THE IMPACTS OF CLIMATE CHANGE ON FOOD SECURITY: THE CASE OF MAIZE IN CHOKWÉ DISTRICT

Máriam Abbas

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INTRODUCTION

- MOZAMBIQUE:
  - Poverty: 46% of the population.
  - 70% of the population lives in rural areas.
  - 24% of households are food insecure.

- **Main focus:**
  - Climate and maize production in Chokwé District.
  - The relation between climate and maize production in Chokwé.
  - Land governance and food security.

METHODOLOGY

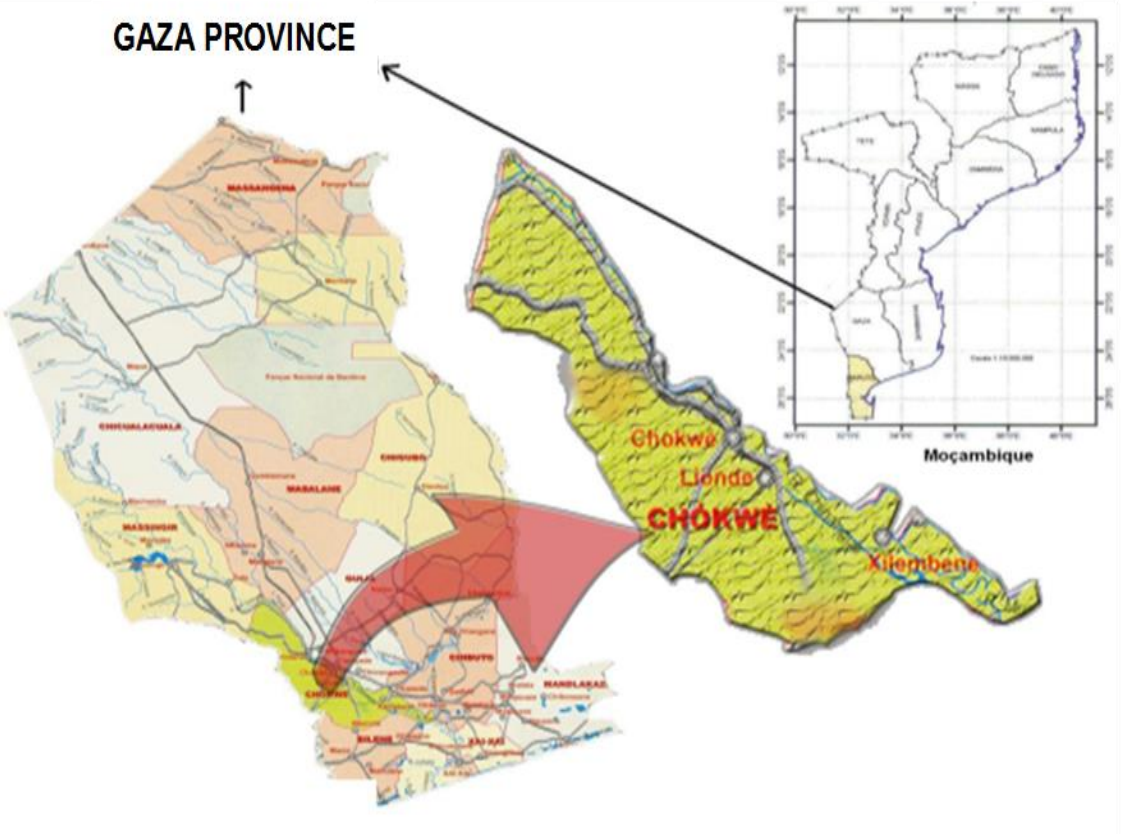
- Quantitative analysis: classical regression model

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \mu_i$$

  - Variables:
    - Maize production (Y)
    - Maize cultivated area (X_1)
    - Precipitation (X_2)
    - Temperature (maximum – X_3 and minimum – X_4)

- Qualitative analysis: interviews (farmers, government and IIAM researchers)

CONTEXTUAL ANALISYS



- Chokwé is located in Gaza Province.
- Food insecurity: 12%
- Semi-arid climate.
- Agriculture is the main activity.

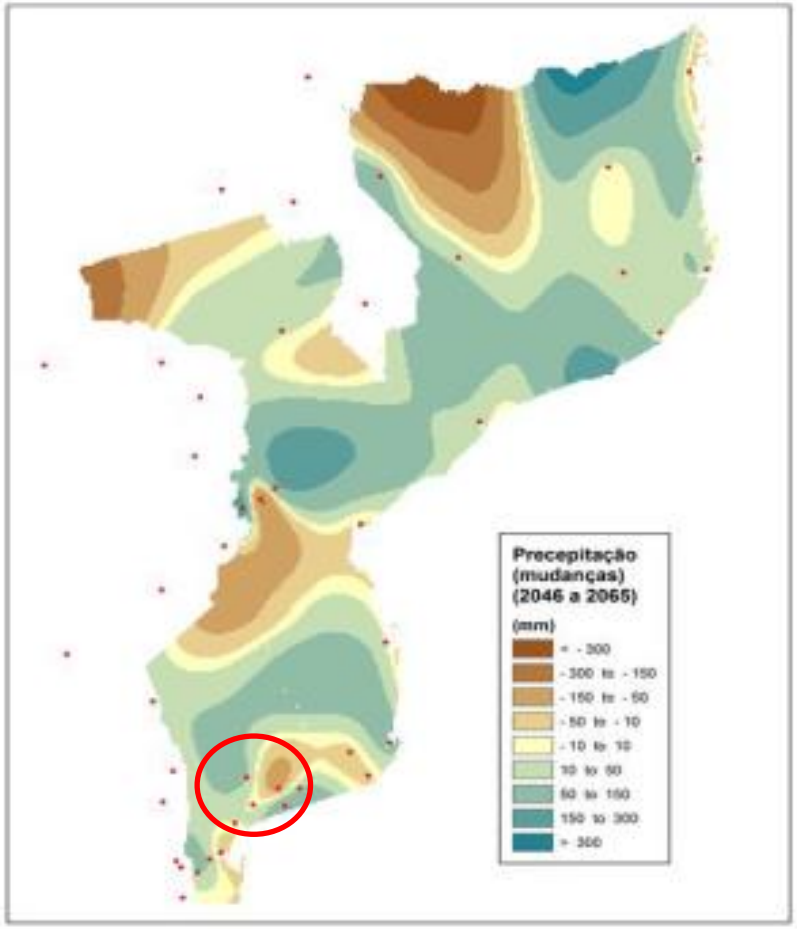


Figure 2. Expected changes in the future (2046-2065) in the median of 7 GCMs for rainfall during maize growing period, expressed in rainfall mm.

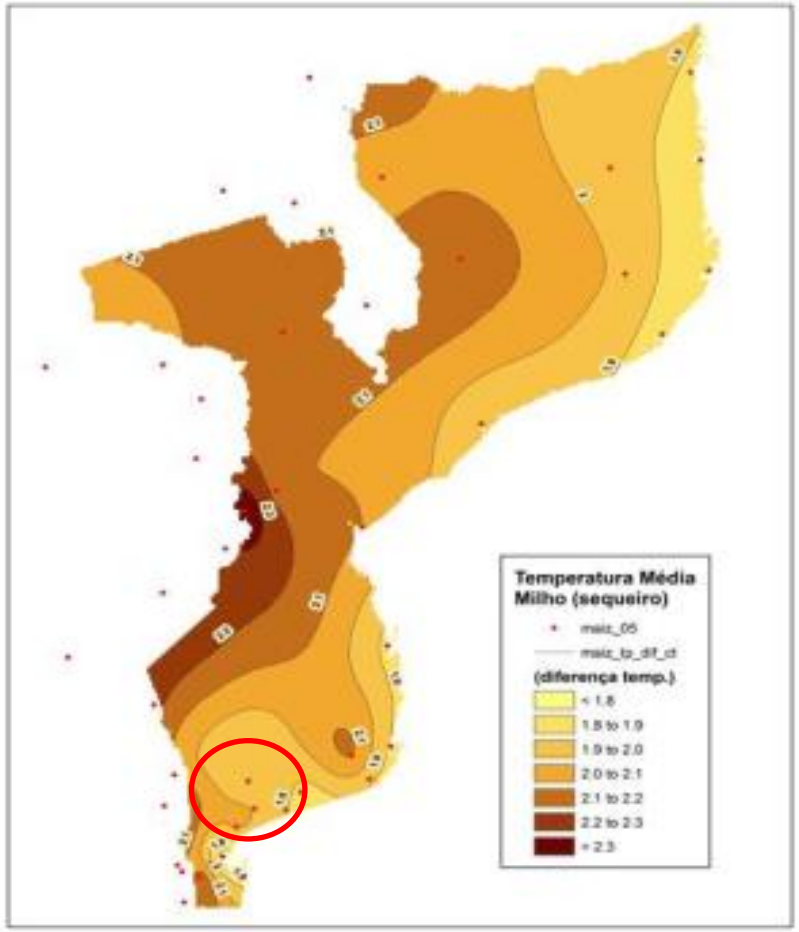


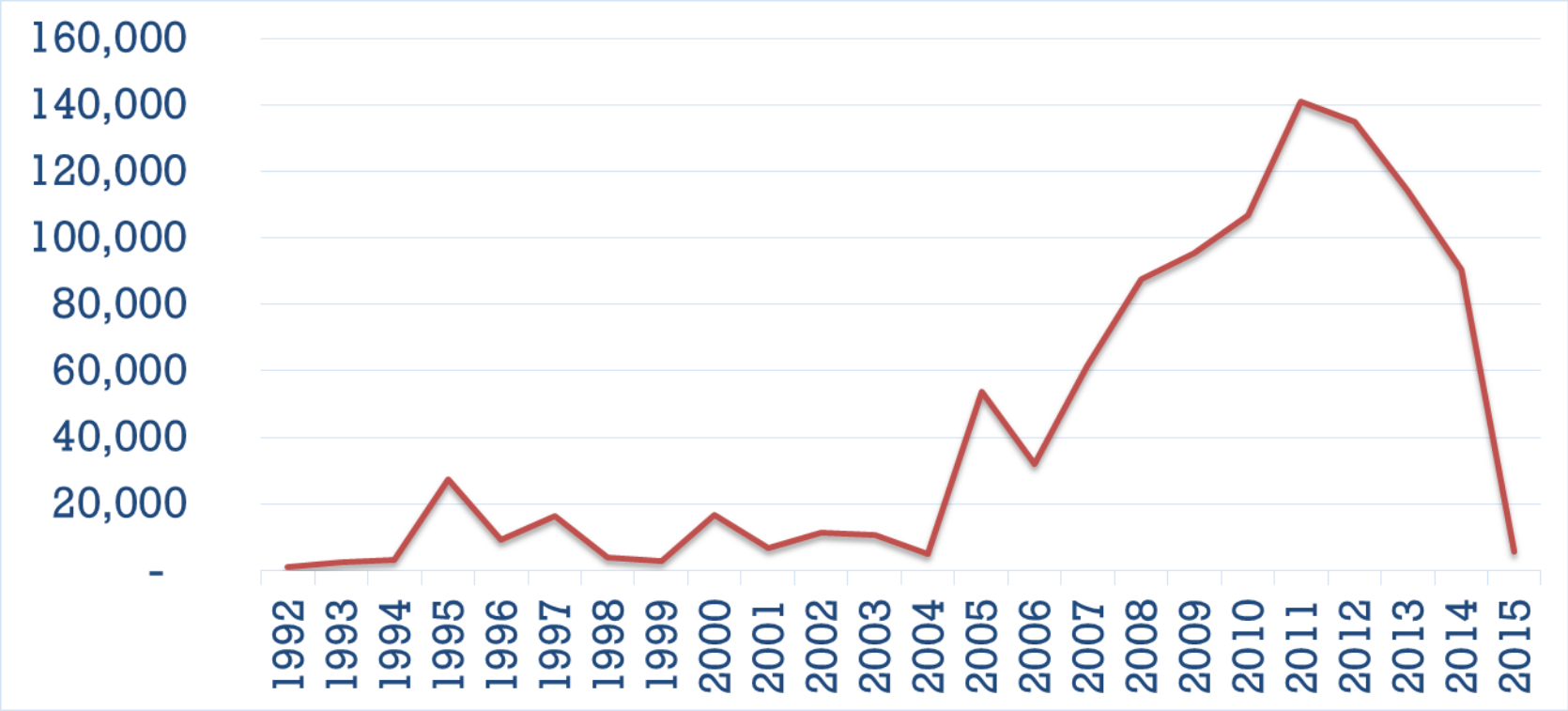
Figure 3. Expected changes in the future (2046-2065) in the median of 7 GCMs for the average daily temperatures during maize growing period, expressed in °C.

Source: Brito & Holman (2012).

RESULTS AND DISCUSSION

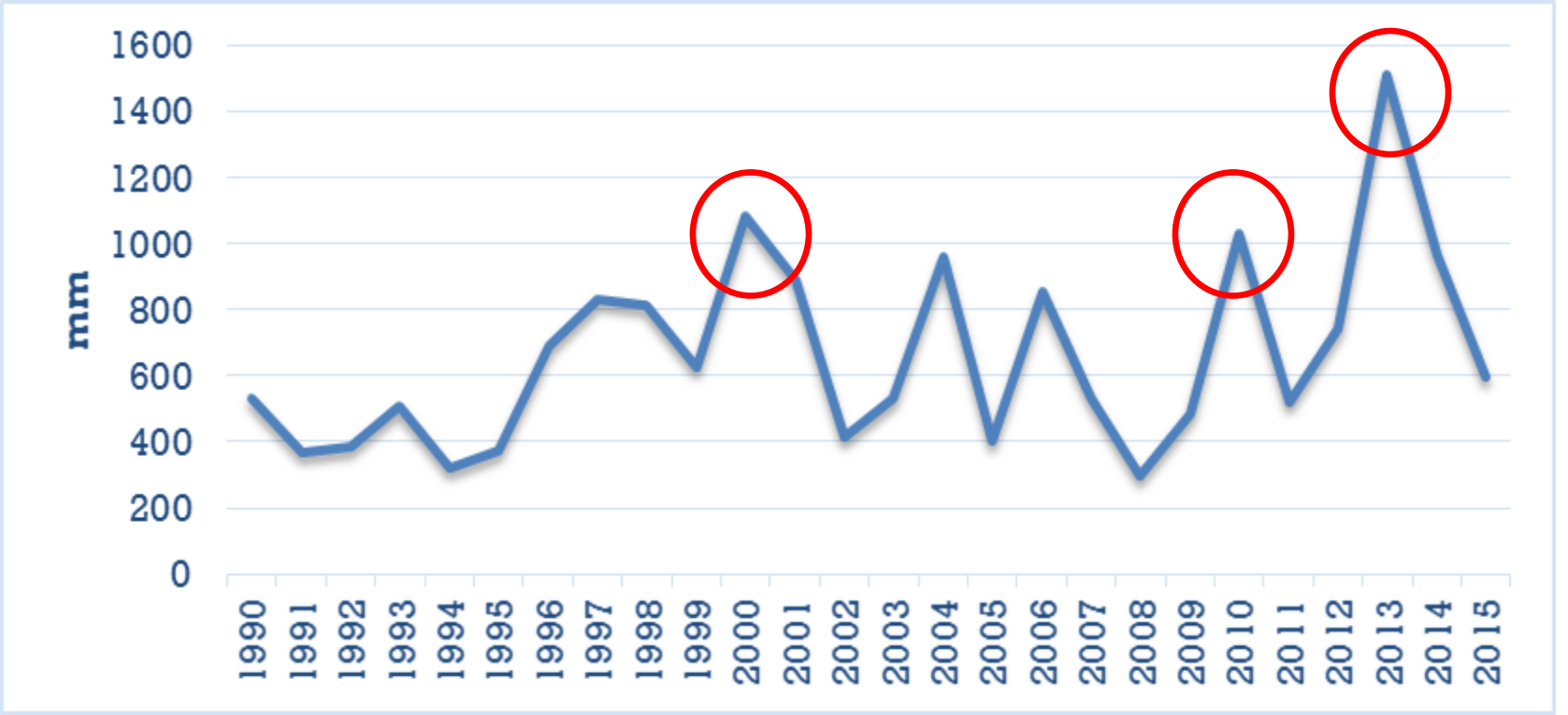
1. CLIMATE AND MAIZE PRODUCTION IN CHOKWÉ DISTRICT

Maize production and cultivated area in Chokwé



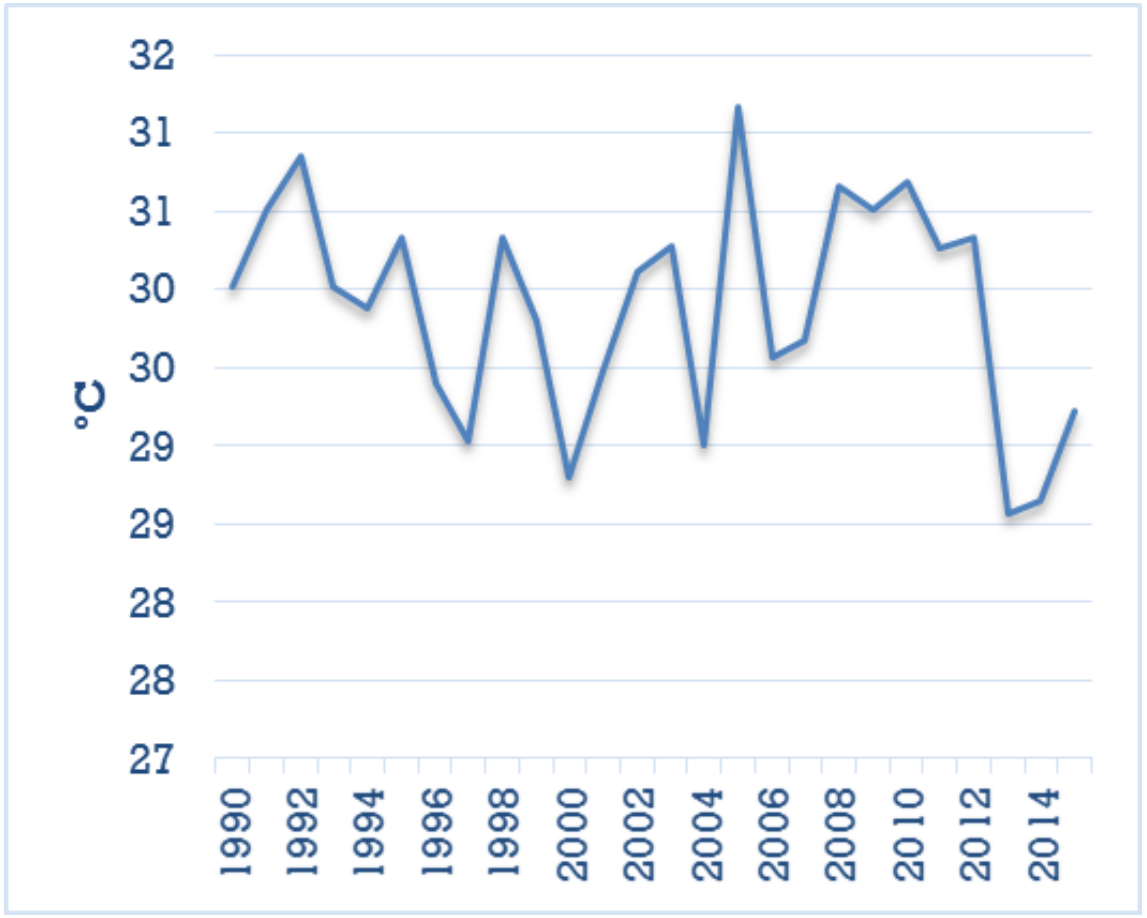
Source: Chokwé District Service of Economic Activities.

Total annual precipitation

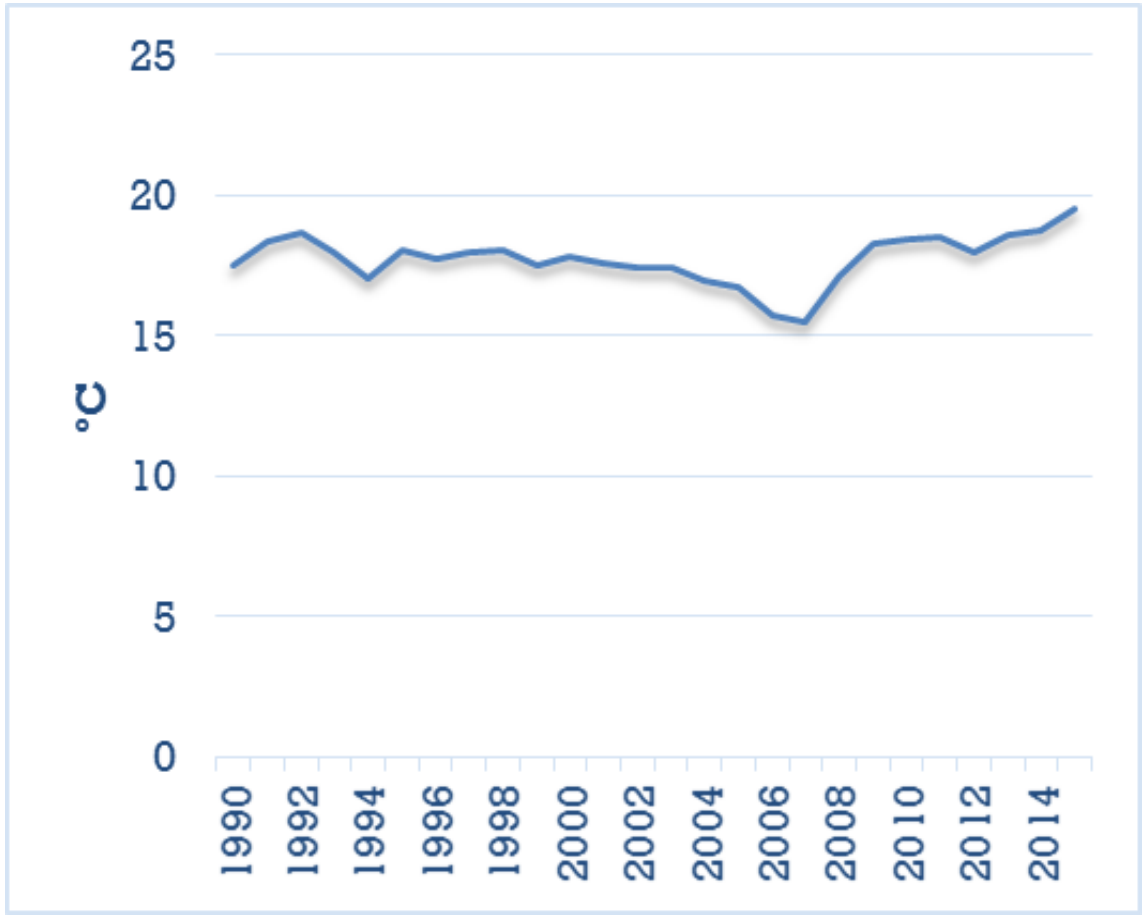


Source: National Institute of Meteorology – Chokwé Station (INAM, 2016).

Annual average maximum temperature



Annual average minimum temperature



Source: National Institute of meteorology – Chokwé Station (INAM, 2016).

2. RELATION BETWEEN CLIMATE AND MAIZE PRODUCTION IN CHOKWÉ

Table 4. Regression results

Variables	**(1)**
	Maize production
Cultivated area	**1.737*** ** (0.159)
Annual precipitation	**32.081*** (17.577)
Maximum average temperature	**16748.443**** (6942.311)
Minimum average temperature	**-1752.752** (4081.785)
(Constant)	**-499113.620***** (225957.711)
Observations	24
R Square	0,891
F	39.013***

Standard error in parentheses
*** p<0,01, ** p<0,05, * p<0,1

3. LAND GOVERNANCE AND FOOD SECURITY

1954 – 1974	• The colonial regime expropriated the fertile lands of the Limpopo Valley of the local peasants and established the Limpopo Colonate.
1975 - 1982	• State companies owned almost all irrigated land.
1983 – today	• The political elites owned the best lands. • Small farmers owned lands from 0.5 ha to 1ha.

- Consequences to small farmers:
  - Water conflict → Low production/productivity → food insecurity
  - Land in the rainfed area →

CONCLUSION

- There is a positive relationship between cultivated area, maximum temperature and precipitation and maize production.

- Farmers are facing difficulties because of droughts/floods, they are not able to produce important crops to ensure food security.

- Land distribution was not transparent and was based on the interests of the public elites, marginalizing the peasants. The peasants obtained marginal areas (less productive), leading to lower production, hence affecting food security.

THANK YOU FOR YOUR TIME!!

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