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Land transformations: between global challenges and local realities

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Hydro-meteorological risk and socio-economic development: future land cover scenarios of an alpine valley

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European mountain areas have been experiencing significant socio-economic transformation with a vital decrease in population and agricultural activities, and improved accessibility and development of recreational areas. This presents a major break to long-term landscape evolution and has important consequences on the provision of important ecosystem services, providing valuable resources in these areas and making them safe and habitable. One of the areas experiencing particularly intense socio-economic changes in the last, and most likely also in the coming decades is the Mountain community of Gemona, Canal del Ferro and Val Canale in the Eastern Italian Alps. Owing to its border position and infrastructure network, the area was an important trade and customs center with important industry. The economy of the area however changed substantially after global socio-economic changes: expansion of the European Union and the introduction of the Schengen regime. Following a collapse of industrial and trade activities, tourism came to focus, which also defines future development goals of the area. Compared to other regions in the Italian Alps and in the neighborhood, tourism here is still at a relative early stage and small scale, however current development suggests significant expansion. The area has so on one side witnessed one of the highest depopulation and population aging rates in the Alps in the last 30 years, and large scale infrastructural projects such as the highway high speed railroad and a major pipeline on the other. All this made the area closer to the neighboring regions and bigger cities in the vicinity, resulting in accelerated real estate development. This intense increase of assets has however resulted in catastrophic consequences to hydro-meteorological events, among them flash floods and debris flows. In order to understand the consequences of different development pathways, we will generate

future scenarios of land use, by incorporating remote sensing, GIS and spatially explicit land use modeling with qualitative research, and evaluating these scenarios in the context of hydro-meteorological risk. Modeling at a detailed local level enables simulating local scale interactions and decisions – among them risk regulations – and taking into account local limitations like topography and accessibility. This way, we will be able to investigate, how different spatial regulations (or lack of them) could shape the land use pattern in this area. Moreover, it will allow us to explore how global driving forces and resulting local land use changes open new challenges for mountain communities.

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