



u^b

UNIVERSITÄT
BERN

OESCHGER CENTRE
CLIMATE CHANGE RESEARCH

EGU General
Assembly 2020

Understanding risk and resilience in alpine communities: Conceptual model for coupling human and landscape systems

Margreth Keiler^{1,2}, Jorge Alberto Ramirez¹, Md Sarwar Hossain¹, Tina Haisch³, Olivia Martius^{1,2}, Chinwe Ifejika Speranza¹, Heike Mayer¹

¹Institute of Geography, University of Bern, Hallerstrasse 12, 3012 Bern, CH

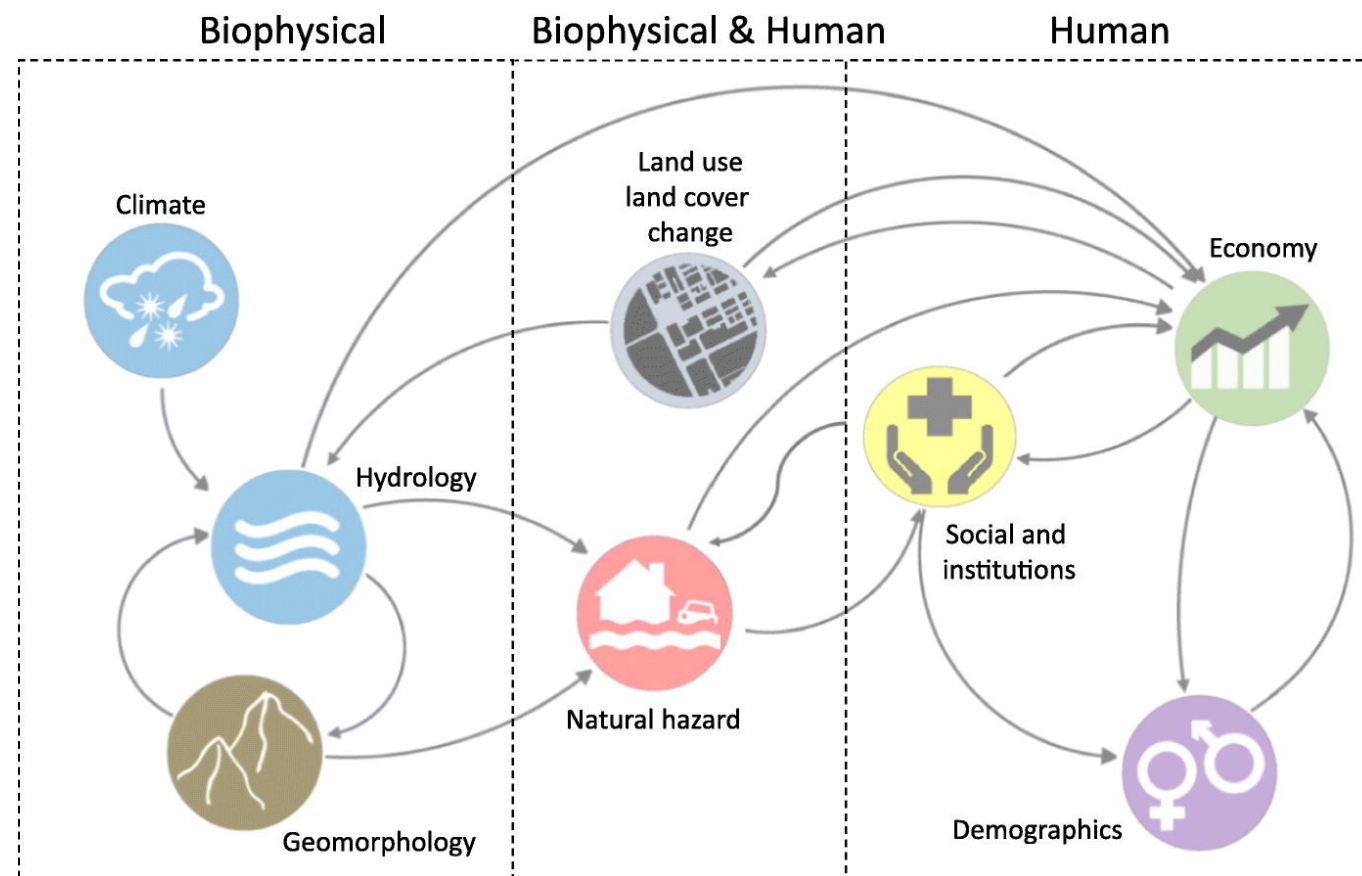
²Oeschger Centre of Climate Change Research, Mobiliar Lab for Natural Risk, University of Bern, CH

³School of Business, Institute for Nonprofit and Public Management, University of Applied Sciences and Arts Northwestern Switzerland, Peter Merian-Strasse 86, 4002 Basel

Combine knowledge on risk and resilience from different disciplines: A coupled human-landscape system

- > Why develop a **coupled-human landscape** system?
- > **Mountain communities are exposed to physical and socio-economic shocks** (e.g. natural hazards, less tourism, unemployment)
- > **How resilient are mountain communities to these shocks?**

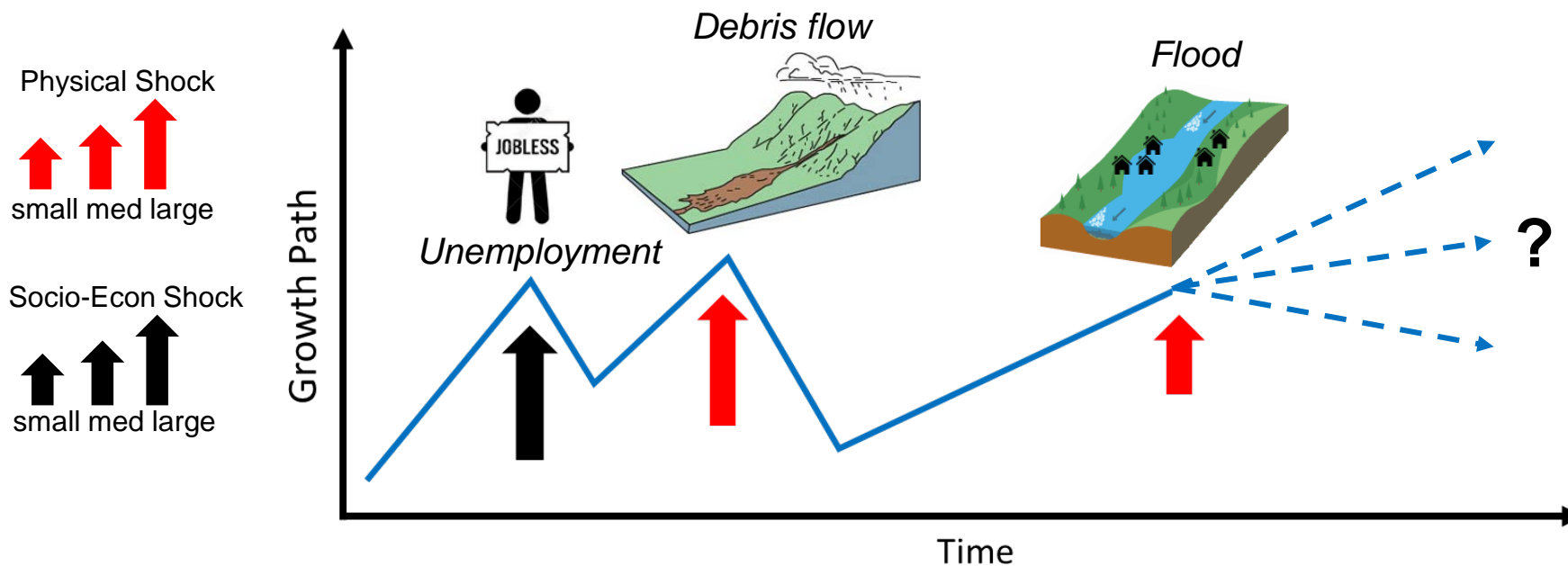
Schematic of linkages between physical and human components of Alpine communities.



For further details see: Hossain, M. S., Ramirez, J. A., Haisch, T., Speranza, C. I., Martius, O., Mayer, H., and Keiler, M.: A coupled human and landscape conceptual model of risk and resilience in Swiss Alpine communities, *Science of The Total Environment*, 138322, <https://doi.org/10.1016/j.scitotenv.2020.138322>, 2020.

Key questions?

Can mountain communities recover from shocks (physical and socio-economic) of different **strengths** and **frequency of occurrence**?



Framework for a coupled human-landscape system

- > First conceptual model of a mountain community with human and natural components
- > Feedbacks highlight important interactions that increase risk and reduce resilience
- > Model operationalization will predict risk and resilience of mountain communities.

