

MAAP: Real-time Amazon Fire Monitoring App, version A



Fire burning a recently deforested area in the Brazilian Amazon in July 2019. Image: Planet.

In time for the next fire season, we are relaunching an improved version of our [Amazon real-time fire monitoring app](#), hosted by Google Earth Engine.

When fires burn, they emit gases and aerosols.* A new satellite (Sentinel-5P from the European Space Agency) detects these **aerosol emissions**.

The major feature of the app is user-friendly and real-time **identification of major fires** across the Amazon, based on the aerosol emissions detected by Sentinel-5P.

Given the low spatial resolution of the aerosol data (7.5 sq km), the app specializes in detecting **large fires** to prioritize efforts.

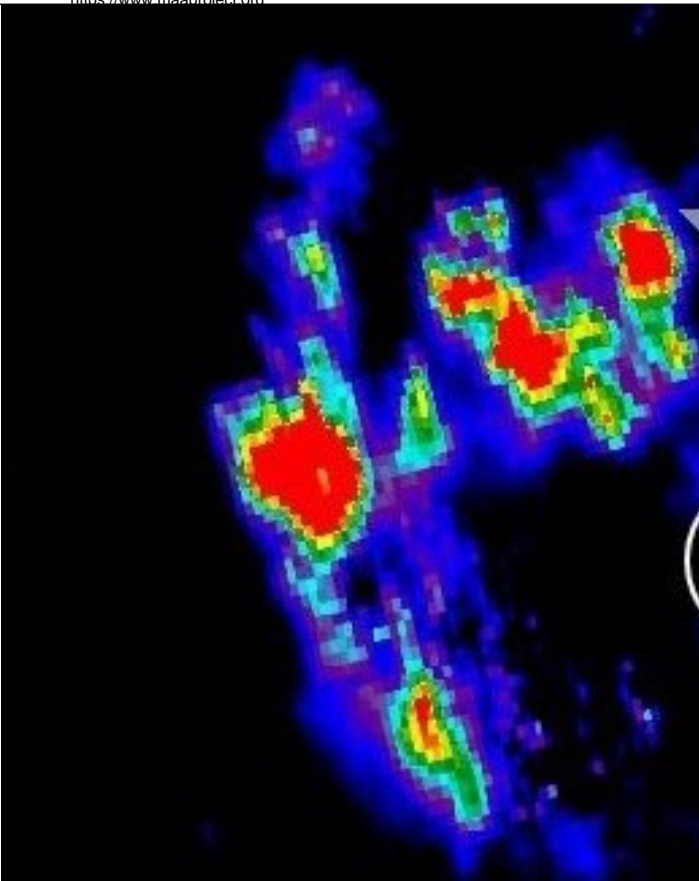
Importantly, the user can analyze the aerosol emissions data from the atmosphere in relation to **fire alert** data from the ground (375 m resolution) to pinpoint the source of the major fires (see instructions below).*

Since the data updates daily and is not impacted by clouds, **real-time monitoring** really is possible. Our goal is to upload each day's new image by midnight.

We hope that key **actors on the ground**, including government agencies and fire-fighting crews, can use this real-time information to better address fires this year.

App Instructions

- 1.



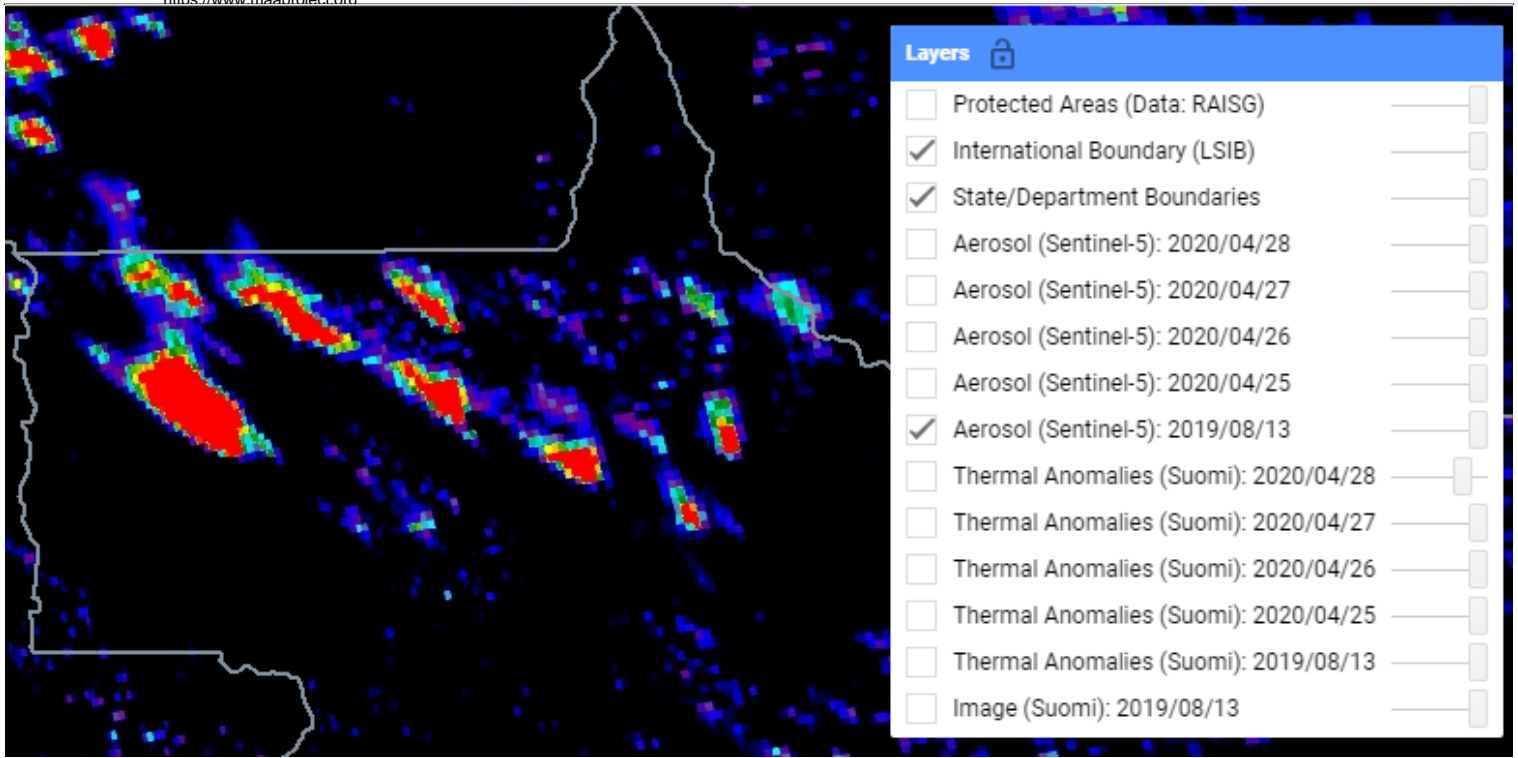
Example of how a major fire appears in the app.

Link to the app at the following link: bit.ly/fire_app

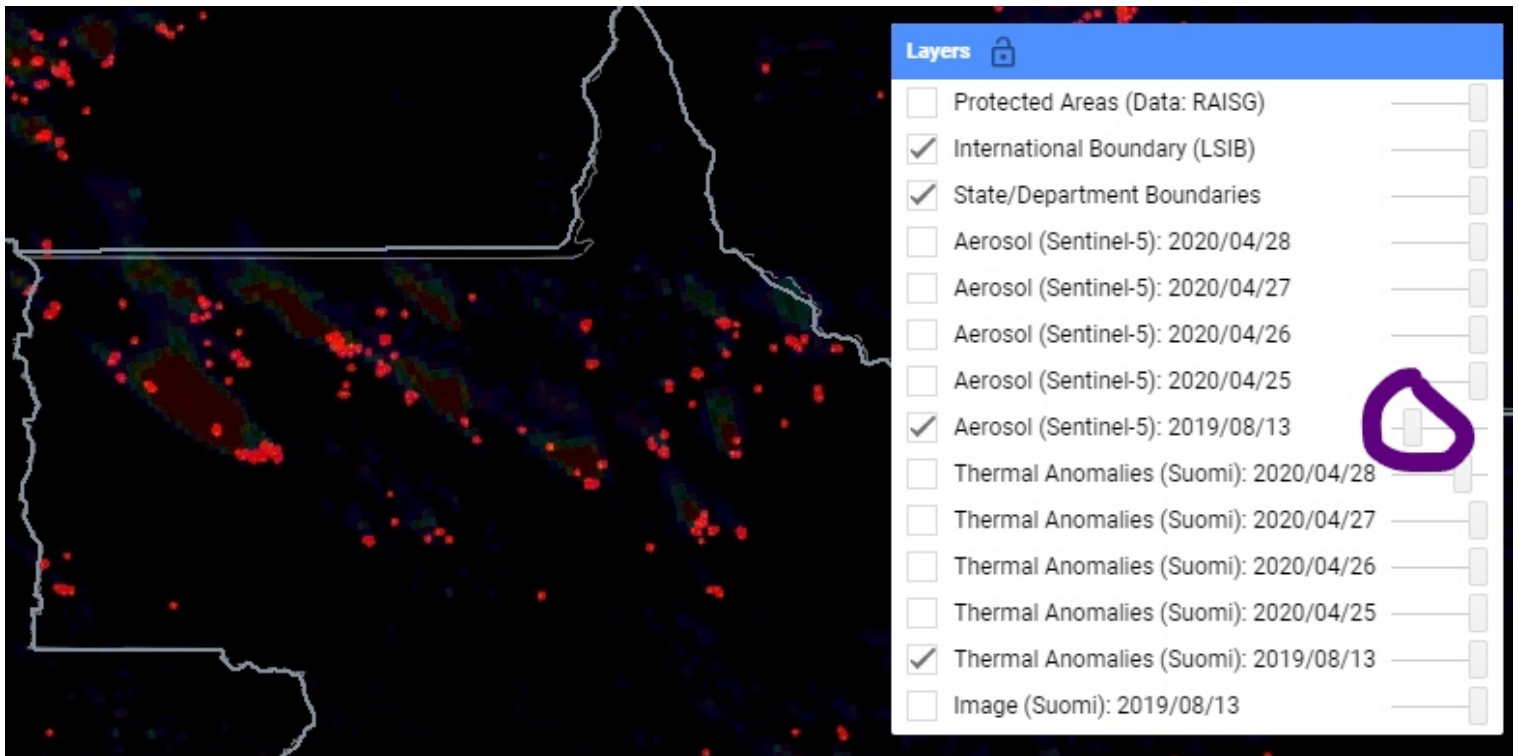
2. Scan the Amazon for **aerosol emissions** of major fires, indicated in yellow, orange, and **red** (see image to the right).
3. Click the "**Layers**" menu in the upper right. Here, you can:
 - Check the date of latest aerosol image (Sentinel 5).
 - Add the **temperature-based alerts** to pinpoint exact location of major fires.
 - For context, add "Protected Areas" and "Departmental Boundaries"
 - Note that you can adjust the transparency of each layer to best view the data.
4. To obtain **coordinates** of an exact spot, click on the map and see under the Coordinates bar on the left.

An Example of how to use the App

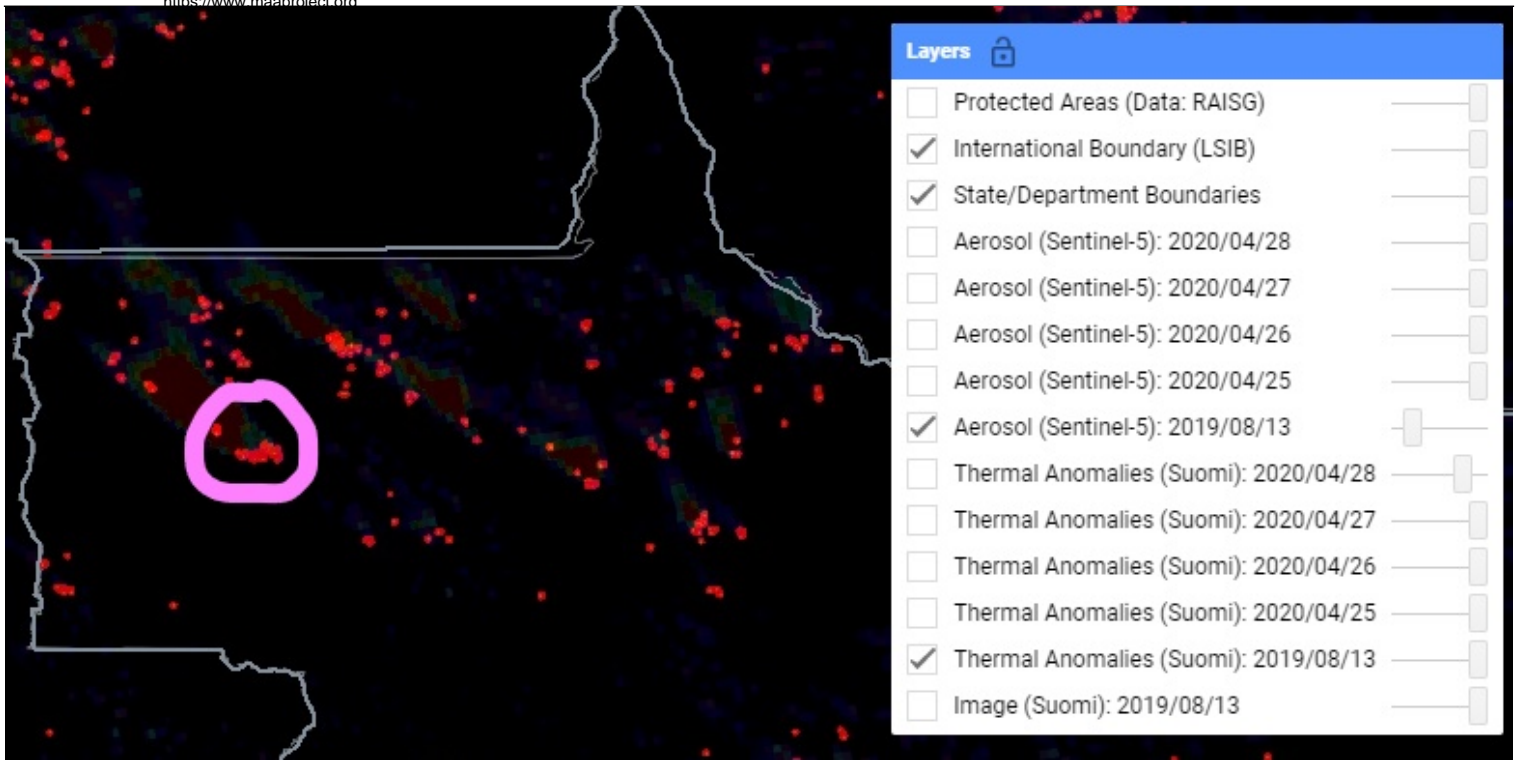
Here is an example based on data from last August in the Brazilian Amazon. The **top image** shows the aerosol emissions from several major fires in the state of Mato Grosso. The **second image** shows how the user can adjust the transparency of the aerosol data to better visualize the thermal anomaly data. The **third image** shows how, by combining the two data sources, the user can pinpoint the likely precise location of the fires (see pink circle for an example). The **bottom image** confirms this finding in a high-resolution image from Planet.



Top image. Aerosol emissions from a major fire in the state of Mato Grosso, August 2019.



Second image. User can adjust the transparency of the aerosol data to better visualize the thermal anomaly data.



Third image. By combining the two data sources, the user can pinpoint the likely precise location of the fire (pink circle).



Bottom image. Confirmation of this finding in a high-resolution image from Planet.

Notes

*Aerosol definition: Suspension of fine solid particles or liquid droplets in air or another gas.

*The high values in the aerosol indices (AI) may also be due to other reasons such as emissions of volcanic ash or desert dust. Hence, some areas, such as the Salar de Uyuni, in western Bolivia, often have orange or red tones.

*The fire alerts are satellite-based data of temperature anomalies on the ground at 375 m resolution.

Acknowledgements

We thank E. Ortiz and G. Palacios for helpful comments to earlier versions of this report.

This work was supported by the following major funders: USAID/NASA (SERVIR), Global Forest Watch Small Grants Fund (WRI), Norwegian Agency for Development Cooperation (NORAD), International Conservation Fund of Canada (ICFC), Metabolic Studio, and Erol Foundation.

Citation

Villa L, Finer M (2020) MAAP: Real-time Amazon Fire Monitoring App. MAAP: 117.