Unravelling the complex interplay between competition for land and water, drought and conflict

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1. Existing research has started to identify conditional and indirect relationships between climate, drought and conflict (see Koubi (2019) *ARPS*).
   - The agricultural sector is highlighted as key actor.

2. Existing research focuses on historical relationships but typically offers no explicit consideration of changes in future risk.

3. Existing long-term conflict projections do not consider the interplay between socioeconomic and climatic changes.
   - Here, we aim to estimate future changes in conflict risk as a function of socioeconomic and climatic changes.
Will climate change lead to more armed conflict?

Climate change is one of the greatest threats to global security. As we see more drought, as poor people are not able to grow the food they need, there will be migrations of millions of people all over the world. That is why we need a Green New Deal.

Theoretical framework: A climate-conflict trap?

Do this link really exist?
## Research Design

<table>
<thead>
<tr>
<th>Exogenous variables from SSP-RCP scenarios</th>
<th>Endogenous variables estimated</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Population growth</td>
<td>• Growth in agricultural GDPpc</td>
</tr>
<tr>
<td>• Educational attainment</td>
<td>• Growth in non-agricultural GDPpc</td>
</tr>
<tr>
<td>• Drought: Soil moisture deficits over croplands</td>
<td>• Armed conflict</td>
</tr>
</tbody>
</table>

Training period: 1979-2014  
Projections: 2015-2099
Dynamic simulations

Data from Uppsala Conflict Data Program, focus on "State-based violence" (Civil conflict) fought between government and at least one rebel group resulting in at least 25 battle-related deaths per year. (E.g. Syria)
Drought projections for different RCPs

Globally

- `mcr_smi_neg_ipsl2p6`
- `mcr_smi_neg_ipsl4p5`
- `mcr_smi_neg_ipsl8p5`
Outlooks of conflict

Conflict projections select scenarios

Differences in proportion in conflict for higher emission vs "Paris" scenario
Evidence of drought conflict links in vulnerable contexts

- Growing-season drought has no significant effect on civil conflict outbreak.
- Yet, it sustains civil conflict violence in the contexts of political marginalization and agricultural dependence in poor countries.

Conclusions

• Increasing drought is expected to alter conflict occurrence

• Impacts of increased drought occurrence might be balanced out by improvements in social economic conditions

• Long-term impact of drought on land use and hydrology is currently not included in conflict projections
Ongoing steps

- Global drought impacts simulations
- Historic and future land use simulations
- Improved understanding of land surface – conflict feedbacks
