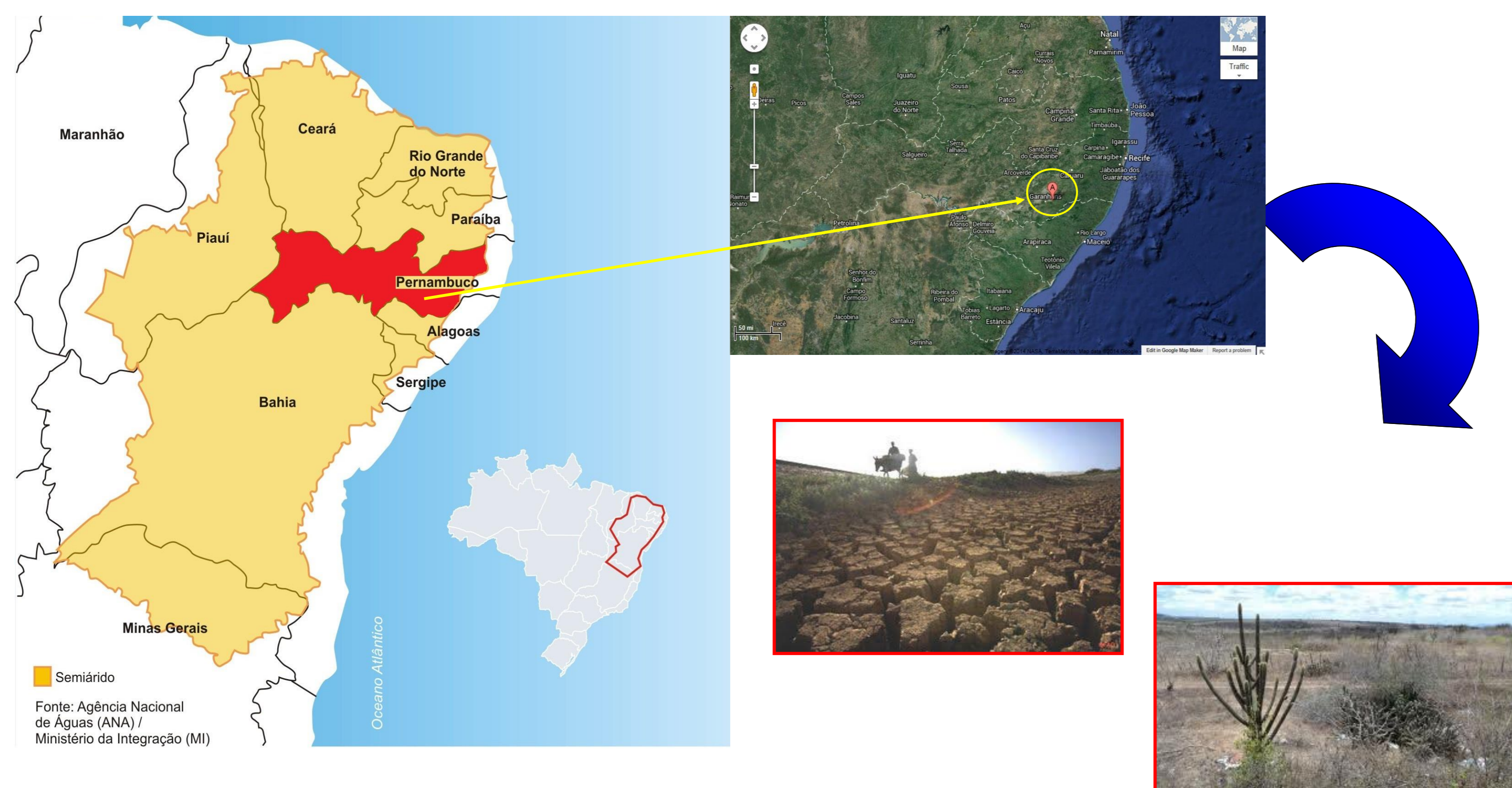


Goals: The study aims to assess the changes in the fluxes of the three main greenhouse gases (CO₂, CH₄ and N₂O) due to land use changes (LUC) in the Brazilian semi-arid region during dry season and rainy .

Introduction

- The domain environment caatinga biome is the semi-arid region, being the only exclusively Brazilian biome
- Its occupies an area of 970 mil km² (11,4% of the country);
- Display phisiognomic characteristics of vegetation and biodiversity;
- About 22 millions people live in region, of whom 12 million suffer from drought;
- One of the poorest and lasta developed regions of the country;
- Among the environmental problems prolonged drought are the most striking.



Changes in land use and land cover are one of the most impactful environmental problems in the biome due to common practice of deploying pastures replacing native vegetation, which represents about 201.786 m² (27% of the biome).

Description

This experiment was conducted in the municipality of São João, in Pernambuco state. The region has warm, humid climate with average annual rainfall of 800mm. The soil is classified regolithic neosol characterized by sandy soils presenting high erodibility.

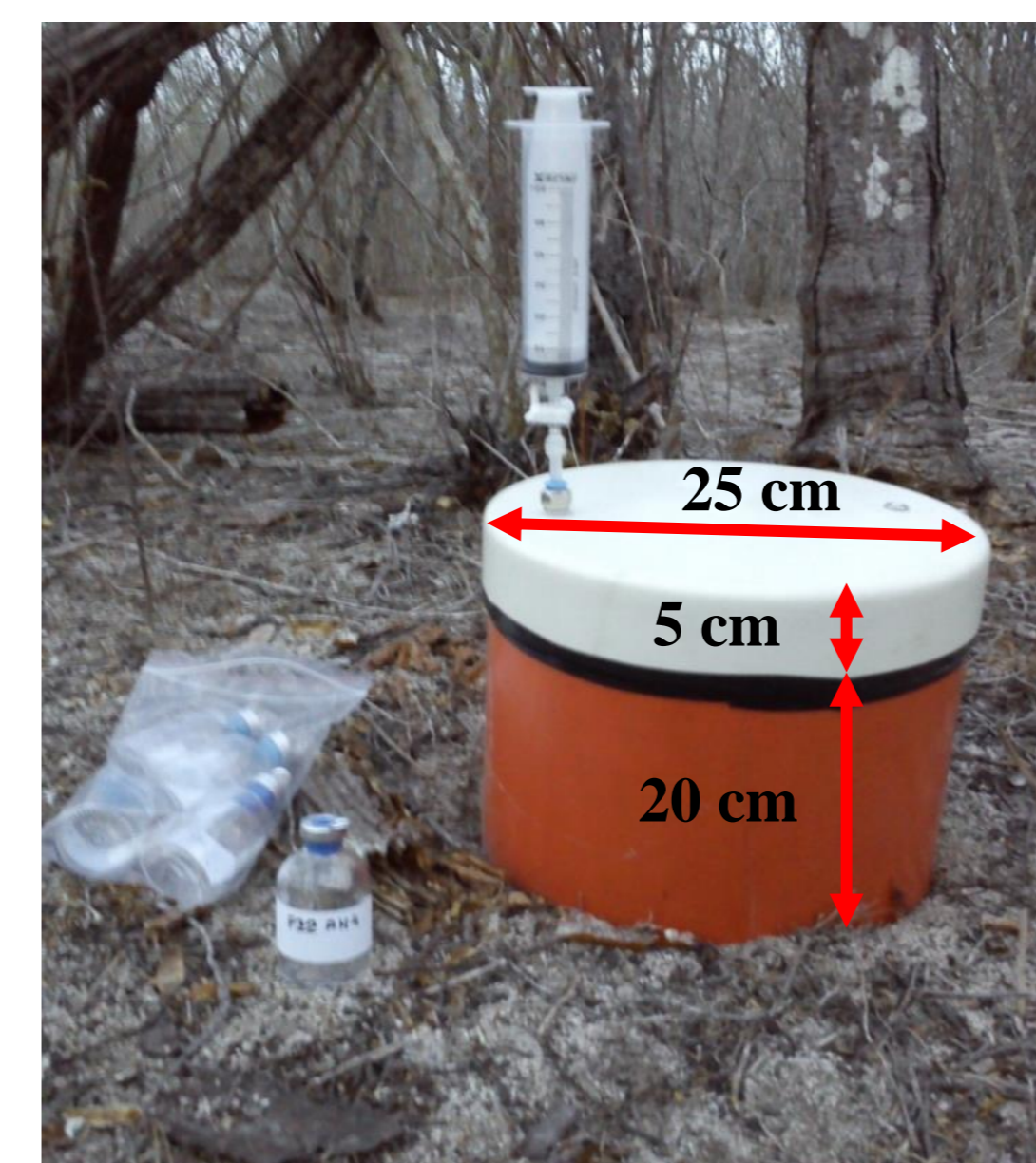
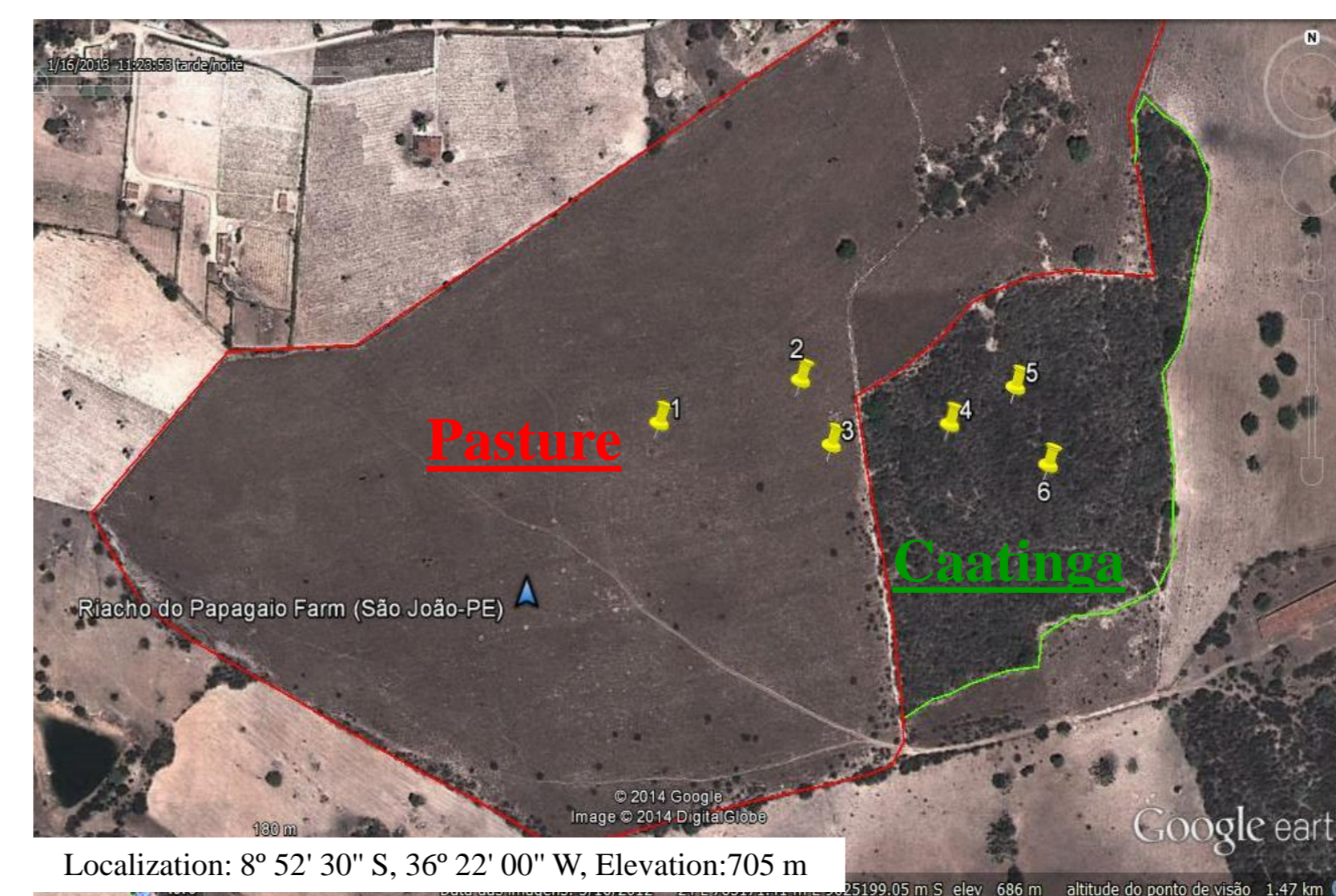
Dry Season



Rainy Season



Aerial view of the Farm Riacho do Papagaio

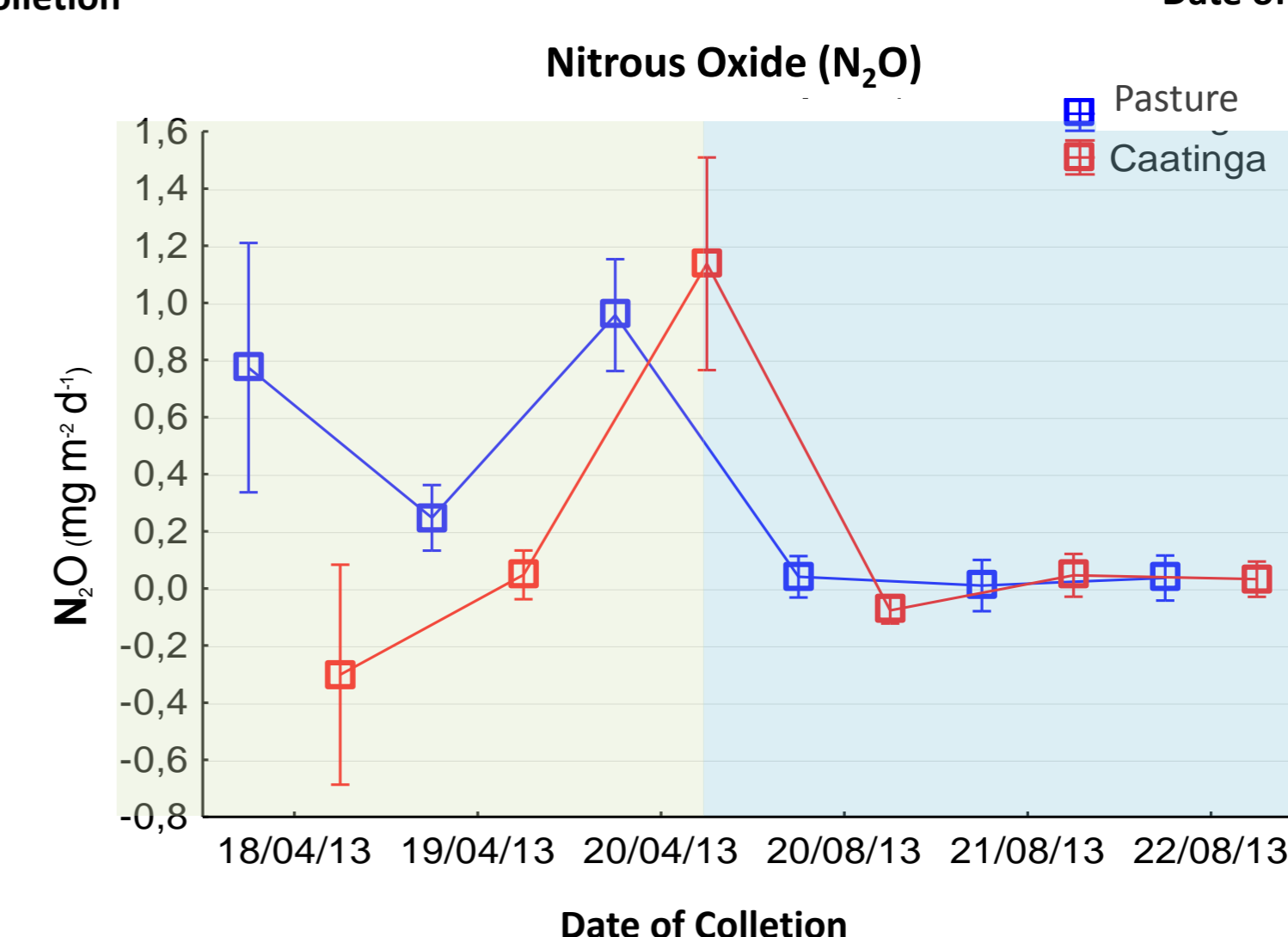
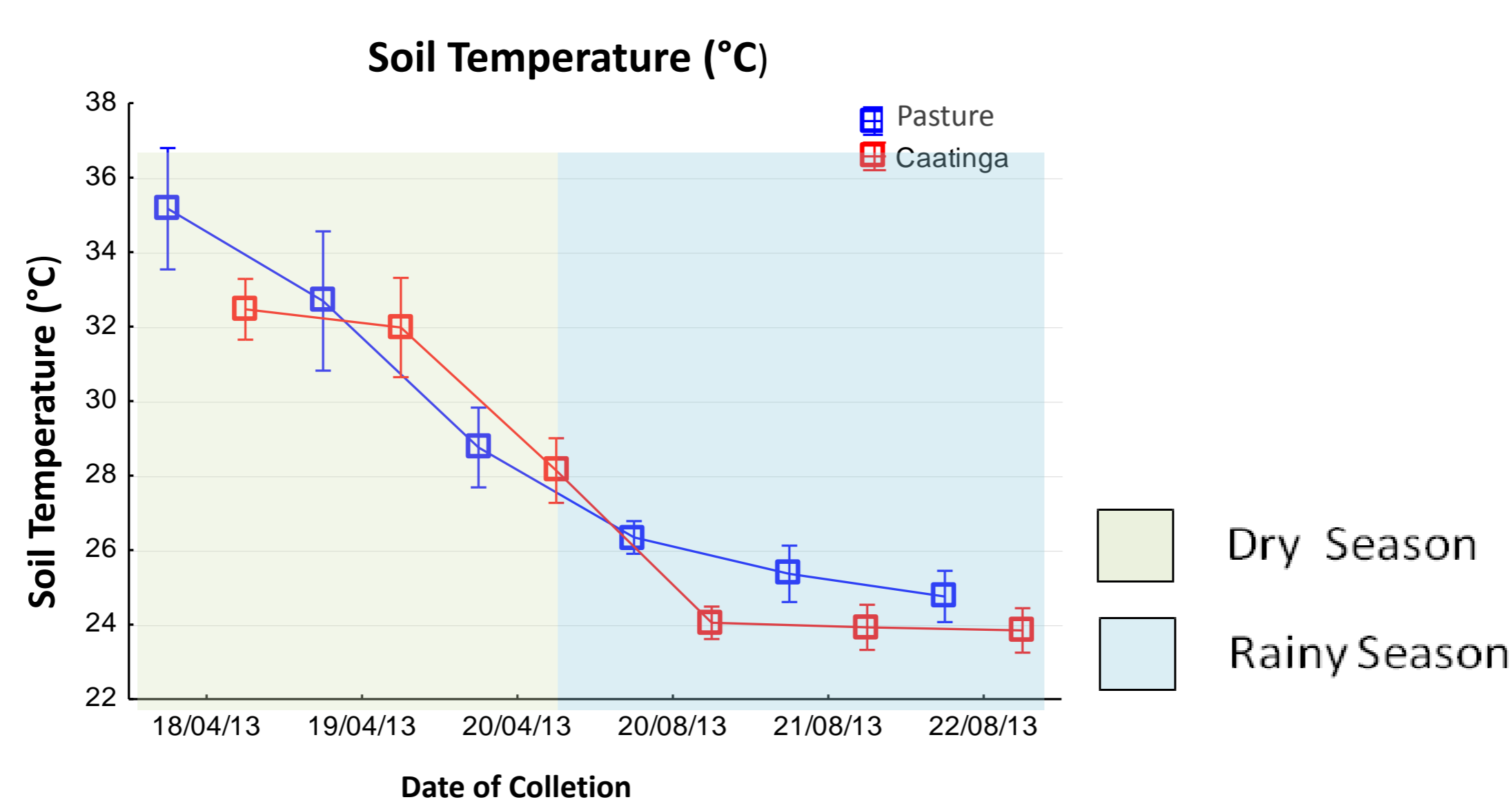
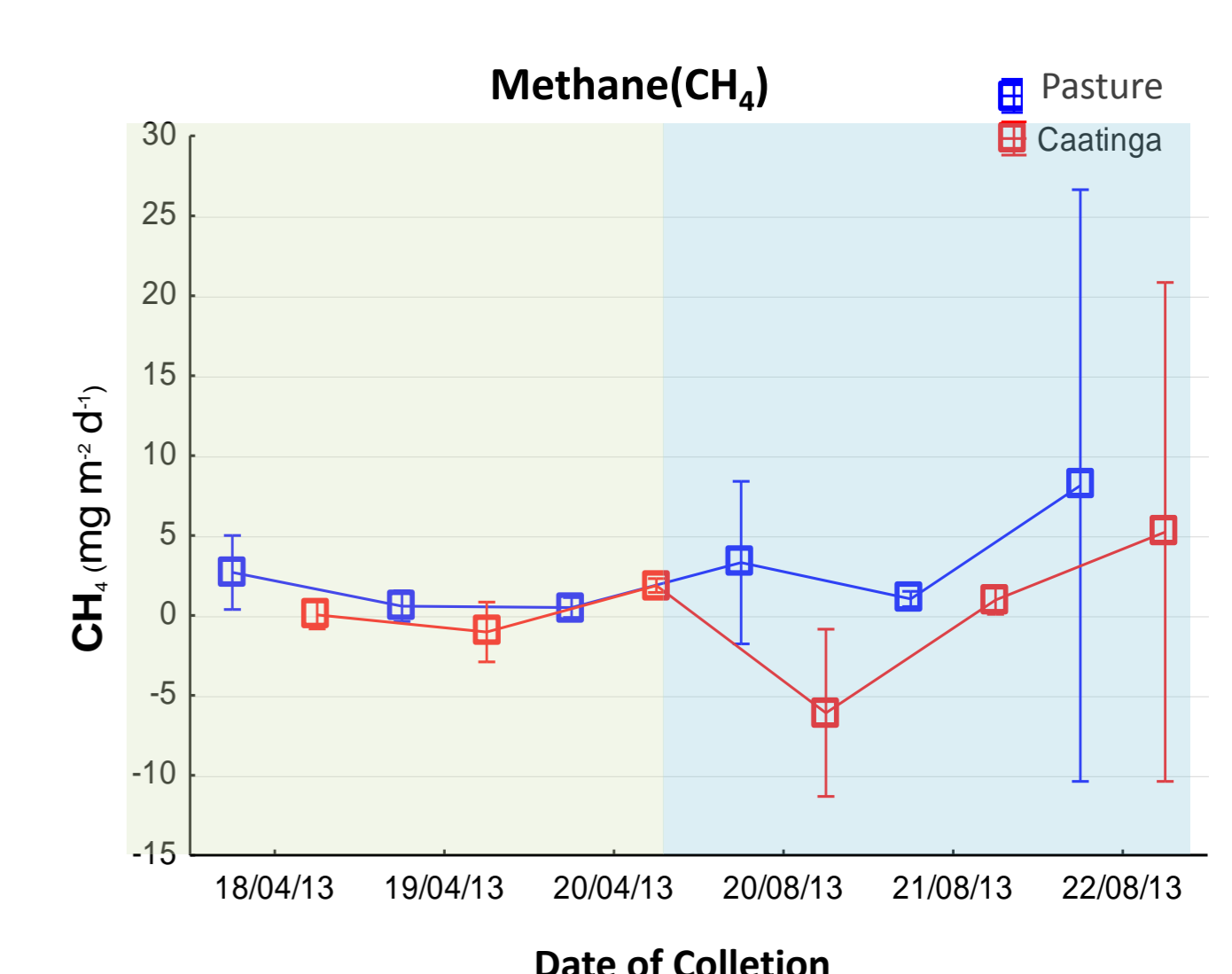
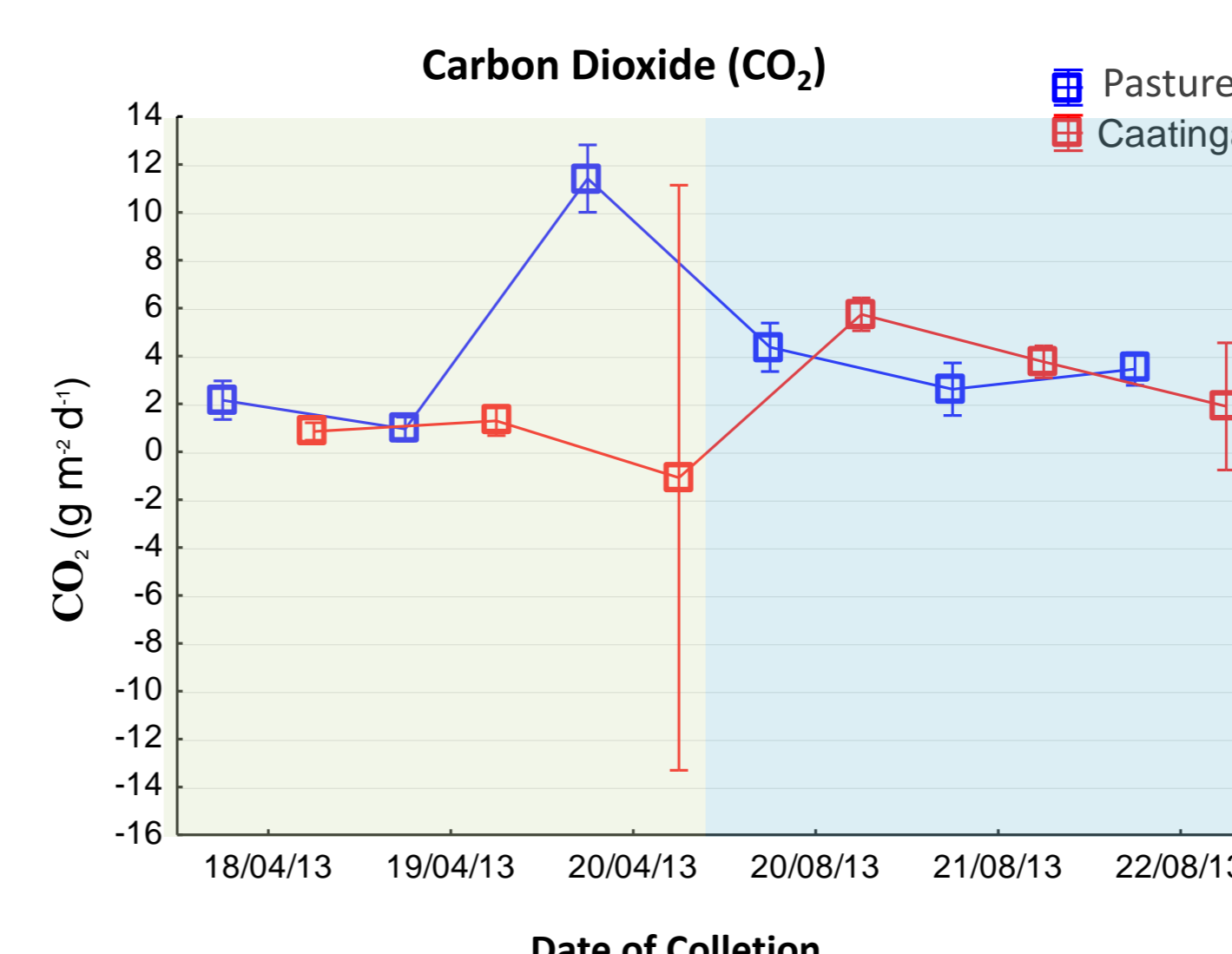


The collections were made in April 2012 (dry season) and August 2013 (rainy season). The fluxes were measured using static PVC chambers in periods of 30 minutes, and the design of this experiment consisted of two treatments: Native Vegetation - Caatinga (C) and grassland (P), distributed in 3 blocks (replicates)

Preliminary results

The CO₂ and N₂O fluxes were higher during the dry period (ANOVA, p = 0.000), with the highest emissions measured in the pasture. During the rainy season, there was no difference between treatments. For CH₄ there was no significant difference between the fluxes for treatments or seasons.

Gas	Dry		Rainy	
	Pasture	Caatinga	Pasture	Caatinga
CH ₄ (mg.m ² d ⁻¹)	1.5	0.14	-1.5	-3.2
CO ₂ (g.m ² d ⁻¹)	4.6	3.2	3.4	3.6
N ₂ O(mg.m ² d ⁻¹)	0.6	0.3	0.03	0.01



During dry season, high soil temperatures (31.3 °C) were observed, which was 17 % higher than the temperature measured in the rainy season (24.5 °C), and air temperature (29.6 °C), which was 10% higher than the temperature found in the rainy season (25.5 °C).

Conclusion

These preliminary results suggest a possible trend of increasing CO₂ and N₂O by elevation of temperature, which is strongly influenced by changes in land cover in this biome. The results of this research will also be used for future comparisons with similar regions located in the Brazilian Northeast, as well as in other semi-arid regions of the planet .