

Two examples of using climate and socioeconomic scenarios

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Two ongoing research projects that use scenarios

- **Projecting the economic damages of adverse human health effects from elevated temperatures in the United States**
 - Kate Calvin (JGCRI/PNNL), Elisabeth Gilmore (School of Public Policy, UMD), Robin Puett (School of Public Health, UMD), Amir Saptoka (School of Public Health, UMD)
 - Funded by the University of Maryland's ADVANCE program and the Pacific Northwest National Laboratory.
- **Forecasting violent conflict under different climate and socioeconomic scenarios**
 - Halvard Buhaug (PRIO), Kate Calvin (JGCRI), Elisabeth Gilmore (UMD), Håvard Hegre (PRIO), John Steinbrunner (UMD), Stephanie Waldhoff (JGCRI)
 - Funded by the US Department of Defense Minerva Initiative (Prime Award No. W911NF1310307) and the Research Council of Norway, project 217995/V10.



Why do we want to use your scenarios?

Both of these projects require credible, complete and consistent climate and socioeconomic scenarios

- To better understand the character and uncertainty of the empirical relationships
- To inform decision-makers regarding the potential future impacts
- Building scenarios that span a wide range of futures is not easy
- Developing quantitative variables requires other models (e.g. demographic, economic)
- Useful starting point for multi-disciplinary research teams to agree on baseline assumptions
- Benefit the broader climate impacts community

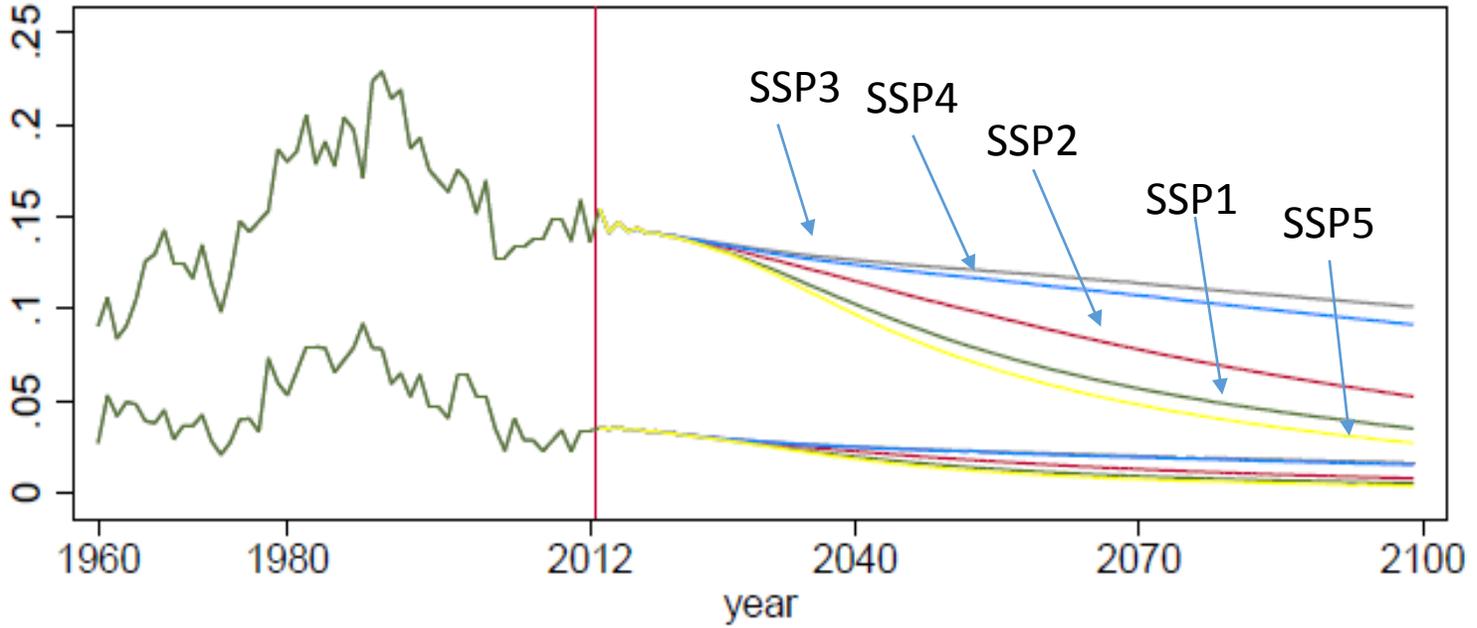


What did we actually do?

	Human health in US	Intrastate conflict
Population and demographics	Developed independent projections at the state-level with age structure calibrated to the US Census	Country-level population and demographic composition from the SSPs
Economy (GDP)	Annual Energy Outlook (AEO) from the Energy Information Agency as baseline	Country-level GDP from the SSPs with adjustments and assumptions for missing countries
Climate change variables	Daily temperatures from CMIP5 archive for RCP4.5 and RCP8.5 from different GCM.	No direct climate or land use change variables. Empirical relationships for IAM generated variables such as food prices/crop yields



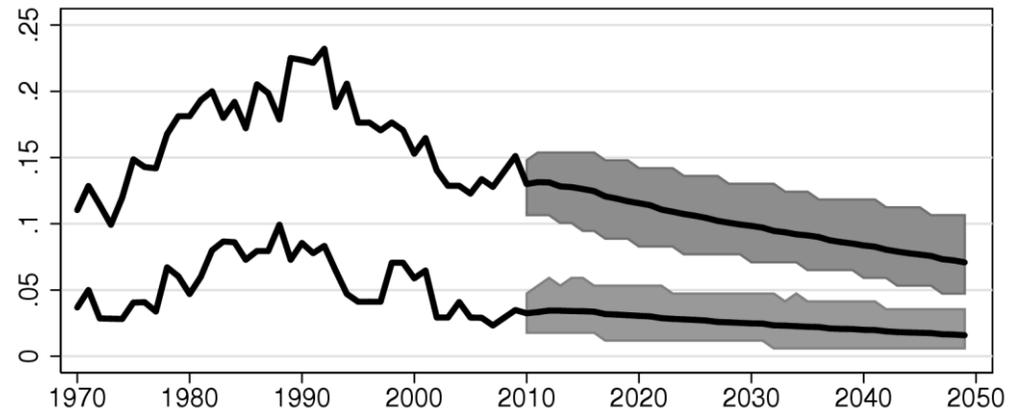
Simulated global proportion in major or major+minor conflict



Preliminary results based on GDP/capita and population in a conflict forecasting model.

We are in the process of including education attainment and youth bulges.

BUT, I did not include the confidence intervals on our estimates. We may not be able to distinguish across the SSPs.





What are we thinking?

- Disaggregating in spatially and temporally is challenging, especially for smaller teams, but can be very important.
- Adjusting the SSPs to matching historical data
- Are the SSPs too optimistic? Do they span plausible futures esp. in developed countries?
- How can we account for the effect of the impacts on the scenario? E.g. *Impact Corrected Scenarios*



What should we be thinking about?

- The scale of the impacts matters for selection of scenarios, but also outreach and availability of information for users
- IAM outputs like food prices will be increasing important
- Sharing of the models that are used to construct the quantitative scenarios would greatly facilitate feedback of the impacts on the SSPs and would also build trust with scenario users
- Coordination is important, but so is maintaining diversity of methods and thinking
- What can we know about the world in 2050 and 2100?