

Tracking and classifying Amazon fire events in near real-time

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SERVIR  AMAZONIA



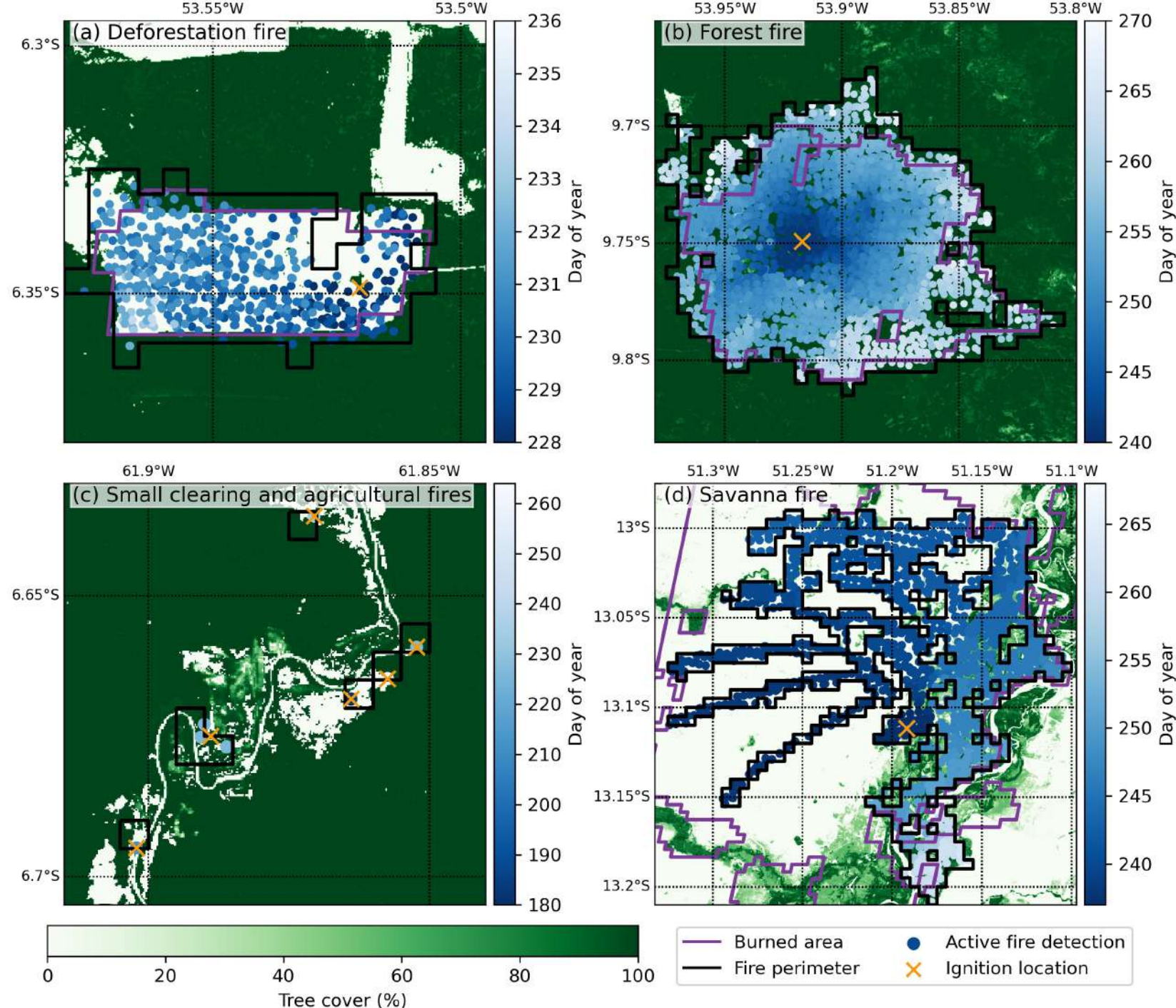
Not all fires are the same

- In the Amazon region, deforestation (a) and understory (b) fires result in long-term losses of carbon from the biosphere.
- Small agricultural burns (c) and savanna fires (d) have shorter term impacts on climate, for example through aerosols.

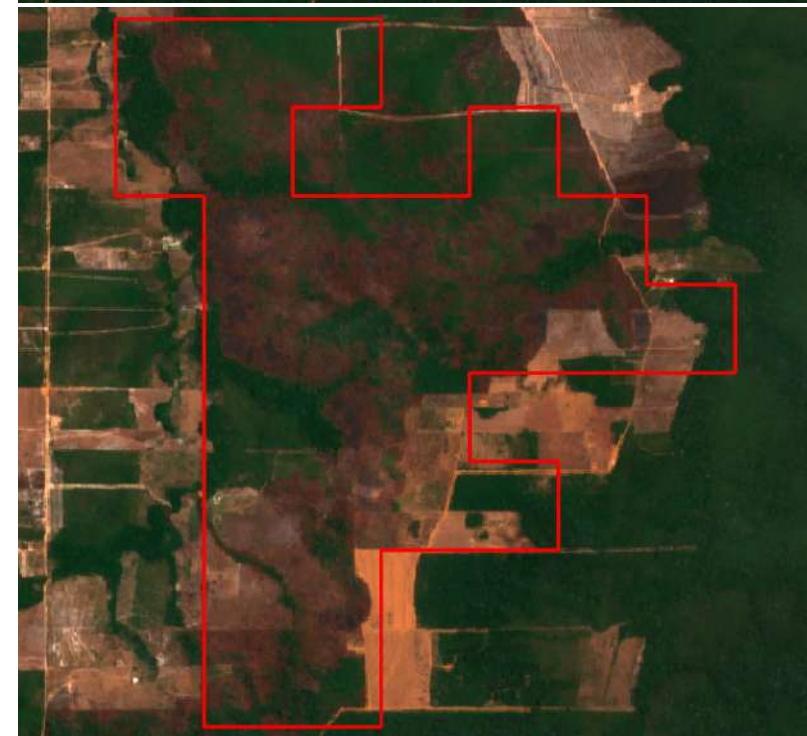
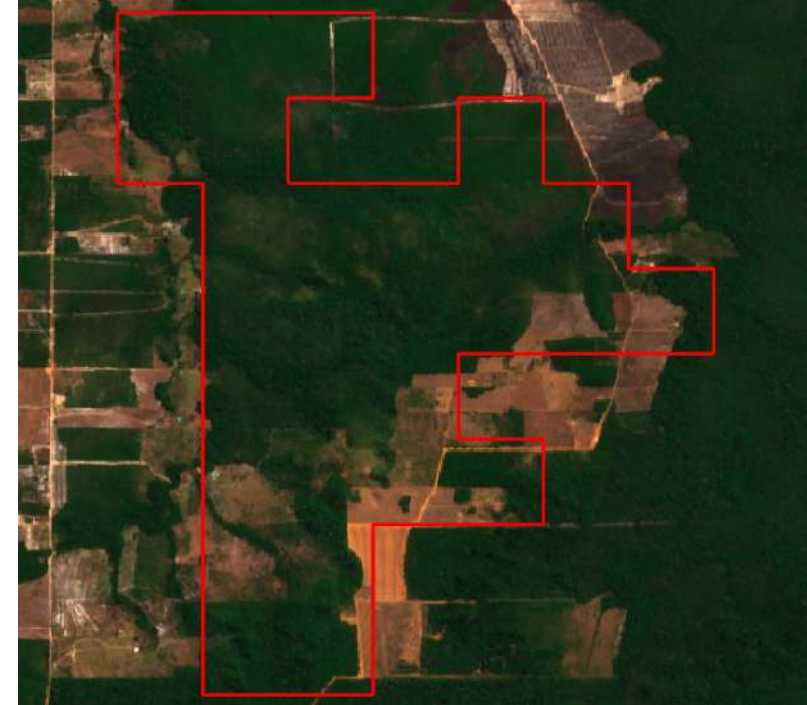


Track wildfires and their behaviour

- We developed a new tool to track individual wildfires and their behaviour.
- This object-based approach provides many advantages, including the characterization of fire types in near-real time.
- Each fire type exhibits unique characteristics in terms of spread, intensity, and land cover.



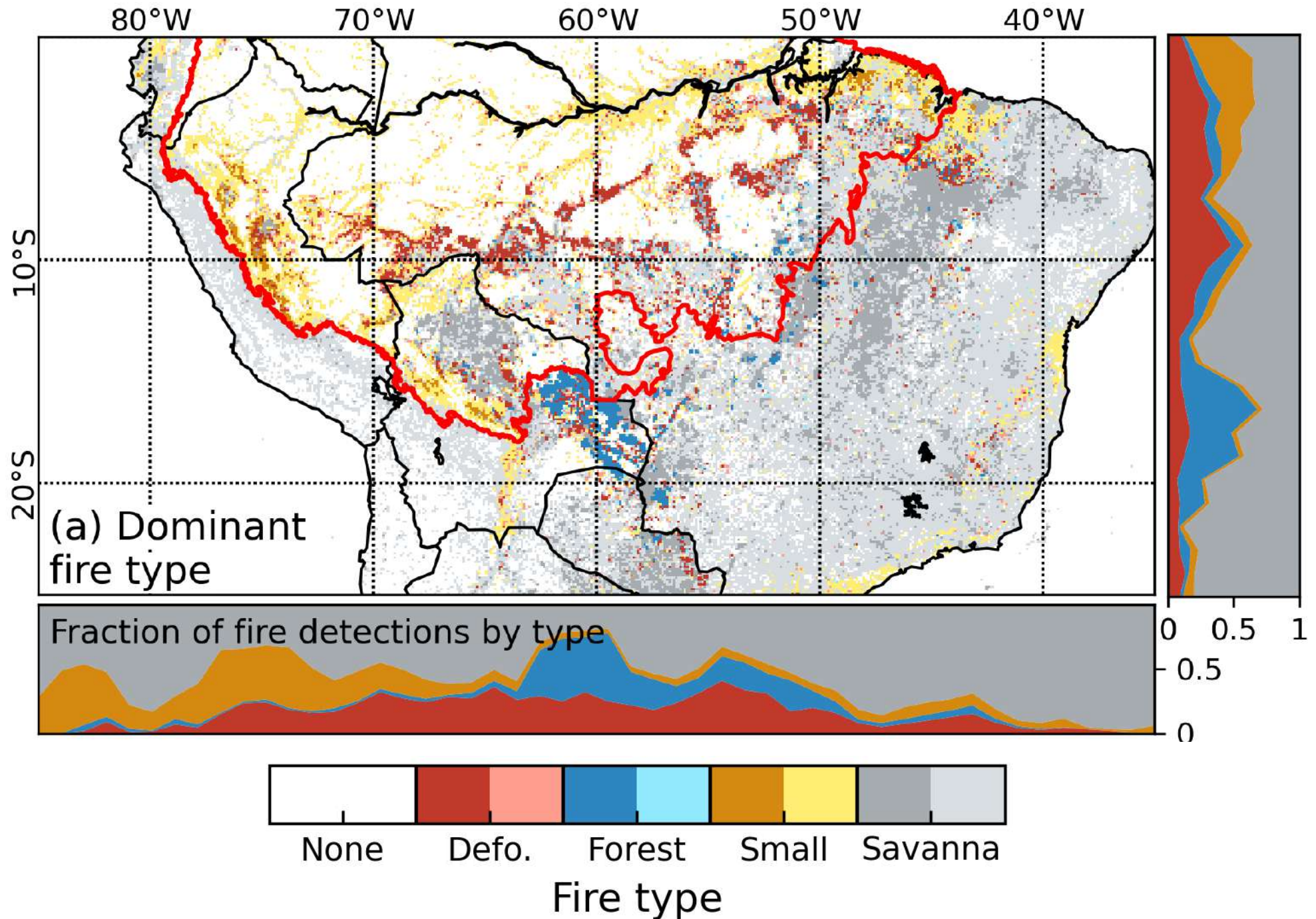
Map accuracy



- Stratified random sample of 100 deforestation and forest fires (118 Sentinel-2 pairs)
- Accuracy of 66% for fire events but 92% for fire detections (carbon emissions)

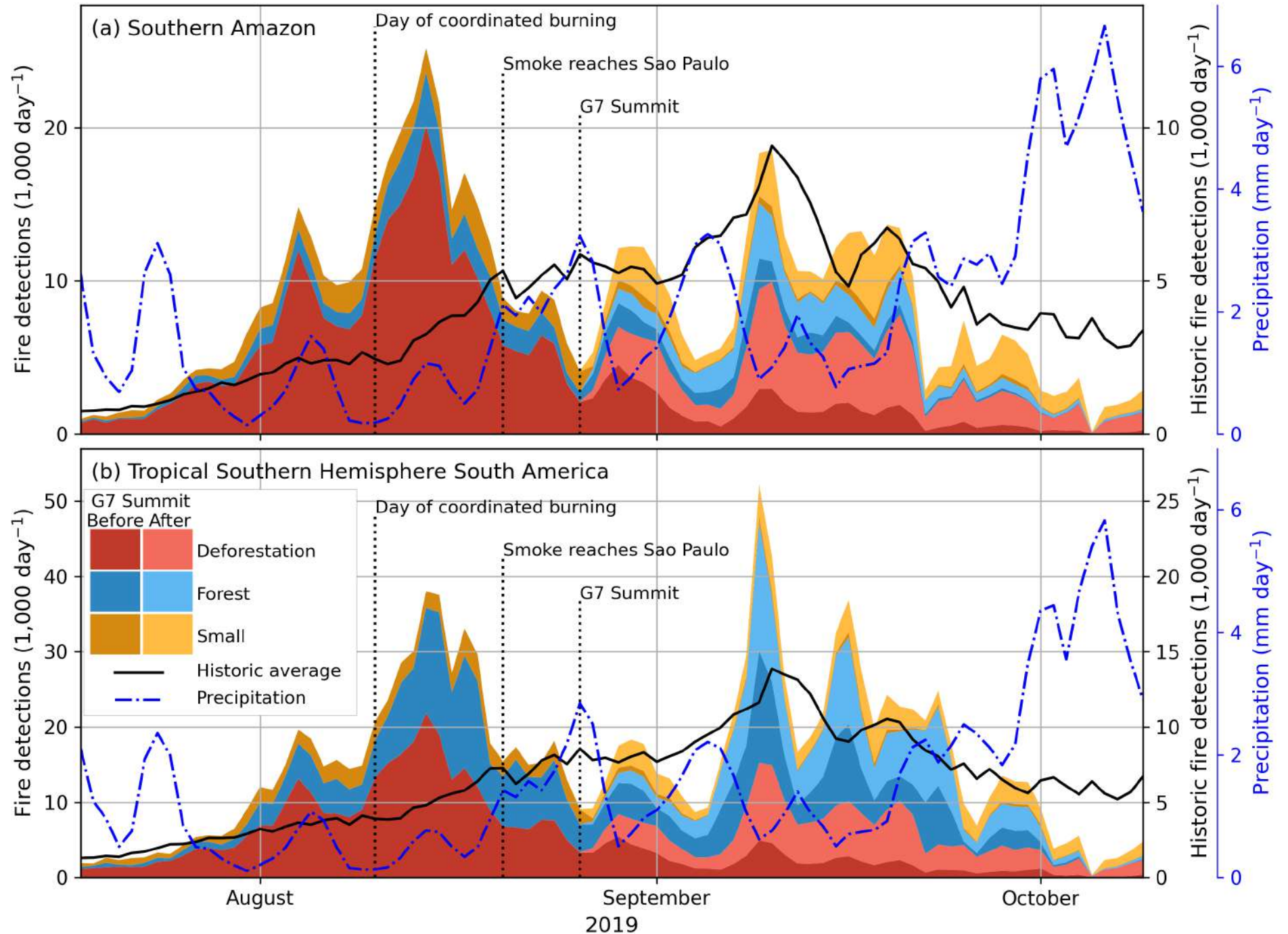
The 2019 fire season explained

- Dominant fire type by active fire detection

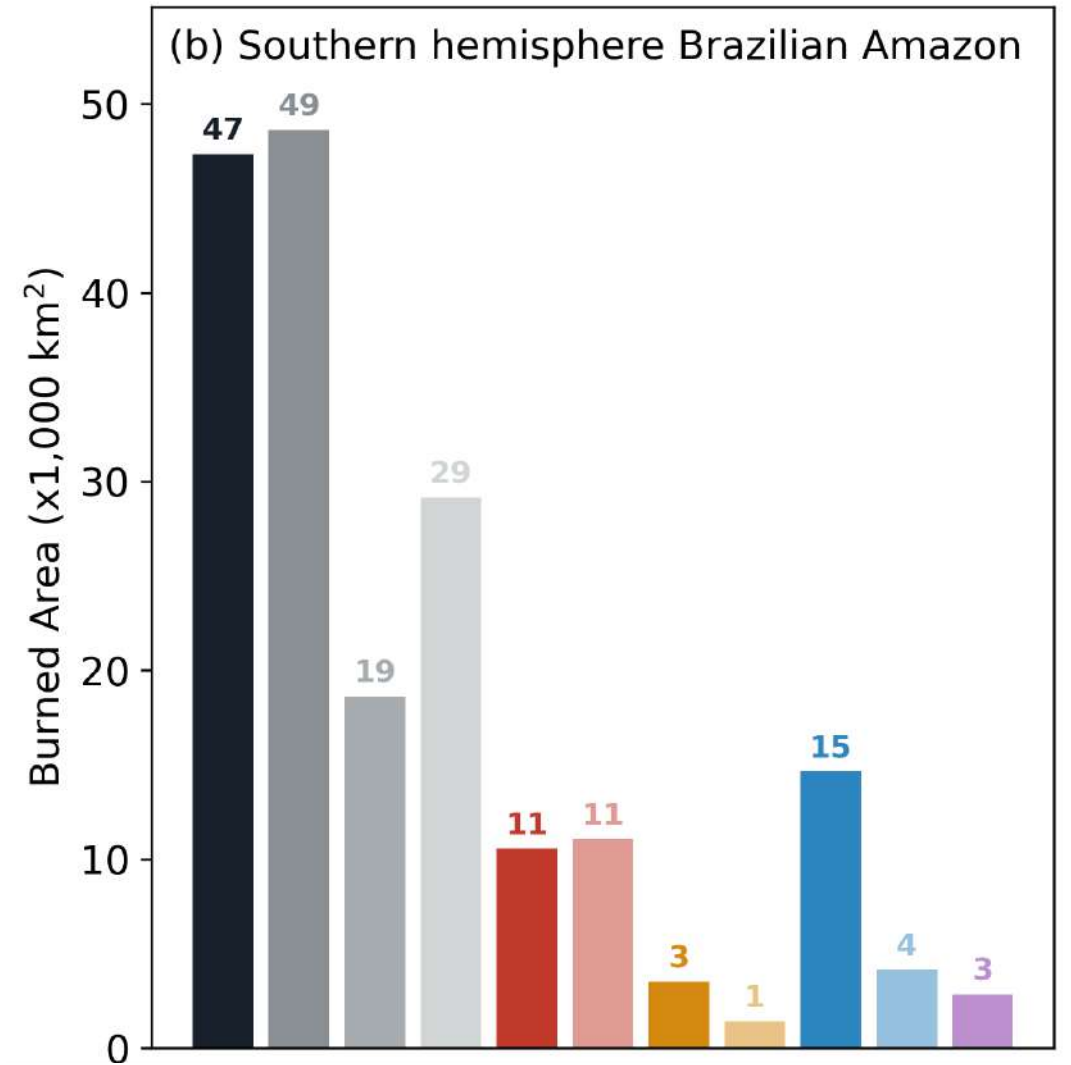
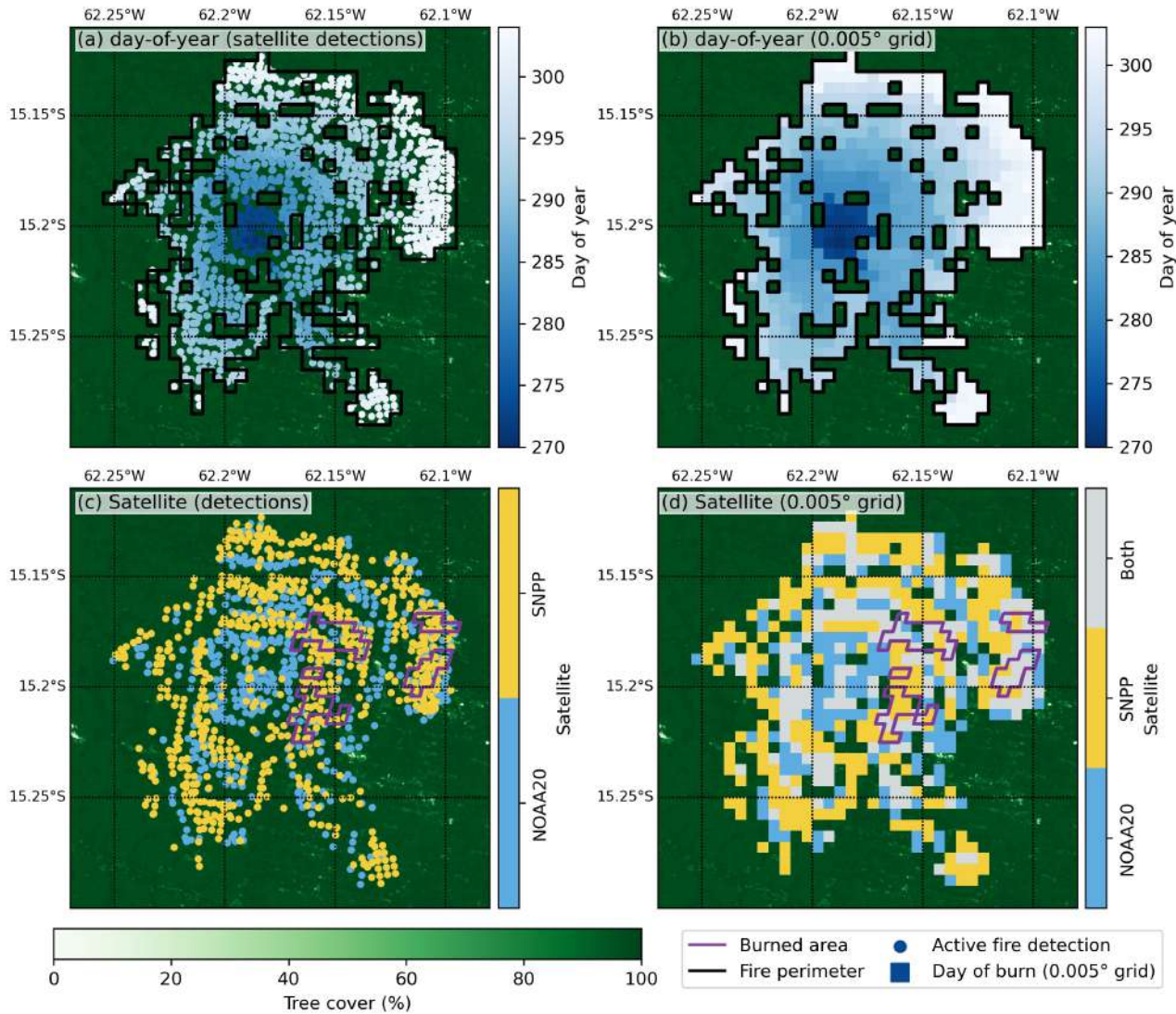


The 2019 fire season explained

- Active fire detections by type

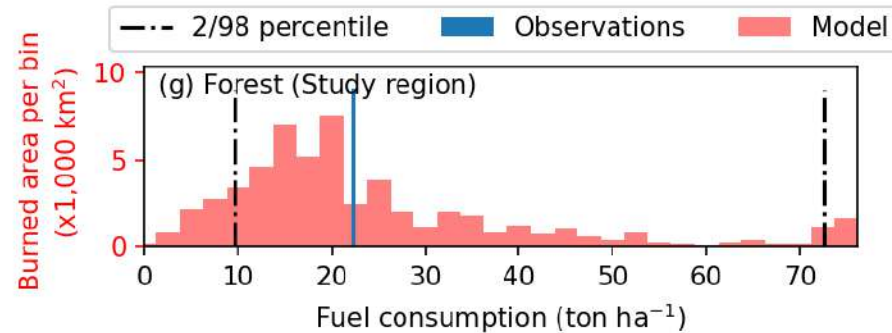
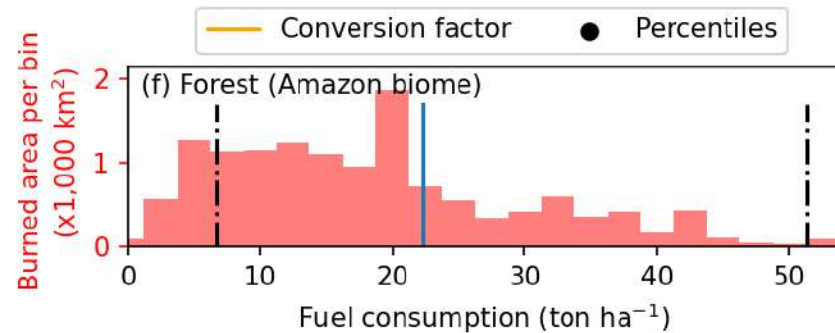
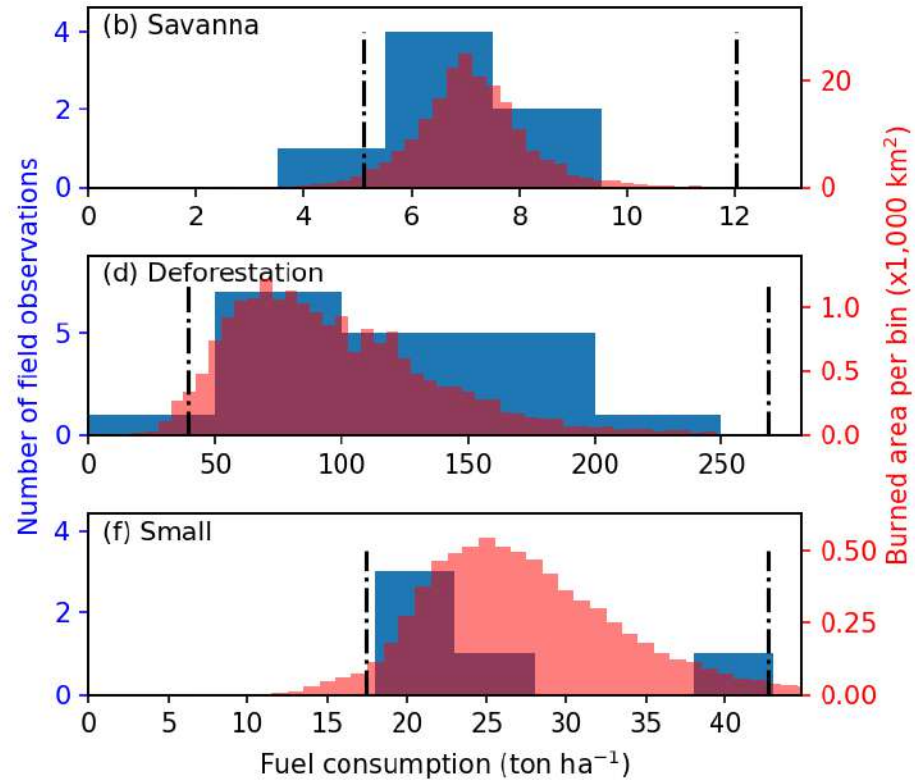
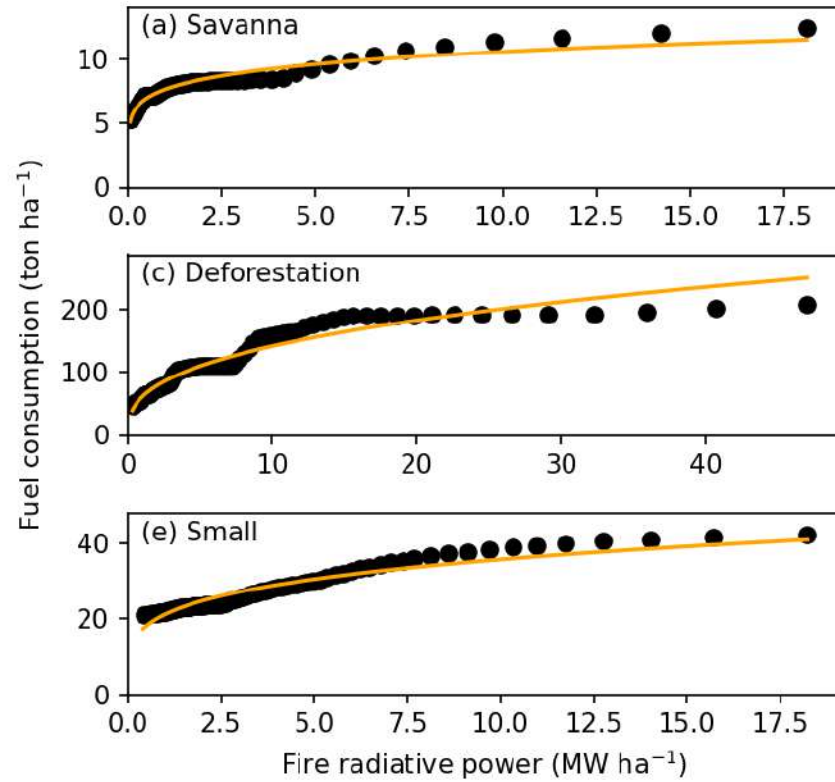


Burned area estimates



This study: All Deforestation Forest Small Savanna
 Mapbiomas: All Deforestation Forest Small Savanna Residual

Carbon emissions estimates

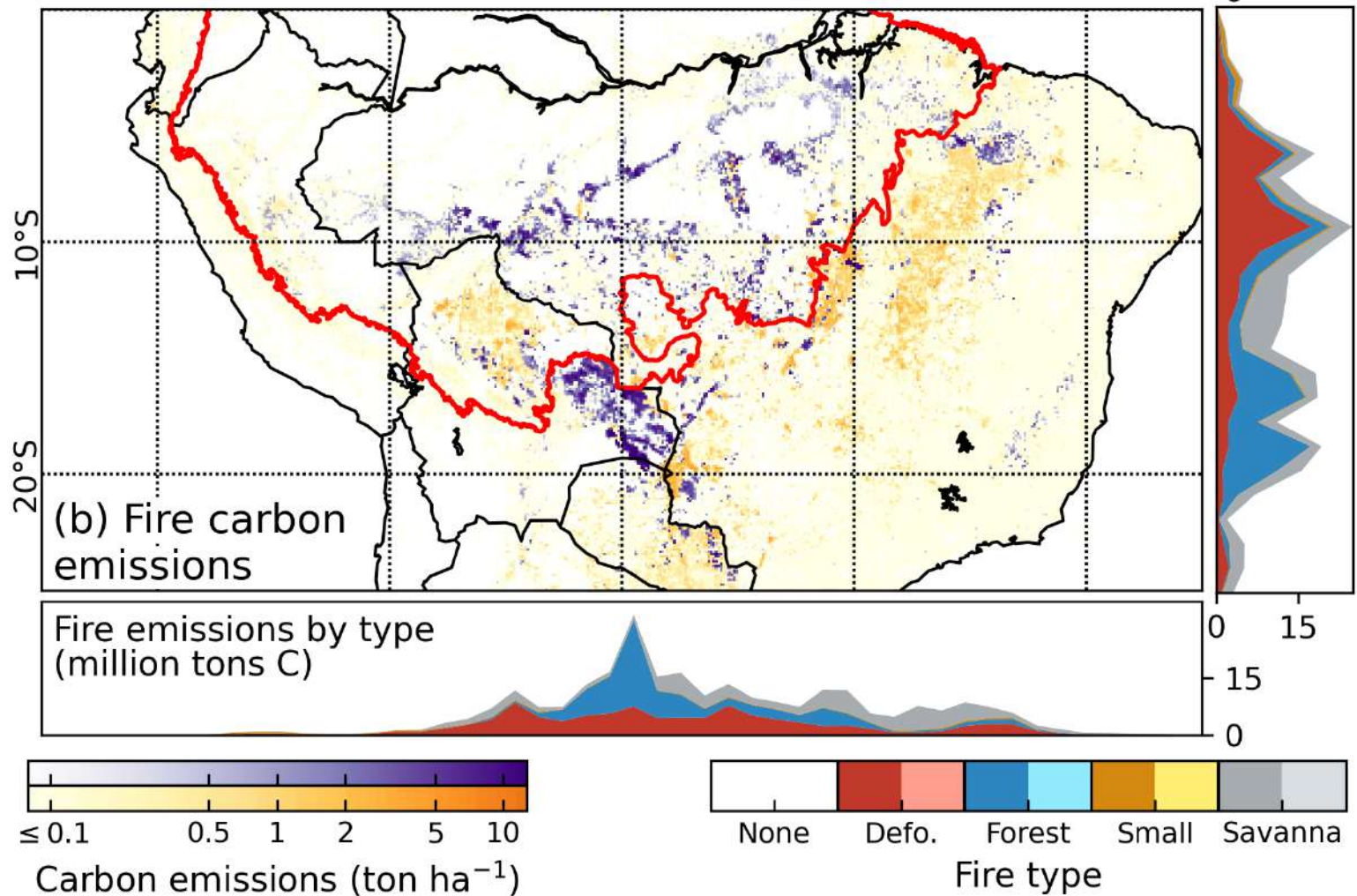


- Calibration against field observations

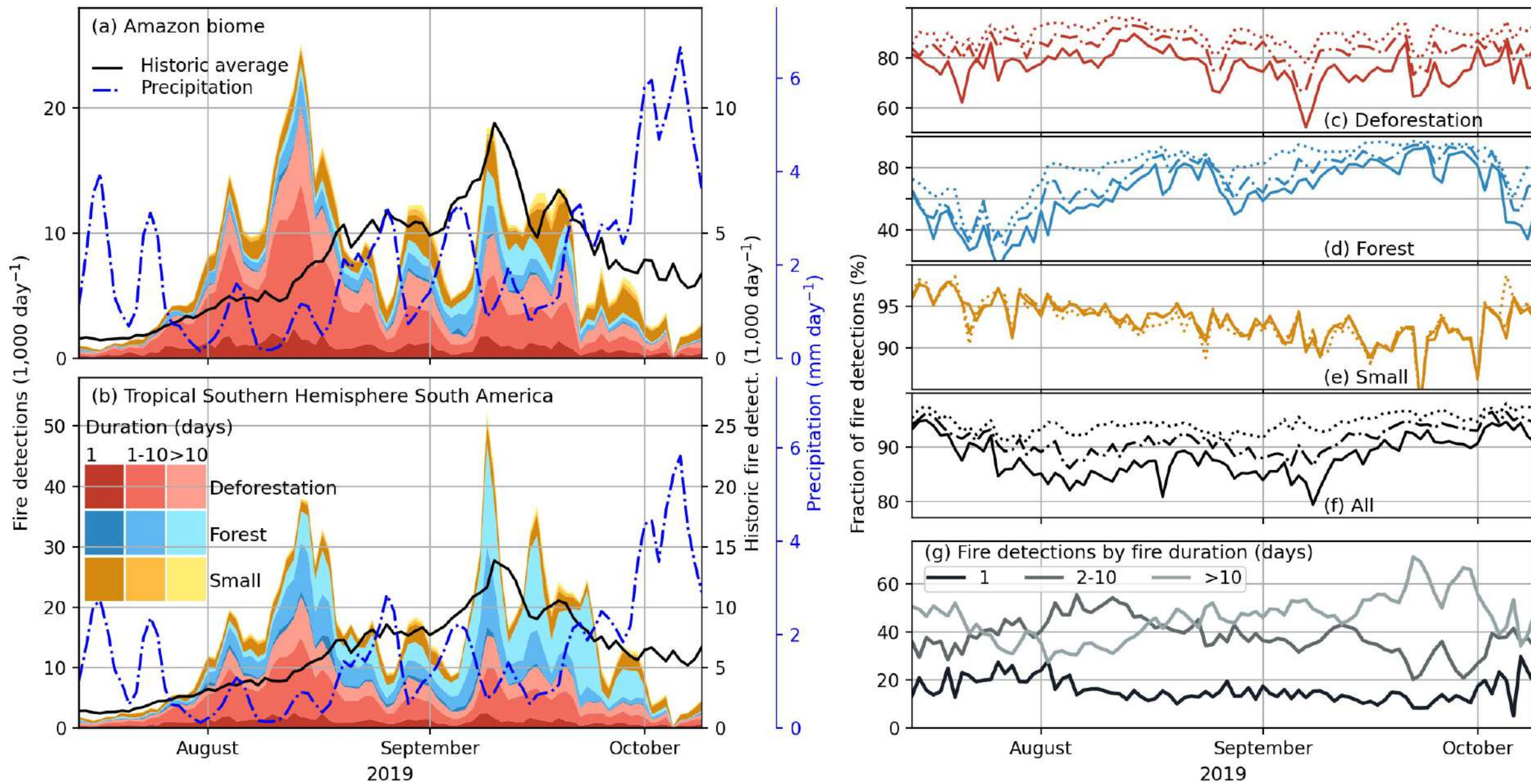
Fire & the carbon cycle



- We can now separate carbon fluxes with short-term (yellow) and long-term (purple) impact on the carbon cycle.
- Across the larger study region, carbon emissions from forest fires (85 Tg) almost equalled those of deforestation fires (99 Tg).
- In Sense4fire, we develop the first object-based emissions inventory.



Good performance in near-real time



Providing situational awareness

FAQ / Methods Quick Instructions

Amazon Dashboard Last Updated: 09/10/2020

Region: Mato Grosso, Brazil Fire Type: All Active Between: 01 / 06 / 2020

New Fires: +74 As of 09/10/2020 Active Fires: 3280 As of 09/10/20

Protected Area Alert

- 1.24 km² (started 09/11/2020)
- 0.93 km² (started 09/11/2020)
- 0.62 km² (started 09/11/2020)

List of active fire events intersecting protected areas as of 09/10/2020.

Download Latest Data

- amazon_dashboard_data.zi

Largest Fires

- 1589.37 km² (started 07/31/2020)
- 1425.38 km² (started 07/20/2020)
- 1371.44 km² (started 07/20/2020)

List of largest fire events active during selected time range.

Legend

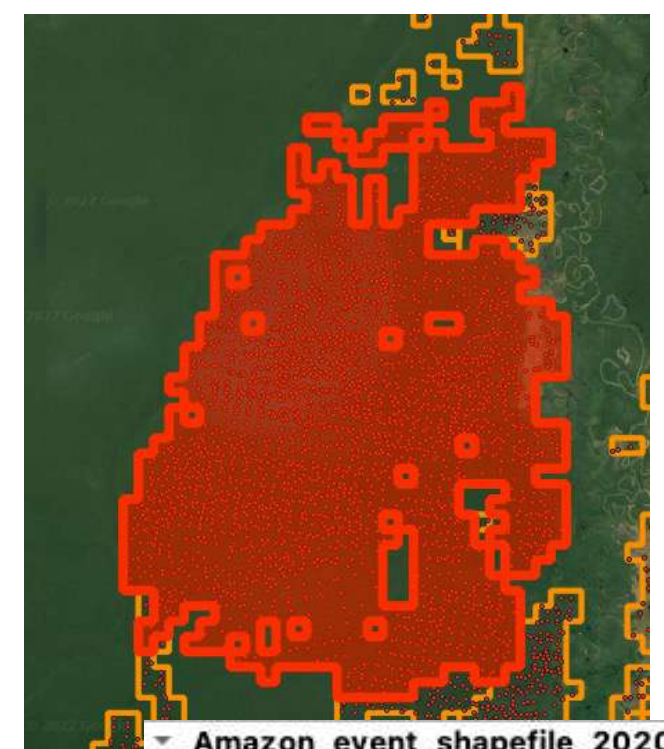
Fire Atlas

Fire Events

- Savanna and Grassland
- Small Clearing and Agriculture
- Understory
- Deforestation

VIIRS Fire Detections by Fire Type - Mato Gross, Brazil

NASA SERVIR AMAZONIA UCI University of California, Irvine CARDIFF UNIVERSITY PEIFYGOL CMRDNP solid living changing EARTH OCEAN



Amazon_event_shapefile_2020

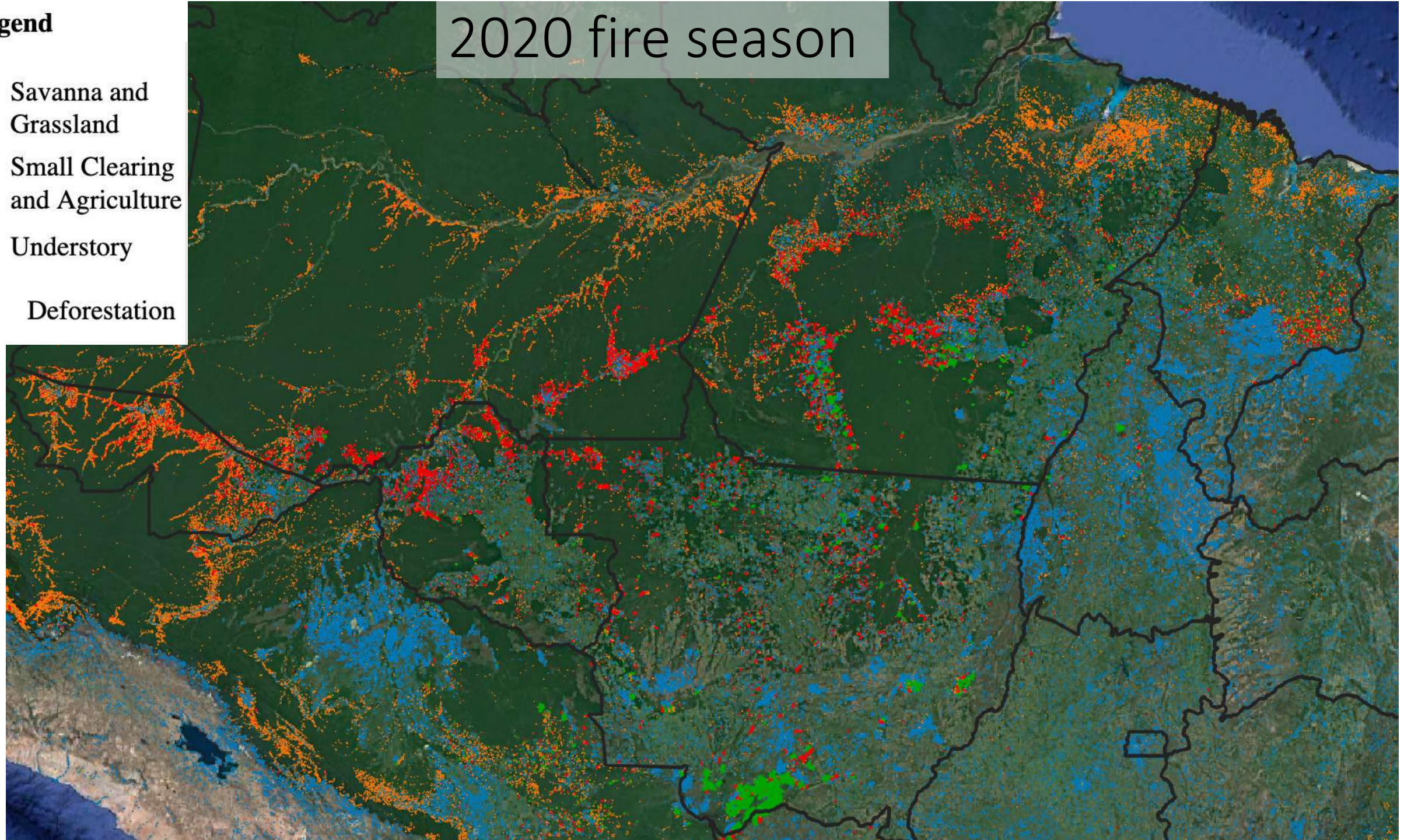
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(Derived)	
(Actions)	
cluster_ID	358735
fire_type	3
confidence	3
size	231.88
start_day	221
duration	44
emissions	594887.6
tree_cover	89.39
biomass	215.4
deforestat	0
frp	22.9
persistenc	1.82
progressio	0.12
daytime	0.49
detections	3089

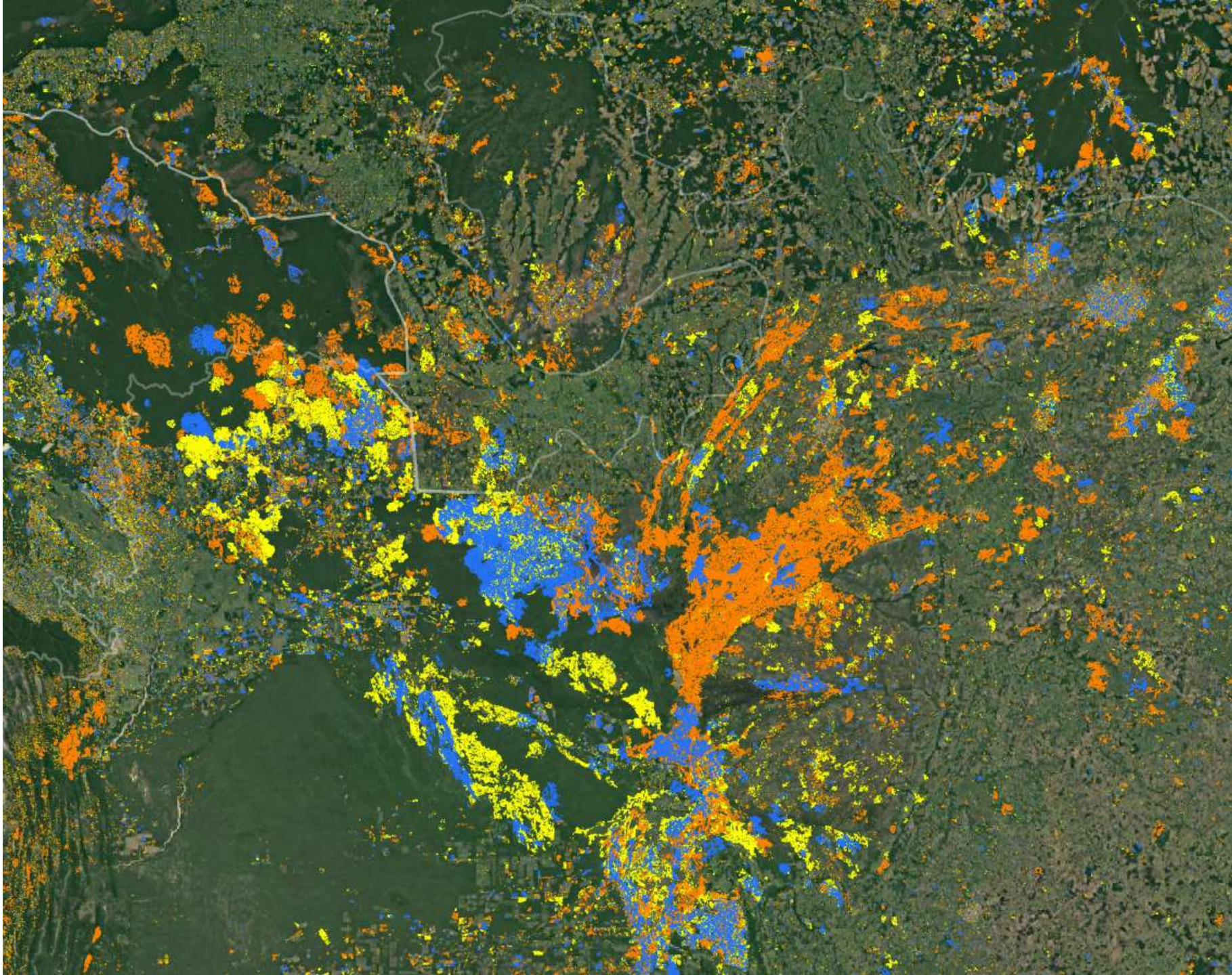
- Amazon Dashboard and data at www.globalfiredata.org

Legend

-  Savanna and Grassland
-  Small Clearing and Agriculture
-  Understory
-  Deforestation

2020 fire season





2021

2020

2019

Questions?

- Manuscript accepted 😊
- www.globalfiredata.org
- contact: andelan@cardiff.ac.uk and soon at BeZero Carbon!

