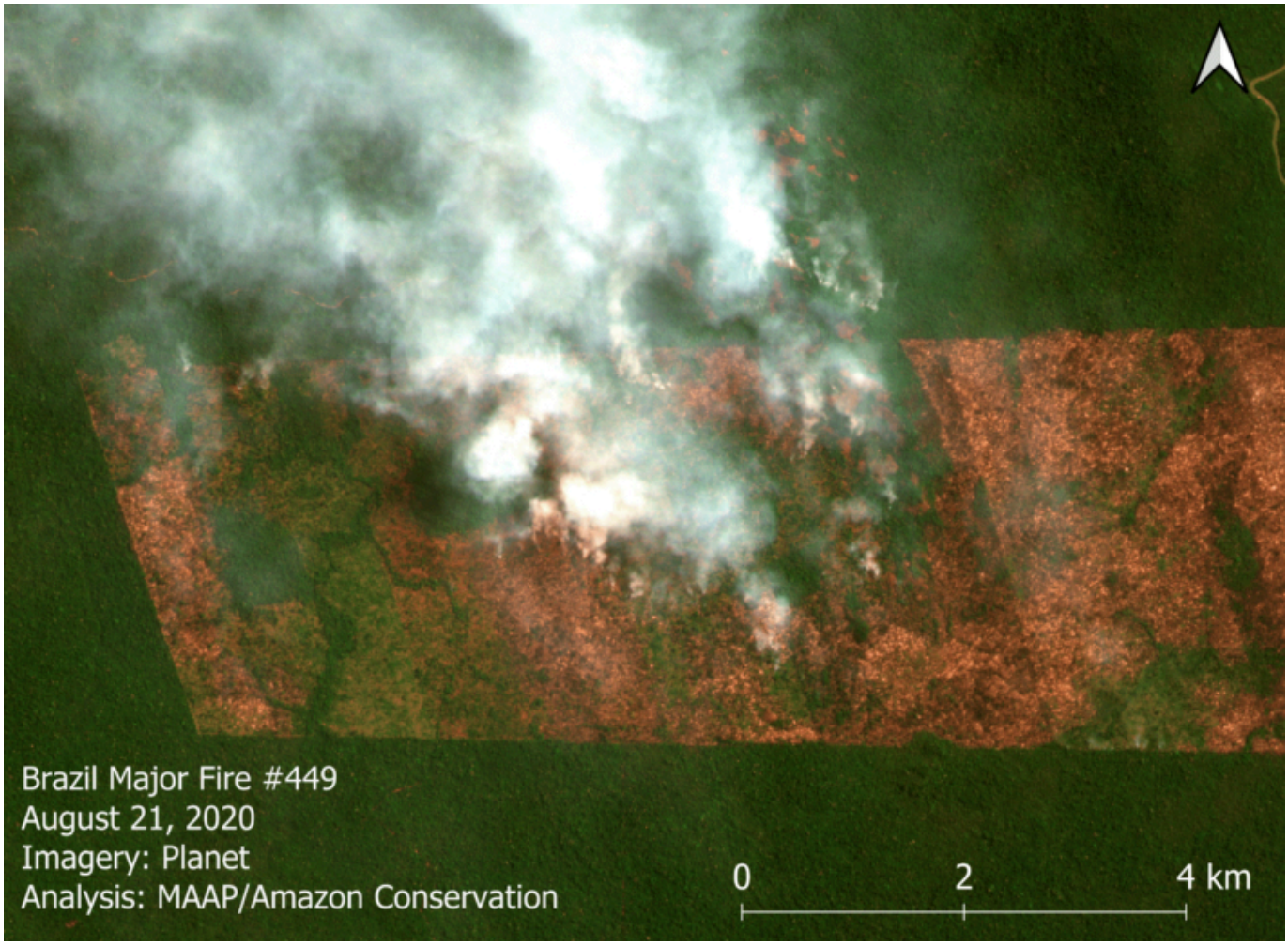
Amazon Fire Tracker 2020: Over 500 Illegal Major Fires in Brazilian Amazon

August 24, 2020



(https://www.maapprogram.org/wp-content/uploads/2020/08/maaproject.org-amazon-fire-tracker-2020-over-500-illegal-major-fires-in-brazilian-amazon-Fire-449-min-scaled.jpg)

Brazilian Amazon Fire #449, burning both recently deforested area (center) and forest fire (upper center). Data: Planetscope (Planet), MAAP. Click to enlarge.

The **Brazilian Amazon** just passed a grim milestone: Over **500 illegal major fires** thus far in **2020**.

The other major headline is that, although most fires continue to burn recently deforested areas, we are now seeing an increase in **forest fires**.

Our Real-time Amazon Fire Monitoring app (https://luciovilla.users.earthengine.app/view/monitoring-amazon-fires) has detected **504 major fires** in the Brazilian Amazon as of August 24 (starting from the first major fire detected on May 28).

Some striking stats about this year's major fires:

- **97%** have occured after the burning moratoriums established in July and are **illegal**.
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- **85%** have occurred in August. Thus, the fire season has been **accelerating**.
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- **83%** have burned **recently deforested areas**. Thus, the fires are actually a smoking indicator of the rampant deforestation.
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- **12%** have been **Forest Fires**. This number marks a major increase from previous estimate as the fire season intensifies. By "Forest Fire" we mean human caused fires in standing forest (there are no "wildfires" as we understand the situation).
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- **4%** have occurred in **Protected Areas or Indigenous Territories**.
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- **856,000 acres** (353,000 hectares) have burned in the recently deforested areas fires.
- **165,000 acres** (66,000) have burned in the forest fires.

Base Map

The **Base Map** is a screen shot of the app's (https://luciovilla.users.earthengine.app/view/monitoring-amazon-fires) "**Major Amazon Fires 2020**" layer. The majority of the major fires in the **Brazilian Amazon** have been in the states of Pará (42%) and Amazonas(31%), followed by Mato Grosso (13%) and Rondônia (13%). Note we are also now seeing an increase in major fires in the **Bolivian Amazon**, particularly savannah fires, and that will be the subject of a future report.
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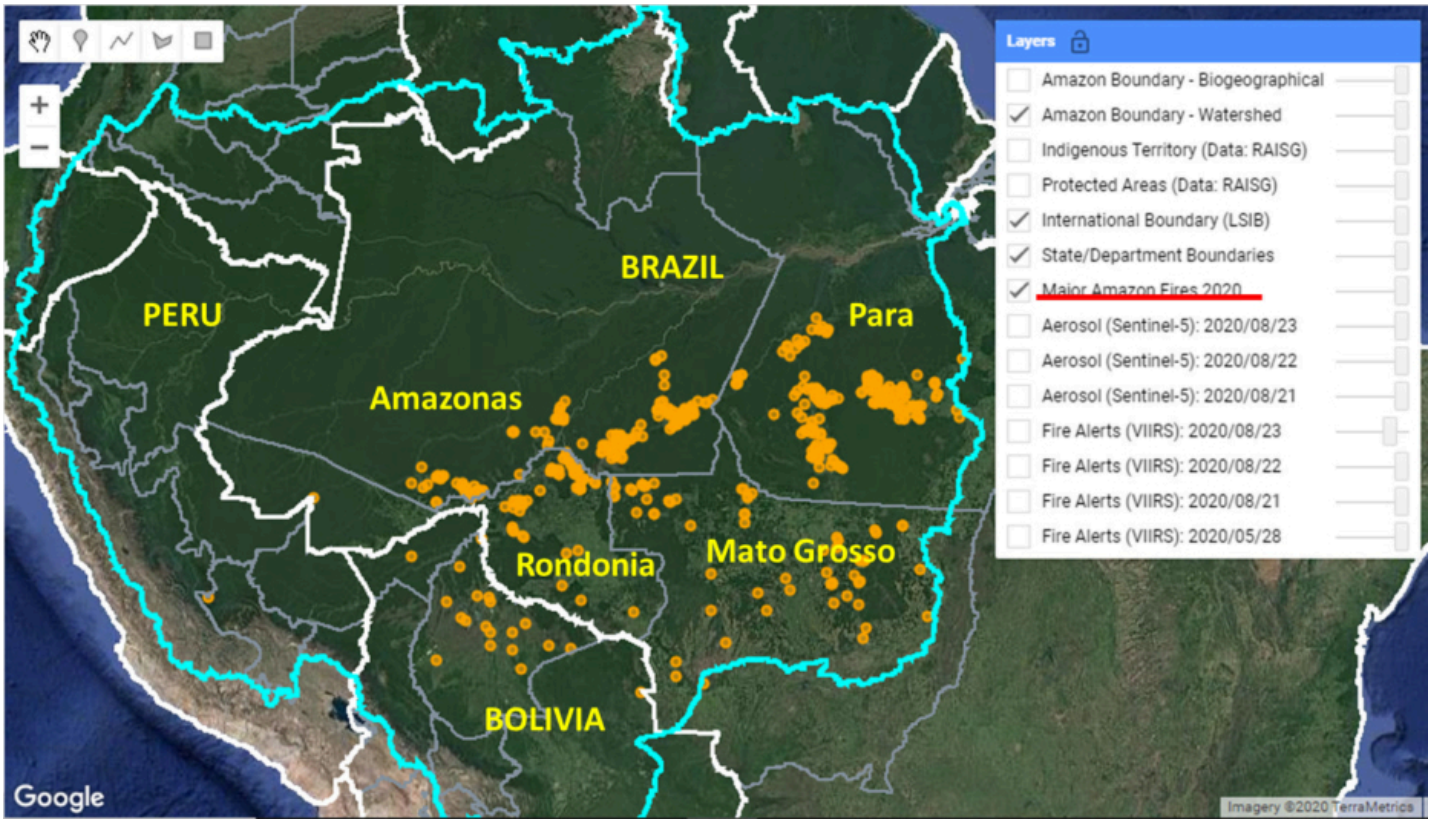

(https://www.maapprogram.org/wp-content/uploads/2020/08/maaproject.org-amazon-fire-tracker-2020-over-500-illegal-major-fires-in-brazilian-amazon-BaseMap-0823.jpg)

Base Map. Major Amazon Fires 2020. Data: MAAP.

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*Notes and Methodology

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

This analysis was done by Amazon Conservation in collaboration with SERVIR Amazonia.

Citation

Finer M, Vale H, Villa L, Nicolau A (2020) Over 500 Illegal Major Fires in Brazilian Amazon. MAAP.