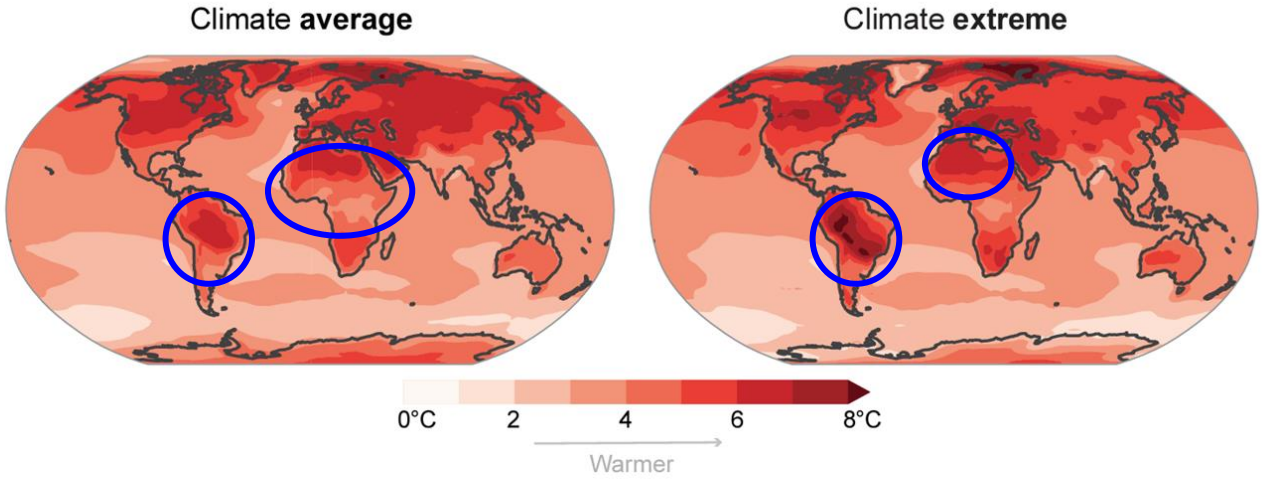
Effects of precipitation extreme events on maize yield in Maracaju (Brazil)

[Speaker Zoom video]

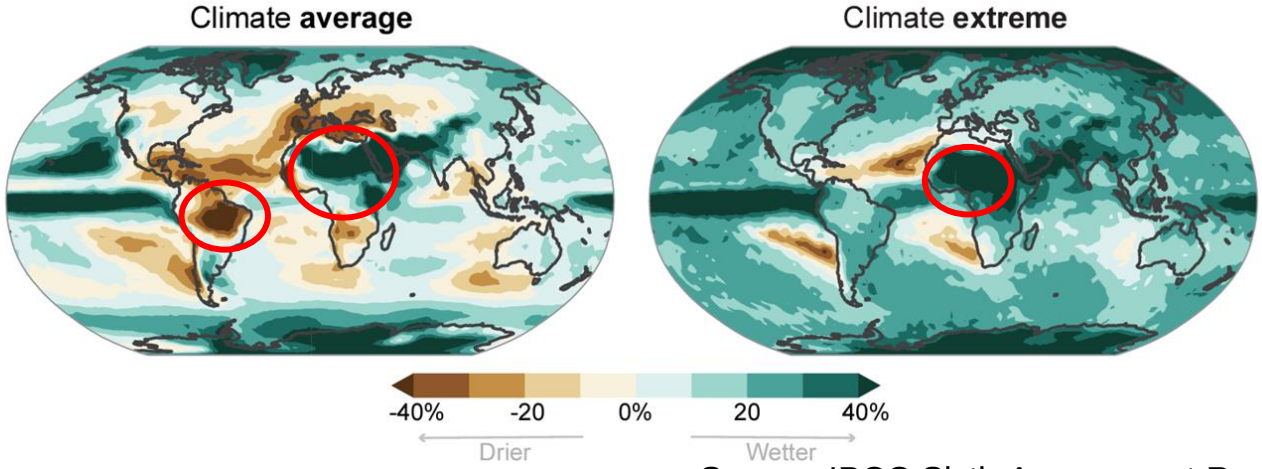
Zuniceratops Ska Rinforzando

[Speaker Zoom video]

Future **changes in temperature** averages and extremes will be **similar**

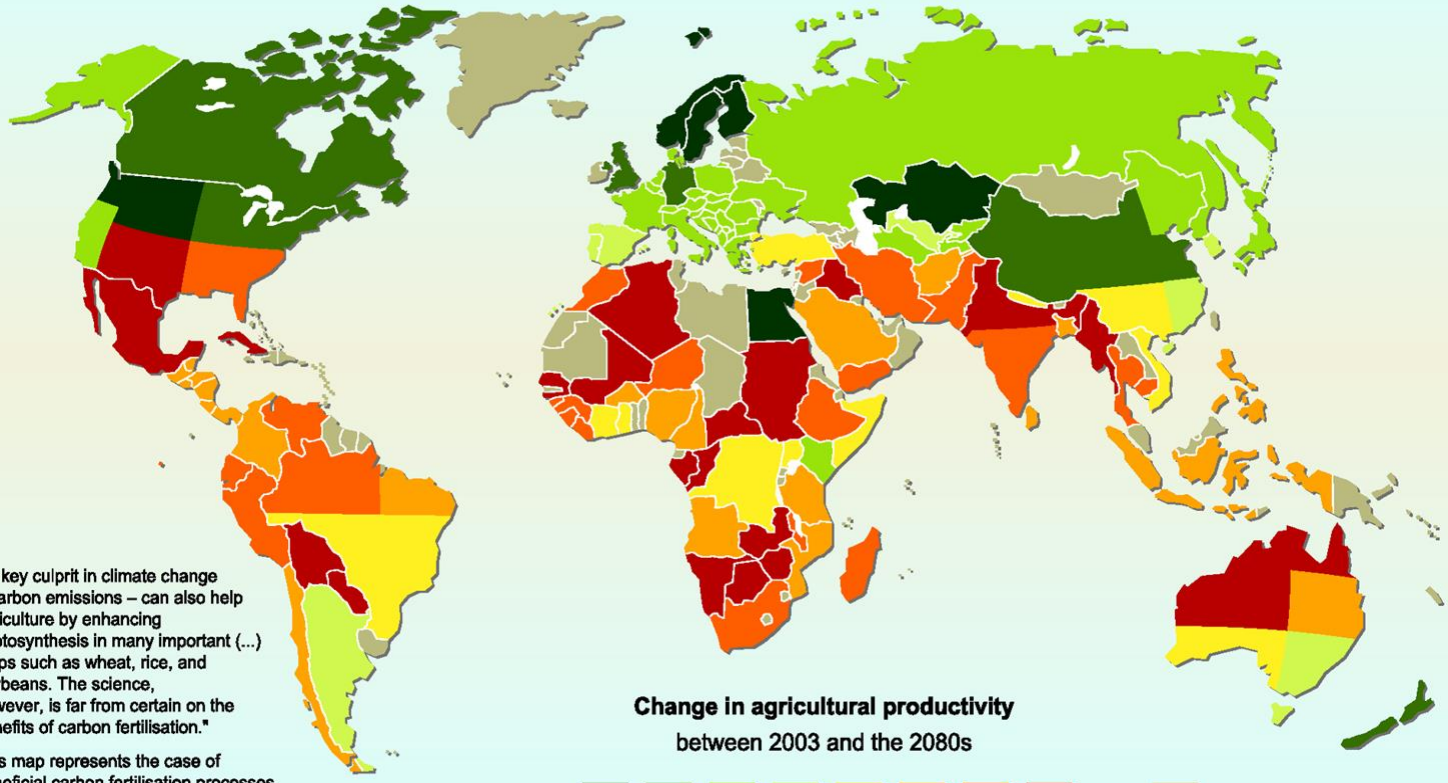


Future **changes in precipitation** averages and extremes can be **very different**



Source: IPCC Sixth Assessment Report Chapter 11, FAQ 11.1

Projected impact of climate change on agricultural yields



[Speaker Zoom video]

Research question

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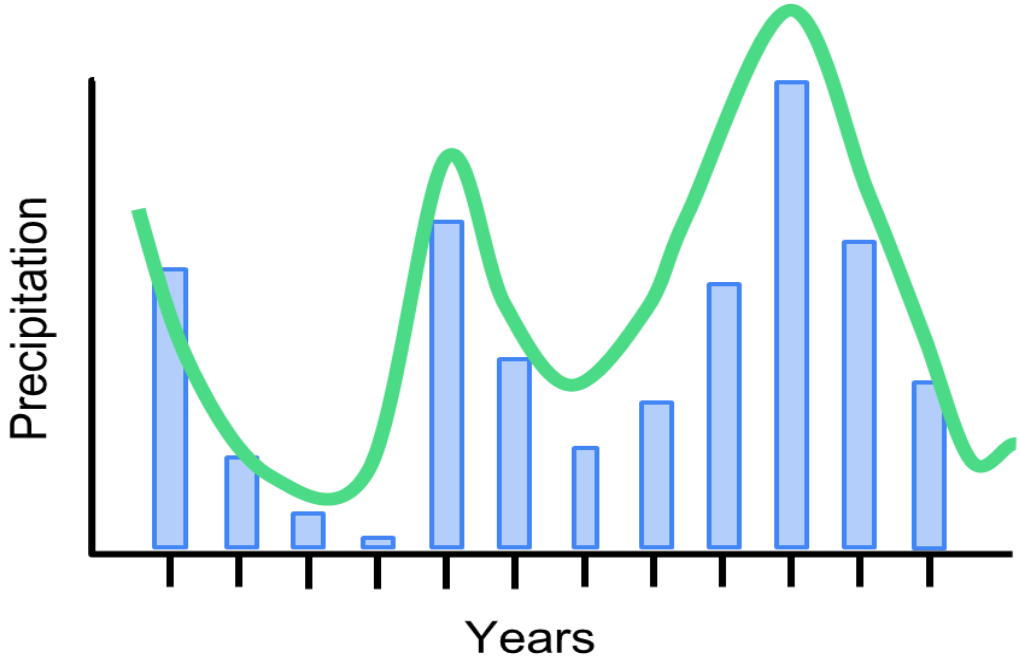
How precipitation and extreme events (excess or lack) correlate with maize yield?



Methods

[Speaker Zoom video]

Precipitation dataset from CHIRPS

(Climate Hazards Group InfraRed Precipitation with Station)

Maize yield annual values (kg/hectare) from IBGE

(Brazilian Institute of Geography and Statistics)

Data analysis: Python 3

Correlation analysis

Study area: Municipality of Maracaju (MS - Brazil),

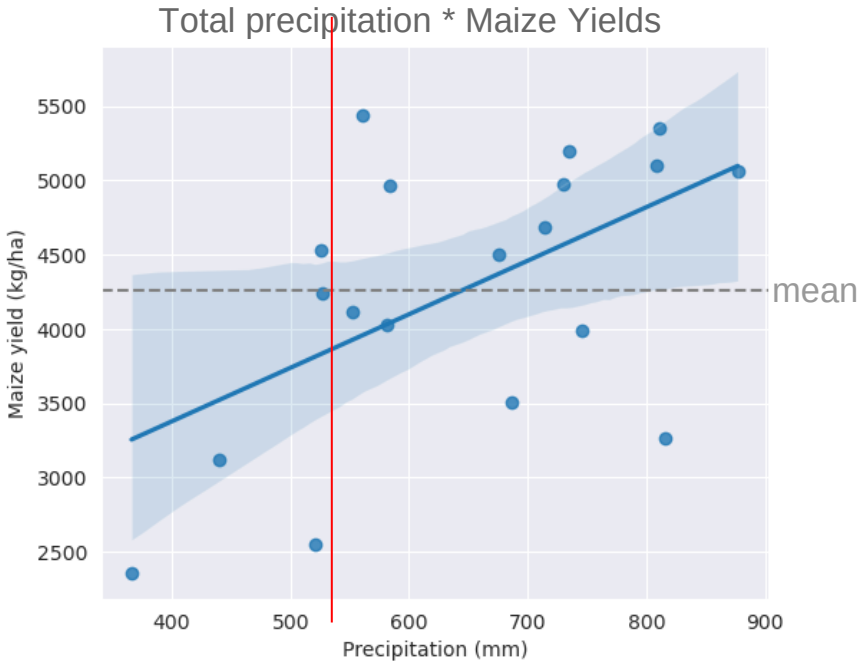
(One of the main maize producers)

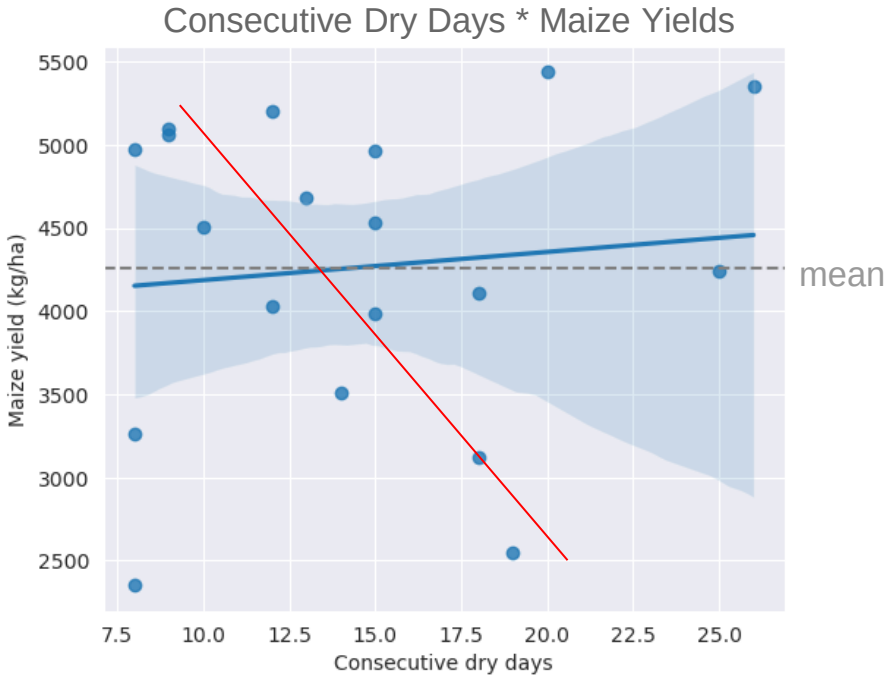
Results

[Speaker Zoom video]

Yield * Precipitation correlations: high yields over 500 mm; other factors

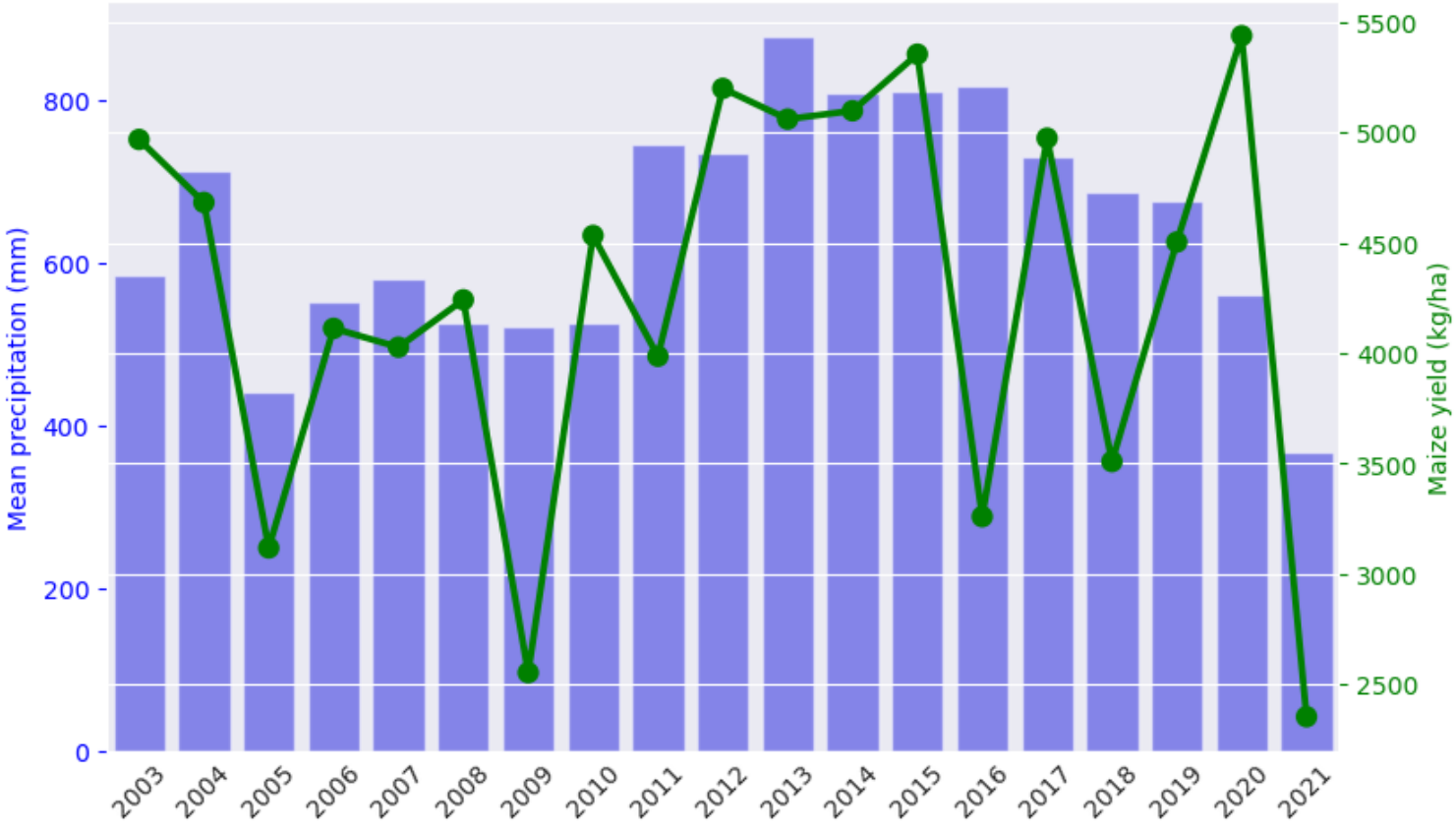
Yield * Consecutive Dry Days correlations: negative, although some years have opposite effect

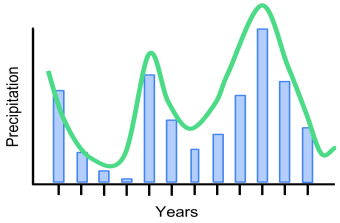




Results

[Speaker Zoom video]





Conclusion

[Speaker Zoom video]

- Extreme low values of precipitation negatively affect maize yield.
- We estimate that crop needs at least 500 mm of precipitation during the growing season.
- There is some relationship between consecutive dry days and crop losses but this study did not capture the relationship well.