



**CROSS
RISK**

Let's go!

ABOUT THE PROJECT

The population of the cross danger levels. Such inconsistencies unsettle the users of in many aspects exposed to avalanche bulletins, complications caused by rain and complicate the personal decision-making. The weather doesn't make appropriate to the situation at a national border, but unification and therefore often unified cross border warnings lead to a risk behavior that is not yet available. It is not optimally adapted to the situation.

One example for the need of unification is the avalanche. In order to avoid such confusion, bulletin in the region around Zelenica, one of the most frequented destinations in the border area between Slovenia and Austria. In winter the avalanche danger evaluation is done independently from Slovenian and also from Austrian meteorological services, competent departments of the countries) and scientific partners draws up uniform warnings of precipitation-related cases inconsistent avalanche dangers.

November, 2018

Year 1, Number 1



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



Among other things, the assessment of flood risks in the program region will be improved and warnings will be harmonized across borders, as rivers will not stop at the border, or the consequences of a storm or certain weather conditions will affect beyond borders. Furthermore, unified and multilingual avalanche warnings will be implemented throughout the program region. This is not only intended to appeal to tourists (ski tourers, snow-shoers, freeriders), but above all to provide better information to local and regional decision-makers responsible for protecting the population and infrastructure. The target group for the warnings are therefore mainly



just about standardizing information, but also about making the warnings understandable to users and offering them in all relevant languages. These considerations led to the submission of a project in a public call for the cooperation program Interreg V-A SI-AT, whose funding was confirmed in March 2018.

However, standardization is not

just about standardizing information, but also about making the warnings understandable to users and offering them in all relevant languages.

Thus, the **project CROSSRISK (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 for a project duration of 3 years. It is funded by the European Regional Development Fund under the cooperation program Interreg V-A Slovenia-Austria with around 1.34 million euros. The project CROSSRISK complies with the priority axis “*Improving institutional capacity and an efficient public administration*” and has as a program-specific objective the *improvement of cooperation in the areas of risk management, ener-*





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, in this project CROSSRISK – public warnings – reducing rain and snowfall related risks – the following institutions work together:



- **Zentralanstalt für Meteorologie und Geodynamik, Customer Service Graz (ZAMG)** as experts in the field of weather forecast and as a representative of the Styrian Avalanche Warning Service
- **Amt der Kärntner Landesregierung, Department 8 – Environment, Energy and Nature Conservations (LWD-K)** as Avalanche Warning Service of Carinthia
- **Amt der Steiermärkischen Landesregierung, Department 14 – Water Management, Resources and Sustainability (A14)** as experts of hydrography and hydrology
- **FH JOANNEUM (FHJ), Faculty of Electronic Engineering** as experts at avalanche detections by using radar technology
- **Agencija Republike Slovenije za okolje (ARSO)**, national meteorological and hydrographic service as experts in weather forecasting, hydrography and as representative of the Slovenian Avalanche Warning Service
- **Znanstvenoraziskovalni Slovenske akademije znanosti in umetnosti (ZRC SAZU), Geographical Institute Anton Melik** 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 creation of advertising material



In order to realize the ambitious goal of improved, unified and multi-lingual warnings about rain and snow hazards for the entire SI-AT program region, the team and the respective institutions will work on several fronts over the next three years:

In the field of hydrology as well as snow and avalanche research, technical and scientific improvements are being carried out in or-

der to be able to warn more accurately and more efficiently about the consequences of an event. For this purpose, the respective models of certain waters or avalanche strokes are expanded and improved. Joint cross-border development will lead to synergies and greater efficiency. By integrating operational services into the project, the continued use of these improvements for the benefit of society is ensured even after the end of the project period.

In addition to the technical and scientific improvements is worked on the better dissemination and presentation of warnings in order to reach those affected as quickly as possible and very understandable.

Another focus of the project is the training of consumers and the public as well as increasing the awareness and expertise of potential stakeholders.

The fact that the relevant institutions in Slovenia and Austria face similar challenges has led them to join forces to pool their knowledge, reducing costs and creating synergies on both sides of the border.

The project, through its improvements at the macro-regional level, will help reduce flood risk and support adaptation to climate change. This will help CROSSRISK to implement the EU's macro-regional strategy for the Alpine Space, the Floods Directive and the EU Strategy for the Danube Region.

T1

SNOW

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

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.

By using 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 threats related to snow for the infrastructure and to better plan prevention measurements. Furthermore daily

forecasts for the potential to generate technical snow

and the runoff due to melt-water will be calculated.

Using 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 danger in specific hazard zones will be implemented. It should also be

possible to forecast the impact of the critical situation. 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.



T2

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

FLOOD

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

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



T2 FLOOD																																						
dates	1JUN2018						1DEC2018						1JUN2019						1DEC2019						1JUN2020						1DEC2020						31MAY2021	
months	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36		
T2.1	Upgrade Mura model: RR and HD component												UM0.1						T1 info						T1 product						UM1.0 (1 model)							
	Expert Meeting (sep2018)												Adjust the RR component to the new snowmelt product/reanalises/fine-tuning/testing/final adjustment																									
																			Inclusion of T2.3						UM0.2													
T2.2	public tender/execution/delivery																		10 maps																			
T2.3	installations of sensors and com equipment																		10 stations																			
T2.4							data collection						precipitation analyses						CCP analyses						report						1 report							



The impact of climate change on evolution of 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, these results will represent valuable information for the planning of future activities of public services, the economy, agriculture and civil protection.

T3

DELIVERY

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

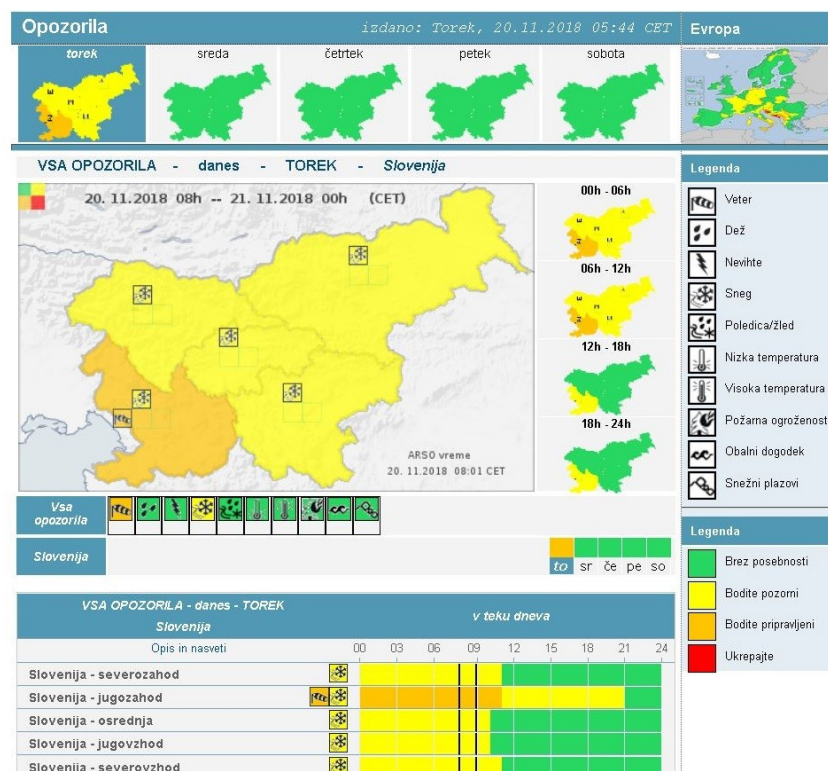
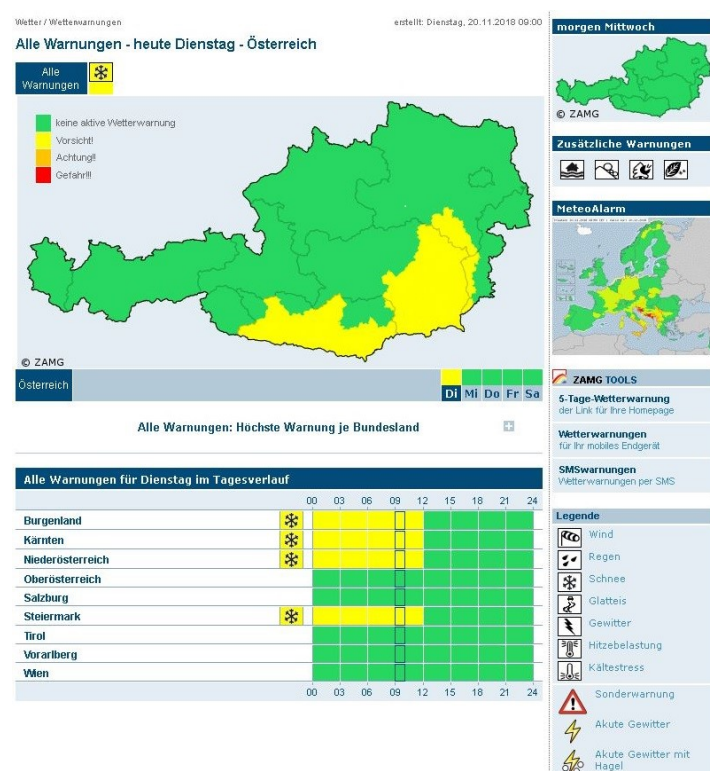
In the project CROSSRISK we wish to improve the communication – among warning services and with end users, the end users being general public and interest groups

as well as enterprise, public authorities and service providers.

In order to protect the population, it is necessary that the warn-

ings reach as wide a population as possible as soon as possible.

Therefore, in T3, we will ensure that the information is as accessible as possible.



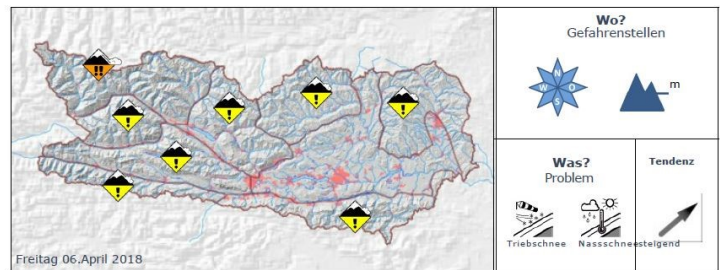
- Multilingualism of automatic warnings will overcome the language barrier for visitors from abroad.
- By publishing machine-readable formats and widgets, we will make it easier for other websites and applications to reuse and spread among their users the warnings for heavy rain, floods, snow and avalanches.
- 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.
- The web application for winter outdoor activities will enable planning the activities in the mountainous terrain by taking into account information about snow cover and related hazards.
- 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 people safety and protection of property.



Lawinenprognosebericht des LWD Kärnten für Freitag 06. April 2018



1 - gering 2 - mäßig 3 - erheblich 4 - groß 5 - sehr groß

Tageszeitlicher Anstieg der Nassschneeaktivität und in Hochlagen noch störanfälligerer Triebschnee

Gefahrenbeurteilung

Die Lawinengefahr in den Kärntner Bergen wird allgemein mit Mäßig beurteilt. Einerseits gilt es in höheren Lagen die noch störanfälligeren Triebschneeeablagerungen zu beachten und andererseits wird, der Jahreszeit entsprechend, die Durchfeuchtung und Durchnässung der Schneedecke durch die Tageserwärmung und strahlendem Sonnenschein zum Hauptproblem. Dadurch steigt die Aktivität von spontanen Lawinenabgängen.

Schneedeckenaufbau

In Staulagen der Hohen Tauern fällt in der Nacht zum Freitag noch etwas Schnee. Am Donnerstag sind die Niederschlagsmengen unter den Erwartungen geblieben. Mit strahlendem Sonnenschein setzen sich auch die Triebschneeeablagerungen in hochalpinen Lagen. Mit Setzungsbeginn werden diese aber anfänglich etwas störanfälliger. Milde Temperaturen und strahlender Sonnenschein führen zu einer weiteren Durchfeuchtung der Schneedecke unter rund 2400 m. Dadurch können die Schwachschichten wie Krusten und Schichten mit kantigen und lockeren Kristallen wieder störanfälliger werden.

Kärntenwetter

Nevarnost snežnih plazov

PLAZOVNI BILTEN

ARSO - METEO.SI

Datum objave: ponedeljek, 7. 5. 2018, 8:23

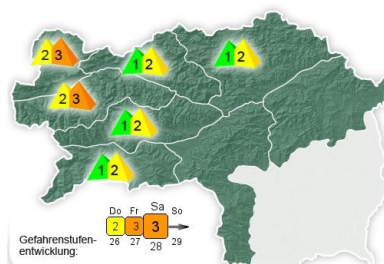
Naslednja objava: četrtek, 15. 11. 2018



Opis stanja in napoved (ponedeljek, 7. 5. 2018)

Lawinenprognosebericht

(herausgegeben: Freitag, 27.04.2018, 15:41 Uhr)



Regionen: R1 Nordost- gebiet: a) Nordalpen West b) Nordalpen Mitte c) Nordalpen Ost d) Niedere Tauern Nord R2 Übergangsregion und Südliche Gebirgsgruppen: a) Niedere Tauern Süd b) Steirisches Randgebirge Ost c) Steirisches Randgebirge West d) Gurk- und Seetaler Alpen

Tagesgang der Lawinengefahr! Schitouren früh abschließen! Letzter Prognosebericht dieser Saison!

Gefahrenbeurteilung

Die Lawinengefahr beschränkt sich in der Steiermark mittlerweile nur noch auf die Hochlagen der Nordalpen, der Niederen Tauern und der Gurk- und Seetaler Alpen. Mit der Erwärmung und Einstrahlung steigt die Gefahr von Nassschnee- oder Gletschneelawinen bereits in den Vormittagsstunden rasch an! Auch Wechten sind instabil und können spontan brechen!

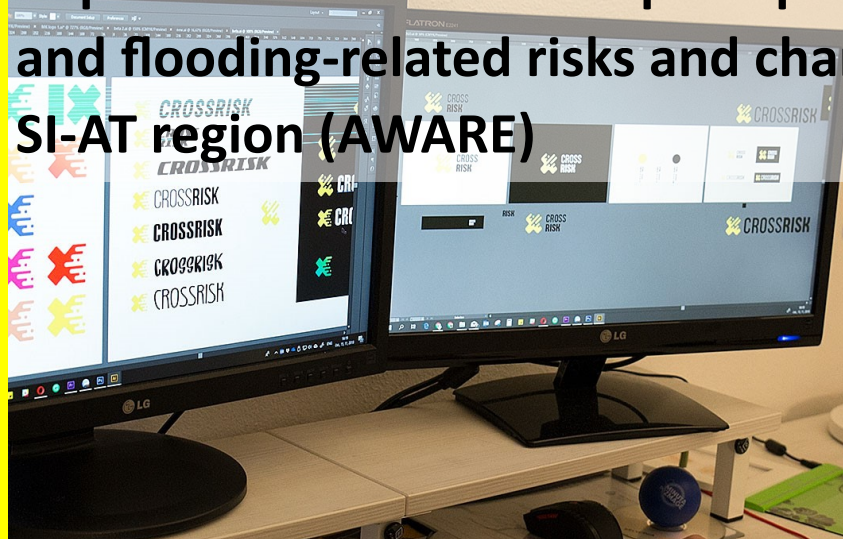
Schneedeckenaufbau

Der in Österreich wärmste April seit dem Jahr 1800 klingt langsam aus und hat den Schnee auf den steirischen Bergen rasch schmelzen lassen. Sonseitige Hänge sind bereits bis in hohe Lagen ausgeapert, Schnee findet sich hier nur noch in Rinnen. Auch in Schattenhängen ist die Schneedecke fortschreitend durchfeuchtet, nur am Morgen teilweise noch oberflächlich verharzt. Oft

T4

AWARE

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



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

We will upgrade existing and design new products (warnings, bulletins, forecasts, advices, etc.) based on the expectations and needs of different user groups. As these groups are quite diverse, including everything from 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 attempt to 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 haz-

ard exposure.

There's no promotion without a brand, therefore our very first step was designing a visual identity for the project centered around an X shaped logo. The X is a universally recognized warning symbol used in various scenarios and relates directly to the name of the project and the crossborder action. The negative space contained within is an abstraction of avalanches and floods as the main themes of the project. We're using yellow in the X as the standard warning color and black in the typography due to the seriousness of the theme. We're also emphasising the second part of the project name RISK, implying an element of danger in the natural events being studied in the project.



PRIMARY



SECONDARY



TERTIARY





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

