CROSSING THE RISK TRESHOLD

Project CROSSRISK newsletter # 1

Editorial

Dear readers, welcome to the first *CROSSRISK* newsletter, which will bring news and information related to the Interreg SI-AT project "*Public warnings – reducing rain and snowfall related risks" (CROSSRISK)*!

The population of the Interreg region Slovenia-Austria is exposed to several natural hazards caused by rain and snow. Both countries have considerable experience in that field, but information on natural hazards are often assessed and communicated differently. Therefore the *CROSSRISK project* aims reducing related risks by establishing unified cross-border warning systems and risk communication in the SI-AT region.

One example is the **avalanche** bulletin in the Zelenica Mountain region. This is one of the most frequently visited destinations in the border area between Slovenia and Austria but today avalanche hazard is evaluated independently (and differently) by Slovenian and Austrian experts. Determining avalanche hazard is important because some access routes cross avalanche areas in this region. Although the differences in avalanche hazard levels are expected due to natural conditions, such inconsistencies unsettle the users of avalanche bulletins and complicate personal decision-making. All this combined often leads to risky behaviour and hazardous situations. Other examples are **flood** risk assessment and communication in the cross-border Mur catchment and warnings related to heavy precipitation events.

In order to reduce risk related to precipitation and snow, the Slovenian and Austrian *CROSSRISK* project partners are going to produce **unified cross-border warnings for precipitation-related hazards**, such as avalanches and floods.

Technically and scientifically improved hydrological models, snow models and avalanche warning techniques will be developed and implemented, in order to issue more accurate warnings. The project is going to be integrated into existing operational services. The continued use of these improvements will bring long-term benefit for the society.

The cross-border warnings are going to be **multilingual** in order to reach local population, local and regional decision-makers, and risk managers as well as local and foreign tourists, such as ski tourers, snow-shoers, and freeriders. The cross-border warnings are going to be implemented throughout the program region.

As it is important to "**teach the teachers**", the projects outcomes are going to be used for trainings of stakeholders, such as civil protection, mountaineering societies, and general public to increase their knowledge, skills and the awareness. The project, working on the local, regional, and Si-AT region levels will help reduce flood and avalanche risk which is in line with the UN Sendai Framework and with endeavours to adapt to climate change. *CROSSRISK* will thus implement the EU's macro-regional strategy for the Alpine Space, the Floods Directive and the EU Strategy for the Danube Region.

Lisa Jöbstl, Zentralanstalt für Meteorologie und Geodynamik

Project Manager

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In this edition:

The **CROSSRISK project** (*Public warnings – reducing rain and snowfall related risks / Javna opozorila – zmanjšanje tveganj zaradi padavin in snežne odeje / Öffentliche Warnungen – Verminderung von Risiken in Zusammenhang mit Regen und Schnee*) started on 1st of June 2018 and is going to last for three years. It is funded by the *European Regional Development Fund* under the cooperation program *Interreg V-A Slovenia-Austria* with a total budget of 1.57 million euros. The *CROSSRISK* project complies with the priority axis "*Improving institutional capacity and an efficient public administration*" and is in line with the program-specific objective: *improvement of cooperation in the areas of risk management, energy, health and social cohesion.*

PROJEKT PARTNERS

To best realize our vision of reducing rain and snow related risks, the best experts in the disciplines from the SI-AT region were brought on board. Thus, the *CROSSRISK* project – public warnings – reducing rain and snowfall related risks – is a partnership of the following institutions:

- ***Zentralanstalt für Meteorologie und Geodynamik***, Customer Service Graz (ZAMG) as experts in the field of weather forecast and as the representative of the Styrian Avalanche Warning Service;
- ***Amt der Kärntner Landesregierung***, Department 8 – Environment, Energy and Nature Conservations (LWD-K) as the representative of Avalanche Warning Service of Carinthia
- ***Amt der Steiermärkischen Landesregierung***, Department 14 – Water Management, Resources and Sustainability (A 14) as experts of hydrography and hydrology;
- ***Agencija Republike Slovenije za okolje*** (ARSO), national meteorological and hydrological service as experts in weather forecasting, hydrology and as the representative of the Slovenian Avalanche Warning Service;
- ***Znanstvenoraziskovalni center Slovenske akademije znanosti in umentnosti*** (ZRC SAZU), Anton Melik Geographical Institute as experts and networker in the field of natural hazards;
- ***Univerza v Mariboru*** (UM), Faculty of Electrical Engineering, Informatics and Computer Science as experts in the fields of advertising, marketing, graphic design and video production and
- ***FH JOANNEUM*** (FHJ), Faculty of Electronic Engineering as experts at avalanche detections by using radar technology.

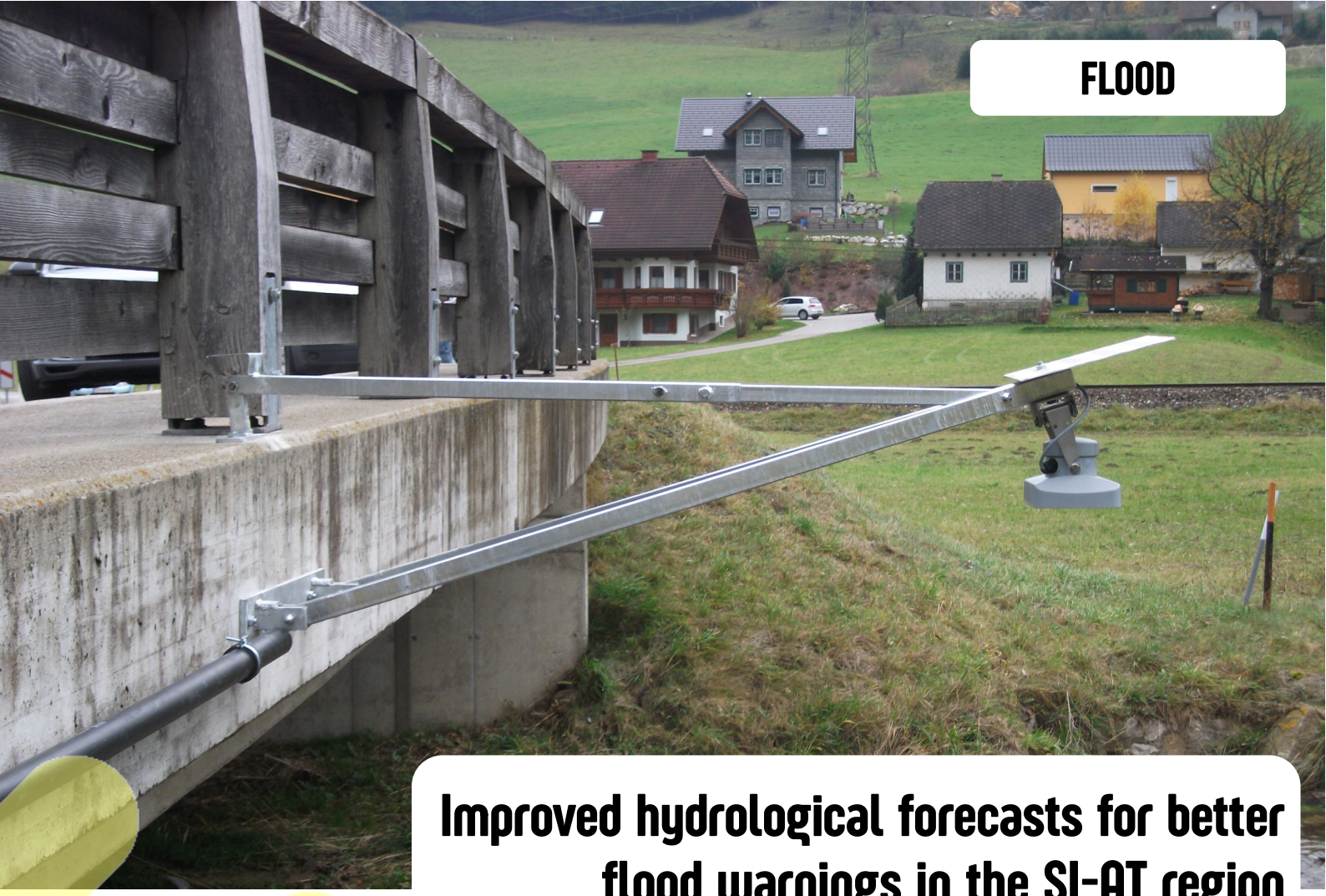
New products to forecast risks and chances related to snow in the SI-AT region

In this work package the focus is placed on snow-related risks and hazards (e.g. high snow loadings, avalanches, new snow). Advanced observation techniques, high-resolution meteorological analyses and forecasts, regional (distributed) and local (one-dimensional) snowpack models and statistical tools are combined, implemented and operated.

Based on weather forecast data forecasts for snowpack characteristics, snow water equivalent, new snow amount and snow loadings will be calculated and graphically shown. These will enable the society to better respond to snow-related threats and the infrastructure managers to better plan prevention measures. Furthermore daily forecasts for the potential to generate technical snow and meltwater runoff prediction will be calculated.

Using the data from conventional measuring systems (which will be partly expanded in this project) and data from radar measurements, additionally to various snow models, a “tool” for estimating the local avalanche hazard in specific hazard zones will be implemented. By combining data it should also be possible to forecast the impact of avalanches in critical situations. These results will help avalanche commissions with their decision making in times of serious risk.

Additional background-information for longer-term planning will be provided by assessing the impact of future climate change on snow-related risks and chances in the SI-AT region.

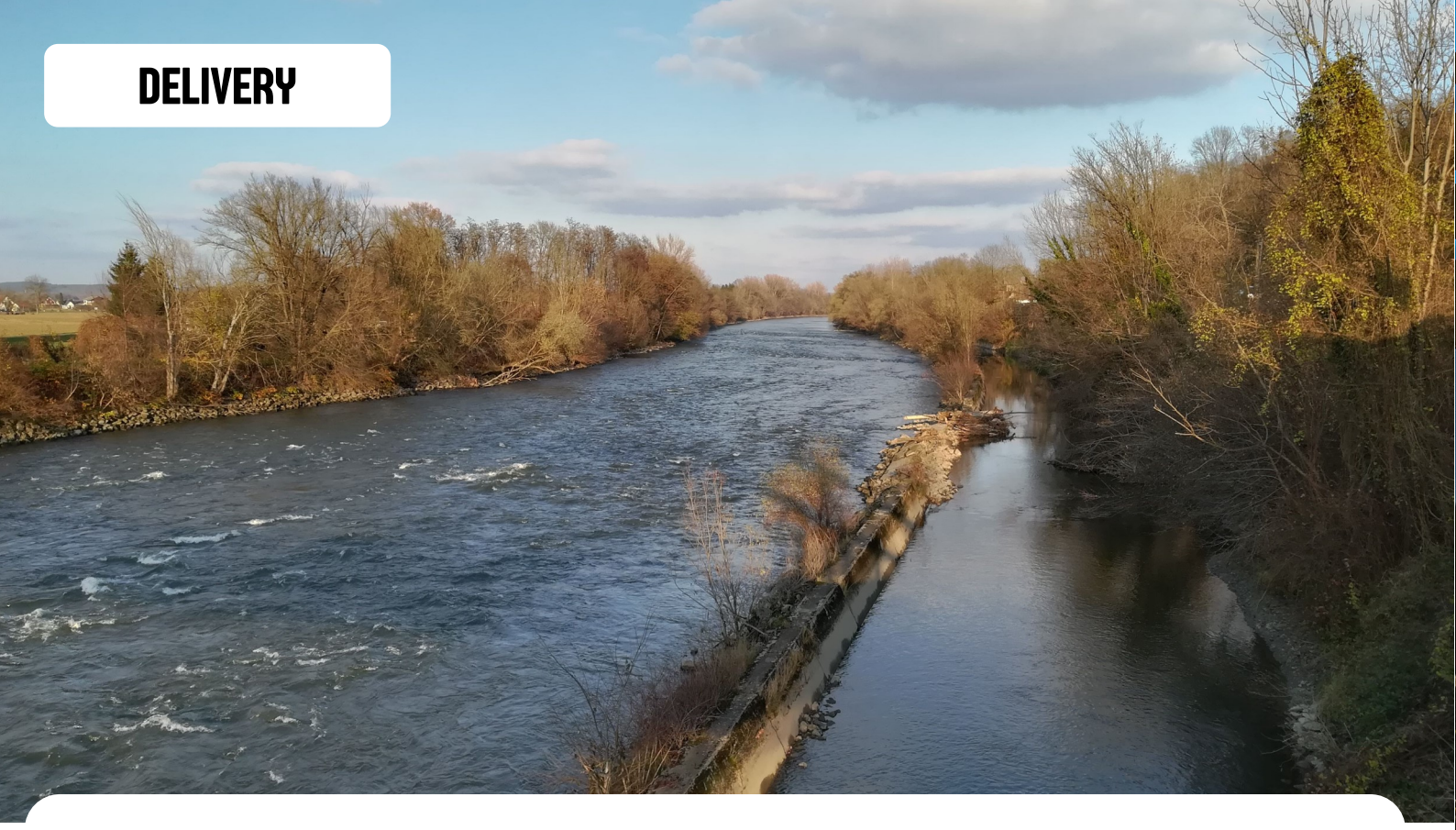


Improved hydrological forecasts for better flood warnings in the SI-AT region

There are two main goals of work package “T2. Floods”; one is the improvement of the existing hydrological forecasting model for the Mur/Mura river to be able to deliver better flood warnings in Austria and in Slovenia, and to build a flood scenario catalogue as background for a flood contingency plan for the part of the border along the Mur/Mura River.

To reach these goals, four different activities are foreseen in the project application.

- For the improvement of the flood forecasting system, the existing hydrological and hydrodynamic models are going to be updated and the new snow input has to be integrated, which will be developed in T1.1.
- In Austria, several already existing gauges on tributaries to the Mur/Mura River will be upgraded with new water level sensors and remote transmission equipment to provide more online data.
- A flood scenario catalogue will be developed for the Grenzmur/mejna Mura, in which the flood areas are shown graphically for different discharges between the bankfull discharge and the discharge for floods with a 300-year return period. Based on this catalogue, a flood contingency plan is going to be developed for the Grenzmur/mejna Mura region. This is going to be done in the *goMURra* project.
- The impact of climate change on precipitation and floods in the SI-AT region will be investigated and published in a report. This will form a support for decision-makers in long-term planning of water management and flood risk management. At the same time, the results will represent valuable information for the planning of future activities of public services, the economy, agriculture and civil protection.



New product delivery methods to highlight risks and chances related to snow and floods in the SI-AT region

In the *CROSSRISK* project we wish to improve communication between all in the project included warning services and also between these services and end users, the end users being general public and interest groups as well as enterprises, public authorities and service providers.

In order to protect the population, the warnings have to reach population as wide as possible and as soon as possible. Therefore, in T3, we will ensure that the information is easily accessible by:

- Multilingualism of automatic warnings which will overcome the language barrier for visitors from abroad and within the SI-AT region.
- By publishing machine-readable formats and widgets, we will make it easier for other websites and applications to reuse and spread communication and information on warnings for heavy rain, floods, snow and avalanches among their users.
- By exchanging expert assessments between the avalanche warning services and by preparing common avalanche bulletins, we will harmonize the danger levels in the border area.
- A web application for winter outdoor activities will enable planning the activities in the mountainous terrain by taking information about snow cover and related hazards into account.
- A mobile application for field reporting will be a source of additional observations, thus complementing the available information about the situation in the mountains.

In addition, we will provide easy-to-understand information for users on the basis of products that will come out of T1 and T2 work packages, and based on the user testing results that will be provided by package T4.

All of the above will help to improve risk management and preparedness for ensuring peoples safety and protection of property.

Improved awareness and perception of snow and flooding-related risks and chances in the SI-AT region

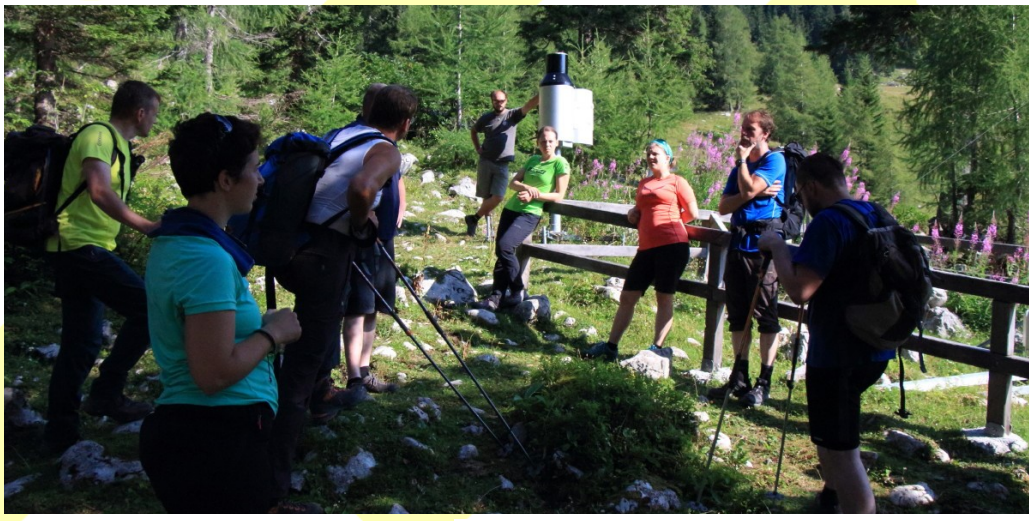
The work package AWARE is centred on promoting and leveraging the outputs of the other WPs with the aim of improving awareness of various rain and snow-related risks and hazards among the target groups. These natural hazards run the gamut from snow avalanches to flooding.

We will upgrade existing and design new products (warnings, bulletins, forecasts, advices) based on the expectations and needs of different user groups. As these groups are quite diverse, including everyone road maintenance crews to skiers and other winter recreationists, our initial steps mainly include figuring out the specific needs and user experience perspectives.

Furthermore we will incorporate various project outputs within a newly designed avalanche training curriculum and associated educational materials that will be used within avalanche workshops and other events for professionals and winter recreationist. These will also be made available to other interested parties ensuring a sustainable re-use of our work on the project.

We will also increase the user base that currently may or may not be aware of the various weather hazards or products attempting to mitigate and educate about such hazards as avalanches. We will be reaching out and involving various user groups and media by providing them with the necessary tools and knowledge to better manage their hazard exposure.

There is no promotion without a brand, therefore our very first step was designing a visual identity for the project, centralized around an X shaped logo. The X is a universally recognized warning symbol. It is used in various scenarios and relates directly to the name of the *CROSSRISK* project and the cross-border action. The negative space contained within is an abstraction of avalanches and floods as the main themes of the project. The colour yellow in the X was chosen as a standard warning colour and black in the typography due to the seriousness of the theme. By emphasising the second part of the project name RISK, it implies that an element of danger in the natural events being studied in the project.



CROSS RISK

SI-AT

Interreg
SLOVENIJA – AVSTRIJA
SLOWENIEN – ÖSTERREICH
Evropska unija | Evropski sklad za regionalni razvoj
Europäische Union | Europäischer Fonds für regionale Entwicklung

ZAMG
Zentralanstalt für Meteorologie und Geodynamik

FERI
Fakulteta za elektrotehniko, računalništvo in informatiko

Das Land Steiermark

LAND KÄRNTEN

FH JOANNEUM
Electronic Engineering

REPUBLIKA SLOVENIJA
MINISTRSTVO ZA OKOLJE IN PROSTOR
AGENCIJA REPUBLIKE SLOVENIJE ZA OKOLJE

ZNANSTVENORAZISKOVALNI CENTER
SLOVENSKE AKADEMIJE ZNANOSTI IN UMETNOSTI