ISI Foundation

CLIMATE AND CONFLICT IN SOMALIA

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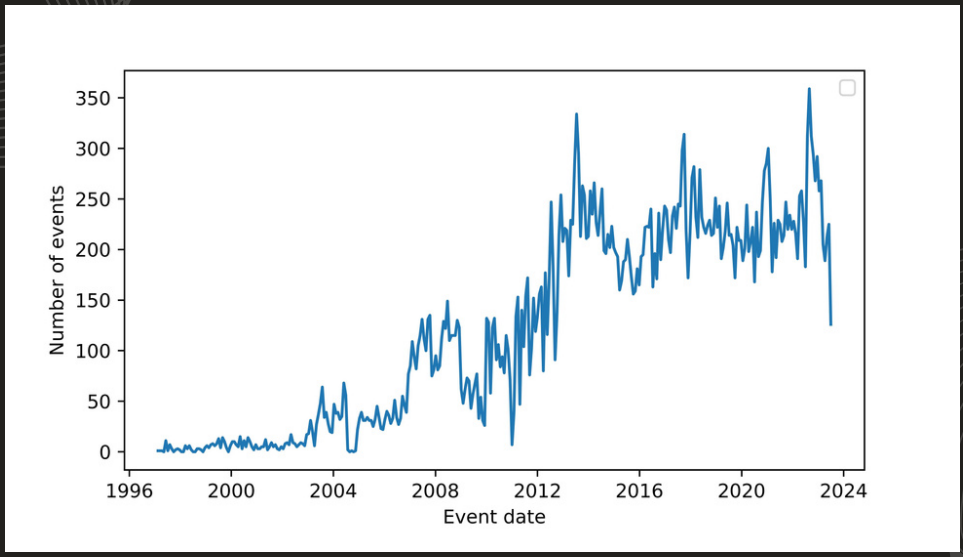
- climate crisis has increased the average global temperature and is leading to more frequent high-temperature extremes and increased drought
- an area that is particularly subject to these changes and is suffering from its consequences is the horn of africa
- Somalia is also currently affected by political crisis, unstable governament, civil war and conflicts

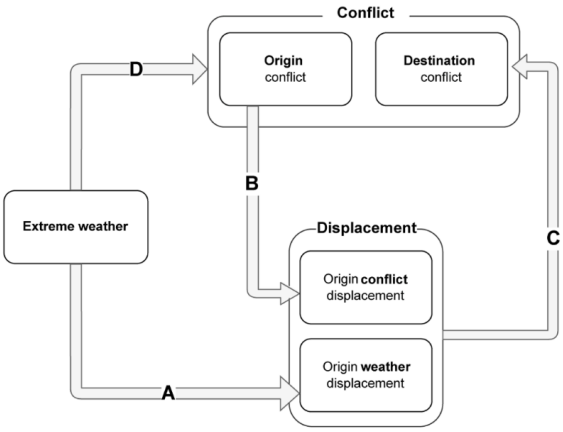
PROTESTS AND VIOLENT EVENTS

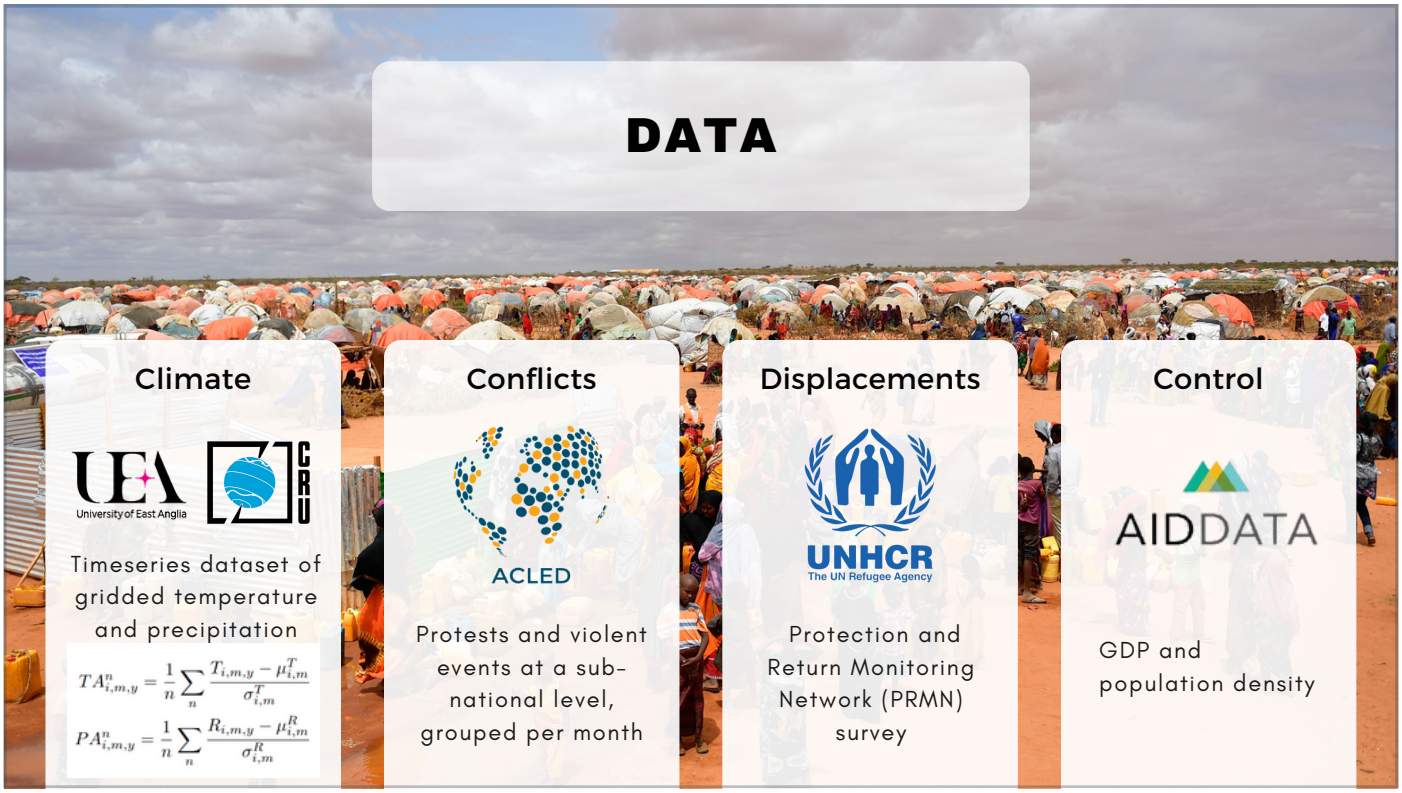


- The number of protests and violent events in Somalia significantly increased from the 90s up to now

- an increased body of research suggests that there is a correlation between the climate and violent conflicts (over resource access, like water and food)

- This relation is complex since is influenced my a multitude of factors, such as the socioeconomical situation of the area/country, and can take place through a different causal linkages (effects on agricultural production, stock market, migration and internal displacements) which are highly interconnected themselves





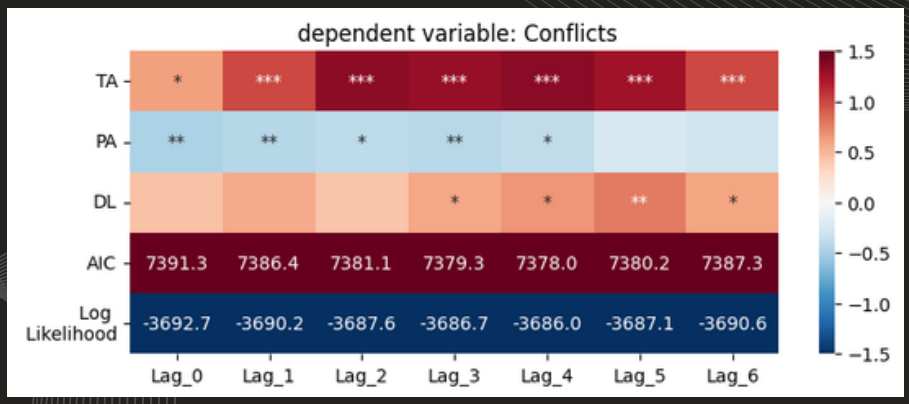
- we collected data to study the effects of climate and displacements on conflicts, but also how displacements are affected themselves by the climate

- ... describe briefly the data sources

LINEAR MODEL 1a

Conflicts $\propto$

Temperature anomalies	TA
Precipitation anomalies	PA
Drought lenght	DL



- The most simple model we employed to study the effect of climate on conflicts is a linear regression model.

- We defined temperature anomaly TA as the standardized difference with the maximum temperature for each region and for each month,

and similarly the precipitation anomaly PA

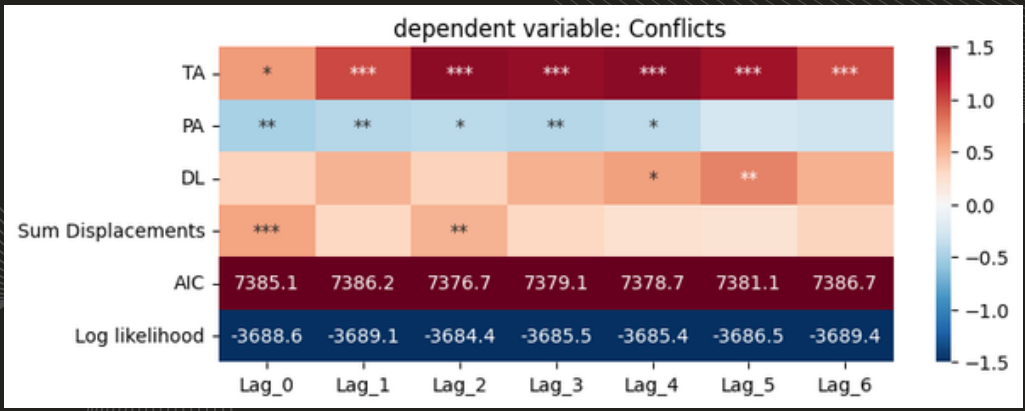
while drought lenght DL is the number of consecutive months with positive temperature anomalies

- We performed different regressions varying the lag (in months) between the climate variables and the number of conflicts. We account for both time and regional fixed effects.

- We found that TA is significant for all lags with a positive coefficient, and PA for most lags with a negative coefficient, suggesting that an increase in TA as well as a decrease in PA is related to an increase in the number of conflicts.
DL is significant and positively correlated to conflicts for higher lags

LINEAR MODEL 1b

Add the number of displacements arriving to the region



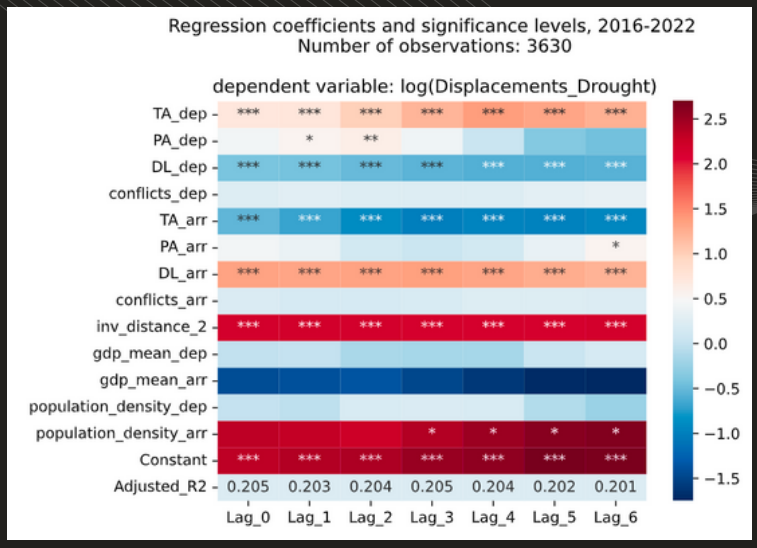
- We included the number of displacements to check its influence on the number of conflicts, along with the climate variables

- We found that this variable is significant, especially when it is not lagged, suggesting that the effect of new arrivals of displaced people to a region affects the conflicts in that region immediately

LINEAR MODEL 2

Log (Displacements) $\propto$

- Climate and conflict variables in the departure and arrival regions,
- inverse distance^2,
- control variables



- We checked the influence of climate and conflict both in the region of arrival of the displacement and in the region of departure.

- We considered displacements that were reported to be due to drought first, and later those reported to be due to conflicts

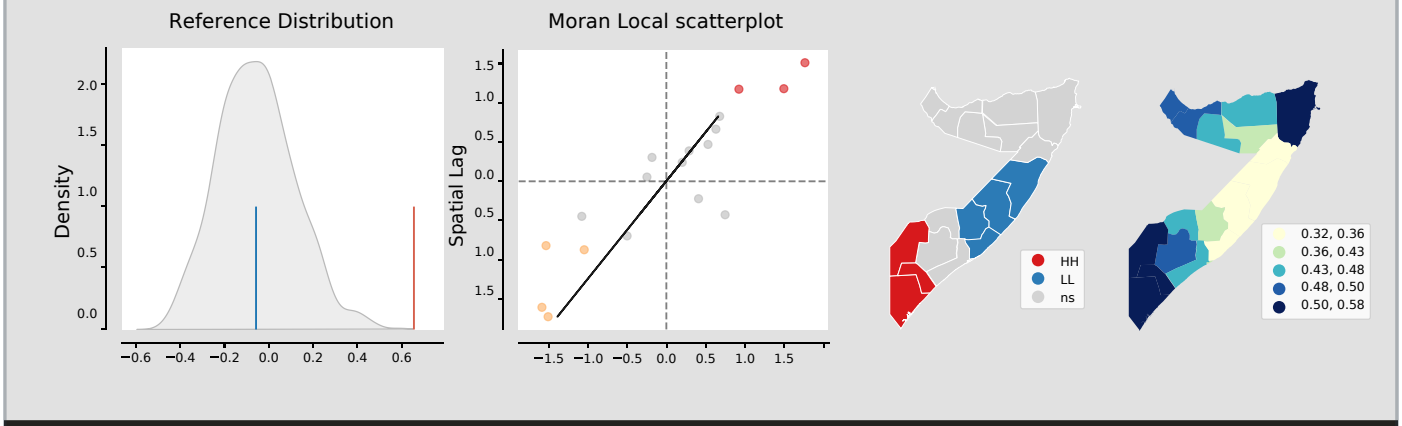
- The factor that is mostly influencing the number of displacements is the distance between the two regions: as expected, people move more towards closer regions

- For the drought displacements, the TA is significant in the arrival as well as departure region, suggesting that people move from regions with higher TA towards regions with lower TA

- however an unexpected behaviour concerns the DL, where it seems shorter drough periods are associated to more displacements

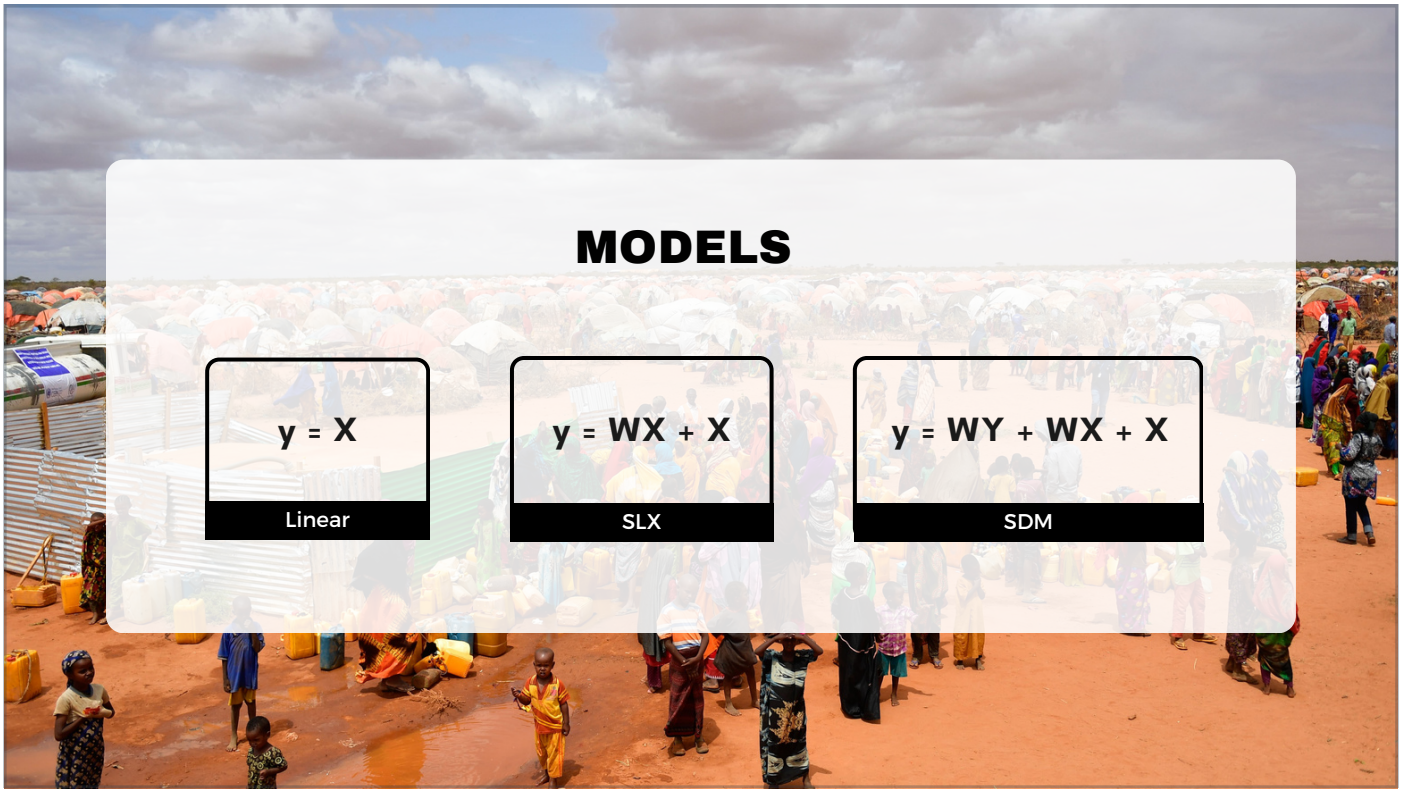
- this underlines that the relationship between climate and displacements could be mediated by numerous intermediate variables, making it challenging to pinpoint a straightforward cause-and-effect relationship.

SPATIAL AUTOCORRELATION



- Since conflict and climate are spatial variables (depend on the location where they are measured) we computed the Moran's I statistic (i.e. the correlation coefficient for the relationship between a variable and its neighboring values)

- the climate variables as well as the conflict variables show high levels of spatial autocorrelation, which led us to consider this feature in our next analysis



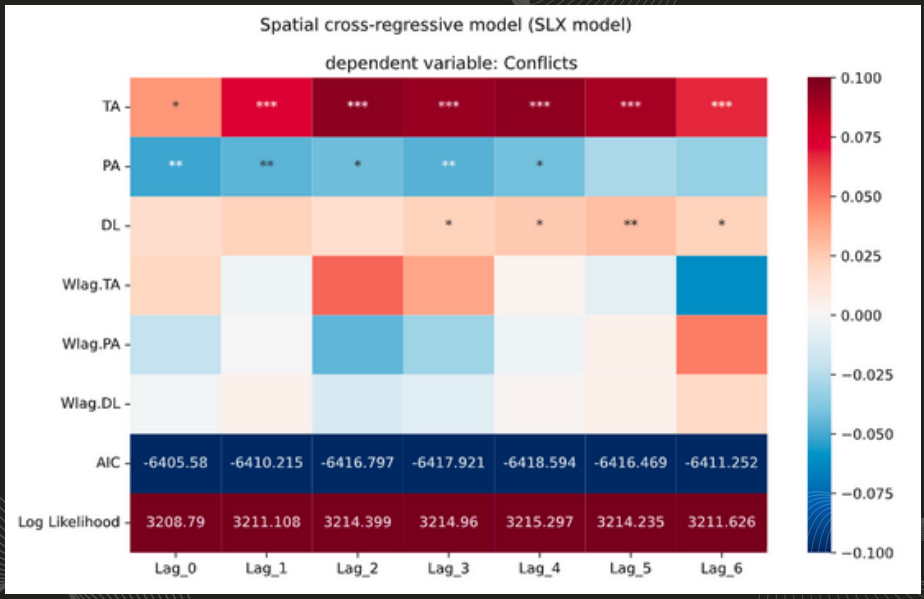
- The traditional fixed effects model can be extended to include spatially lagged variables among the regressors

- We first included spatially lagged climate variables together with the climate variables of the region under analysis

- We then included also the spatially lagged dependent variable, to check how conflicts in neighbouring regions affected the conflicts in the region under study

- Since we found signal for climate affecting conflict, and also climate affecting displacements between regions, our objective is to check weather climate variables of neighbouring regions can be used as a proxy for the number of displacements

$$y = \beta X + W\text{lag}.\beta\, WX$$

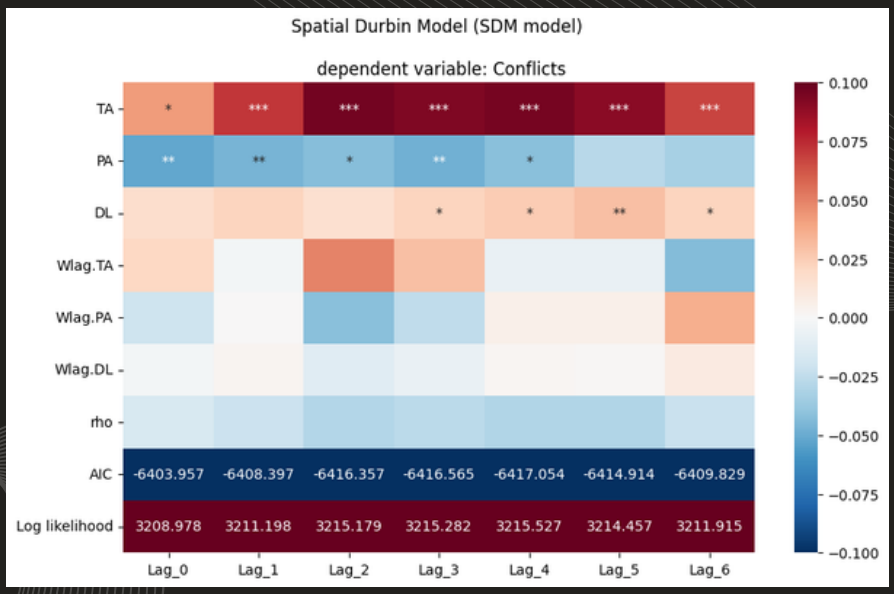


- To do so we extended the traditional fixed effects model to include among the regressors the spatially lagged climate variables, weighted by the inverse distance squared

So far we did not find strong evidence signalling the presence of an influence of climatic variables in the other regions on the conflict of the region under study, but this could be due to a number of factors such as:

- potential misconfiguration of the weight matrix
- variations in the time frame in which the different processes happen
- potential non linearities

$$y = \beta X + W_{lag}.\beta\, WX + \rho\, WY$$



Also conflicts in neighbouring regions do not seem to influence directly the conflict of the region under study, at least under these model assumptions.

Thanks to the team

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Thank you for
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