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Can AI (help) v combat Deforestation?

The Problem: Deforestation threatens the Amazon[1]

deforestation

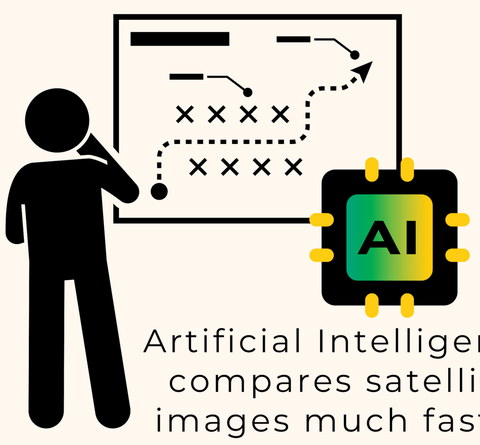
tree cover loss

evapotranspiration decrease → precipitation reduction

carbon emissions increase → global warming

We need to control the (human induced) forest fire and deforestation!

Towards a Solution



Artificial Intelligence compares satellite images much faster than humans

Analysis of Landsat images with 30m resolution[2]

Monitoring of the **Andean Amazon** Project

- Machine learning is used to compare satellite images and check for changes[2]

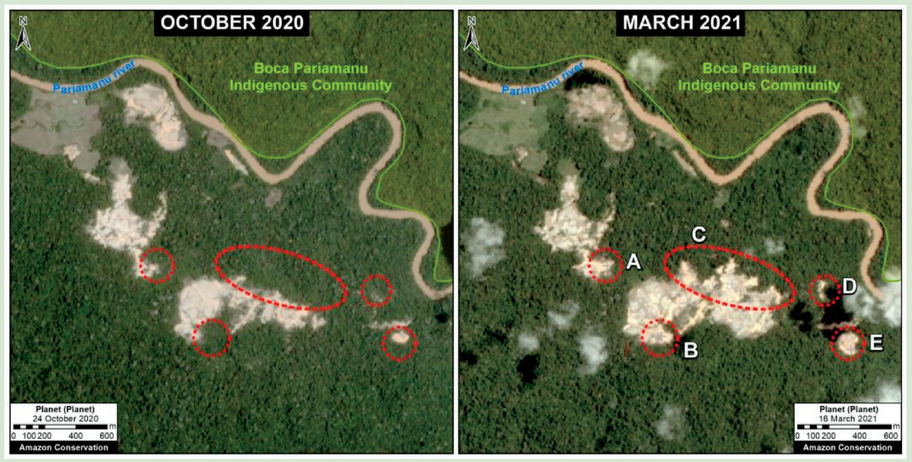


Fig. 2

- Critical verification done by local population[2]

Detection of elevated aerosol emissions and tree cover changes[2]

Alerts are published in Global Forest Watch app[2]

Success Story

- Joined efforts of the Peruvian government and MAAP reduced the deforestation for an illegal gold mine in Peru[3]
- After the operation the deforestation for gold mines in the area decreased by 78%[3]

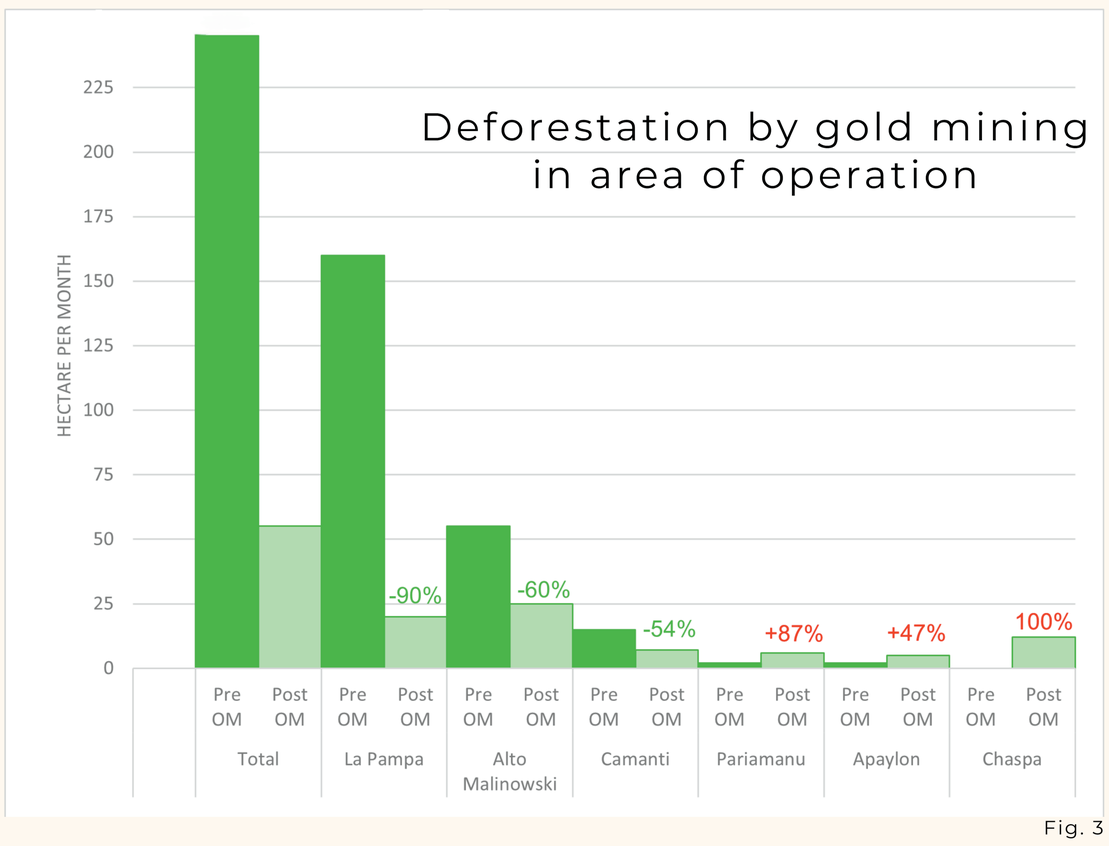


Fig. 3

The Conclusions

Local Initiative that helps finding solutions to climate change with a global impact.

Outlook for the future:

- **Increased use of machine learning in AI-driven early warning systems for deforestation**[4]
- **AI-powered decision support tools for sustainable land use**[4]

References

1 Jia, G., E. Shevliakova, P. Artaxo, N. De Noblet-Ducoudré, R. Houghton, J. House, K. Kitajima, C. Lennard, A. Popp, A. Sirin, R. Sukumar, L. Verchot, 2019: Land–climate interactions. In: Climate Change and Land: an IPCC special report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems [P.R. Shukla, J. Skea, E. Calvo Buendia, V. Masson-Delmotte, H.-O. Pörtner, D.C. Roberts, P. Zhai, R. Slade, S. Connors, R. van Diemen, M. Ferrat, E. Haughey, S. Luz, S. Neogi, M. Pathak, J. Petzold, J. Portugal Pereira, P. Vyas, E. Huntley, K. Kissick, M, Belkacemi, J. Malley, (eds.)]. https://doi.org/10.1017/9781009157988.004
2 Monitoring of the Andean Amazon Project (2021). maaproject.org
3 Finer M., Mamani, N. (2020) Illegal Gold Mining Down 78% in Peruvian Amazon, But Still Threatens Key Areas. MAAP: 130.
4 Rolnick et al. (2021). Climate Change & AI: Recommendations for Government. GPAI. climate-change-and-ai.pdf (gpai.ai)

Figure 1: MAAP Logo taken from maaproject.org
Figure 2: Finer M, Mamani N (2021) New Illegal Gold Mining Hotspot in Peruvian Amazon – Pariamanu. MAAP: 137. Data from Planet & MAAP
Figure 3: Adapted with data from Finer M., Mamani, N. (2020) Illegal Gold Mining Down 78% in Peruvian Amazon, But Still Threatens Key Areas. MAAP: 130.

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