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Alpine Space

X-RISK-CC

PROJECT NEWSLETTER

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Let's remind you what the X-RISK-CC project is about

X-RISK-CC PROJECT, is a collaborative initiative aimed at addressing the challenges posed by extreme weather events in the context of climate change. Led by a consortium of partners across the Alpine Space region, the project focuses on enhancing preparedness, risk management, and resilience to mitigate the impacts of floods, droughts, windstorms, landslides, and other extreme weather phenomena.

Through innovative approaches, scientific research, and stakeholder engagement, X-RISK-CC seeks to develop effective strategies and solutions to safeguard communities, infrastructure, and ecosystems in the face of a changing climate.

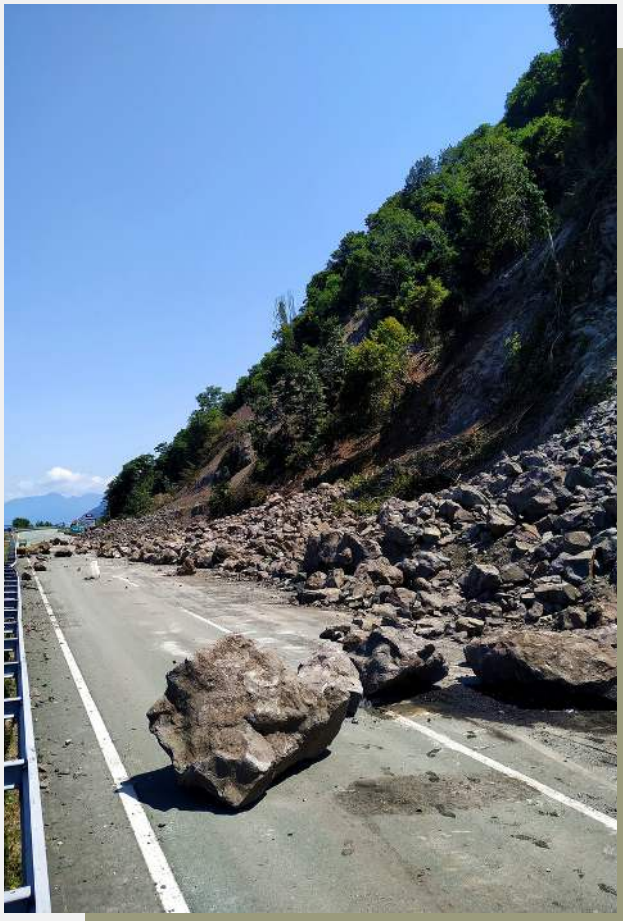
Characteristics of past extremes in pilot areas

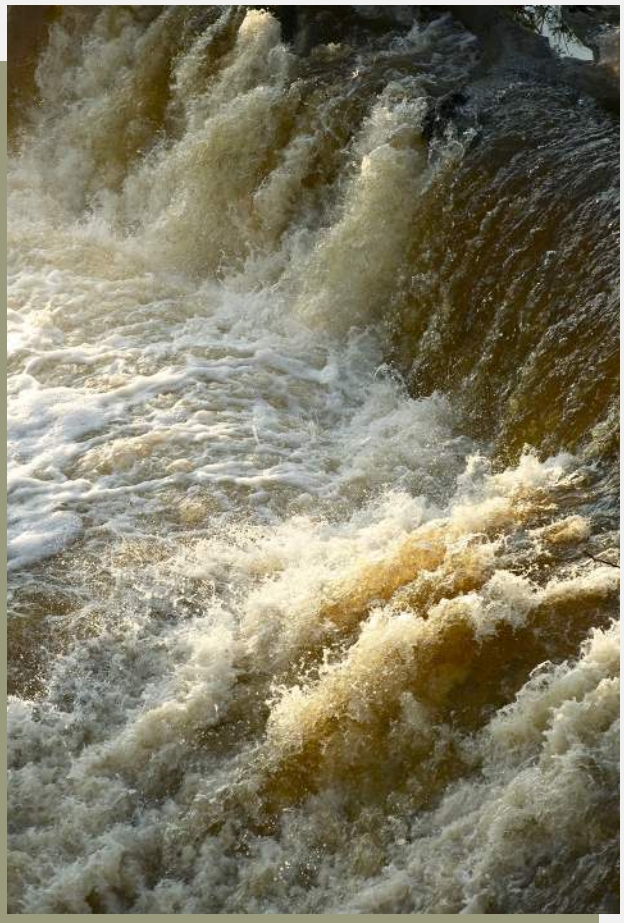
Winter storm Eleanor in Val d'Arly (France)

Winter Storm Eleanor that occurred in January 2018 brought locally 132 mm of rain over two days, a rare event for winter in Val d'Arly. Although not record-breaking, it was relevant especially in combination with strong winds reaching 115 km/h. Analysis from 1990 to 2022 shows seasonal differences in maxima of rainfall intensity, with increases spring and decreases in autumn, but no significant changes in winter or on an annual basis.

Extreme precipitation leading to compound and cascading hazards in Garmisch-Partenkirchen (Germany).

In the last decades the area of Garmisch-Partenkirchen recorded several compound and cascading hazards, such as rockfall, landslides, debris flows and floods, triggered by intense precipitation events of different durations. One of the most relevant past episodes involving many simultaneous hazardous processes occurred in August 2005 with daily precipitation totals above 100 mm and an estimated return period as a summer extreme of around 90 years for the Garmisch weather station. Since 1950 this area has seen an increase in maximum intensity of daily rainfall, especially during summer, with also an increase in the number of heavy rainfall events both annually and in summer.



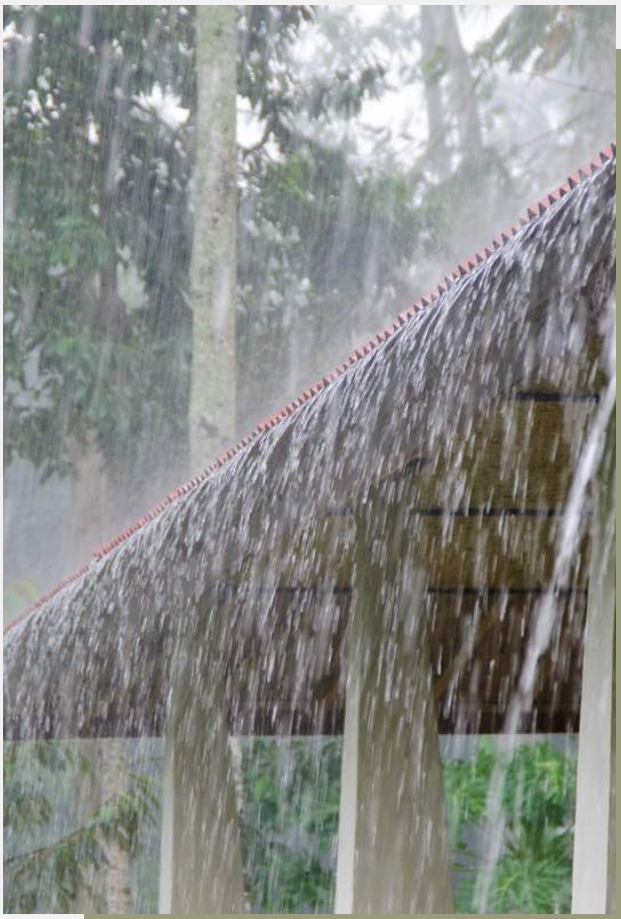


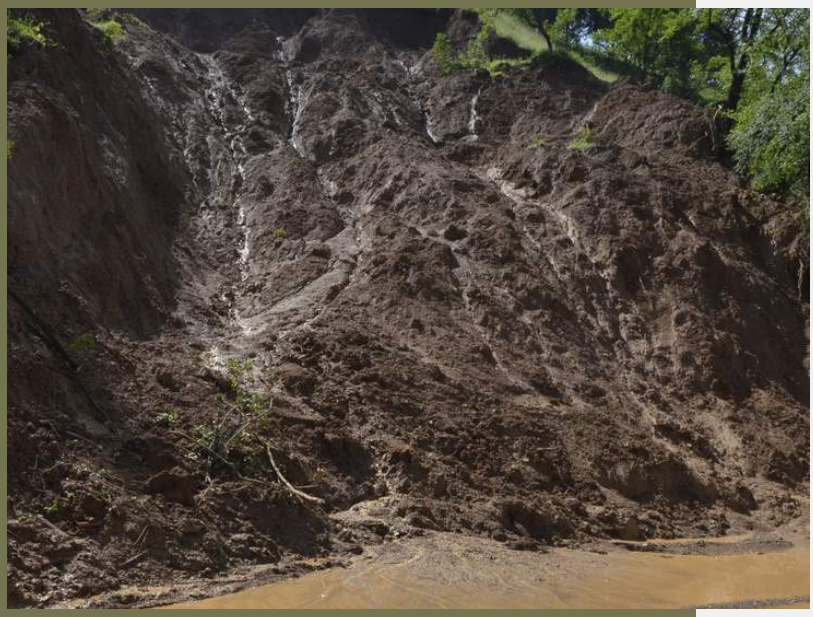
Extreme precipitation leading to flash floods in the Sora catchment (Gorenjska, Slovenia)

In the Sora catchment, the two main flooding events in the last two decades occurred in September 2007 and August 2023. Both were declared as natural disasters on a national level, while 2023 also represented the most extensive flooding event in Slovenia on the record. The event in 2007 mainly affected the northern part of the Sora catchment with 1-day precipitation extremes, while 2023 brought the highest amount of precipitation to the south eastern part of the catchment over a period of 2 days. Record precipitation accumulations were measured at a number of stations during both events, reaching amounts normally observed over a period of 2-3 months. The estimated return periods of extreme precipitation in the affected areas were at least 200 years and locally even exceeded 500 years. Since 1950, there's a trend of increasing multi-day rainfall, especially in the northern parts, although summer shows a decrease.

The storm Vaia in Trentino-South Tyrol (eastern Italian Alps)

At the end of October 2018 a Mediterranean storm Vaia hit a large portion of the eastern Alpine region and caused significant damage with heavy rains and strong winds, marking one of the most severe weather events in 30 years. Trentino-South Tyrol was one of the most impacted regions in Italy, especially in the pilot area including Fiemme and Ega Valleys, where floods, debris flows and massive windfalls occurred. Based on the data recorded by the regional weather station network, the precipitation totals over the three central days of the storm exceeded locally a return period of 100 years. Recent decades have seen more frequent and intense rainfall, particularly in northern regions, indicating that similar events might also become more likely.





Short-duration summer extreme precipitation in a cross border Alpine area

During the summers of 2021 and 2022, short-duration rainfall extremes in Wipptal (South Tyrol, Italy) and Stubaital (Tyrol, Austria) led to several debris flow events and other types of gravitational mass movements damaging infrastructure and buildings. The return periods associated with such events were around 10 years or less, as estimated by considering all available station records of daily precipitation since 1980. While trends for sub-daily rainfall are hard to confirm due to limited data, intense 1-day precipitation values are occurring more frequently, suggesting a higher risk of similar events in the future.

Initial results of the workshops and the Rapid Risk Management Appraisal (RRMA)

The initial results from our workshops where the Rapid Risk Management Appraisal (RRMA) was applied, have provided valuable insights into the strengths and weaknesses of existing risk management in our pilot areas. Here are some key takeaways:

- Evaluations varied widely due to diverse participant backgrounds.
- Events and phenomena that occur unexpectedly pose significant challenges.
- The role of voluntary organizations, like fire departments, was frequently praised.
- Public awareness of warning systems and non-structural prevention measures needs improvement.
- Assessments differed between different types of events within the same region.
- Effective communication among stakeholders is crucial during response phases.
- Similar events share common challenges, such as finding landfill areas for debris flow materials.
- Debriefing and exchanging lessons learned from events were highly valued by participants.

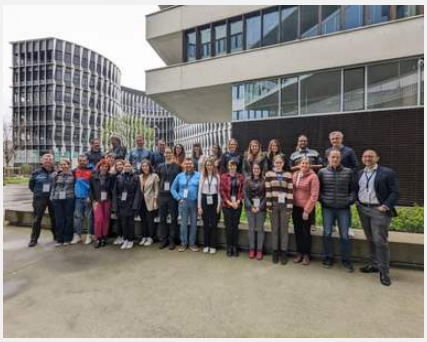
Moving forward, we'll incorporate these findings into improvement measures alongside the results from WP1 and WP2. Future workshops will focus on developing measures for enhancing the risk management in the pilot areas in collaboration with stakeholders.

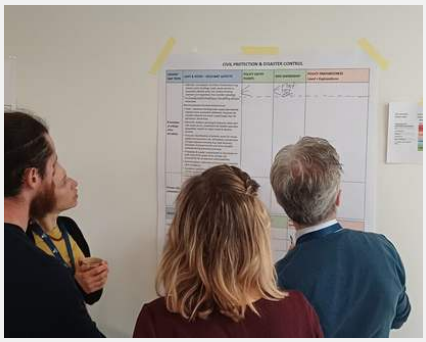
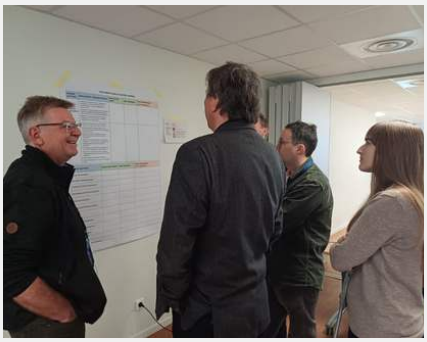
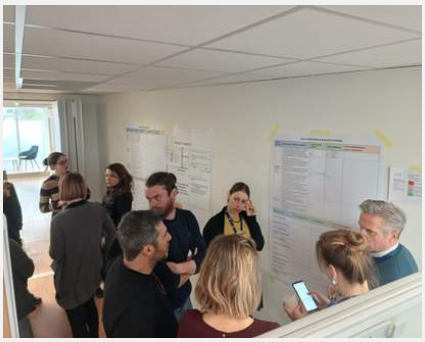
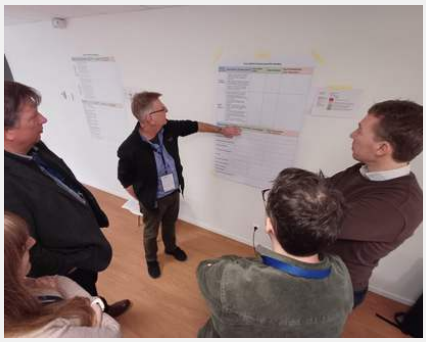
Laying the groundwork for the development of transalpine policy recommendations is in full swing

- In how far are existing risk management policies prepared to cope with unexpected and potentially severe consequences of future extreme weather events?
- What is missing?
- What needs to be improved?
- What are the policy entry points?

We are developing an analytical framework for identifying and analysing generic risk management gaps in existing policy frameworks for disaster risk reduction and climate change adaptation in Alpine countries.

We identified strategic policy gaps and needs in core action fields such as natural hazard management, civil protection and spatial planning.



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