Interreg Co-funded by the European Union

Alpine Space

X-RISK-CC

PROJECT NEWSLETTER

NO 2 I OCTOBER 2023

Photo credit: Mitja Legat

In a world grappling with unpredictable climate patterns, the X-RISK-CC project, in partnership with ten allies across the Alpine Space, is charting the course for risk managers and policymakers. Together, we're tackling the intricate challenges brought about by extreme weather events in our changing climate.

X-RISK-CC WHAT'S GOING ON?

Our journey kicked off with a deep dive into the realm of extreme weather. Harnessing data from our pilot areas, we embarked on a comprehensive assessment of the likelihood of meteorological extremes. This included analyzing the significant Vaia storm in Trentino South Tyrol. Simultaneously, we scrutinized historical and current trends in climate drivers impacting the region, with a particular focus on intense precipitation in the Gorenjska Region. We expanded these assessments across the entire Alpine Space, leveraging innovative downscaling methods to enhance the precision of climate projections and better equip us for preparedness and planning.

Understanding Risks and Impacts

In Work Package 2, our focus shifted to the collection of vital data concerning hazards, vulnerability, and exposure in our pilot areas. This forms the cornerstone of our efforts to assess risks associated with extreme events. Our approach combines quantitative tools, such as a modular scheme for assessing compound and cascading hazards, with qualitative methods that delve into sequential impact chains. To extend the reach of our impact analysis across the Alpine Space, we've introduced a data-driven scheme. This innovative approach assists in modeling and predicting impact probabilities linked to weather conditions, climate drivers, and other environmental factors.

Rapid Risk Management and Collaboration

Within Work Package 3, we've successfully developed a rapid risk management appraisal approach. This method will guide upcoming workshops in each pilot area, where local experts and decision-makers will assess the strengths and limitations of risk practices during targeted extreme events. Our recent partner meeting in Munich further cemented the crucial link between the scientific analyses in Work Packages 1 and 2 and the practical needs outlined in Work Package 3. Together, we've laid the groundwork for the risk assessment manual and pilot action plans.




Highlights

from the pilot areas

DEVELOPMENT OF AN APPROACH FOR PREDICTING FUTURE ALPINE NATURAL HAZARDS AND RISKS

The pilot region of Garmisch-Partenkirchen is exposed to numerous alpine hazards such as rockfalls, landslides, floods, debris flows, hyper-concentrated flows, and flash floods. Recurring extreme precipitation events have triggered several significant natural hazard events in the past decades. There is a clear connection between dangerous hydrological natural hazards and intense summer rainfall, making the region particularly vulnerable to changing rainfall intensities in a changing climate. The Technical University of Munich is working on a conceptual approach for the quantitative assessment of meteorological trigger conditions and torrential processes of past events. This aims to estimate future probabilities of critical precipitation events, changing frequencies and magnitudes of torrential processes, and the resulting risks. The Chair of Landslide Research systematically collects quantitative information on 14 torrential events from the last 30 years in the study area and links them to their meteorological trigger conditions. In addition to analyzing the meteorological triggers and magnitudes of past events, the project partners of X-Risk-CC will (1) estimate future changes in the probability of critical precipitation events (reaching/exceeding past triggering thresholds) under different emission scenarios, and (2) anticipate future changes in the frequency and extent of potentially hazardous torrential processes. The Engineering Risk Analysis Group conducts a quantitative assessment of risk for the town of Garmisch-Partenkirchen and the touristically used Partnach Gorge. The plan is to evaluate the change in risk due to future changes in the frequency and intensity of heavy rainfall events and compare the results with other factors influencing future risk in the region.

PROJECT PARTNERS

- European Academy of Bozen-Bolzano – EURAC Research (Lead partner)
- Civil Protection Agency, Autonomous Province of Bolzano
- Autonomous Province of Trento
- Slovenian Environment Agency
- Development agency Sora
- Auvergne Rhône-Alpes Energy Environment Agency
- GeoSphere Austria
- Forest-technical service for torrent and avalanche control, Section Tyrol
- Technical University of Munich
- Swiss Federal Institute for Forest, Snow and Landscape Research WSL
- Environment Agency Austria

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