1. GREENHOUSE EFFECT, GLOBAL WARMING AND CLIMATE CHANGE

GREENHOUSE EFFECT: Process by which the atmosphere traps solar radiation and warms the planet's surface.

GREENHOUSE GASES:
- CO2, CH4, N2O, H2O vapor and Chlorofluorocarbons.

1.2. EFFECTS ON THE ENVIRONMENT

UNMANAGED SYSTEMS
- Oceans:
  - Sea-level rise.
  - Carbonisation and Acidification.
  - Wildlife Reserve and Species Loss.
  - Hurricanes.

MANAGED SYSTEMS
- Agriculture and Livestock Farming.
- Health.

ANOTHER CONCERN: TIPPING POINTS
- Non-linear reactions to stresses.

1.3. EVIDENCE AND GENERAL CONSENSUS

EVIDENCE
- Increase of 0.9ºC of the Earth’s surface.
- Melting of the Arctic and Antarctic's ice sheets.
- Sea level has increased about 20cm since 1990.
- Increase on the frequency of extreme events (more hurricanes, ...).

GENERAL CONSENSUS
- 97% consensus, among the scientific community, that anthropogenic emissions are the cause of global warming.

2. LINKING CLIMATE CHANGE AND CONFLICT

THE ROLE OF UNDERDEVELOPED COUNTRIES
- More than 1 out of 2 people live off agricultural activities.
- Climate change can affect harvests and reduce the availability of basic needs.
- Political instability.

DIFFICULTIES IN MEASURING CAUSALITY
When the data is observational:
- Selection bias.
- Measurement errors.
- Confounding.

MOST COMMON ECONOMETRICAL APPROACHES
CROSS-SECTIONAL
- How the conflict variable evolves across sites.
- Use of control variables.

PANEL DATA
- How a certain group of population respond to different climatic conditions that vary over time.

2.1. THE DEBATE

BURKE-HSIANG-MIGUEL
“Climate breeds conflict”
Channels:
- Economic incentives.
- Psychological pathway (serotonin).

BUHAUG
“There’s no strong evidence to support a causal relationship between climate and conflict”
Channels:
- Decline on agriculture productivity.
- Technological progress can prevent it.

2.2. EMPIRICAL EVIDENCE

BURKE ET AL. (2009)
- Warming increases the risk of civil war in Africa.
- Using a cross-regional approach, they control for socioeconomic factors and climate shocks.

BUHAUG ET AL. (2010)
- Climate change not to blame for African civil wars.
- Analysis shows that rainfall shocks have a significant impact on civil war incidence.

3. DROUGHTS AND POLITICAL VIOLENCE: AN EXERCISE

A) TESTING THE ASSOCIATION BETWEEN DROUGHTS AND POLITICAL VIOLENCE

1. Contingency tables: observed and expected
2. Hypothesis test
1. H0: no association between Political Violence and Droughts
2. H1: not H0
3. Pearson Chi-square statistic
\[ \chi^2 = \sum \frac{(O - E)^2}{E} \]
4. Decision rule:
P-value: 1,0066e-10 < Significance level of 0.05, and 59.88>6.63
REJECT THE NULL HYPOTHESIS

B) CONFLICT AND CLIMATE VARIABLES: LOGIT MODEL

4. CONCLUSIONS
- Human-induced climate change is a major challenge for humanity.
- Despite of having found a positive association between political violence and droughts, no causal relationship can be inferred.

5. SELECTED BIBLIOGRAPHY