



MONITORAMENTO E PREVISÃO DE RISCO DE DESMATAMENTO NA AMAZÔNIA

Carlos Souza Jr., Ph.D.
Pesquisador Associado
souzajr@imazon.org.br



*Missão: promover conservação e
desenvolvimento sustentável na Amazônia.*

Há dois tipos de distúrbios antropogênicos na Floresta Amazônica: Desmatamento e a Degradação Florestal

Sinop, MT



Sinop, MT



Marengo, J.A., Souza Jr, C.M., Thonicke, K., Burton, C., Halladay, K., Betts, R.A., Alves, L.M. & Soares, W.R. (2018). Changes in climate and land use over the Amazon region: current and future variability and trends. *Front. Earth Sci.*, 6, 228.

Barlow, J. et al. (2016). Anthropogenic disturbance in tropical forests can double biodiversity loss from deforestation. *Nature*.

Souza, C.M., Siqueira, J. V., Sales, M.H., Fonseca, A. V., Ribeiro, J.G., Numata, I., Cochrane, M.A., Barber, C.P., Roberts, D.A. & Barlow, J. (2013). Ten-year Landsat classification of deforestation and forest degradation in the Brazilian amazon. *Remote Sens.*

Remoção parcial da cobertura florestal pela atividade madeireira, queimadas e mudanças climáticas (secas prolongadas)



Remoção completa da cobertura florestal para atividades de uso da solo (pecuária, agricultura, áreas urbanas, mineração)

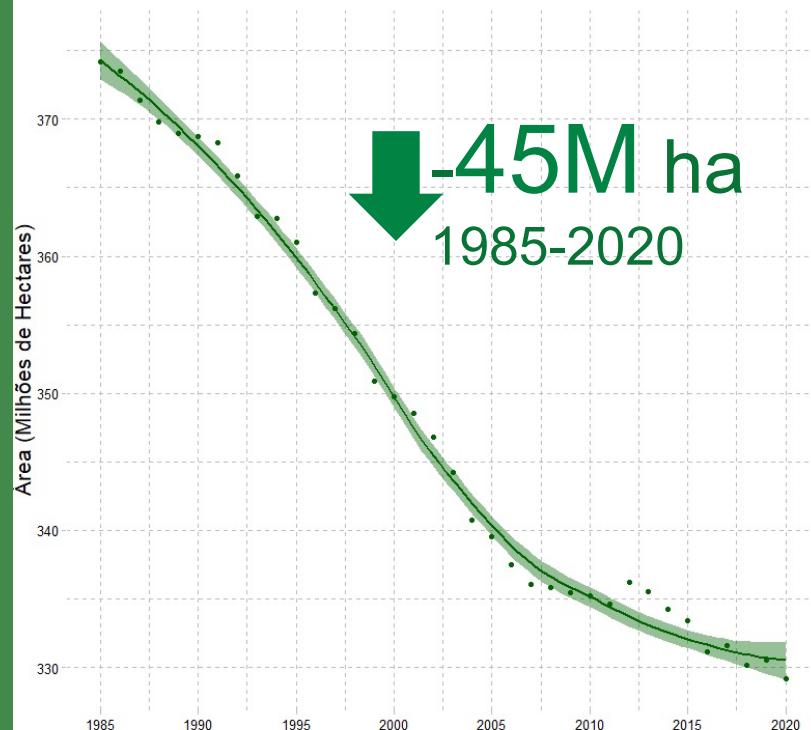
Impactos

- Perda de biodiversidade
- Redução de chuvas
- Emissões de CO₂
- Aumento da temperatura local
- Risco de *tipping point*

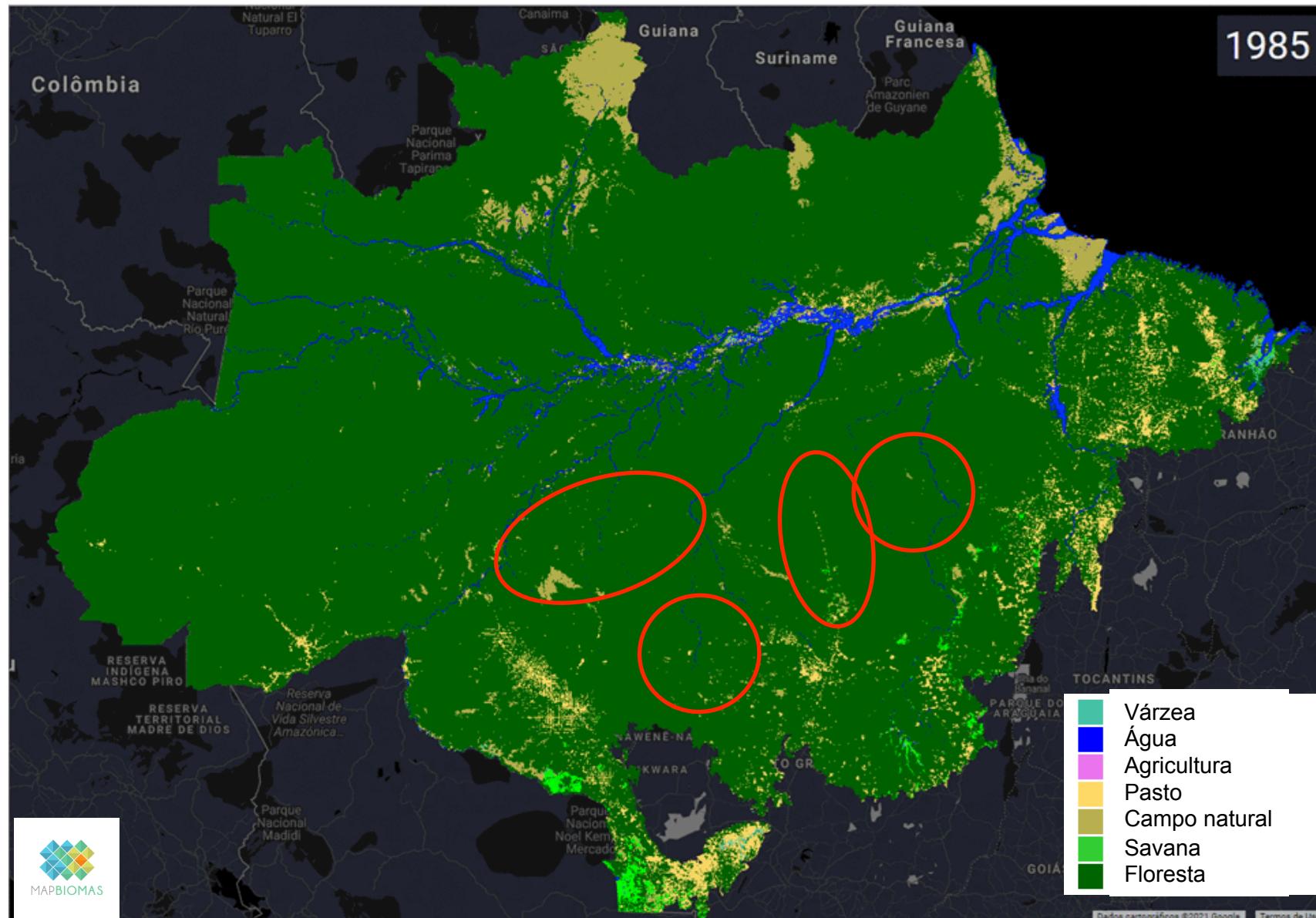


Uso e Cobertura da Terra do Bioma Amazônia de 1985 a 2020

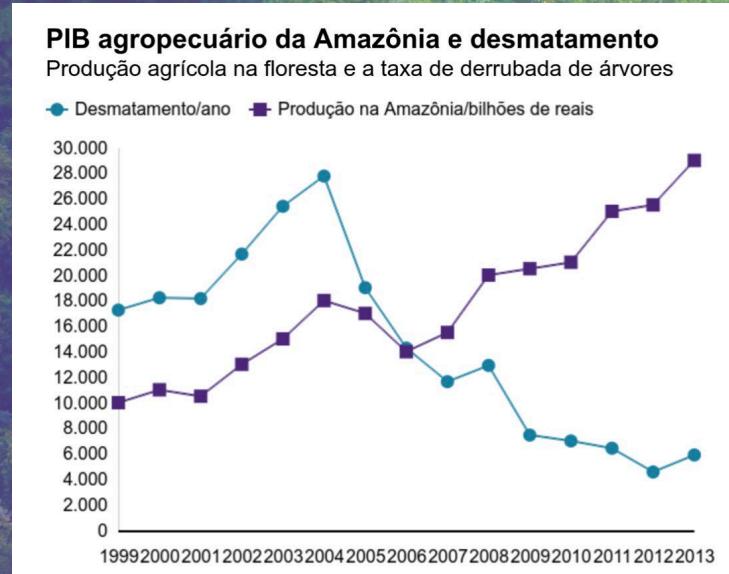
Bioma Amazônia



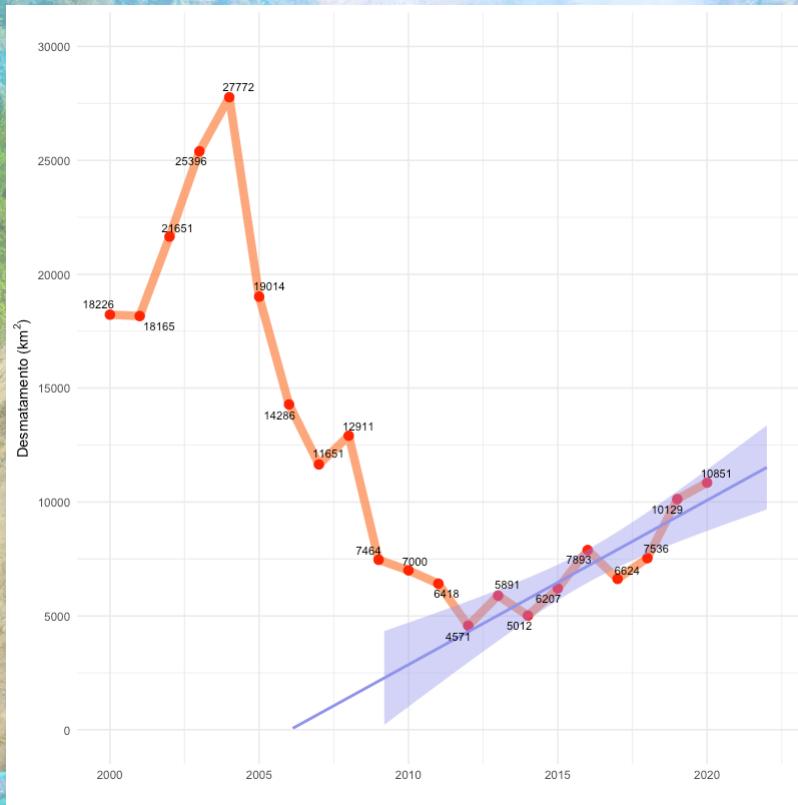
Perdemos um total de
~20% da floresta
Amazônica original.



Taxa de Desmatamento Anual na Amazônia Legal 1988-2020



Fonte: Imazon



Fonte: PRODES, INPE

CRISE ENERGÉTICA

Crise hídrica já estava
anunciada, diz pesquisador

FOLHA DE S.PAULO

Supermarkets threaten Brazil boycott over
deforestation



WORLD + CLIMATE CHANGE

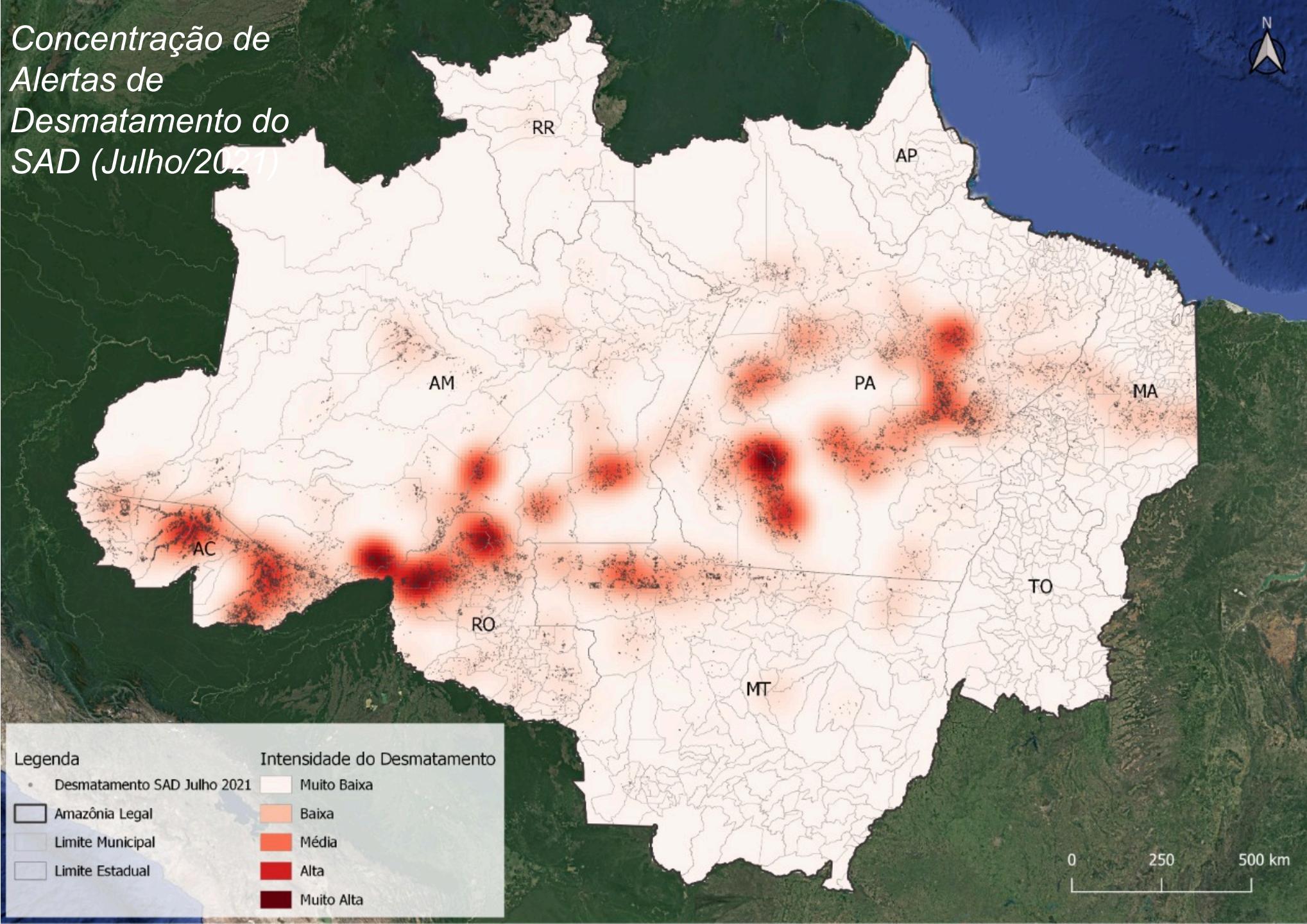
The Amazon Now Emits More Carbon Than it
Absorbs. Can We Ever Reverse That Tipping
Point?

TIME

'More emissions than
Exxon': Is meat the next
target for divestment?

INVESTMENT
WEEK

Concentração de Alertas de Desmatamento do SAD (Julho/2021)



Área Desmatada
10.476 km²

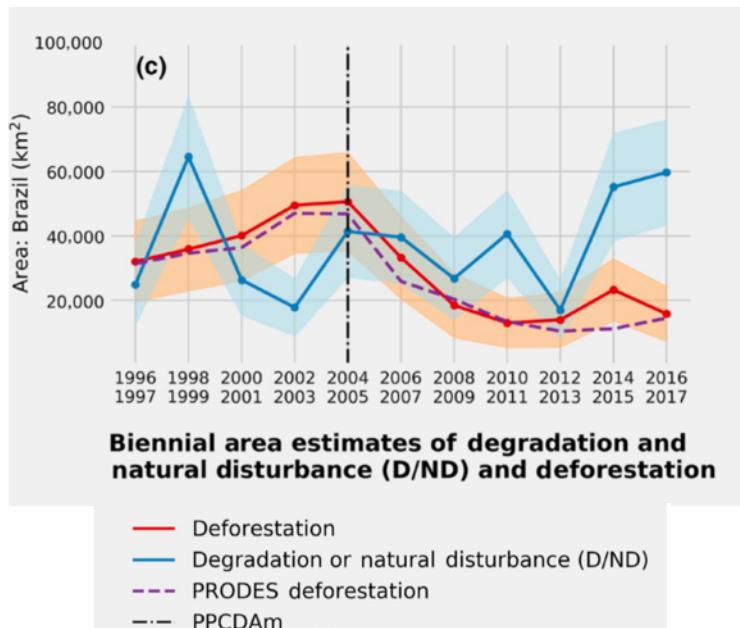
Agosto de 2020 a Julho 2021

↑ 57%

6.688 km²

Agosto de 2019 a Julho 2020

A área de degradação florestal passou a ser maior que a área desmatada a partir de 2004. Em períodos de seca extrema é 2 a 3 vezes maior!



Received: 25 November 2019 | Revised: 30 January 2020 | Accepted: 31 January 2020

DOI: 10.1111/gcb.15020

PRIMARY RESEARCH ARTICLE

Satellite-based estimates reveal widespread forest degradation in the Amazon

Eric L. Bullock¹ | Curtis E. Woodcock¹ | Carlos Souza Jr.² | Pontus Olofsson¹

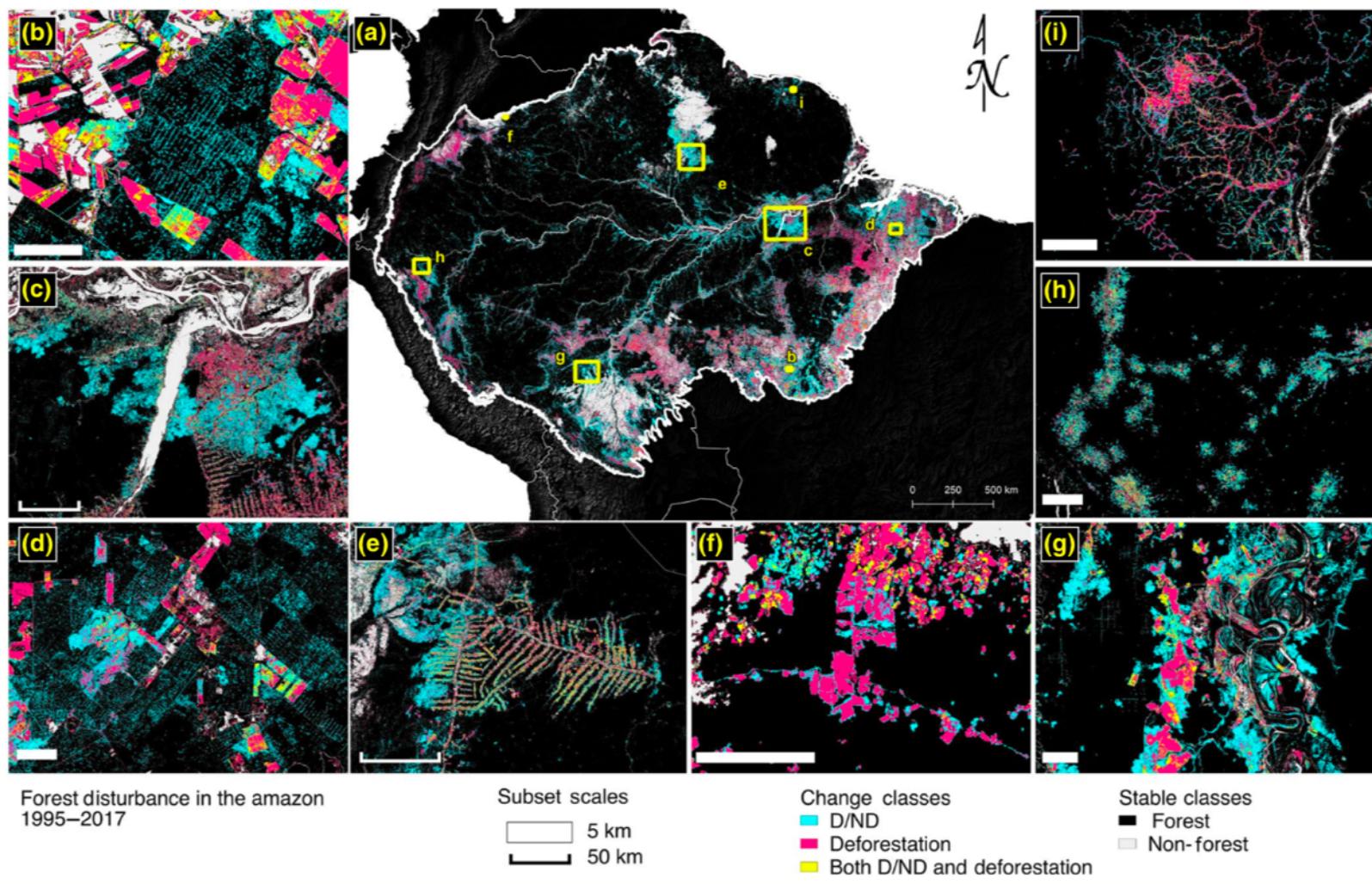


FIGURE 2 The 30 m disturbance dataset showing locations of degradation and natural disturbance (D/ND), deforestation, both D/ND and deforestation, and stable forest and non-forest from 1995 to 2017. (a) Amazonian Ecoregion as defined in Olson et al. (2006). (b) Logging, deforestation, and fire in Mato Grosso, Brazil (longitude, latitude: -54.67, -11.91). (c) Fires near the Amazon River and deforestation in Pará, Brazil (-54.67, -11.91). (d) Selective logging and deforestation in Pará, Brazil (-48.53, -3.32). (e) Fires and deforestation in Roraima, Brazil (-59.88, 0.96). (f) Deforestation with D/ND due to roads, fire, and edge damage in Meta, Colombia (-115.64, 11.43). (g) Fire damage, deforestation, and waterlogging along in Beni, Bolivia (-66.86, -11.99). (h) Small-scale logging in Loreto, Peru (-76.59, -5.49). (i) Deforestation and degradation due to mining in Sipaliwini, Suriname (-54.51, 5.02)

As estradas é uma das principais vetores de desmatamento e de queimadas

CSIRO PUBLISHING
International Journal of Wildland Fire
http://dx.doi.org/10.1071/WF13106

A quantitative study of the proximity of satellite detected active fires to roads and rivers in the Brazilian tropical moist forest biome

Sanath S. Kumar^{A,D}, David P. Roy^A, Mark A. Cochrane^A, Carlos M. Souza Jr^B, Christopher P. Barber^A and L. Boschetti^C

^AGeographic Information Science Center of Excellence, South Dakota State University, Brookings, SD 57007, USA.

^BInstituto do Homem e Meio Ambiente da Amazônia–*Imazon*, Caixa Postal 5101, Ananindeua, Pará 67, 113-000, Brazil.

^CDepartment of forest, rangeland and fire sciences, College of Natural Resources, University of Idaho, Moscow, ID 83844, USA.

^DCorresponding author. Email: sanath.kumar@sdstate.edu



Roads, deforestation, and the mitigating effect of protected areas in the Amazon

Christopher P. Barber^{a,*}, Mark A. Cochrane^a, Carlos M. Souza Jr.^b, William F. Laurance^c

^aGeospatial Sciences Center of Excellence, South Dakota State University, 1021 Medary Ave, Wecota Hall Box 505B, Brookings, SD 57007, USA

^bAmazon – Instituto do Homem e Meio Ambiente da Amazônia, Rua Domingos Marreiros, 2020, Belém, Pará CEP: 66.060-162, Brazil

^cCentre for Tropical Environmental and Sustainability Science (TESS), School of Marine and Tropical Biology, James Cook University, Cairns, Queensland 4878, Australia

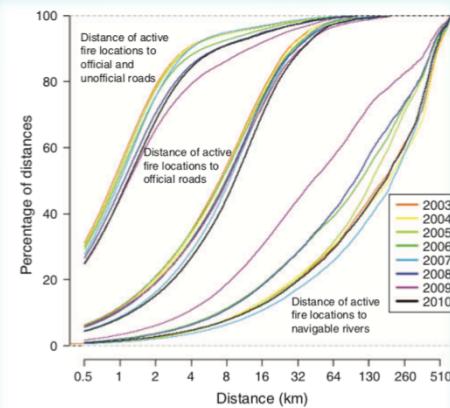


Fig. 5. Cumulative frequency of the closest distances from each MODIS active fire detection to the transportation networks. Results shown for each year of MODIS active fire detections (colour coded) for the Brazilian tropical moist forest biome study area.

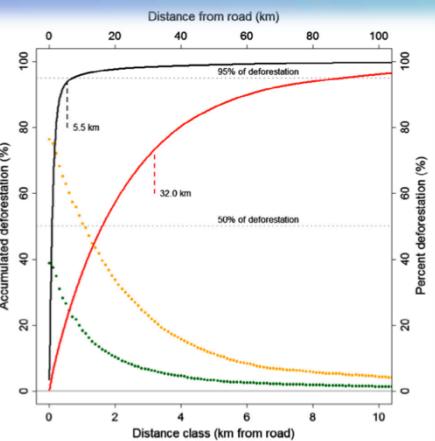


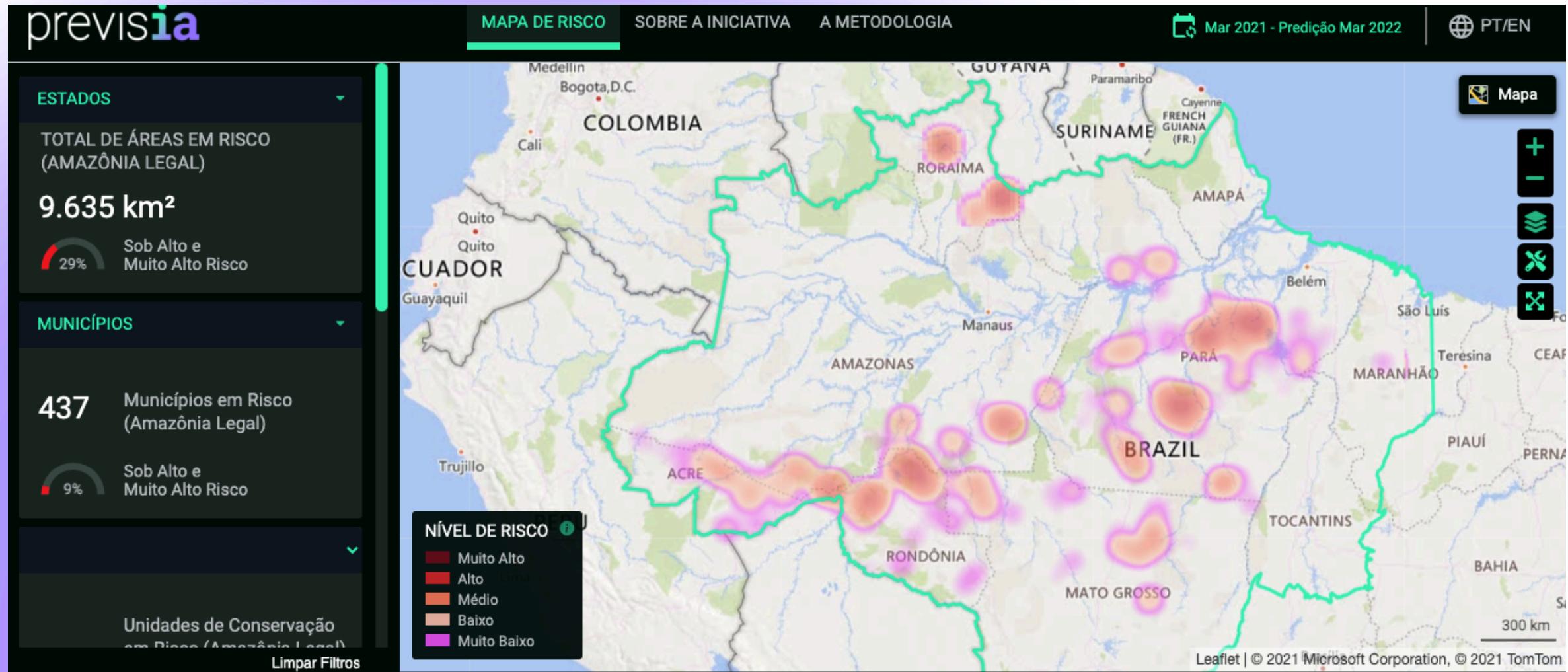
Fig. 1. Accumulation of overall deforestation with respect to distance from roads (left and top axes). Red line is distance to highway network indicating distance at which 95% of deforestation is accounted for and the calculated distance of diminishing influence. Black line indicates same for all official and unofficial roads. The percent deforestation within 100 m distance classes (bottom and right axes) shows relationship between deforestation in protected areas (green) and unprotected forests (orange). (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

85% das queimadas concentram-se em até 5km de todas as estradas

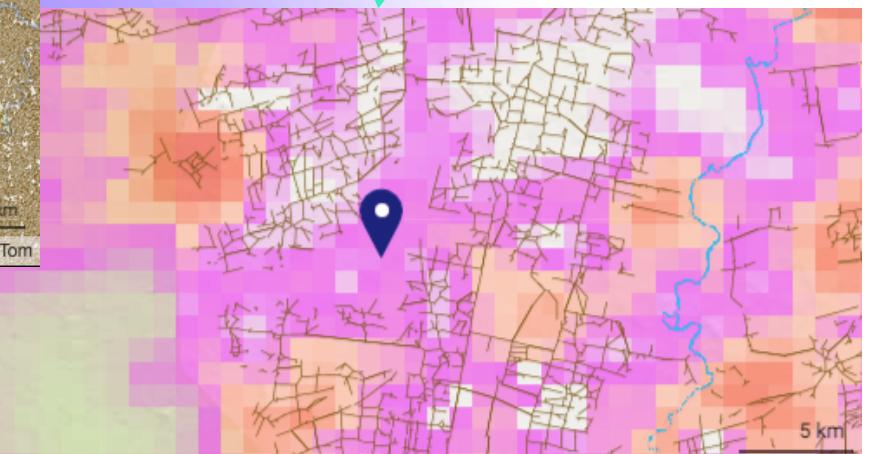
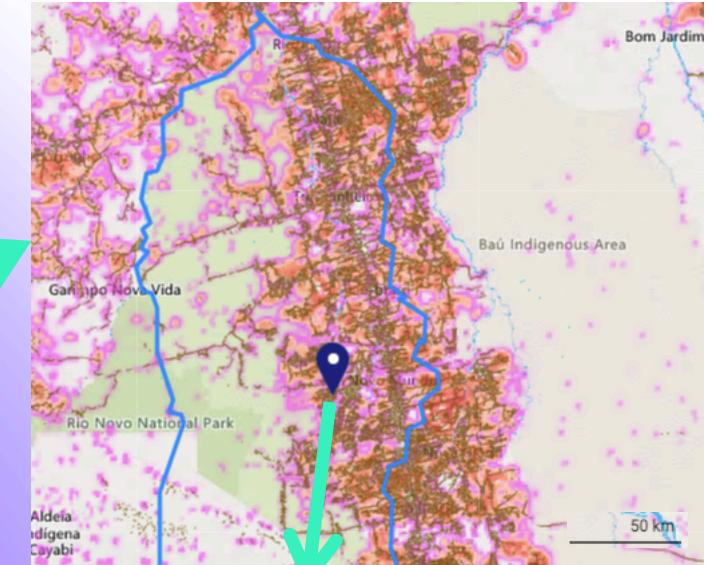
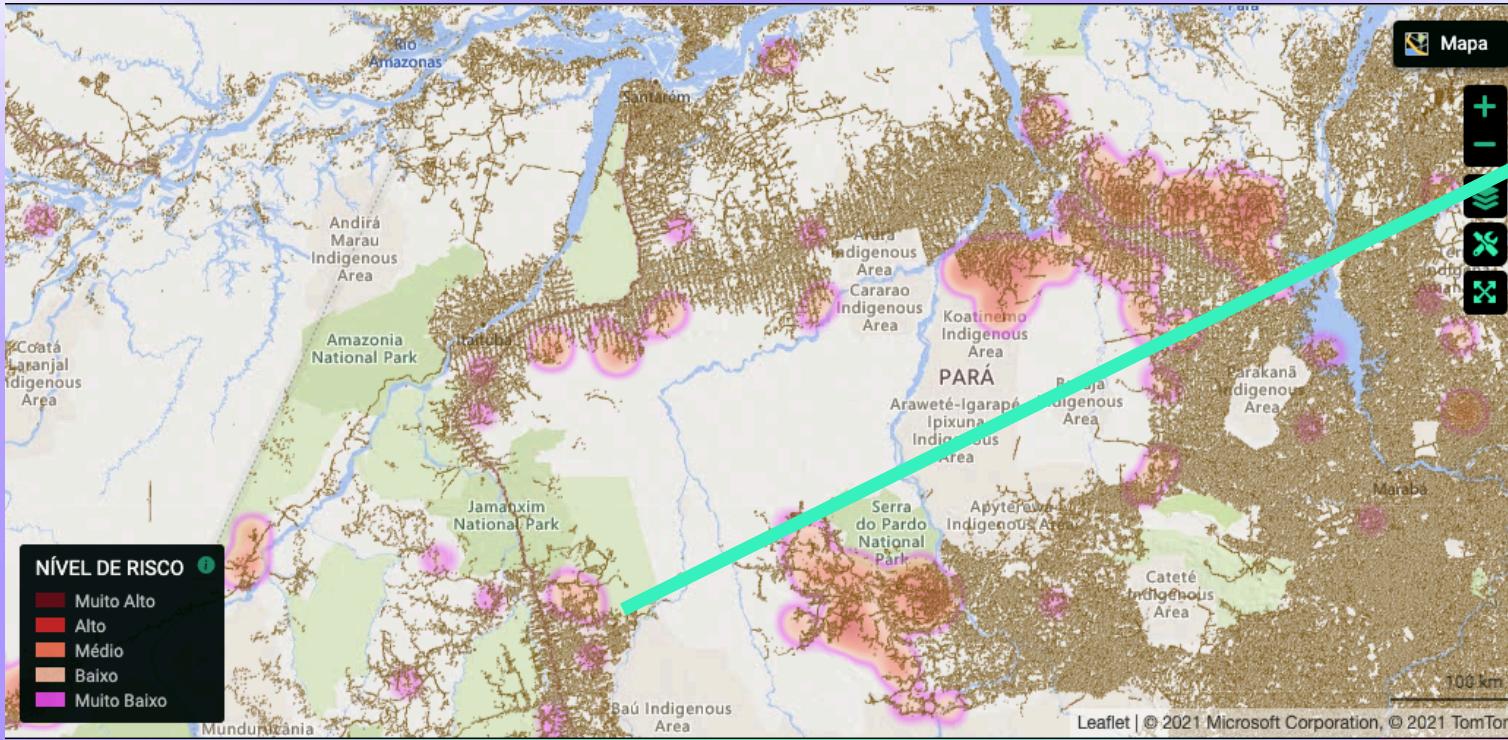
95% do desmatamento acumulado concentram-se em até 5km de todas as estradas

Risco de Desmatamento

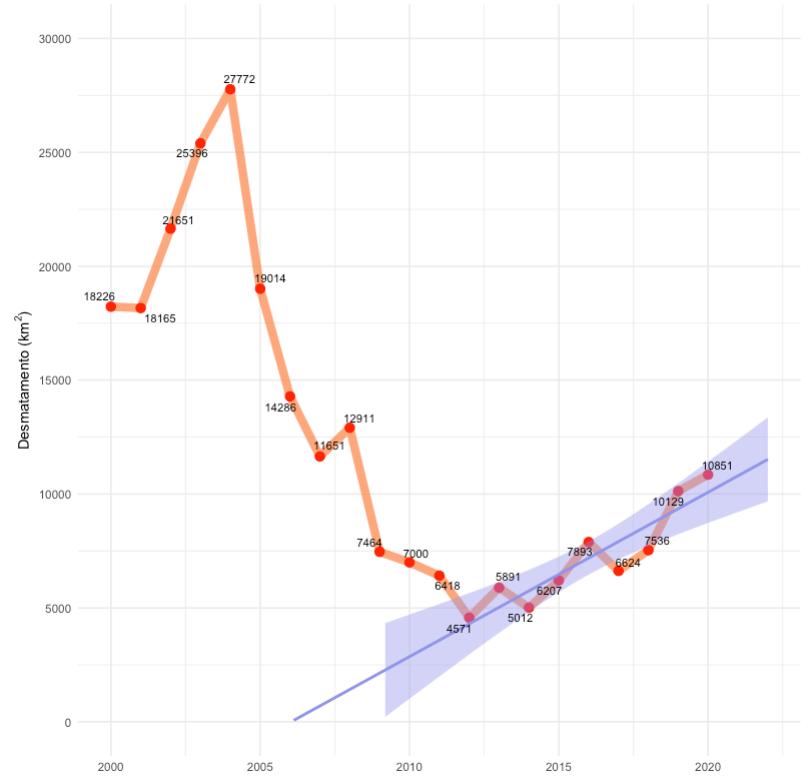
previsia.org



Mapeamos todas as estradas, caminhos e ramais na Amazônia até 2020 com IA

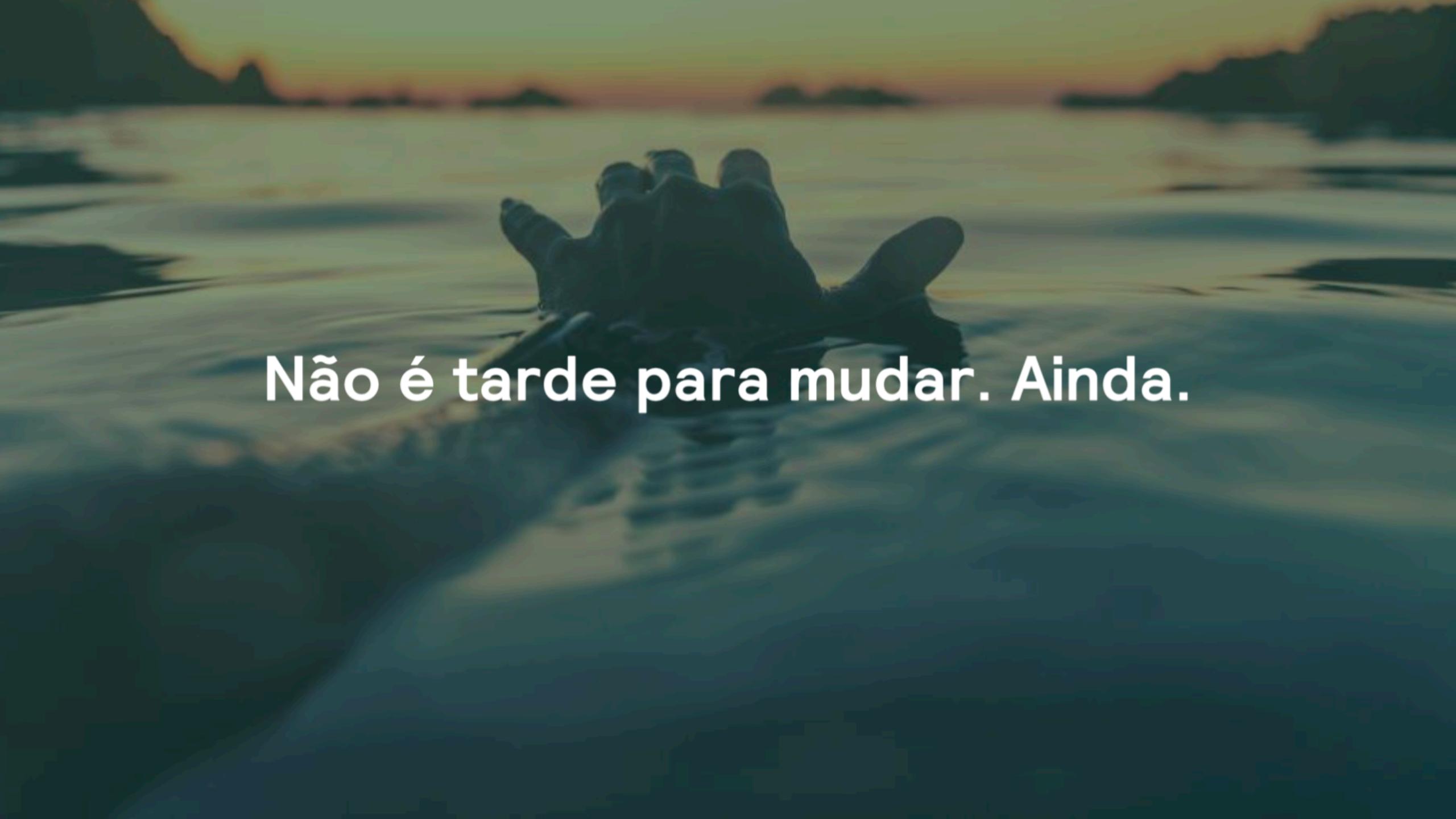


AÇÕES PARA REDUÇÃO DO DESMATAMENTO E DA DEGRADAÇÃO FLORESATAL NA AMAZÔNIA



- 1. Usar efetivamente** informações de sistemas de **monitoramento** para responsabilização por crimes ambientais.
- 2. Implementar estratégias de prevenção** de desmatamento.
- 3. Restaurar** áreas degradadas, aumentar a produtividade de pastagens, combater a grilagem de terras públicas, e escalar a econômica de base florestal.

Fonte: [PRODES](#), INPE

A photograph of a person's feet resting on a sandy beach. The person is wearing dark swim trunks. The ocean is visible in the background with gentle waves, and the sky is filled with warm, golden sunset colors.

Não é tarde para mudar. Ainda.