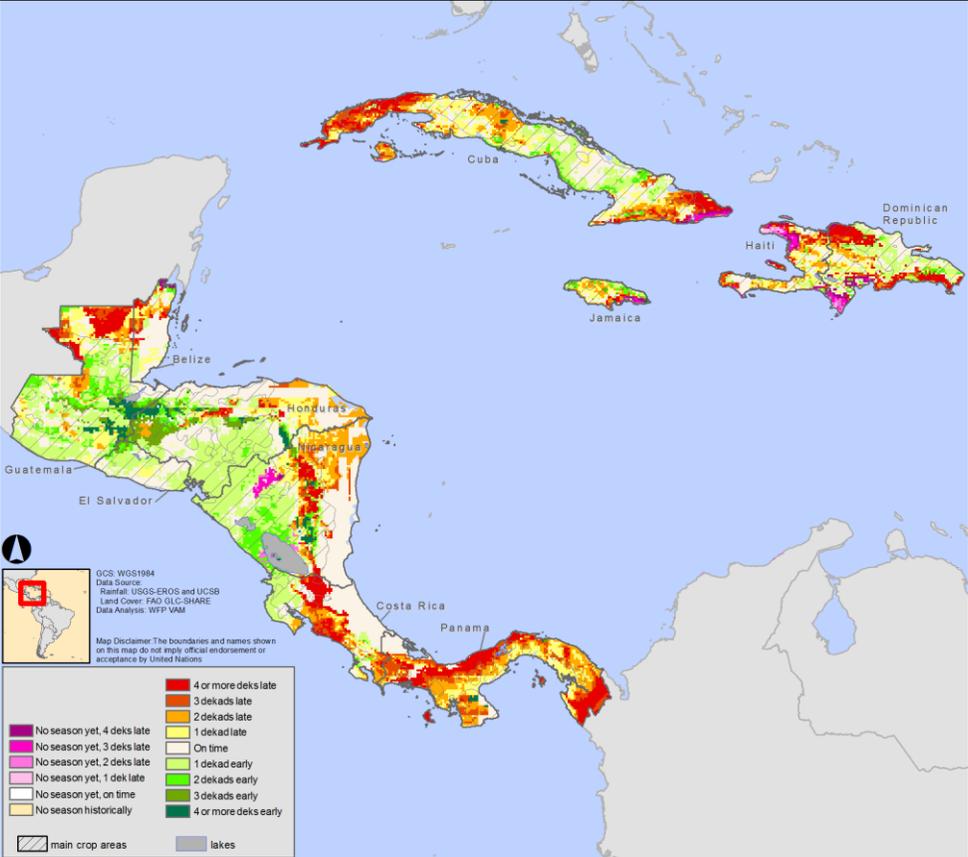
Brown shades indicate below-average rainfall; blue shades indicate above-average seasonal rainfall.

CENTRAL AMERICA SEASONAL ANALYSIS – 2015

26Jun-12Jul 2015 CENTRAL AMERICA
 NDVI (percent of average) 26Jun-12Jul 2015



31 May 2015 CENTRAL AMERICA
 Date of Onset of Growing Season (relative to average) by 31 May 2015



Left: late June 2015 Vegetation Index as a percentage of the 12-year average. Hashed pattern indicates main agricultural areas. Orange shades for below-average vegetation; green shades for above-average vegetation

Right: Variation in date of onset of season relative to average. Warm tones for delays, green shades for advances in the onset of suitable conditions for planting

Vegetation Status and Onset of Season

Persistence of drier than average conditions during the current season has led to a pattern of below average vegetation. This is particularly noticeable across Nicaragua, Honduras, Guatemala and particularly Hispaniola, where rainfall deficits have been much more severe and long lasting.

Delays in the start of the growing season are more evident in Panama and western Costa Rica, eastern and westernmost Cuba and Haiti. Even in places where the start of season was timely, pronounced May rainfall deficits caused widespread replanting.

The El Nino Event of 2015-2016

An El Nino event is officially active since March 2015. After remaining at relatively weak levels until May 2015, it is now intensifying and should peak in the last quarter of 2015.

Historically, the Central American region shows strong connections between El Nino events and seasonal rainfall deficits during core periods of the two cropping seasons (Primera and Postrera).

The *Primera* Season (March-July 2015)

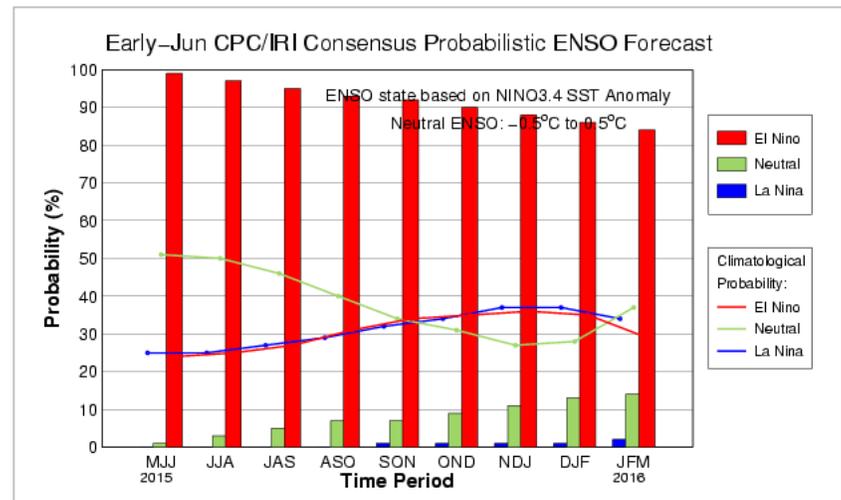
The *Primera* season is the first of the two growing seasons in the Central America region and broadly extends from March to July.

Forecasts published earlier, mostly indicated below average rainfall for the bulk of the *Primera* season and at best an average rainfall season on the Atlantic coastal areas. Actual conditions so far have matched the forecasts quite well and there should be no substantial change to the outlook of the full *Primera* season.

Current forecasts for the *Postrera* season (August-November)

For the coming *Postrera* season, a variety of seasonal forecasts consistently indicate below average rainfall for the duration of the season (August to November).

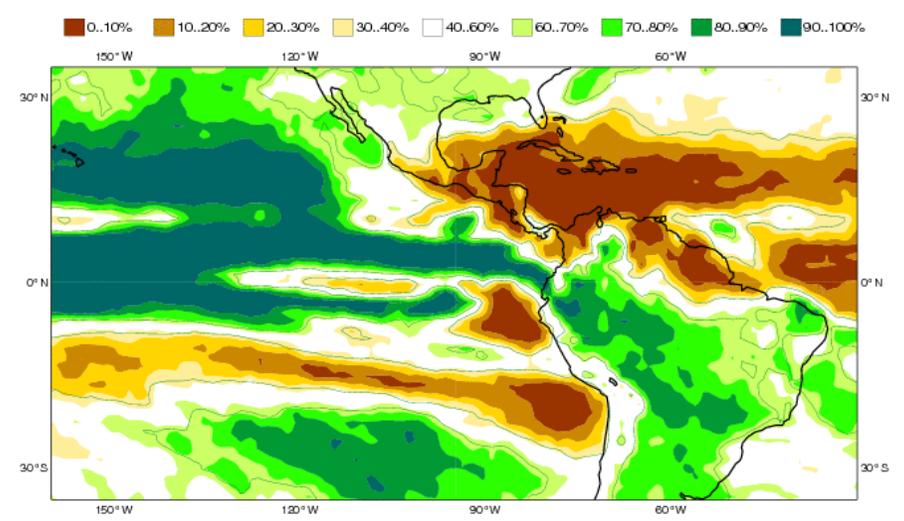
Seasonal forecasts for the *Postrera* season show a high likelihood of below average rainfall, raising the possibility that the region could face two consecutive poor growing seasons, adding to the lingering effects of the 2014 *Primera* season drought.



Probability of an El Niño developing (red bars) vs neutral conditions (red) and La Niña (blue). Though probabilities decrease somewhat from current values they remain above 80% through to early 2016, enclosing the coming *Postrera* season.

ECMWF Seasonal Forecast
Prob(precipitation > median)
Forecast start reference is 01/06/15
Ensemble size = 51, climate size = 450

System 4
ASO 2015
Solid contour at 1% significance level



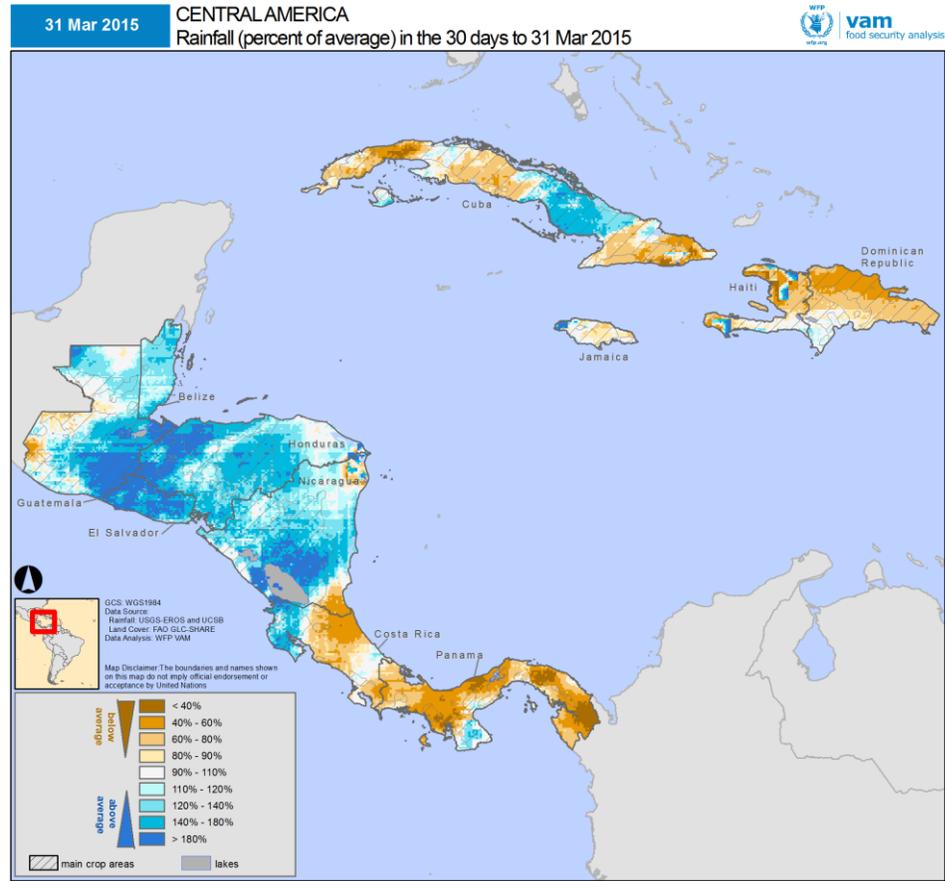
Probability of August to October rainfall being above typical values (historical median). Green shades for wetter than usual, orange shades for drier than usual.

The season: Month by month



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CENTRAL AMERICA SEASONAL ANALYSIS – 2015



March 2015 rainfall as a percentage of the 20-year average (left). Brown shades for below-average rainfall; blue shades for above-average seasonal rainfall.

Early April 2015 vegetation index as a percentage of the 12-year average (right). Orange shades for below-average vegetation; green shades for above-average vegetation.

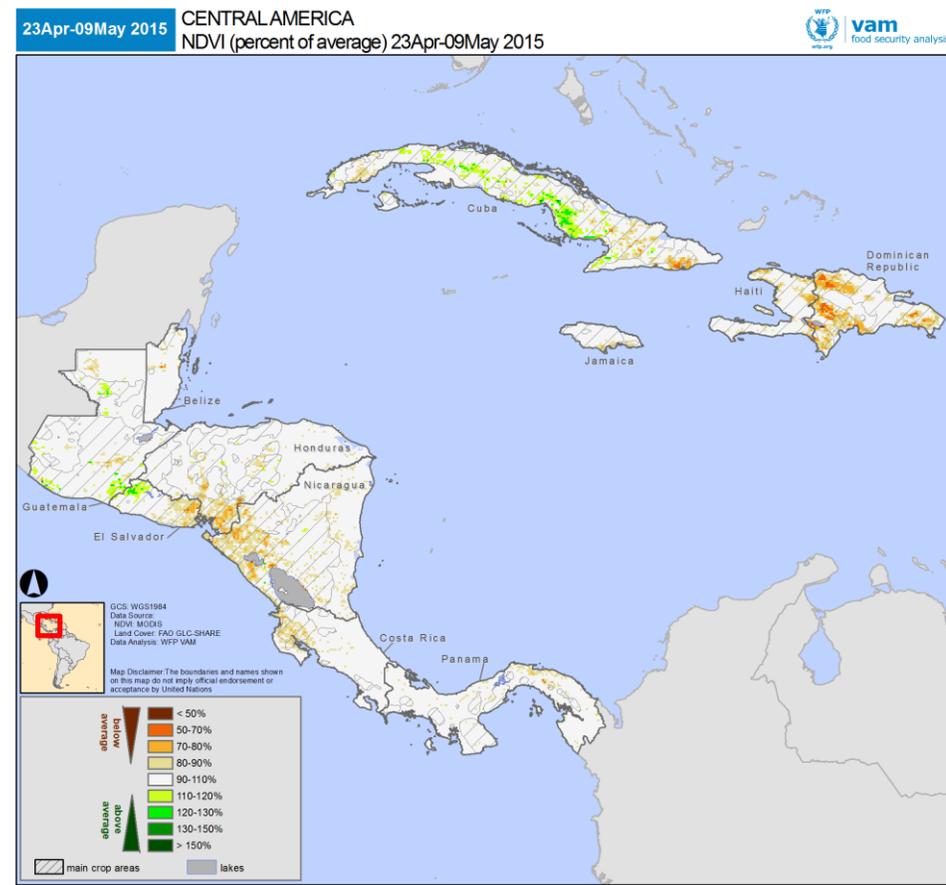
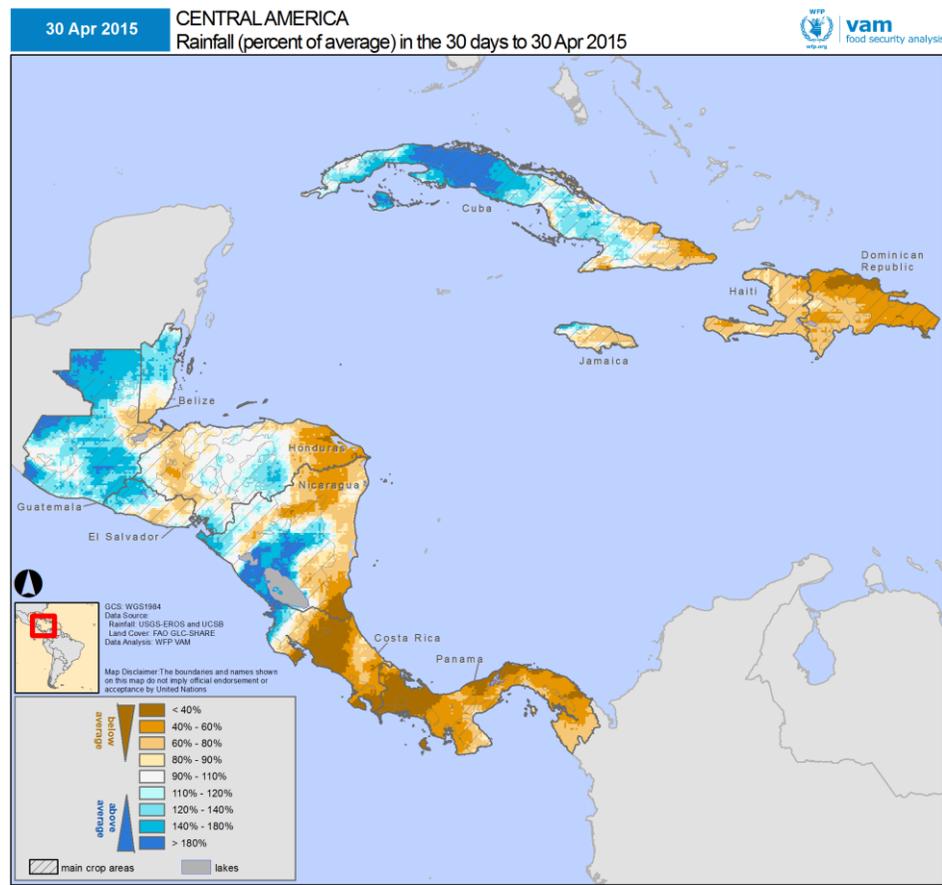
Hashed pattern indicates main agricultural areas.

March 2015

This month marks the very early stages of the first cropping season (Primera) and is usually characterized by low rainfall amounts across the region. Nicaragua and Guatemala enjoyed wetter than usual conditions in contrast with Costa Rica and Panama, where drier than average conditions prevailed. This was also the case in Haiti and parts of Cuba.

Vegetation remained at average levels, as rainfall fluctuations have little influence this early in the season.

CENTRAL AMERICA SEASONAL ANALYSIS – 2015



April 2015 rainfall as a percentage of the 20-year average (left). Brown shades for below-average rainfall; blue shades for above-average seasonal rainfall.

Early May 2015 vegetation index as a percentage of the 12-year average (right). Orange shades for below-average vegetation; green shades for above-average vegetation.

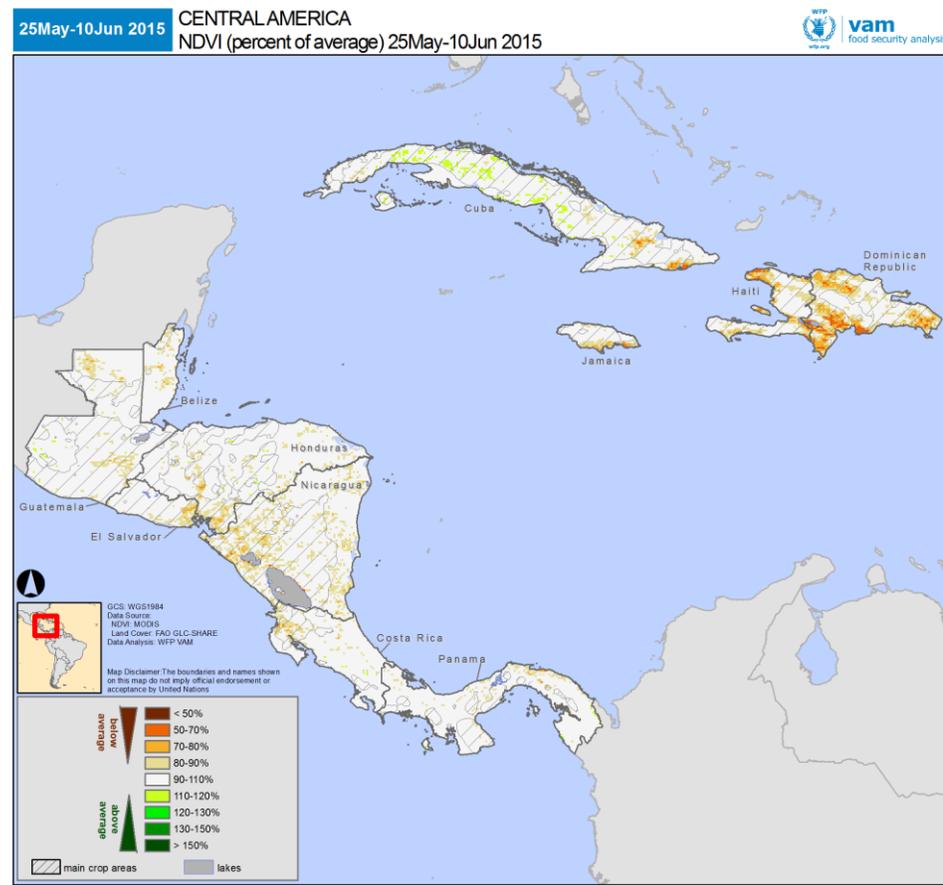
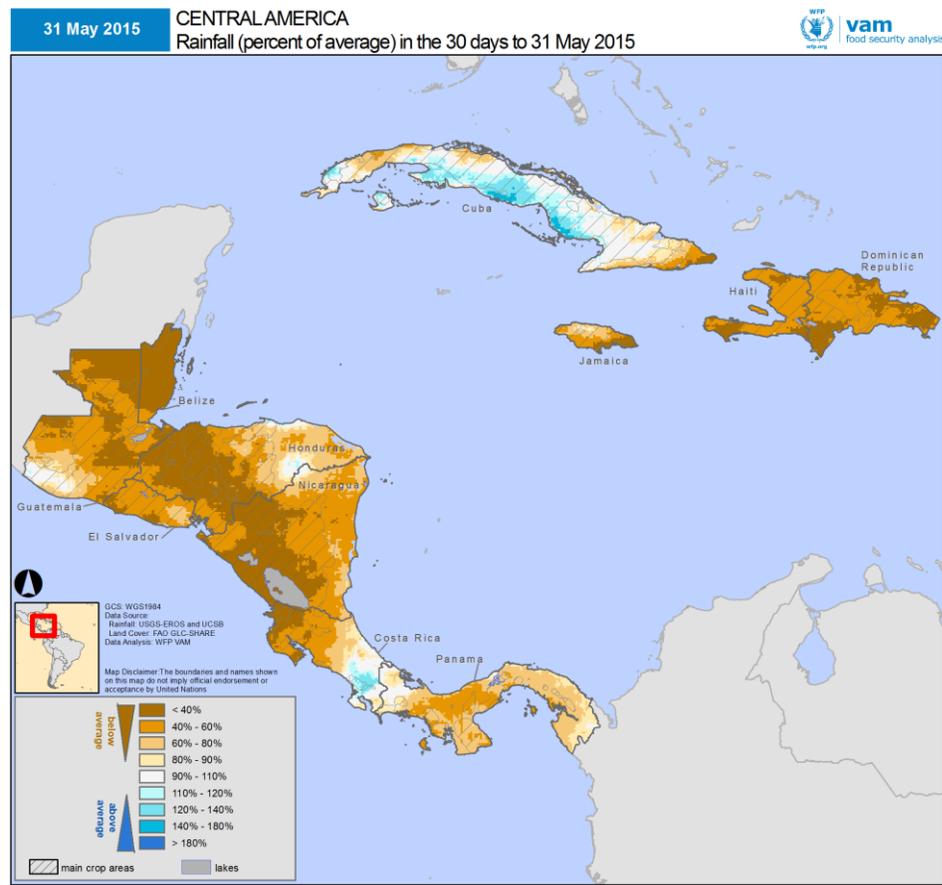
Hashed pattern indicates main agricultural areas.

April 2015

This month brings the first substantial rains into the region. As the season developed, drier than average conditions extended into parts of Nicaragua and Honduras and were maintained over Costa Rica, Panama and Haiti (Hispaniola) where delays in the onset of the growing season are noticed.

Vegetation tended to be below average in Haiti and Dominican Republic, due to sustained drier than average conditions.

CENTRAL AMERICA SEASONAL ANALYSIS – 2015



May 2015 rainfall as a percentage of the 20-year average (left). Brown shades for below-average rainfall; blue shades for above-average seasonal rainfall.

Early June 2015 vegetation index as a percentage of the 12-year average (right). Orange shades for below-average vegetation; green shades for above-average vegetation.

Hashed pattern indicates main agricultural areas.

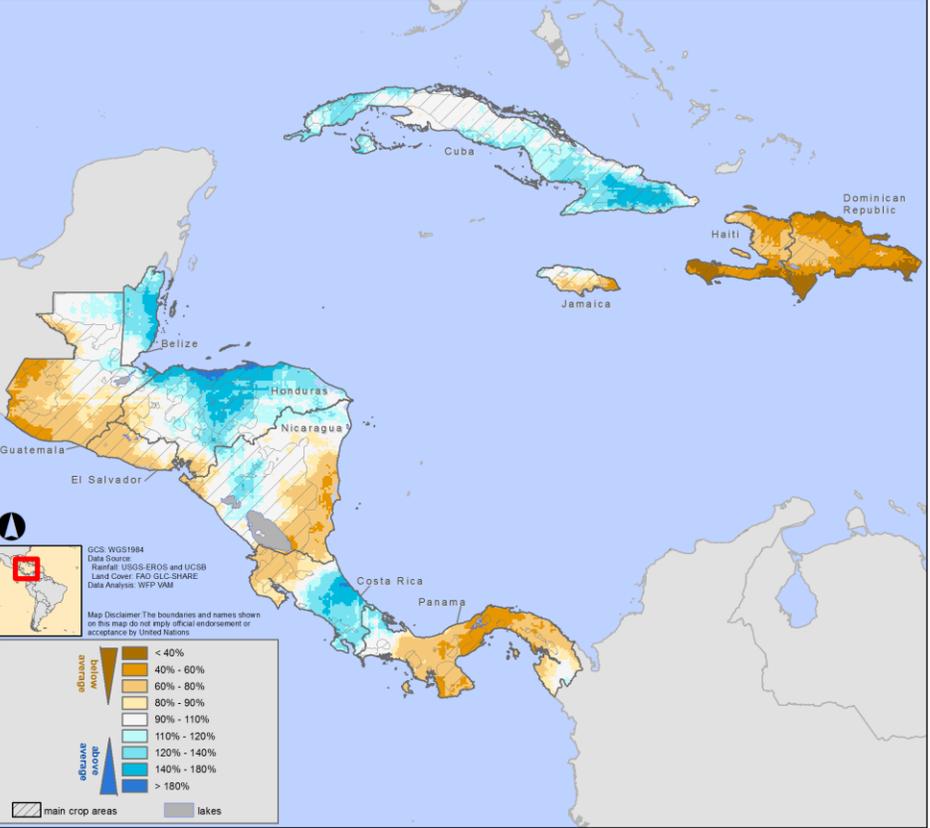
May 2015

The bulk of the growing season across Central America starts during May. This period was characterized by severe rainfall deficits across most of the region, particularly in Guatemala, Honduras, Nicaragua and western Costa Rica. These conditions were also evidenced in Haiti and Dominican Republic. Consequently, the region experienced further delays in the start of the growing season.

The rainfall deficits reinforced the pattern of below average vegetation, which became more pronounced in Nicaragua and Honduras as well as across Hispaniola.

CENTRAL AMERICA SEASONAL ANALYSIS – 2015

30 Jun 2015 CENTRAL AMERICA
Rainfall (percent of average) in the 30 days to 30 Jun 2015



26Jun-12Jul 2015 CENTRAL AMERICA
NDVI (percent of average) 26Jun-12Jul 2015



June 2015 rainfall as a percentage of the 20-year average (left). Brown shades for below-average rainfall; blue shades for above-average seasonal rainfall.

Early July 2015 vegetation index as a percentage of the 12-year average (right). Orange shades for below-average vegetation; green shades for above-average vegetation.

Hashed pattern indicates main agricultural areas.

June 2015

Good rains during the first half of June decreased the seasonal rainfall deficit verified at the end of May. Relief was short lived as drier than average conditions returned thereafter, leading to another month of overall rainfall deficits for south and western Guatemala, Salvador, eastern Nicaragua and Panama. In Hispaniola, drier than average conditions remained throughout the month, leading to even more intense deficits.

The persistent deficits and delays in the onset of the season will lead to significant negative impacts for the worst affected countries.

Data Sources:

Rainfall: CHIRPS, Climate Hazards Group, UCSB

Vegetation: MODIS NDVI, EOSDIS-NASA

Land Cover: FAO GLC-Share

Processing:

VAM software components, ArcGIS

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