

Amazon Fire Tracker 2020 – July Update



Example of a major fire in the Brazilian Amazon burning recently deforested area. Brazil major fire #54, July 30, Mato Grosso. Image: Planetscope (Planet).

Recall we recently launched an innovative new app for [Real-time Amazon Fire Monitoring](#) (see [MAAP #118](#) for details).

In a **novel approach**, the app combines data from the atmosphere (aerosol emissions in smoke) and the ground (heat anomaly alerts) to effectively detect and visualize **major Amazon fires**.

The app **specializes** in filtering out thousands of the heat-based fire alerts to prioritize only those burning large amounts of biomass and thus emitting elevated levels of aerosol (defined here as a major fire).*

As of the end of July, we have detected **77 major Amazon fires** thus far in 2020, all in Brazil.

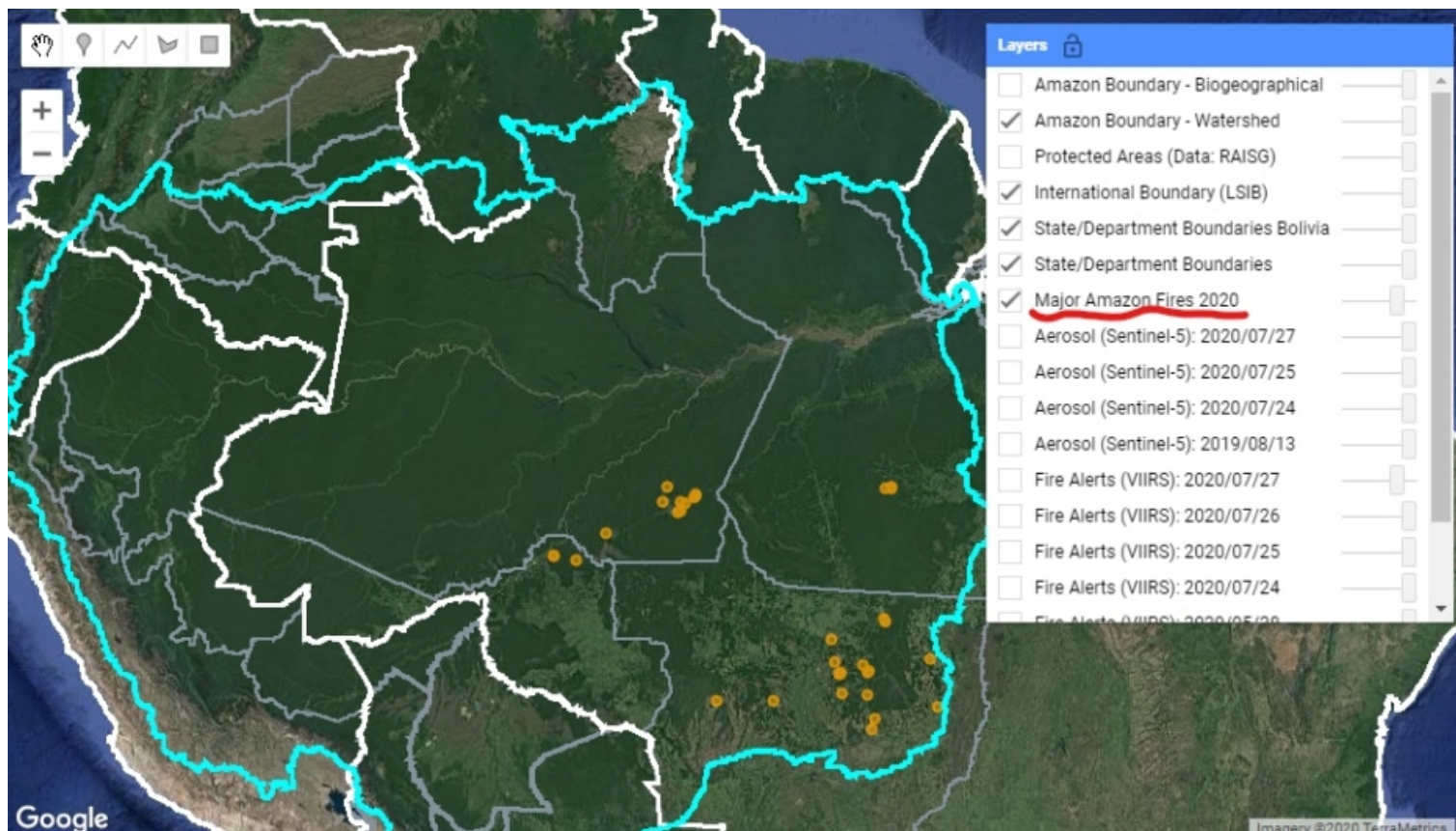
In summary, 84% of the major fires are burned recently deforested areas and 83% were illegal (in violation of fire moratoriums). We detected the first forest fire on the last day of the month.

We have started detecting large and uncontrolled fires in the drier ecosystems of **Bolivia**, but outside the Amazon watershed.

See below for a more detailed overview of the 2020 Amazon fire season thru the end of July.

Key Results

The **Base Map** is a screen shot of the app's "**Major Amazon Fires 2020**" layer.



Base Map. Screen shot of the app's "Major Amazon Fires 2020" layer.

As noted above, we have detected **77 major Amazon fires** thus far in 2020, all in Brazil.

The first major fire was detected on May 28 in the state of **Mato Grosso** in southeastern Brazilian Amazon (see [MAAP #118](#)). This event was followed by 12 major fires in June, all in Mato Grosso (see [Fire Tracker #12](#)).

The number of major fires in Mato Grosso decreased in July, suggesting the state's new fire moratorium (starting July 1) may be working.

Starting in mid-July, the major fire activity shifted to the surrounding Brazilian states of **Amazonas, Rondônia and Pará**. This shift coincided with national fire moratorium (starting July 15), indicating it has not been as effective.

Overall, most of the major fires (**83%**) appear to be **illegal** as they violate the state and national government mandated fire moratoriums established in July.

Importantly, most of the major fires (**84%**) have burned **recently deforested areas** (deforested 2018-20) covering 108,000 acres (44,000 hectares). See [MAAP #113](#) for more on this important point in regards to the 2019 fires.

We detected the first **forest fire** on the last day of the month. It burned 388 acres (157 hectares).

The other major fires have been in older cattle or agricultural areas (deforested pre 2018).

We have started detecting large and uncontrolled fires in the drier ecosystems of **Bolivia**, but outside the Amazon watershed.

Key Examples of 2020 Fires

Overall our key finding is that most major Brazilian Amazon fires are burning recently deforested areas, and not raging forest

fires. Below is a series of four satellite images **time-lapse videos** showing examples of recent deforestation (2019) followed by a major 2020 fire burning lots of biomass that was detected by the app.

Brazilian Amazon Fire #1, May 2020

<https://www.maaproject.org/wp-content/uploads/2020/07/maaproject.org-amazon-fire-tracker-2020-july-update-Brazil-1-timelapse.mp4>

Brazilian Amazon Fire #4, June 2020

<https://www.maaproject.org/wp-content/uploads/2020/07/maaproject.org-amazon-fire-tracker-2020-july-update-Brazil-4-timelapse.mp4>

Brazilian Amazon Fire #12, June 2020

<https://www.maaproject.org/wp-content/uploads/2020/06/maaproject.org-amazon-fire-tracker-2020-brazil-fire-12-june-29-Brazil-12-series.mp4>

Brazilian Amazon Fire #18, July 2020

<https://www.maaproject.org/wp-content/uploads/2020/07/maaproject.org-amazon-fire-tracker-2020-july-update-Brazil-18-timelapse.mp4>

Brazilian Amazon Fire #54, July 2020

<https://www.maaproject.org/wp-content/uploads/2020/07/maaproject.org-amazon-fire-tracker-2020-july-update-Brazil-54.mp4>

***Notes and Methodology**

When fires burn, they emit gases and aerosols. A new satellite (Sentinel-5P from the European Space Agency) detects these **aerosol emissions**. Thus, the major feature of the app is detecting elevated aerosol emissions which in turn indicate the burning of large amounts of biomass. For example, the app distinguishes small fires clearing old fields (and burning little biomass) from larger fires burning recently deforested areas or standing forest (and burning lots of biomass).

We define "major fire" as one showing elevated aerosol emission levels on the app, thus indicating the burning of elevated levels of biomass. This typically translates to an aerosol index of >1 (or cyan-green to red on the app). To identify the exact source of the elevated emissions, we reduce the intensity of aerosol data in order to see the underlying terrestrial heat-based fire alerts. Typically for major fires, there is a large cluster of alerts. The major fires are then confirmed, and burn areas

estimated, using high-resolution satellite imagery from [Planet Explorer](#).

No fires permitted in the Brazilian state of Mato Grosso after July 1, 2020. No fires permitted in all of Brazilian Amazon after July 15, 2020. Thus, we defined "illegal" as any major fires detected after these respective dates.

There was no available Sentinel-5 aerosol data on July 4, 15, and 26.

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Citation

Finer M, Nicolau A, Villa L (2020) Amazon Fire Tracker 2020 – July Update. MAAP.