EGU2020-6531
https://doi.org/10.5194/egusphere-egu2020-6531
EGU General Assembly 2020

Climate Risk and Vulnerability Assessment in Azerbaijan's mountain regions

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Mountain regions are an important hotspot of vulnerability to climate change. These ecosystems are experiencing a higher warming rate than other areas in the world, with severe consequences on the environment, the economy and society. This is particularly relevant for Azerbaijan's mountain regions, where the climate change impacts on water management could lead to severe consequences on the main local socio-economic activities such as agriculture and livestock farming.

For these reasons, the Impact Chains (ICs) methodology has been applied within two regions of Azerbaijan to understand and investigate cause-effect chains of current and future risk from different type of climate hazards following the approach proposed in the Fifth Assessment Report (AR5) of the International Panel on Climate Change (IPCC). ICs provide a consolidated scheme which helps to better understand, systemize and prioritize the factors driving climate impact related risks in a specific system and to perform climate risk assessments. It includes the underlying root-causes of climate risk, hazard, exposure and vulnerability factors and their interactions coming from quantitative and qualitative information.

Here we present the ICs study for Azerbaijan's mountain regions accounting for flood, drought, erosion, heat stress and forest fires identified as the most relevant hazards in the country.

Climate conditions and future hazard components were assessed looking at future daily temperature and precipitation data until 2099 from two RCP (Representative Concentration Pathways) scenarios provided by the Inter-Sectoral Impact Model Intercomparison Project (ISIMIP). The spatialized dataset is an ensemble of four global climate model simulations at a resolution of 0.5°x0.5°. In particular, the ISIMIP projections were exploited to extract the future evolution and spatial distribution over the region of relevant indicators for climate and climate hazards, including weather extremes and droughts.

The different levels of exposure and vulnerability were evaluated combining quantitative and qualitative information coming from spatial analysis, workshop discussion and questionnaires with local stakeholders and experts.

To finalize the risk assessment, the hazard, exposure and vulnerability components were combined through aggregation and normalisation techniques and risk indicators and hotspot

maps for Azerbaijan’s mountain regions were developed.

The information provided by the ICs will be available to further analyse the risk processes and local dynamics, and to support local stakeholders in decision-making process and future investments on risk reduction and climate adaptation plans.