Developing resilience to hydrologic extremes in irrigated agriculture through risk transfer mechanisms in the context of southeastern Brazil

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Introduction

2008-2018 ca. 11.5 bi USD in climate-related losses in Brazil (ONU-CEPAL).
Most farms remain uninsured

- High costs
- Low access to credit
- Low education on insurance

Objective

This work aims to:

- Model the impacts of hydrologic extremes risk transfer in irrigated agriculture.
- Optimize premium values of an agricultural index insurance fund.

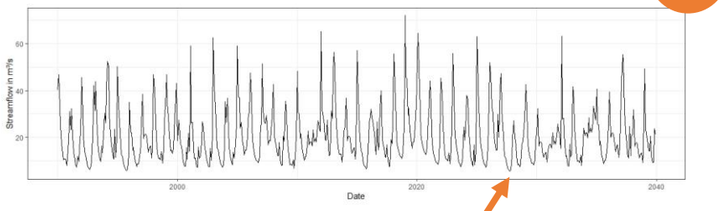
Pilot area

Cantareira System

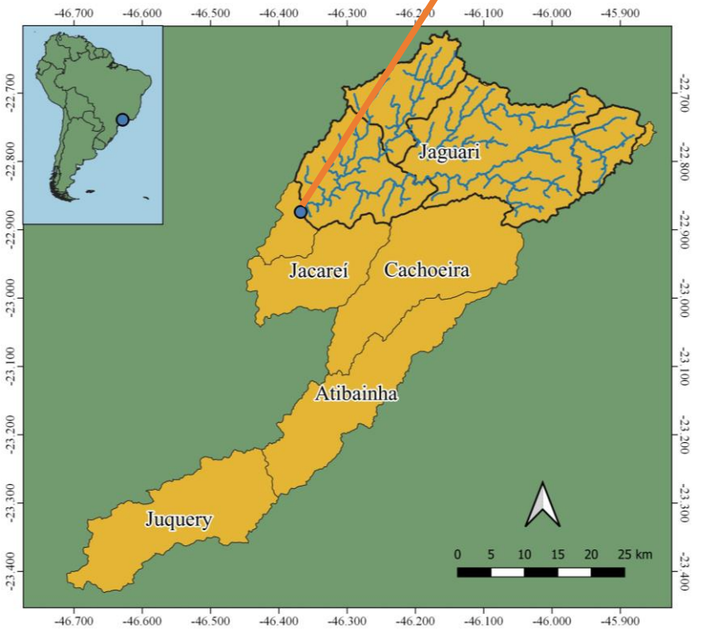
- Supplies water for ca. 5 million inhabitants
- Pilot area in Jaguari catchment

Methods

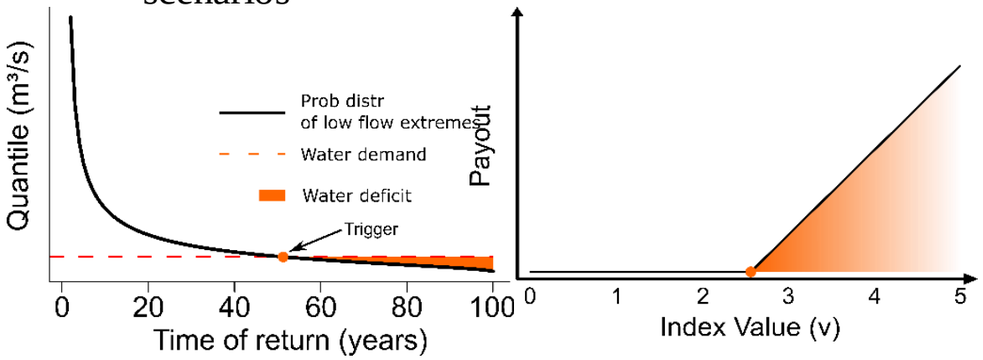
Monthly streamflow scenario generation **B**



A Economic parameters



C Define trigger and estimate losses according to scenarios



D Optimize premiums

Cash-flow equation

$$R_t = R_{t-1} \cdot (1 + i) + Pr - I + d - A$$

Preliminary results & Next steps

- Risk pooling might reduce risk premiums and fund uncertainty
- Climate informed estimation of index will help us to understand how climate change affect on risk-averse models