

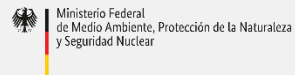
2019 Fire Season Outlook Report

11th of March 2019

Developed by:



With the support of:



Scope

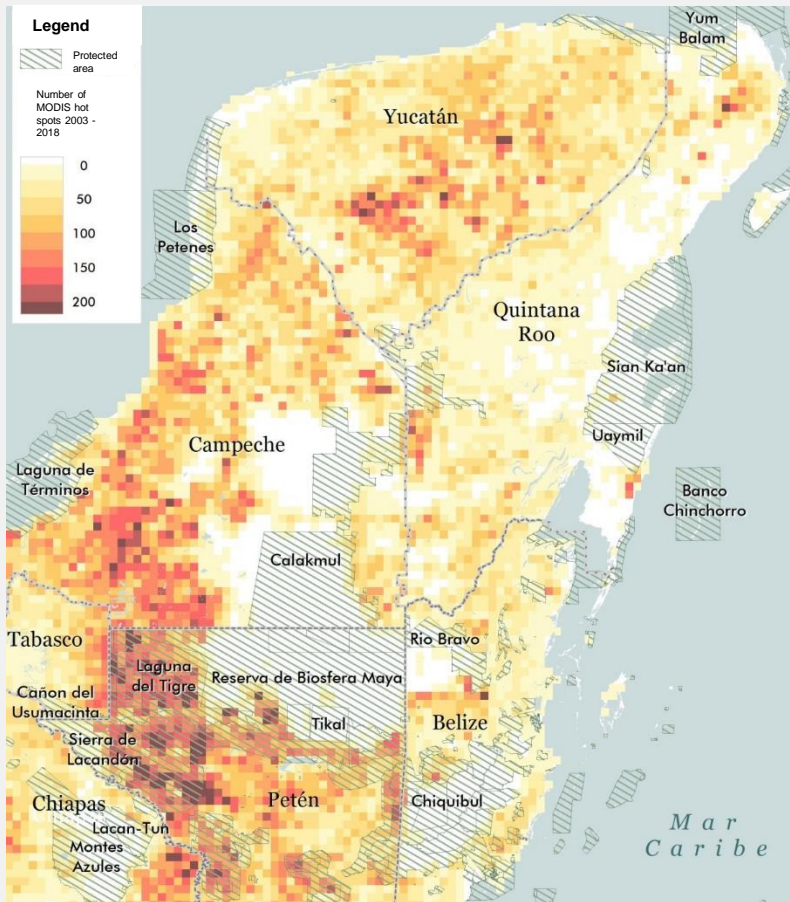
This report aims to support professionals in charge of prevention, mitigation and fighting of wildfires in their preparation for the 2019 fire season in the Selva Maya.

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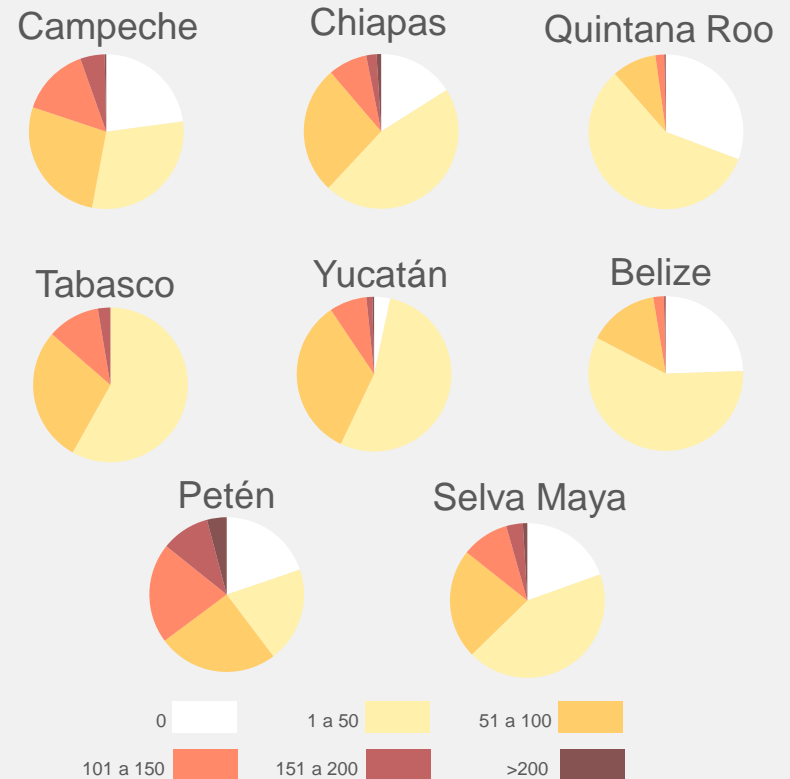
- Recent fire history in the region based on [MODIS](#) hot spots
- [ENSO](#) in the 2019 season
- Cumulative precipitation during the last months
- Medium-range (medium-term) weather forecast
- Conclusions: implications for fire season 2019

Fire History: MODIS Hot Spots, 2003–2019

MODIS satellite sensors can detect “hot spots” in the landscape, most of which reflect fires.

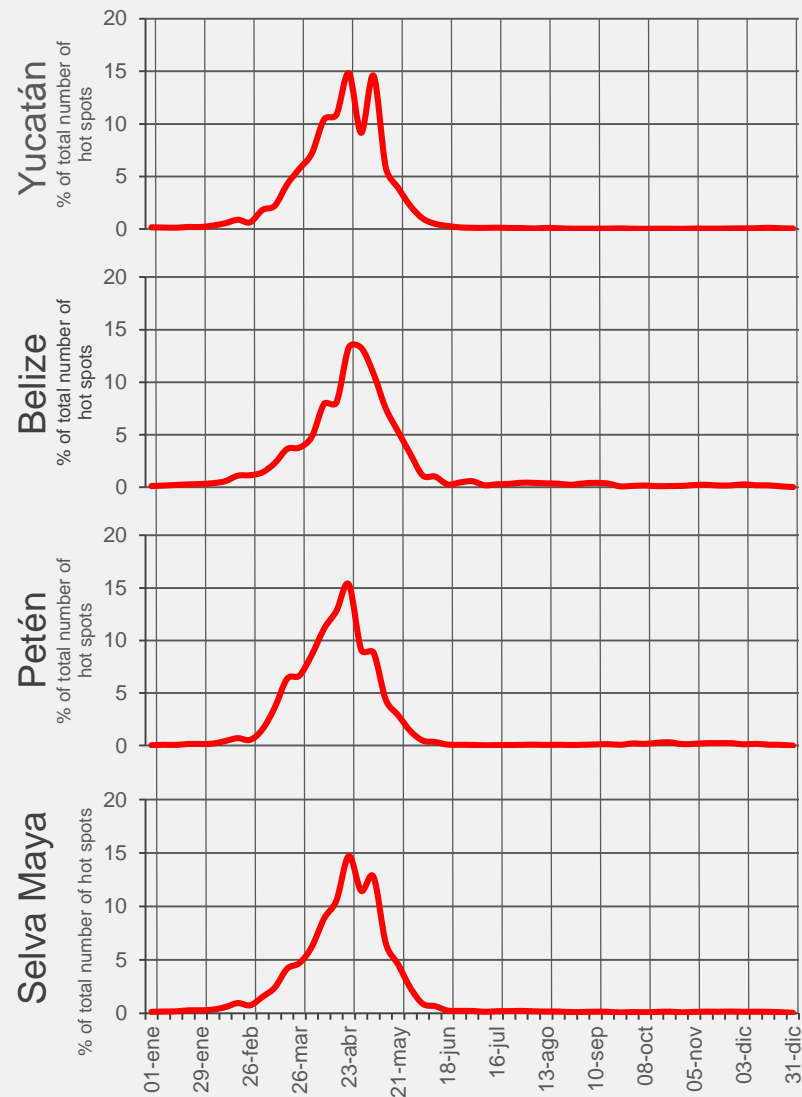
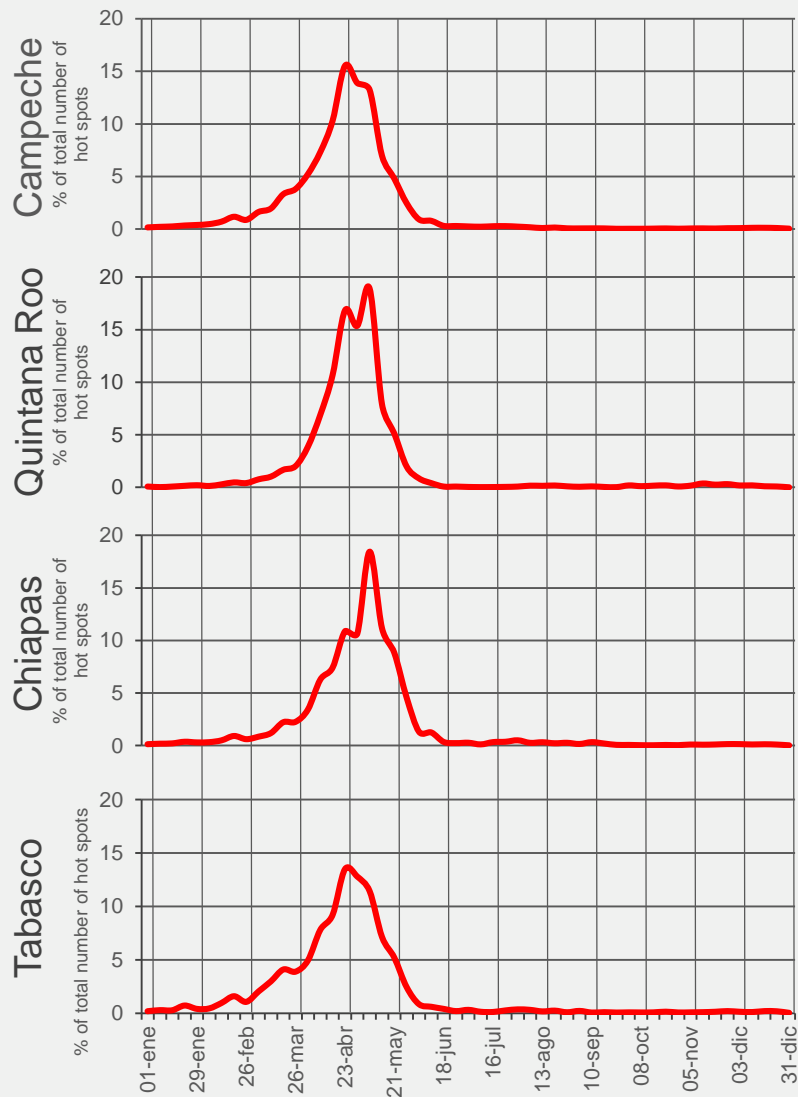


Proportion of area by number of MODIS hot spots in grids of 25 km² between 2003 and 2018



The map visualizes the cumulative number of MODIS hot spots in grids of approximately 25 km² for the period from 2003–2018. It reveals the spatial distribution and recurrence frequency of hot spots correlated to fire damage.

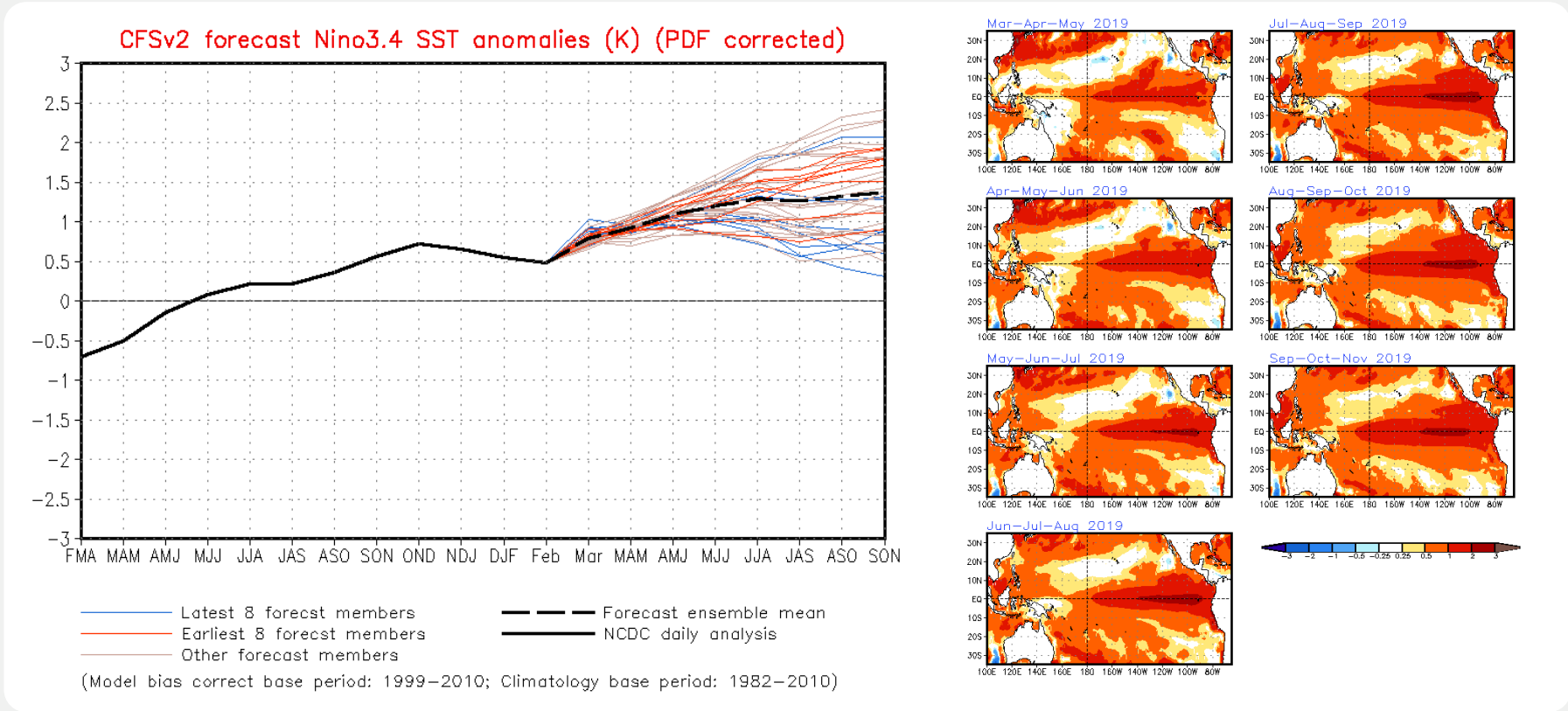
Fire History: MODIS Hot Spots Temporality, 2003–2018



The MODIS time series data for hot spots from 2003–2018 show that the burning season is **clearly concentrated between mid-March and late May**, with some regional variations. The peak season typically occurs around the third week of April.

ENSO in 2019: SST Anomaly Forecast

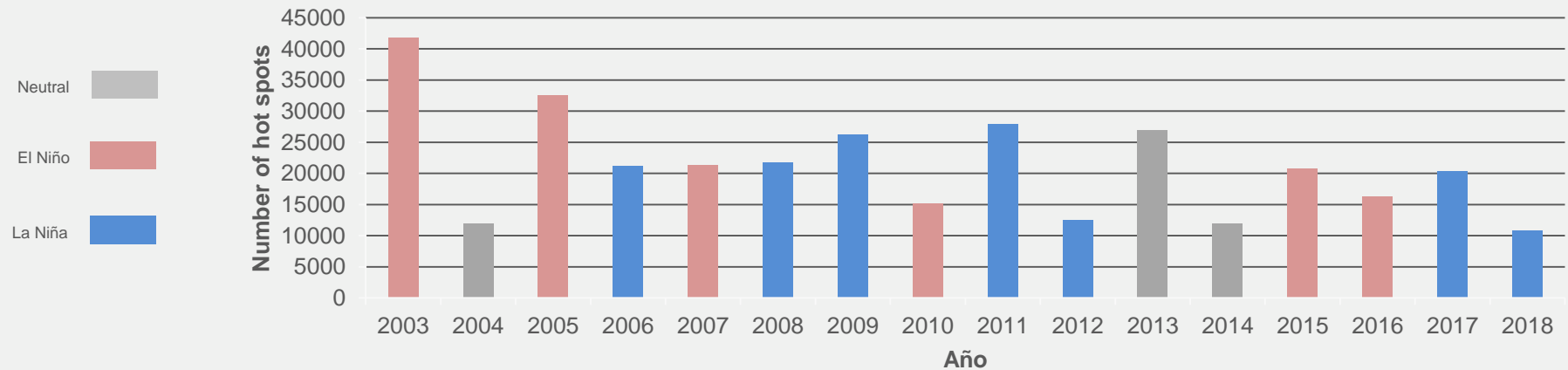
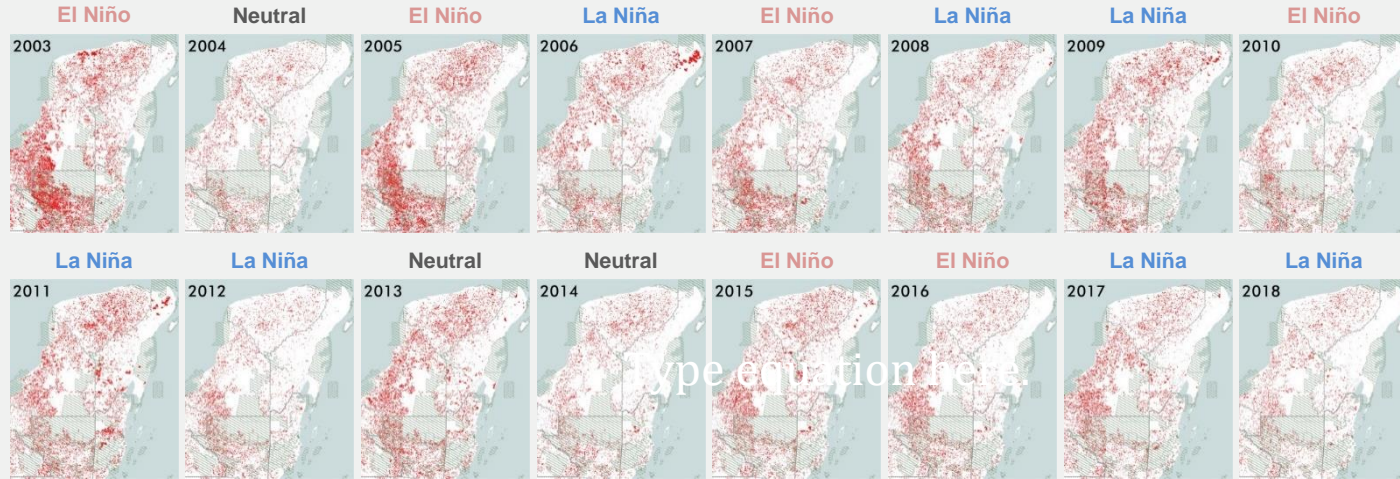
The *El Niño Southern Oscillation* (ENSO) is a global climate phenomenon of annual cycle length which also affects rainfall and temperature in the Selva Maya.



The average set of SST (Sea Surface Temperature) anomaly prognosis indicates that the current weak (moderate) **El Niño conditions will further intensify and expand into the second half of 2019.**

ENSO in 2019: MODIS Hot Spots and ENSO

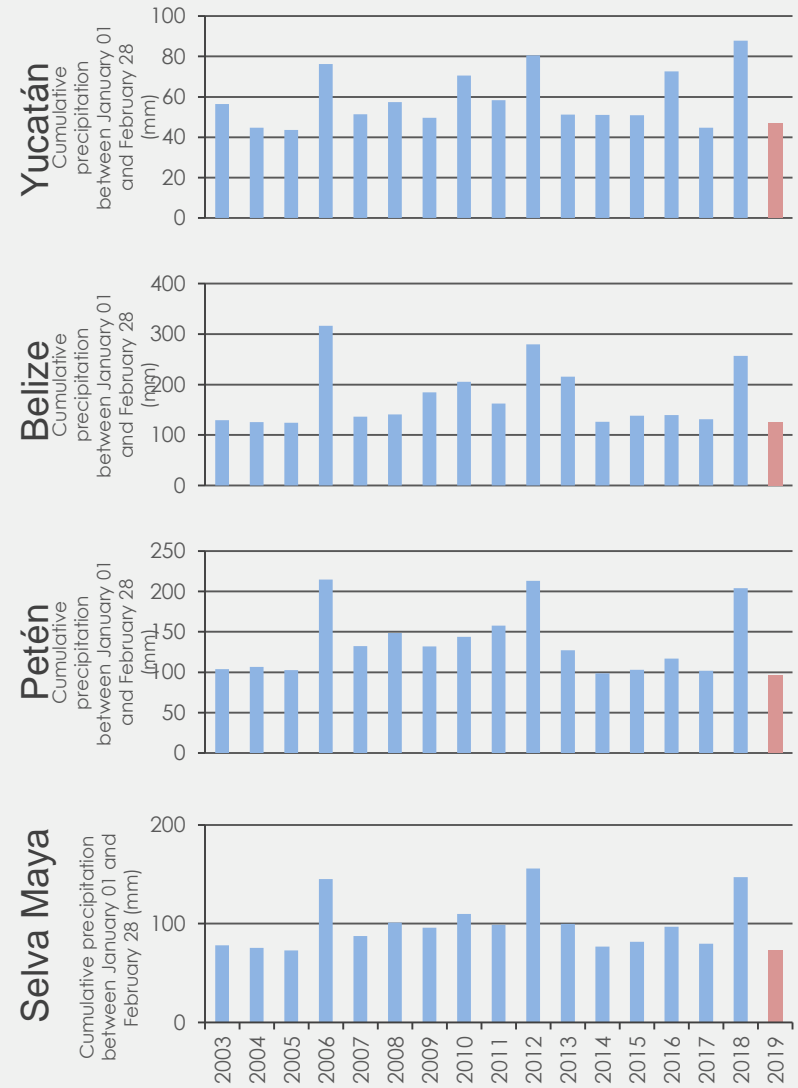
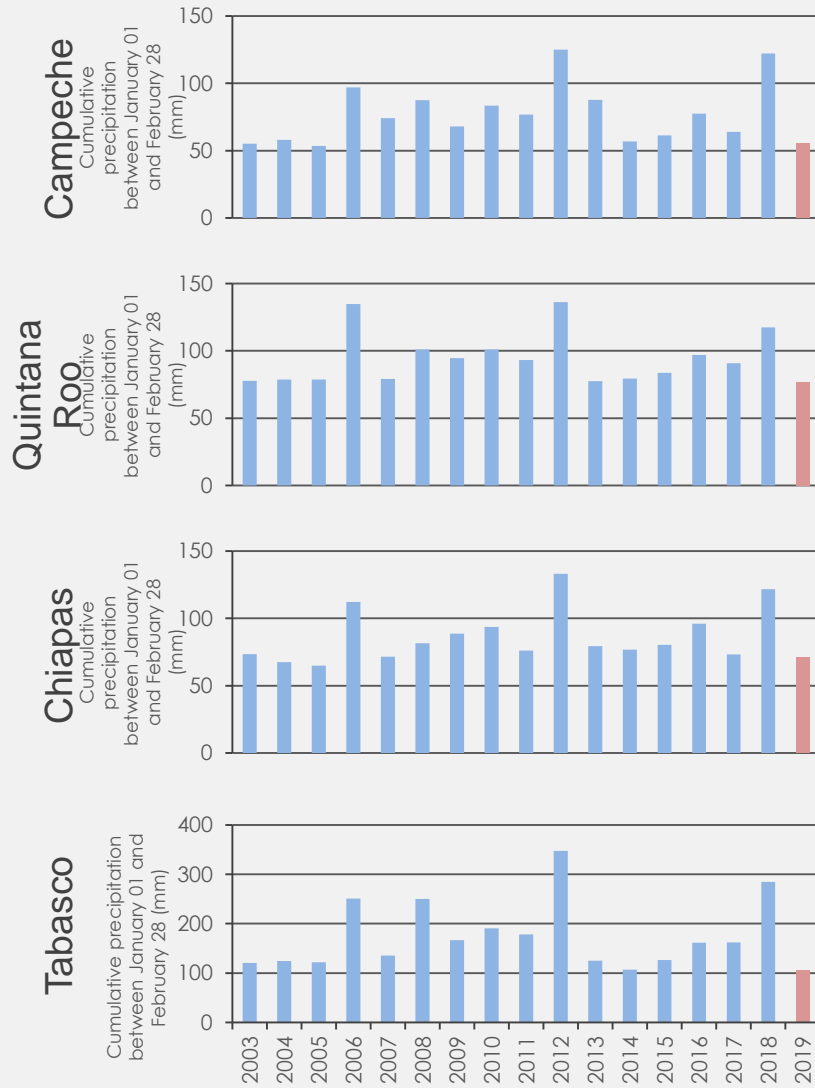
Three different phases of ENSO can be distinguished: 1) El Niño: reduced rainfall, 2) La Niña: above-average rainfall, 3) Neutral: regular rainfall (close to average).



Source: MODIS Collection 6 NRT Hotspot / Active Fire Detections MCD14DL. Disponible [https://earthdata.nasa.gov/afirm/s].

A comparison between the ENSO phases (neutral, El Niño, La Niña) and the number of hot spots shows that during El Niño events the number of hot spots was 16% higher than the average between 2003 and 2018. The two most severe seasons in the period (2003 and 2005) were associated with El Niño events. **Therefore, the current conditions of El Niño suggest that the fire season will be intense.**

Cumulative precipitation: Comparison 2003–2019

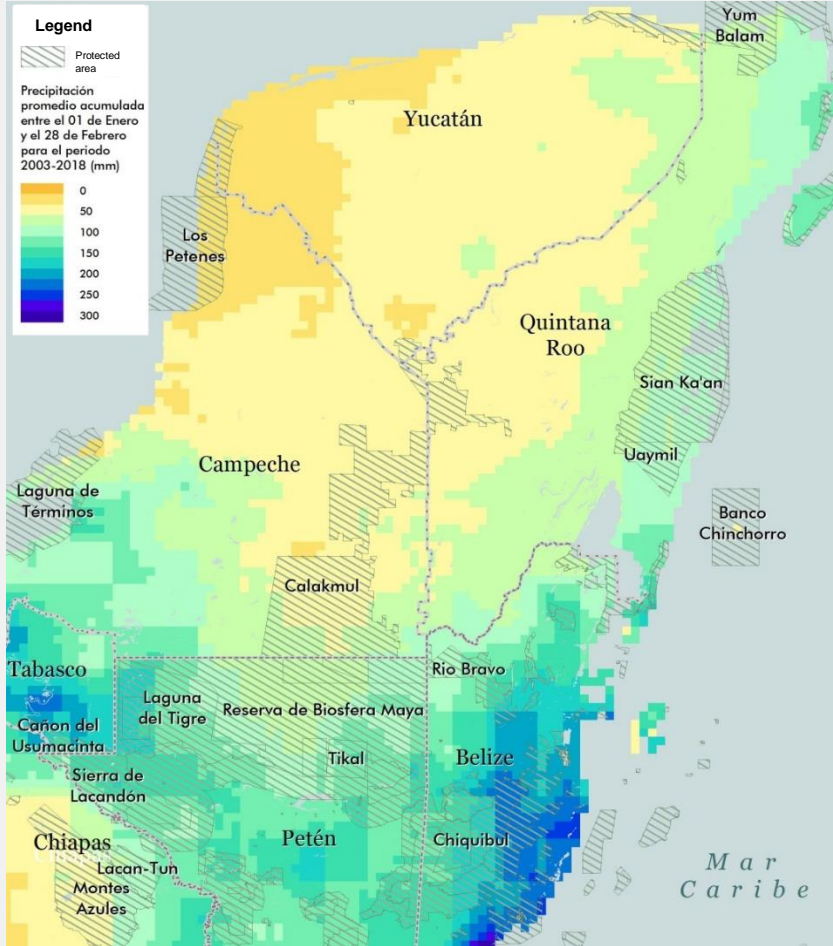


Source: Climate Hazards Group InfraRed Precipitation with Station data (CHIRPS), <http://chg.geog.ucsb.edu/data/chirps/>

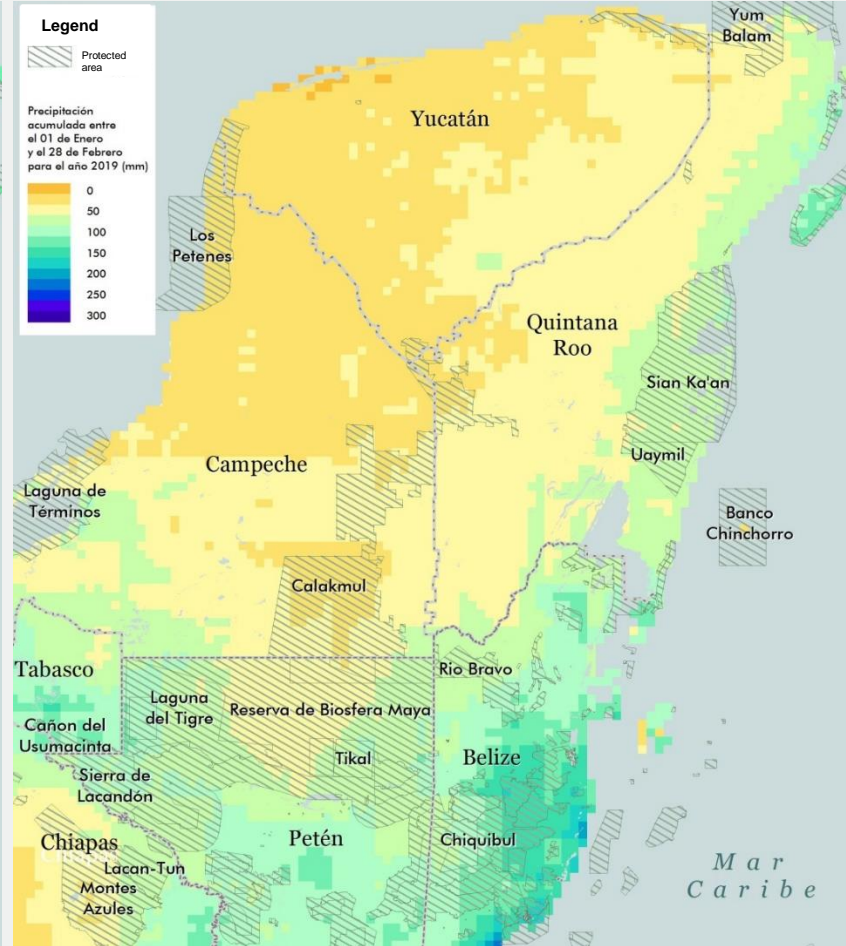
Cumulative precipitation values between January 1st and February 28th of the years in the period 2003 - 2019 indicate that 2019 values are among the lowest of all years.

Cumulative Precipitation: 2019 Value versus Historic Average

Average cumulative precipitation **2003–2018**
between January 1st and February 28th



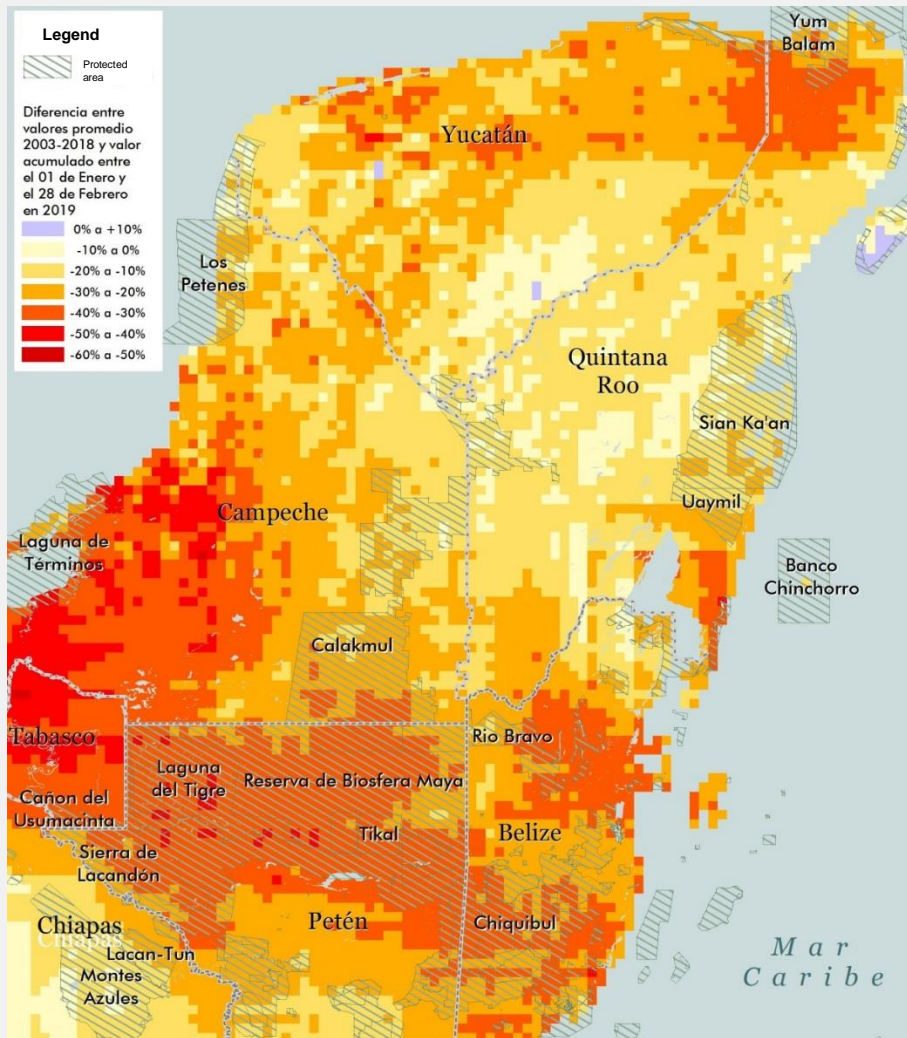
Cumulative precipitation between January 1st and February 28th, **2019**



Source: Climate Hazards Group InfraRed Precipitation with Station data (CHIRPS), <http://chg.geog.ucsb.edu/data/chirps/>

The comparison between the average cumulative pre-dry season precipitation (Jan. 1st – Feb. 28th) of 2003–2018 and 2019 shows a general **reduction in the amount of precipitation throughout the Selva Maya for Jan.–Feb. 2019.**

Cumulative Precipitation: Value 2019 versus Average Value

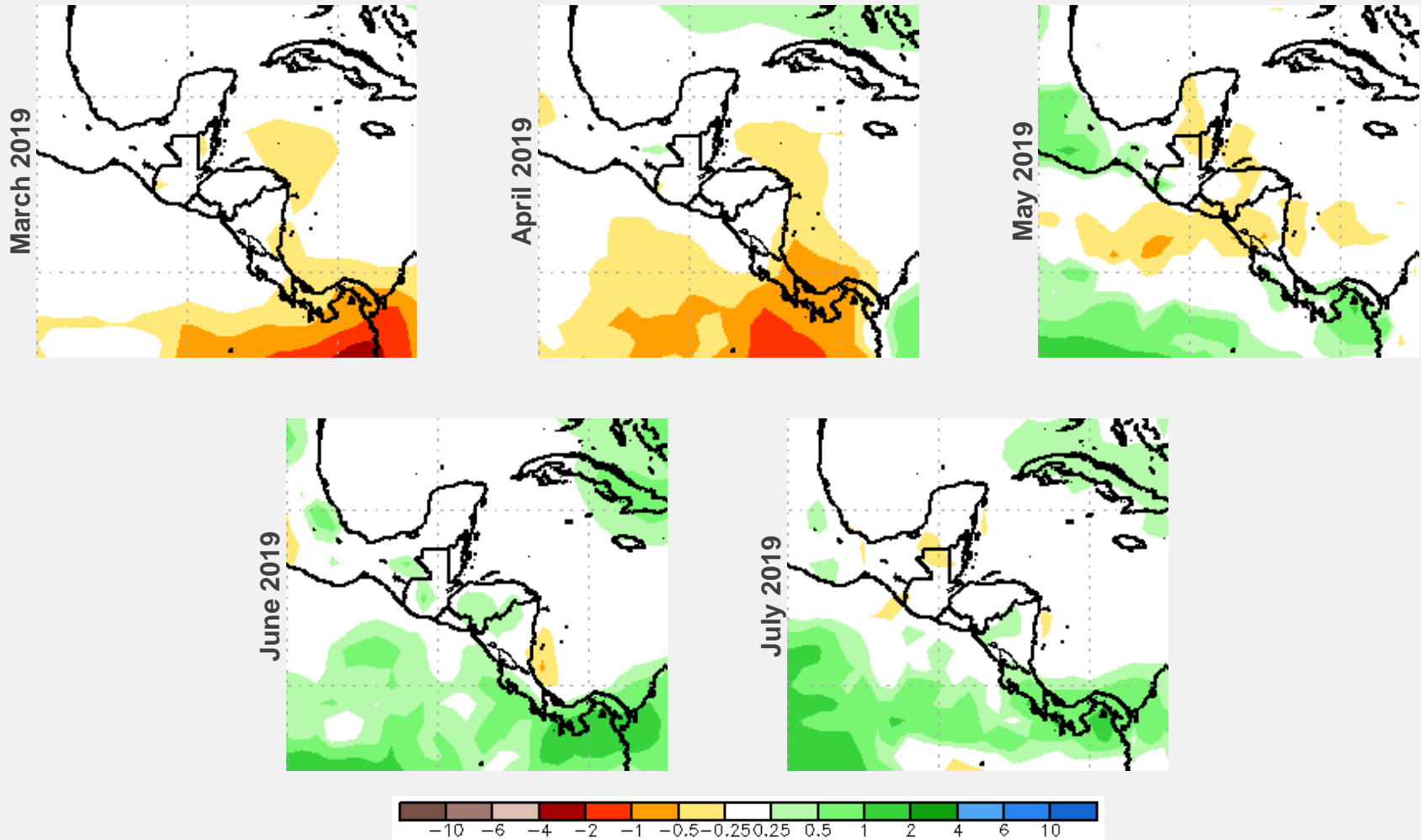


Campeche	-27%
Chiapas	-17%
Quintana Roo	-17%
Tabasco	-40%
Yucatán	-21%
Belize	-28%
Petén	-31%
Selva Maya	-24%

Source: Climate Hazards Group InfraRed Precipitation with Station data (CHIRPS), <http://chg.geog.ucsb.edu/data/chirps/>

The difference between the cumulative precipitation in early 2019 (Jan. 1st – Feb. 28th) against the average from 2003–2018 is **negative throughout the Selva Maya**. The strongest deviations from average rainfalls are found in Tabasco (-40%) and Petén (-31%).

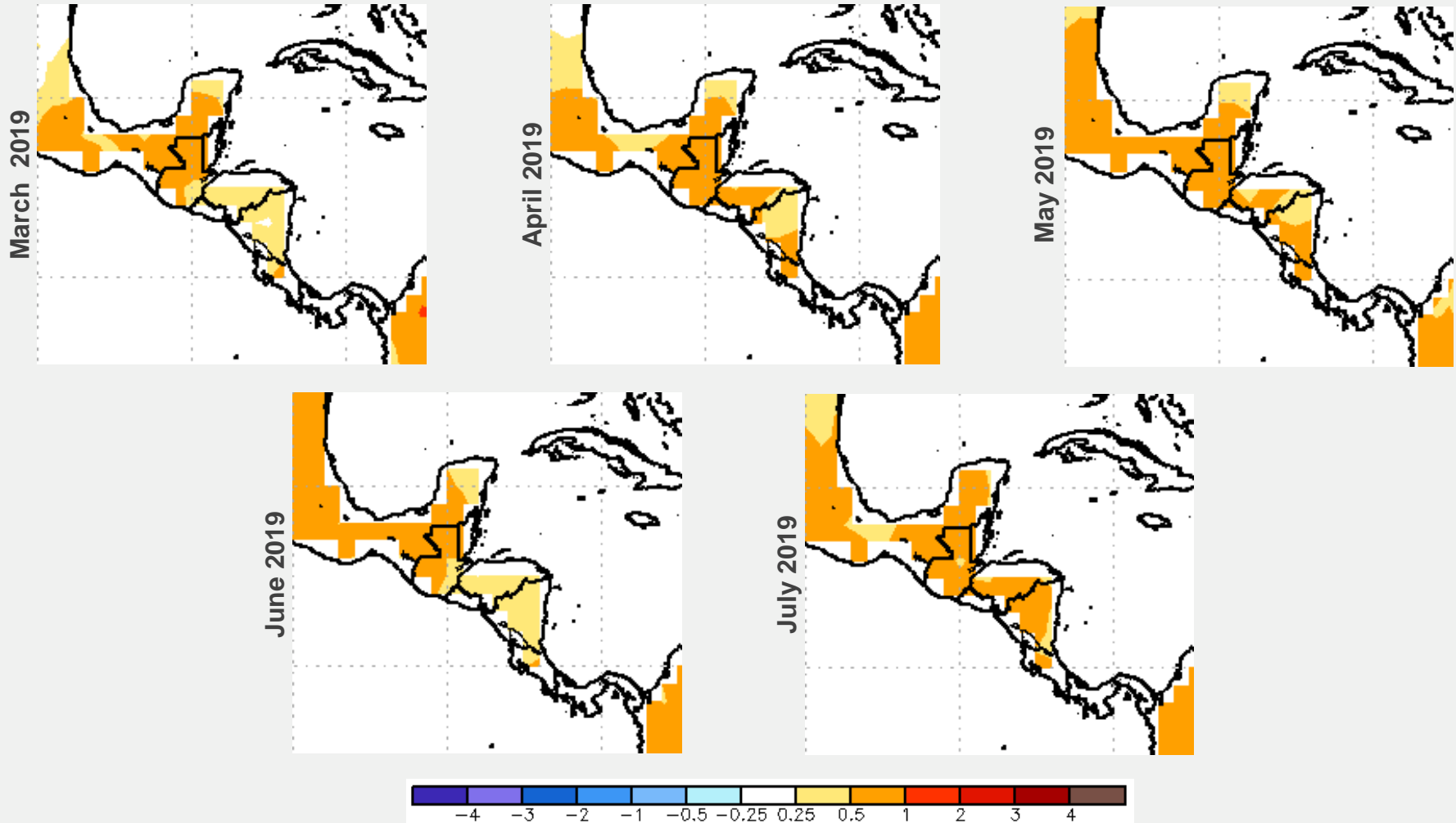
Medium-range Forecast: Precipitation Anomaly



Source: Climate Prediction Center / NCEP, NOAA

The medium-range forecast of precipitation for the next five months (March to July 2019) indicates that weak negative anomalies (lower rainfall) are expected in May and July in the range of -0.5 mm daily precipitation. Hence, we must **expect not only a severe but also a prolonged drought and fire season.**

Medium-range Forecast: Temperature Anomaly



Source: Climate Prediction Center / NCEP, NOAA

The medium-range forecast of mean temperature for the next five months (March to July 2019) indicates that positive anomalies (temperature increase) are expected in all months of the forecast in the range of +1°C. **High temperatures amplify the severity of the fire season by accelerating the desiccation of fuel (e.g. leaf litter, dead wood) and the intensity of fires, hence impeding wildfire combat and extinction.**

Conclusions

- The **currently prevailing moderate El Niño** conditions are predicted to continue **into the second half of 2019**.
- **Rainfall during January and February** was unusually low, with cumulative precipitation being the **second lowest among the last 17 years** for the Selva Maya as a whole. The strongest deviations from average were measured in Tabasco (-40%) and Petén (-31%).
- Medium-range precipitation and temperature forecasts indicate that **drier and warmer conditions (up to 1°C higher)** relative to the historical average are to be expected during the coming months, and these conditions are anticipated to prevail at least until July 2019.
- Under these circumstances it is expected that the **2019 fire season will be severe** and therefore it is recommended to **implement extraordinary measures of mitigation and preparation** for this season.

TodosSomosSelvaMaya # WeAreSelvaMaya

This report was elaborated within the framework of the project "Support for the monitoring of biodiversity and climate change in the Selva Maya". For more information please visit <http://selvamaya.info/es/proyecto-monitoreo/> or contact giz.selvamaya@giz.de

If you would like to receive further information on wildfires and related conservation issues in the Selva Maya, please register [HERE](#).



Ministerio Federal
de Medio Ambiente, Protección de la Naturaleza
y Seguridad Nuclear

