

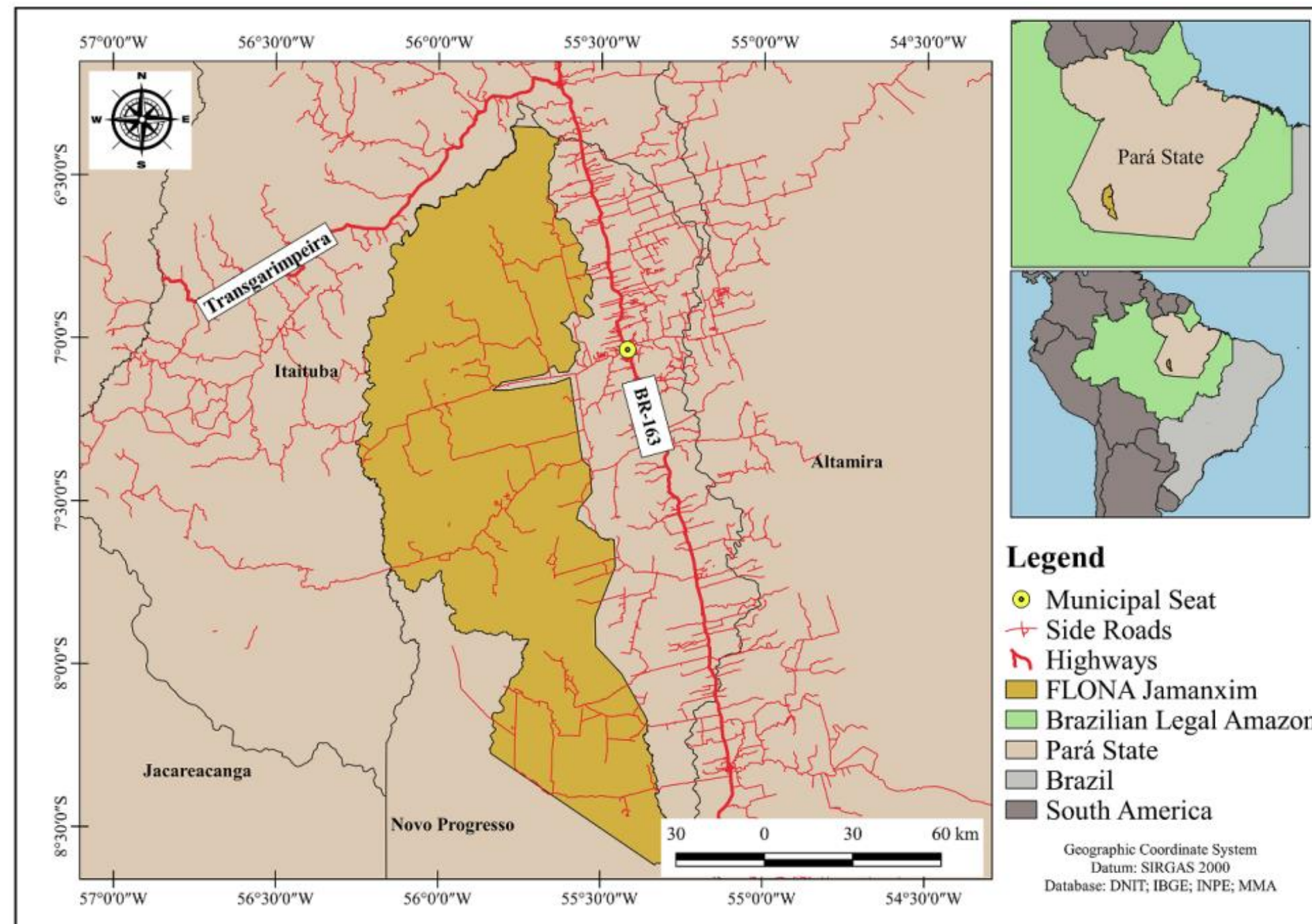
Drivers of fire foci in a protected area in the Brazilian Amazon: a geospatial approach

PROBLEM

The Amazon region is under **severe threats** due to various forms of **environmental degradation**, including **wildfires**, **deforestation**, Edge effects, selective logging and extreme droughts. Among these threats, deforestation and fires stand out, as they contribute directly to the **loss of biodiversity** and vital ecosystem services.

GENERAL OBJECTIVE

This study aimed to evaluate fire foci and their driving factors in the Jamanxim National Forest (FLONA Jamanxim), located in the southeastern Amazon, using geographic information systems (GIS) to inform the decision-making process for environmental management.

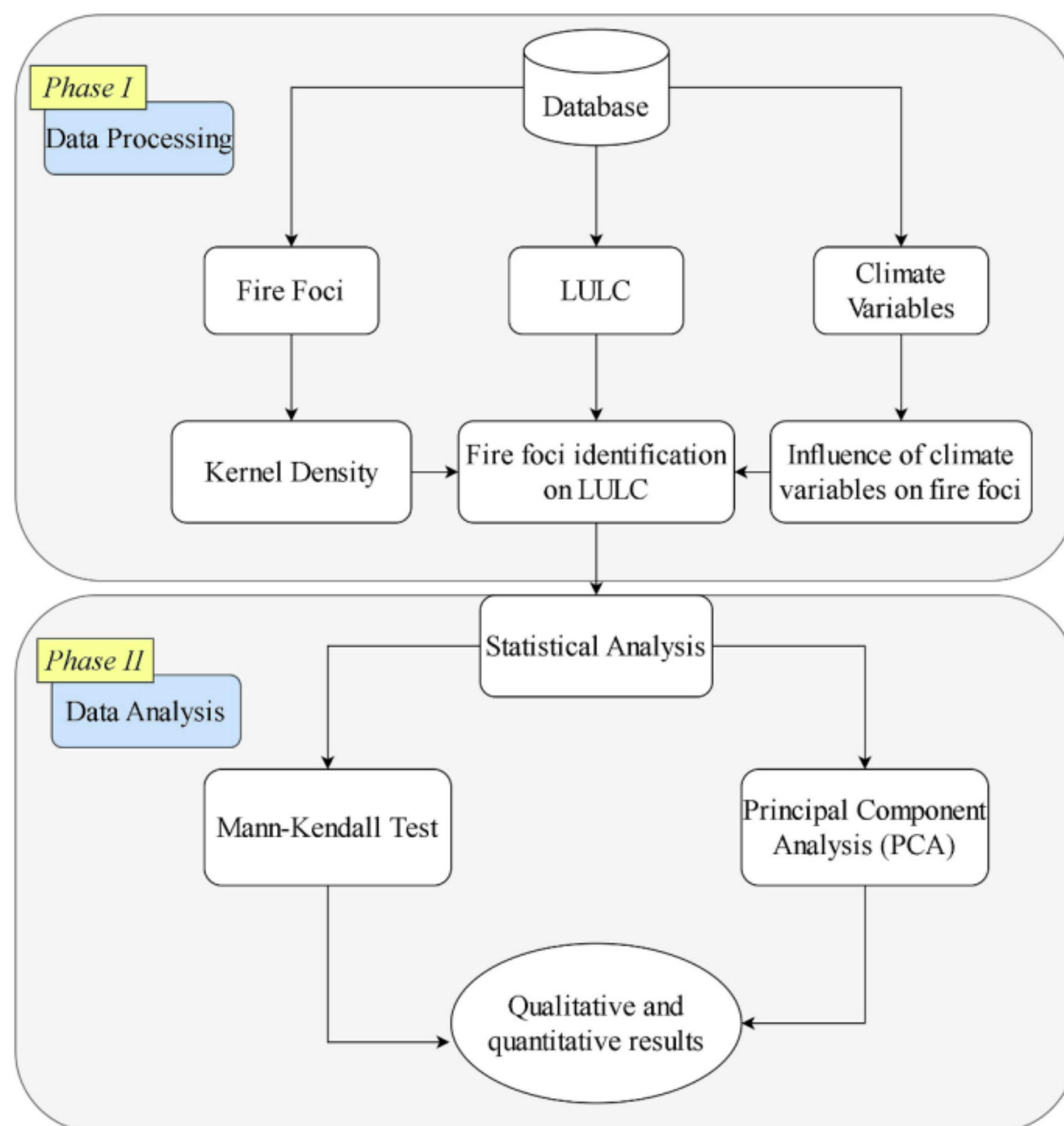
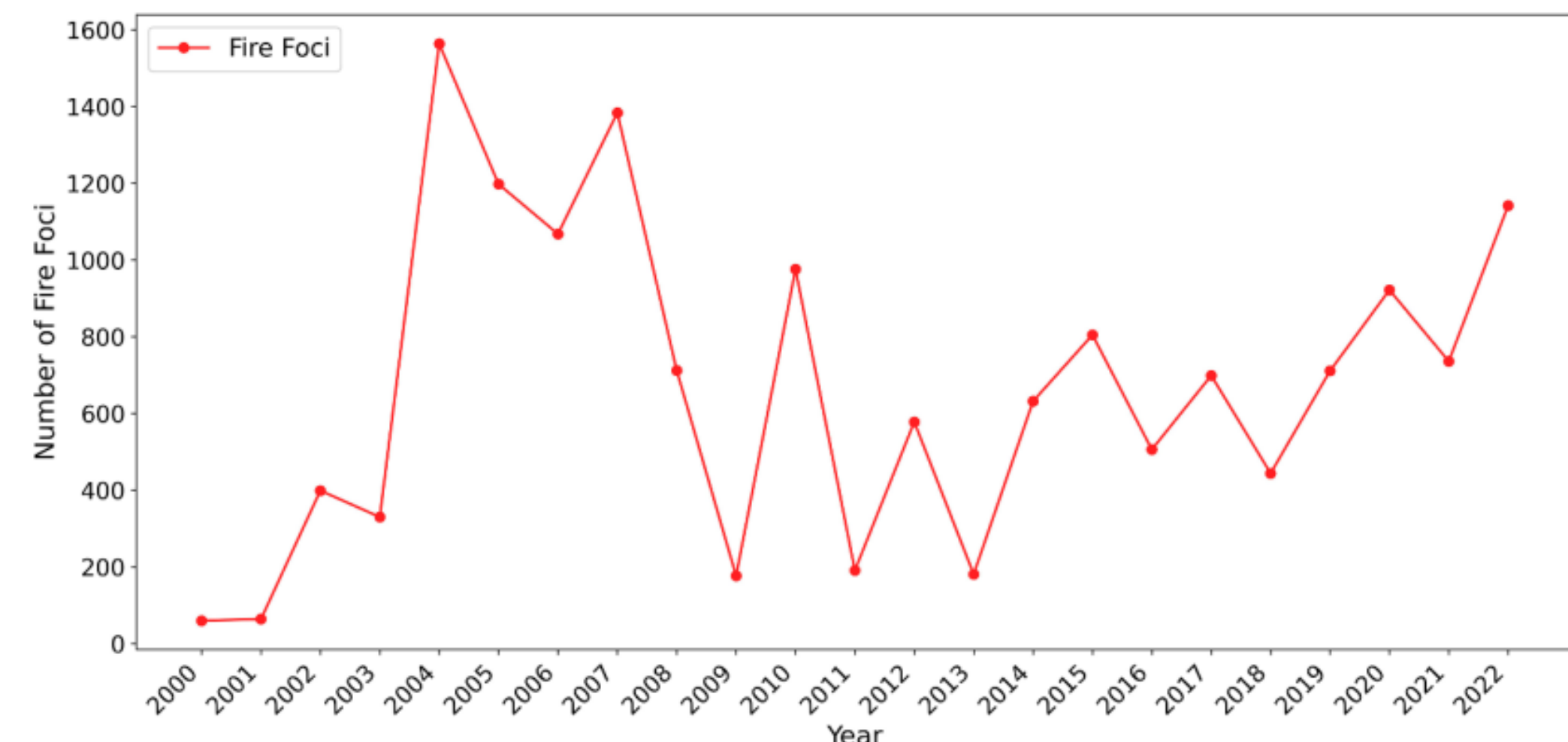


PROPOSAL

This study addresses a key research question:

❑ **What drives wildfire activity in FLONA Jamanxim?**

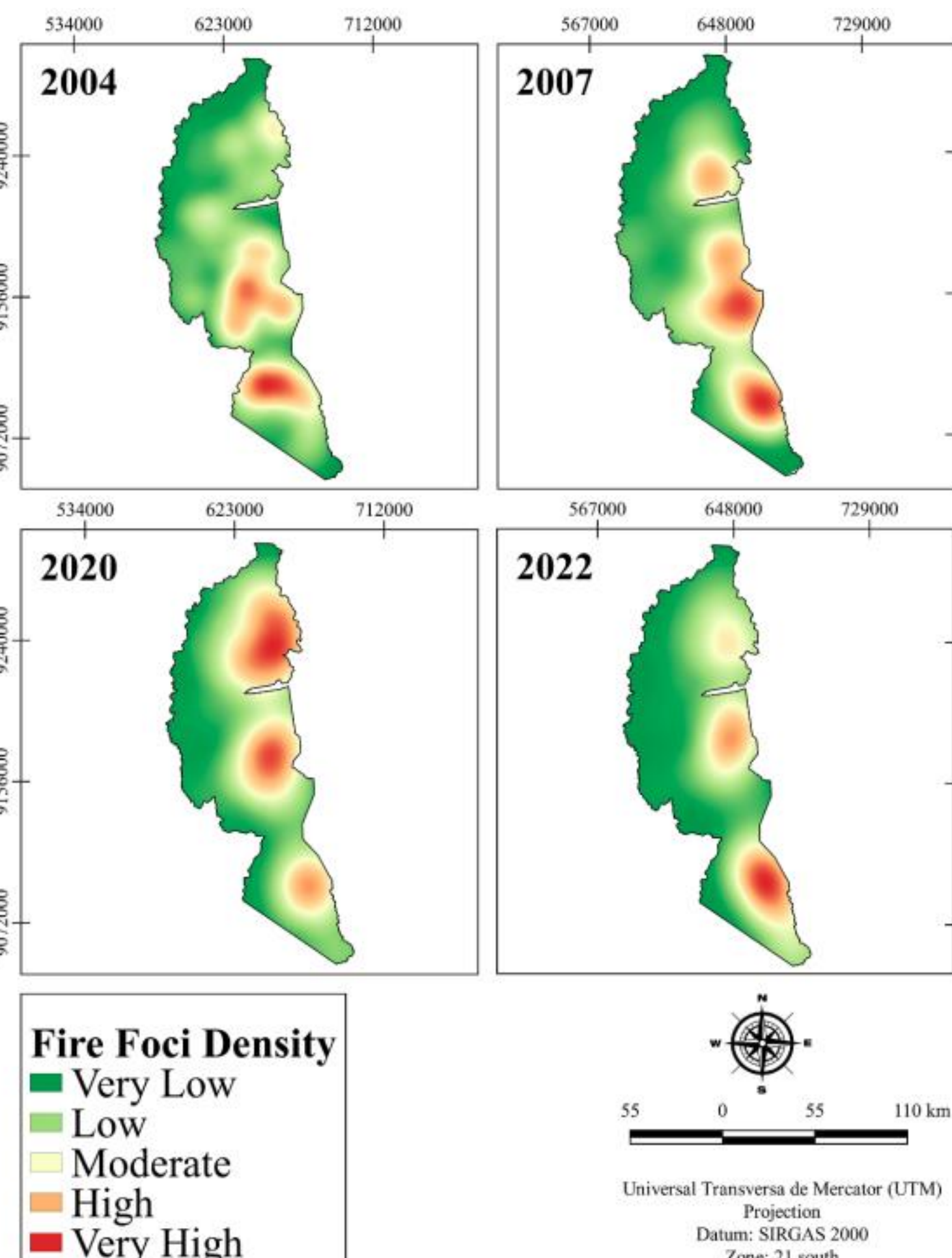
We hypothesize that land-use changes, particularly pasture implementation, stimulate fire occurrences, which are further intensified by dry-season climate factors. To test this, we used **GIS and remote sensing** to evaluate fire patterns and their main drivers.



RESULTS

- In 2004, 2007, 2020 and 2022, the **fire foci** were more **concentrated** in the **southern region** of FLONA Jamanxim.
- For all years of analysis, this trend was more concentrated on the eastern edge, with the fire foci density varying from very high to moderate.
- Regarding the fire foci identification in the LULC, forest formation in **2004** had the **highest concentration**, followed by pasture, savanna formation, and rocky outcrop.
- By 2022, **fire foci in pasture areas** accounted for approximately **59.81% of the total**, followed by forest and savanna formations with 39.93% and 0.26%, respectively.

Classes	Fire frequency by LULC (%)			
	2004	2007	2020	2022
Forest formation	67.90	53.61	45.44	39.93
Pasture	31.84	45.30	54.56	59.81
Savanna formation	0.13	0.79	0.00	0.26
Grassland	0.00	0.22	0.00	0.00
Rocky outcrop	0.13	0.07	0.00	0.00



CONCLUSIONS

- Fire dynamics in FLONA Jamanxim are driven by a complex interaction between natural climate seasonality and anthropogenic activities.
- The findings highlight a critical need for integrated management approaches that bridge regional fire science and site-specific planning.
- While this study provides a transferable framework for assessing fire risk in Amazonian protected areas under frontier pressure , future modeling can be enhanced.

Read to the article!

