

MAAP #107: Seeing the Amazon Fires with Satellites

August 23, 2019

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Recent fire (late July 2019) in the Brazilian Amazon. Data: Maxar.

Fires now burning in the **Amazon**, particularly **Brazil** and **Bolivia**, have become headline news and a viral topic on social media.

Yet little information exists on the **impact** on the Amazon rainforest itself, as many of the detected fires originate in or near agricultural lands.

Here, we advance the discussion on the impact of the fires by presenting the first **Base Map** of current “fire hotspots” across three countries (Bolivia, Brazil, and Peru). We also present a striking series of **satellite images** that show what the fires look like in each hotspot and how they are impacting Amazonian forests. Our focus is on the most recent fires in **August 2019**.

Our **key findings** include:

- **Fires are burning Amazonian forest in Bolivia, Brazil, and Peru.**
- The fires in **Bolivia** are concentrated in the dry Chiquitano forests in the southern Amazon.
- The fires in **Brazil** are much more scattered and widespread, often associated with agricultural lands. Thus, we warn against using fire detection data alone as a measure of impact as many are clearing fields. However, many of the fires are at the **agriculture-forest boundary** and maybe expanding plantations or escaping into forest.
- Although not as severe, we also detected fires burning forest in **southern Peru**, in an area that has become a deforestation hotspot along the Interoceanic Highway.

Given the nature of the fires in Bolivia and Brazil, estimates of total burned forest area are still difficult to determine. We will continue monitoring and reporting on the situation over the coming days.

Base Map

The Base Map shows “**fire hotspots**” for the Amazonian regions of Bolivia, Brazil, and Peru in August 2019. The data comes from a NASA satellite that detects fires at 375 meter resolution. The letters (**A-G**) correlate to the **satellite image zooms** below.



(<https://www.maaprogram.org/wp-content/uploads/2019/08/maaproject.org-maap-107-seeing-the-amazon-fires-with-satellites-fuegos-agosto19-base6-en.jpg>)

Base Map. Fire Hotspots in the Amazon during August 2019. Data: VIIRS/NASA.

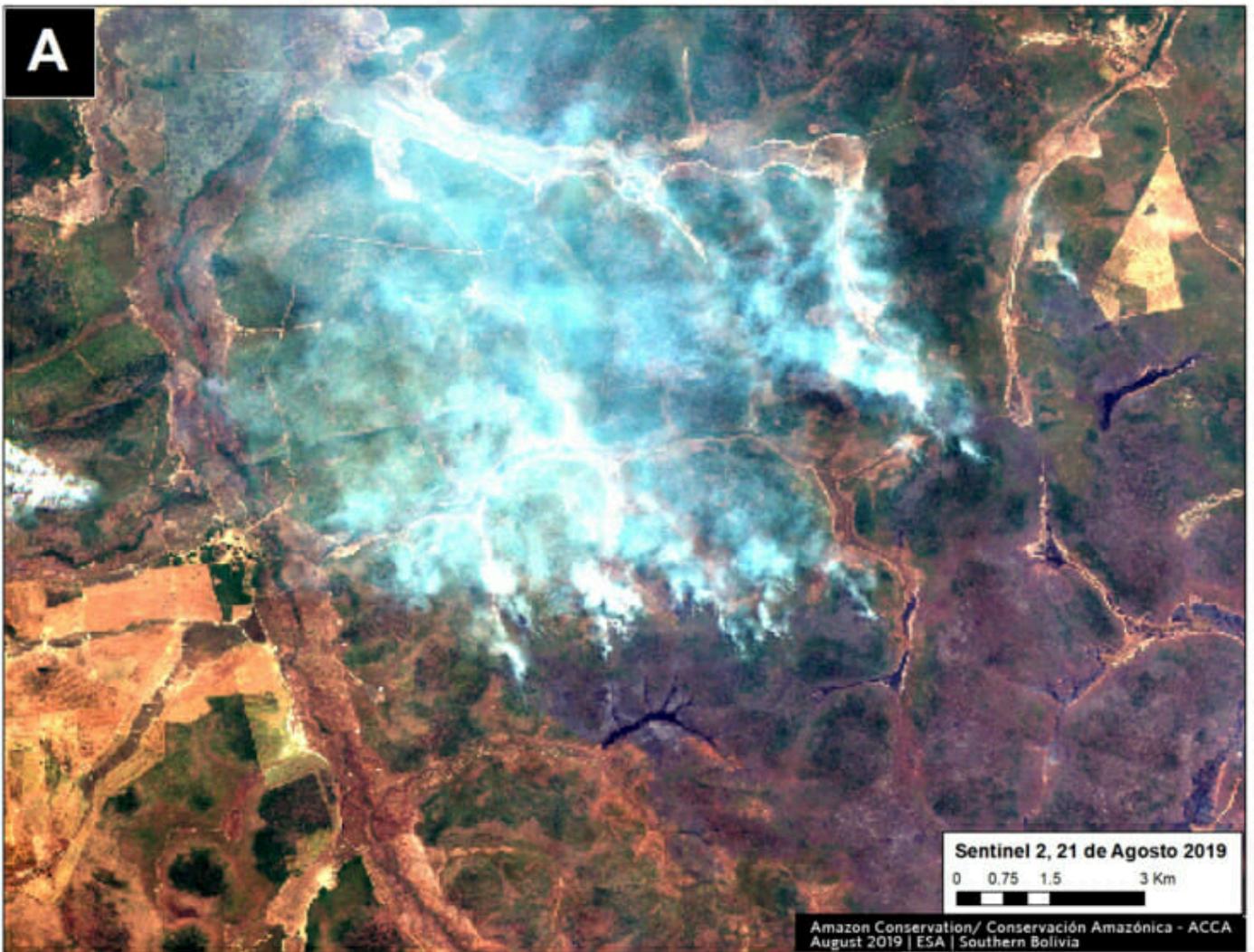
Zoom A: Southern Bolivian Amazon

Fires are concentrated in the dry Chiquitano of southern Bolivia. It is part of the largest tropical dry forest in the world. The fires coincide with areas that have been part of cattle ranching expansion in recent decades (References 1 and 2), suggesting that poor burning practices could be the cause of the fires. Ranching using sown pastures has previously been referred to as a direct cause of forest loss in Bolivia (References 2 and 3). The Bolivian National Service of Meteorology and Hydrology (SENAMHI (<http://senamhi.gob.bo>)) issued high wind alerts in July and August for southern Bolivia, which could have led to the expansion of poorly managed fires. Also, August is usually the driest month of the year in this region. These conditions could explain the origin (poor fire practice) and expansion (little rain and strong winds) of the current fires.



(<https://www.maaprogram.org/wp-content/uploads/2019/08/maaproject.org-maap-107-seeing-the-amazon-fires-with-satellites-ESA-5.jpg>)

Zoom A1. Fire in southern Bolivian Amazon. Data: ESA



(<https://www.maaprogram.org/wp-content/uploads/2019/08/maaproject.org-maap-107-seeing-the-amazon-fires-with-satellites-ESA-3.jpg>)

Zoom A2. Fire in southern Bolivian Amazon. Data: ESA



(<https://www.maaprogram.org/wp-content/uploads/2019/08/maaproject.org-maap-107-seeing-the-amazon-fires-with-satellites-Planet-7.jpg>)

Zoom A3. Fire in southern Bolivian Amazon. Data: Planet

Zooms B, C, E, F, G: Western Brazilian Amazon

The major fires in western Brazil seem to be at the agriculture-forest boundary. Note that **Zoom B** shows fire in a **protected area** in Amazonas state; **Zoom C** seems to show fire escaping (or deliberately set) in the primary forests in Rondonia state; and **Zooms F and G** seems to show fire expanding plantation into forest in Amazonas and Mato Grosso states, respectively.

(<https://www.maaprogram.org/wp-content/uploads/2019/08/maaproject.org-maap-107-seeing-the-amazon-fires-with-satellites-ESA-3-1.jpg>)

Zoom B. Fire in a protected area in Amazonas state. Data: ESA

(<https://www.maaprogram.org/wp-content/uploads/2019/08/maaproject.org-maap-107-seeing-the-amazon-fires-with-satellites-Planet-10.png>)

Zoom C. Fires at agriculture-forest boundary in Rondonia state. Data: Sentinel.

(<https://www.maaprogram.org/wp-content/uploads/2019/08/maaproject.org-maap-107-seeing-the-amazon-fires-with-satellites-Planet-11.jpg>)

Zoom E. Fire escaping (or deliberately set) in the primary forests in Rondonia state. Data: Planet

(<https://www.maaprogram.org/wp-content/uploads/2019/08/maaproject.org-maap-107-seeing-the-amazon-fires-with-satellites-Planet-9.jpg>)

Zoom F. Fire that seems to be expanding plantation into forest in Amazonas state. Data: Planet.

(<https://www.maaprogram.org/wp-content/uploads/2019/08/maaproject.org-maap-107-seeing-the-amazon-fires-with-satellites-Planet-5.jpg>)

Zoom G. Fire that seems to be expanding plantation into forest in Mato Grosso state. Data: Planet.

(<https://www.maaprogram.org/wp-content/uploads/2019/08/maaproject.org-maap-107-seeing-the-amazon-fires-with-satellites-Planet-1.jpg>)

Bonus Zoom. Recent fire in Brazilian Amazon. Data: Planet.

Zoom D: Southern Peruvian Amazon

Fires burning forest near the town of Iberia, an area along the Interoceanic Highway that has become a deforestation hotspot in the region of Madre de Dios (see MAAP #28 (https://www.maaprogram.org/2016/hotspot_southperu/) and MAAP #47 (https://www.maaprogram.org/2016/fire_mdd/)).

(<https://www.maaprogram.org/wp-content/uploads/2019/08/maaproject.org-maap-107-seeing-the-amazon-fires-with-satellites-fuegos-agosto19d-nat-a1.jpg>)

Zoom D. Fire in southern Peruvian Amazon (near Iberia, Madre de Dios). Data: ESA

Additional References

We have these to be some of the most informative additional references:

New York Times, Aug 24

(<https://www.nytimes.com/interactive/2019/08/24/world/americas/amazon-rain-forest-fire-maps.html?smid=tw-nyclimate&smtyp=cur&login=smartlock&auth=login-smartlock>)

Global Forest Watch, Aug 23 ([https://blog.globalforestwatch.org/fires/what-can-global-forest-watch-tell-us-about-the-fires-in-brazil?](https://blog.globalforestwatch.org/fires/what-can-global-forest-watch-tell-us-about-the-fires-in-brazil?utm_campaign=gfw_fires&utm_source=gfwtwitter&utm_medium=photo&utm_term=firesinbrazil_8)

[utm_campaign=gfw_fires&utm_source=gfwtwitter&utm_medium=photo&utm_term=firesinbrazil_8](https://blog.globalforestwatch.org/fires/what-can-global-forest-watch-tell-us-about-the-fires-in-brazil?utm_campaign=gfw_fires&utm_source=gfwtwitter&utm_medium=photo&utm_term=firesinbrazil_8)

Technical References

¹ Müller, R., T. Pistorius, S. Rohde, G. Gerold & P. Pacheco. 2013. Policy options to reduce deforestation based on a systematic analysis of drivers and agents in lowland Bolivia. *Land Use Policy* 30(1): 895-907. <http://dx.doi.org/10.1016/j.landusepol.2012.06.019>

² Muller, R., Larrea-Alcázar, D.M., Cuéllar, S., Espinoza, S. 2014. Causas directas de la deforestación reciente (2000-2010) y modelado de dos escenarios futuros en las tierras bajas de Bolivia. *Ecología en Bolivia* 49: 20-34.

³ Müller, R., P. Pacheco & J. C. Montero. 2014. El contexto de la deforestación y degradación de los bosques en Bolivia: Causas, actores e instituciones. Documentos Ocasionales CIFOR 100, Bogor. 89 p.

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