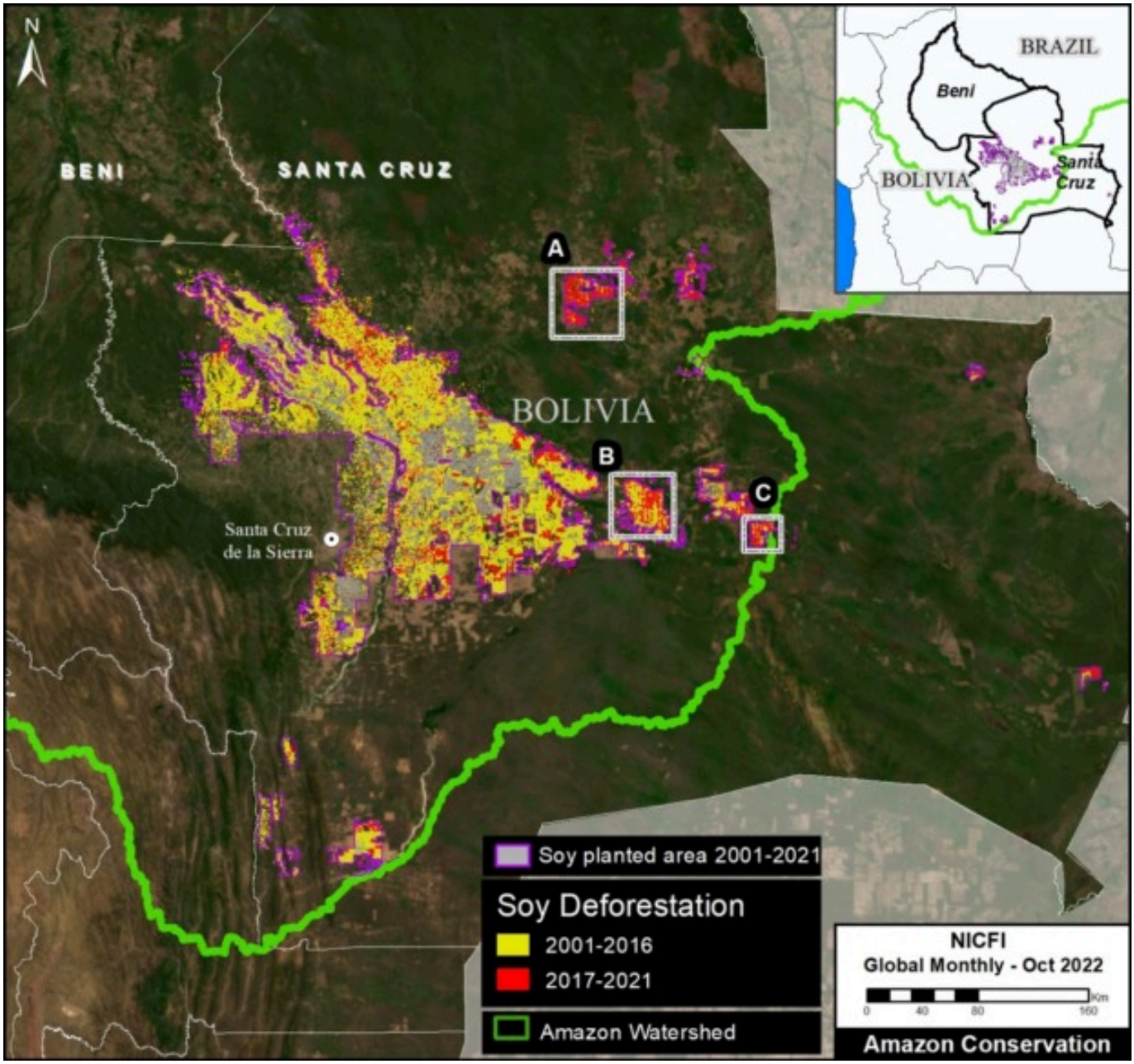
MAAP #179: Soy Deforestation in the Bolivian Amazon

February 15, 2023



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Base Map. Soy-driven deforestation in the Bolivian Amazon, 2001-2021. Click on map to enlarge.

It is generally known that **commodities** such as oil palm, soy, and cattle are major tropical deforestation drivers, but concise estimates are often difficult.

New satellite-based datasets are improving this situation. Notably, researchers recently published the first overview of **soybean plantations** for South America.[1]

Here, we use this data to estimate recent **soy-driven deforestation** in the **Bolivian Amazon**.

In the second part of this series, see **MAAP #180 (https://www.maapprogram.org/2023/soy-mennonites-bolivia-amazon/)**, we incorporate additional data to estimate the role of **Mennonite colonies** in this soy deforestation.

In summary, we document the massive soy-driven deforestation of **904,518 hectares** (2.2 million acres) between 2001 and 2021 in the Bolivian Amazon (see **Base Map**).

Of this total, Mennonites have caused 23% (210,980 hectares, or 521,344 acres).

Soy Deforestation in the Bolivian Amazon, 2001 – 2021

Soy has covered 2.1 million hectares of the southern Bolivian Amazon over the past 20 years, with current coverage around 1.2 million hectares.

We documented an extremely high level of soy-driven deforestation in the Bolivian Amazon: **904,518 hectares** (2.2 million acres) between 2001 and 2021 (see **Base Map** above). This is a massive area, similar to the size of the U.S. state of Vermont.

This soy deforestation peaked in 2008 (92,000 hectares), but has been high (>18,000 hectares) every year between 2001 and 2019, meaning this is a long-running and persistent issue.

The vast majority of the total deforestation occurred in the Santa Cruz department, plus a small corner of adjacent Beni department.

Below, **Figure 1** shows the overall massive soy deforestation over the past 20 years in the Bolivian Amazon, comparing 2001 (left panel) with 2021 (right panel).

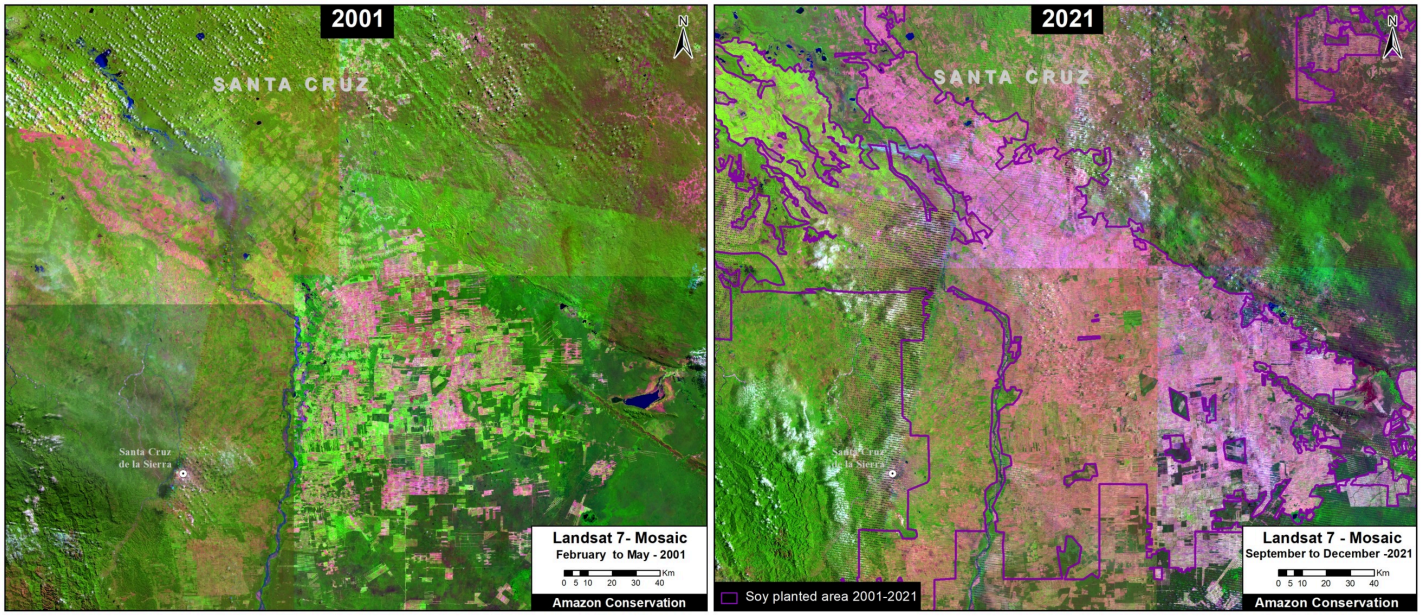

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Figure 1. Soy deforestation in the Bolivian Amazon, 2001 vs 2021.

Soy Deforestation in the Bolivian Amazon, 2017 – 2021

Of the total soy deforestation noted above, 11% (**101,188 hectares**, or 250,000 acres) occurred in just the past 5 years (2017-21).

Below, **Figures 2-4** show examples of this recent soy deforestation, comparing 2017 (left panel) with 2021 (right panel). See the Base Map above for locations of insets A-C.

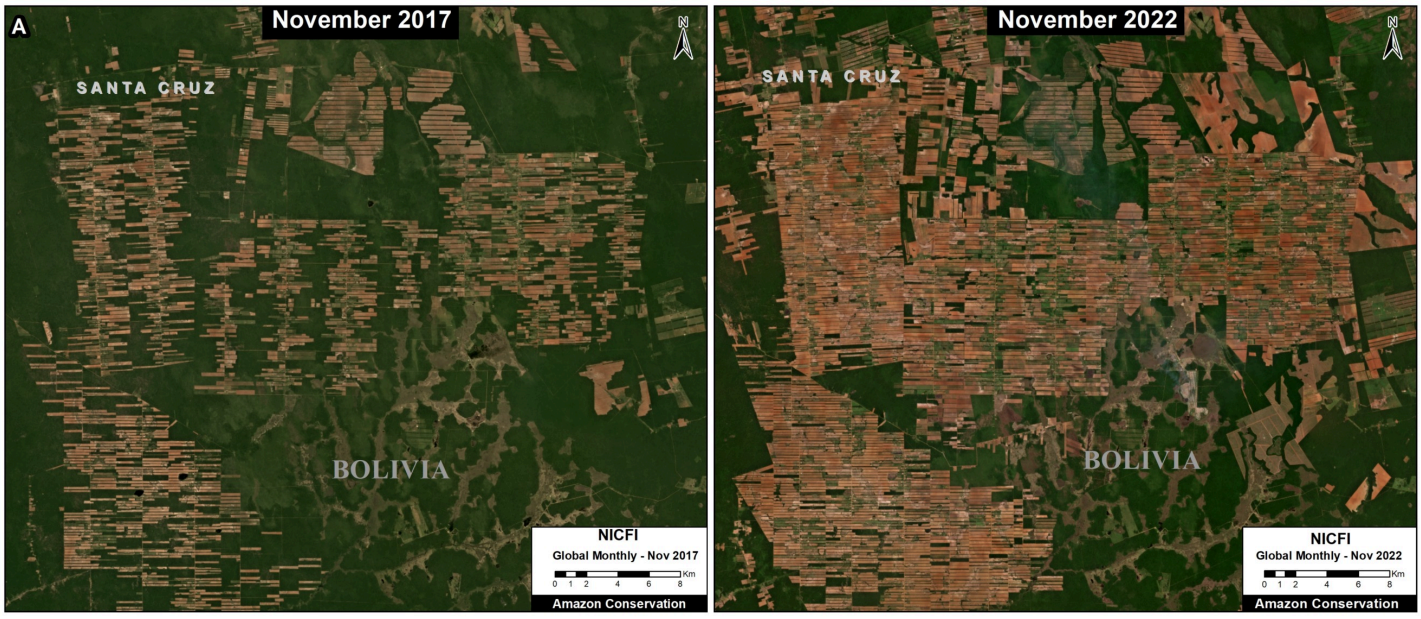

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Figure 2. Soy deforestation in the Bolivian Amazon, 2017 vs 2021.

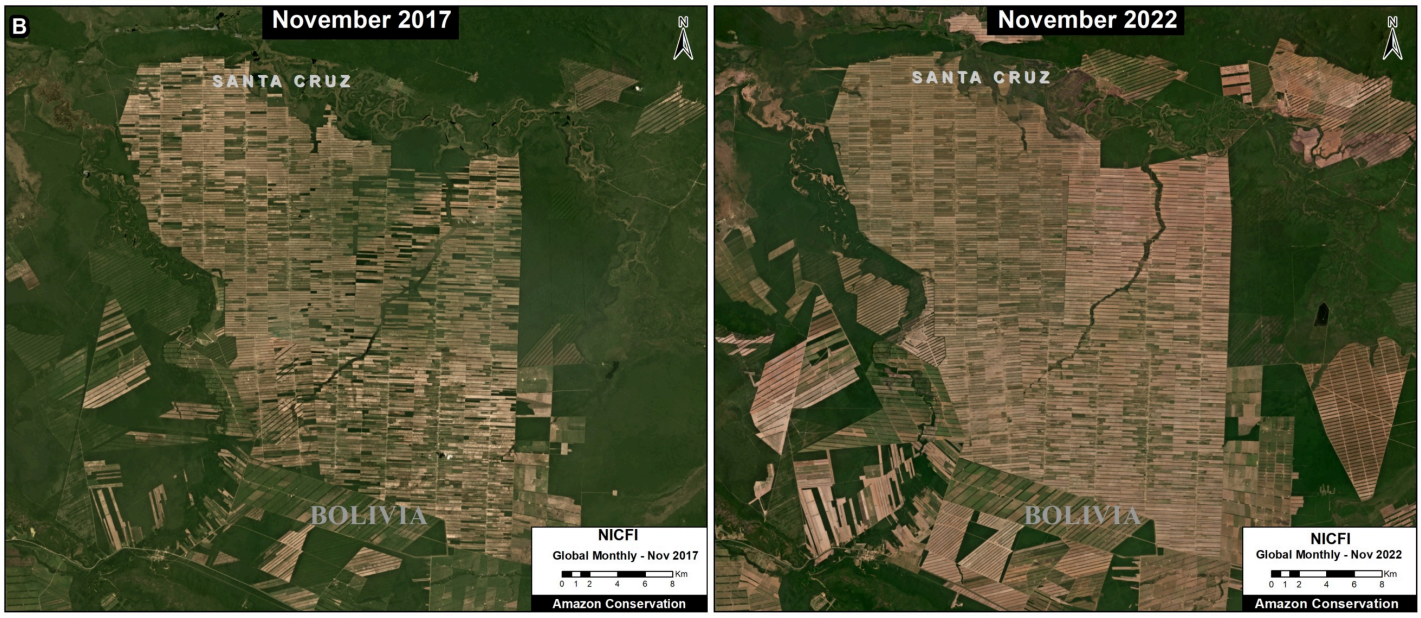

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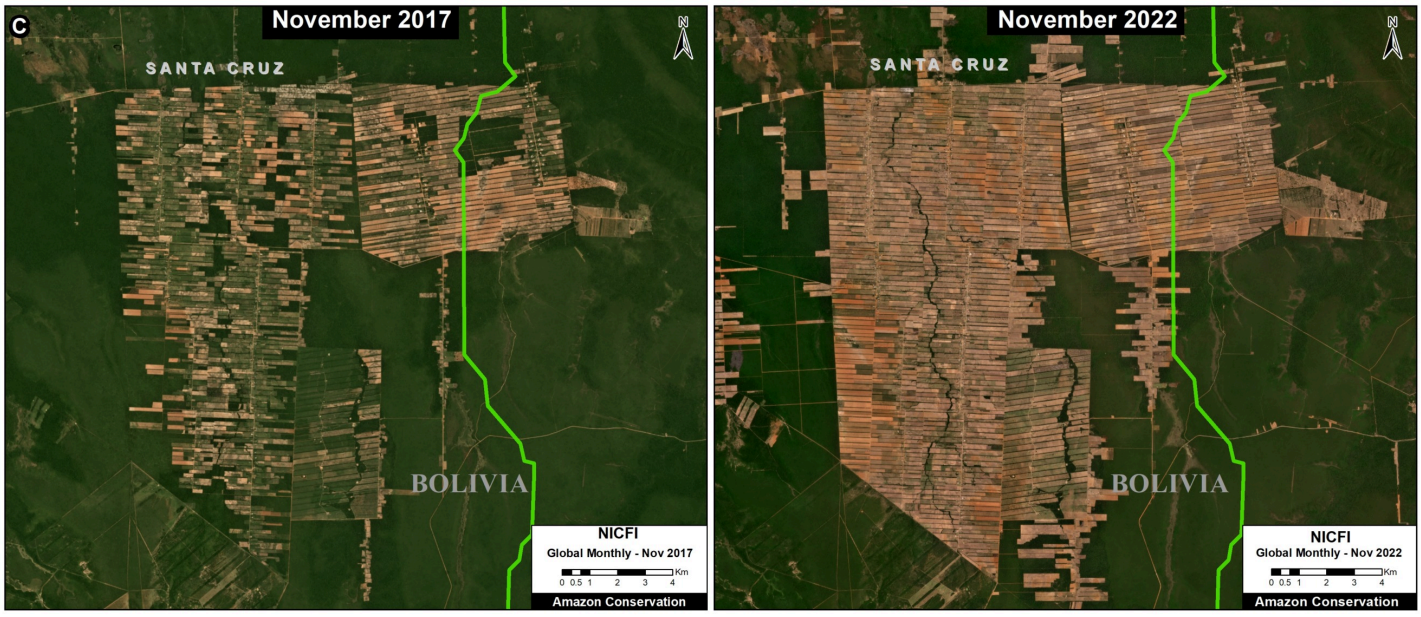
Figure 3. Soy deforestation in the Bolivian Amazon, 2017 vs 2021.



(https://www.maapprogram.org/wp-content/uploads/2023/02/maaproject.org-maap-xyy-soy-deforestation-in-the-bolivian-amazon-Panel-Soy-ZoomC-17-22.jpg)

Figure 4. Soy deforestation in the Bolivian Amazon, 2017 vs 2021.

Methodology

For this series of reports, we employed a three-part methodology.

First, we mapped out "soy planted area" for 2001 to 2021 based on the data from Song et al 2021.[1] This data is available on the University of Maryland's GLAD site "Commodity Crop Mapping and Monitoring in South America (https://glad.umd.edu/projects/commodity-crop-mapping-and-monitoring-south-america)."

Second, on top of the soy planted area noted above, we mapped out forest loss for 2001 to 2021, also based on data from the University of Maryland.[2] This served as our estimate of soy-driven deforestation.

Third, on top of the soy planted area noted above, we incorporated an additional dataset from a recent study on the expansion of Mennonite colonies in Latin America. [3] Spatial data from this study available here (https://borealisdata.ca/dataverse/lendev). We then estimated forest loss for these select Mennonite soy areas. See **MAAP #180 (https://www.maapprogram.org/2023/soy-mennonites-bolivia-amazon/)**.

References

[1]Song, X.P., M.C. Hansen, P. Potopov, B. Adusei, J. Pickering, M. Adami, A. Lima, V. Zalles, S.V. Stehman, D.M. Di Bella, C.M. Cecilia, E.J. Copati, L.B. Fernandes, A. Hernandez-Serna, S.M. Jantz, A.H. Pickens, S. Turubanova, and A. Tyukavina. 2021. Massive soybean expansion in South America since 2000 and implications for conservation.

[2]Hansen, M. C., P. V. Potapov, R. Moore, M. Hancher, S. A. Turubanova, A. Tyukavina, D. Thau, S. V. Stehman, S. J. Goetz, T. R. Loveland, A. Kommareddy, A. Egorov, L. Chini, C. O. Justice, and J. R. G. Townshend. 2013. "High-Resolution Global Maps of 21st-Century Forest Cover Change." Science 342 (15 November): 850–53. Data available from: earthenginepartners.appspot.com/science-2013-global-forest.

[3]Yann le Polain de Waroux, Janice Neumann, Anna O'Driscoll & Kerstin Schreiber (2021) Pious pioneers: the expansion of Mennonite colonies in Latin America, Journal of Land Use Science, 16:1, 1-17, DOI: 10.1080/1747423X.2020.1855266 (https://doi.org/10.1080/1747423X.2020.1855266)

Acknowledgements

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Citation

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