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Trajectories: Social-ecological trajectories of French alpine valleys under climate variability

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Mountain social-environmental systems (SES) host major economic activities, and in some alpine valleys, increase human population attracted to their natural resources and amenities. Mountain SES provide a disproportionate measure of critical ecosystem services to people living both in- and outside mountain regions, such as energy, water, food, protection from natural hazards, and multiple cultural ecosystem services. The provision of these services depends largely on land use, which itself is shaped by long-established interactions of humans with nature in SES. Regarding the biophysical dimensions of global change, mountain regions world-wide, and the European Alps in particular, are already experiencing faster temperature change than the global average, precipitation regimes are uncertain and likely to experience increased variability, and serious hazards are expected to results in terms of natural risks (5th report of IPCC, 2013).

Within this general context, the French initiative, Trajectories, funded by IDEX University Grenoble Alpes, aims at improving knowledge of interactions between human societies and environment in the context of global change. The project fits into the overarching scheme of co-constructing decision-making expertise, involving local actors in 3 French alpine valleys.

Based on integrative research linking natural, geoscience, engineering, and human and social sciences, the project aims at promoting an emerging methodology based on:

- Observations of social, economic, ecosystem and environmental dynamics; this endeavour strongly relies on an integrated vision of existing ZA-Alpes, SNO GLACLIOCLIM and Sentinelle des Alpes observatories;
- Efforts to model coupled society-environment dynamics, aiming at providing support for both understanding patterns and predicting pattern inter-relations.
- Territorial assessment to connect locally structuring human activities with both the way these activities draw on a region's resources to metabolize them, and turn them into sources of material and immaterial wealth, and the way this metabolization interacts with he social and physical environment.
- Prospective scenarii built iteratively, starting from local decision-makers' projects, and connecting with institutional constraints (related to sustainable development goals). The overarching goal is to feed a dialogue among researchers and local actors with observation, models, and assessment in order to co-create global change adaptation trajectories.

The presentation will introduce the structure, the main challenges of the 4-year Trajectories project as well as first results of the first year project.