Amazon Fire Tracker 2020: End of August Update (Over 600 Major Fires)

September 1, 2020

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(https://www.maapprogram.org/wp-content/uploads/2020/08/maaproject.org-Fire-584-scaled.jpg)

Brazilian Amazon Major Fire #584, August 2020. Data: Planet. Analysis: MAAP.

August 2020 just ended its run as a severe Amazon fire month.
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Our novel Real-time Amazon Fire Monitoring app (https://luciovilla.users.earthengine.app/view/monitoring-amazon-fires) has

detected **646 major fires** in the **Brazilian Amazon** thus far in 2020.*
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Of these, **88%** (569 major fires) occurred in **August**,* and all were **illegal**, occuring after the burning moratoriums established in July.
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Also in August, we saw the sudden appearance of "**Forest Fires**," defined here as human-caused fires in standing forest. We detected **82 forest fires** in August, which now account for 13% of all the major fires.*
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The vast majority of the major fires (**79%**) continue to **burn recently deforested areas**, defined here as areas where the forest was previously and recently cleared (between 2018-20) prior to burning.
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In fact, over **1.1 million acres** (453,000 hectares) of recently deforested areas has burned in 2020. Thus, the fires are actually a smoking indicator of the current rampant deforestation in the Brazilian Amazon.
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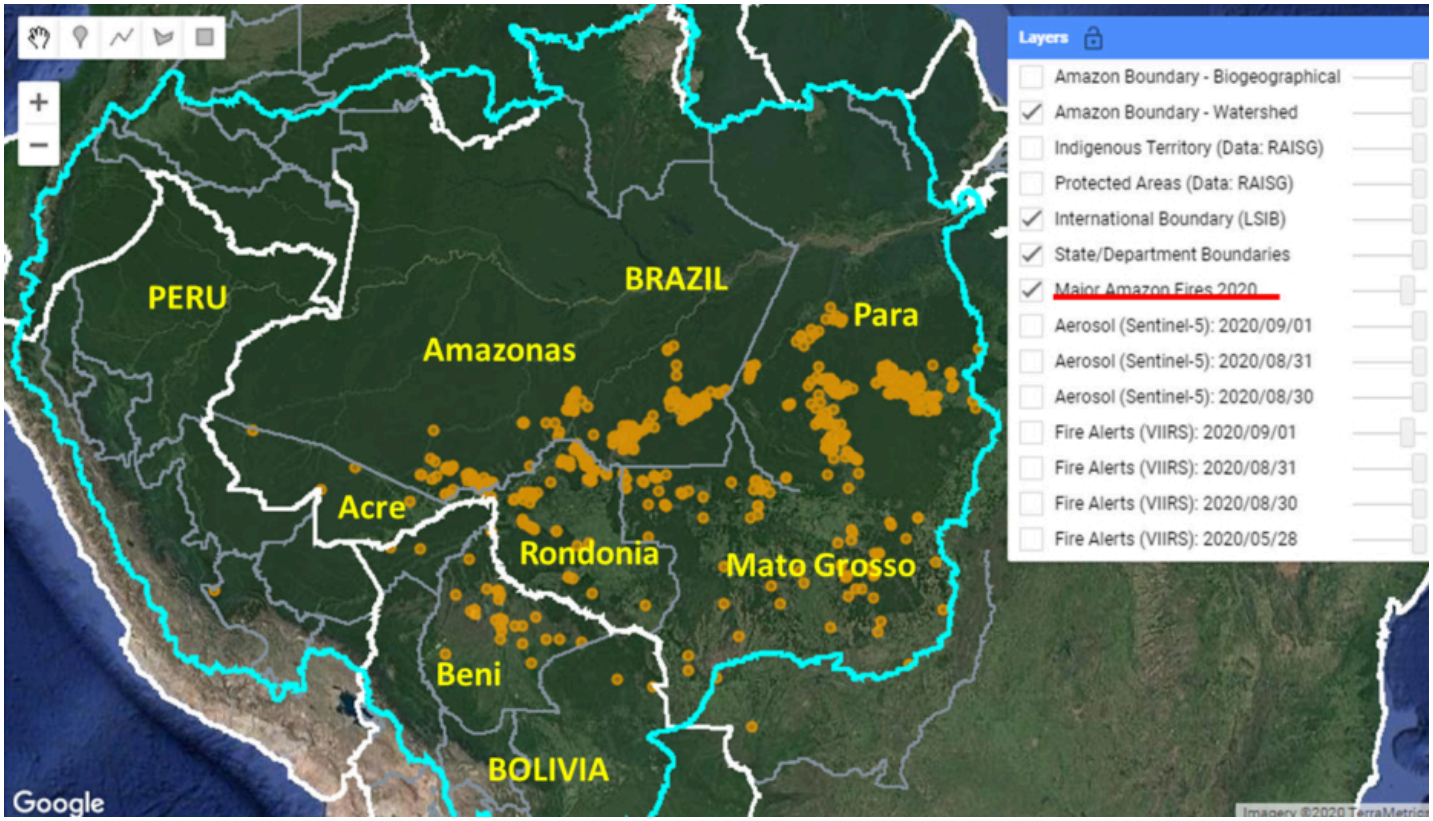
Base Map

The Base Map is a screen shot of the app's "**Major Amazon Fires 2020**" layer (as of September 1). The majority of the major fires in the Brazilian Amazon have been in the states of Pará (37%) and Amazonas (33%), followed by Mato Grosso (16%), Rondônia (13%), and Acre (1%).

The app has detected an additional **58 major fires** in the Bolivian Amazon thus far in 2020. The majority of these (71%) have occured in savanna ecosystems in the department of Beni.



(https://www.maapprogram.org/wp-content/uploads/2020/08/maaproject.org-amazon-fire-tracker-2020-end-of-august-update-over-600-major-fires-20200901.jpg)

Screen shot of the app's "Major Amazon Fires 2020" layer (as of September 1).

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*Notes and Methodology

Data updated as of September 1, starting from the first major fire detected on May 28.

We detected 569 major fires during August in the Brazilian Amazon.

Prior to August, we detected only one forest fire, and that was on July 31.

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

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**.

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 (https://www.planet.com/explorer/).

See **MAAP #118** (https://www.maapprogram.org/2020/amazon-fire-app/) for additional details on how to use the app.

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.

A major fire may be classified as burning across multiple land categories (for example, both recently deforested area and surrounding forest fire) so those percentages do not total 100%.

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

Acknowledgements

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Citation

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