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Impact of natural hazards on global ecosystems

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Ultimately, human societies rely on the existence of functioning global ecosystems. Thus, avoiding the collapse of global ecosystems should be among the highest priorities of climate mitigation and adaptation efforts. However, "protecting" ecosystems is a challenge much more complex than avoiding adverse effects on human infrastructures, societies, economies or lives. For instance, natural hazards such as wildfires or floods can play a **functional** role for ecosystems, with species requiring those events in their life-cycle. Therefore simply trying to avoid the at-first-sight devastating effects of natural hazards on ecosystems can be counter-productive, and even be damaging.

Here we present a statistical study made with the open-source, probabilistic risk model CLIMADA [1] about the frequency and magnitude distribution of several natural hazards affecting global terrestrial ecosystems. The hazard modelling is based on historical data augmented with probabilistic methods, and thus can be interpreted as providing a snap-shot of "current conditions". This can then be used as a baseline to be contrasted with future projections of climate change and socio-economic development. Further, this baseline can inform studies on the functional and vital relationship between natural hazards and ecosystems, which are necessary to design appropriate protection measures.

CLIMADA: https://github.com/CLIMADA-project/climada_python

[1] Aznar-Siguan, G. et al., GEOSCI MODEL DEV. 12, 7 (2019) 3085–97