

# EXHIBITION OF NATURAL HAZARD MODELS AND RISK COMMUNICATION TOOLS

with discussion about knowledge transfer and risk communication



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## Documentation of the joint workshop between EUSALP Action Group 8 and Alpine Convention Working Group PLANALP

Heimschuh (Austria), 25 April 2019

## 1. Rationale of the workshop

This document summarizes the outputs of the workshop “Interactive Natural Hazard Models” that was organized back to back with the 7<sup>th</sup> EUSALP Action Group 8 Meeting and the 28<sup>th</sup> Alpine Convention PLANALP Meeting on 25.04.2019 in Heimschuh (Styria). The joint workshop was based on the initiative for collaboration between the EUSALP Action Groups 8 and the PLANALP working group to implement knowledge transfer and exchange of good natural disaster risk reduction practices and climate change adaption on local level including risk communication and focussing on different social groups.

The Alpine region offers a unique and valuable living space. With the growing demand for settlement areas and the pronounced climate changes, especially in the mountains, the need for protection against natural hazards has also increased. Heavy storms, avalanches, landslides and intense rainfall pose a threat to Alpine regions and their inhabitants. The challenge is to provide sustainable protection for future generations and their habitats, paying particular attention to raising awareness for natural hazards and climate change.

For this reason, the Co-Leader of EUSALP Action Group 8 (Federal Ministry for Sustainability and Tourism), together with the chair of the PLANALP working group (Province of Styria, Department 14, Water Management, Resources and Sustainability) and their partners from the member states of the Alpine Space, organized an interactive workshop for children and young people on the subject of natural hazard management with an exhibition of exciting models of natural hazards and risk communication tools. The target group was not limited to the younger generation, but also included multipliers such as teachers and media representatives who can disseminate the knowledge they have acquired about how to deal with natural hazards.

The goal was to work together with decision-makers, scientists, children and young people to address current and future challenges of natural hazard risk management in order to ensure sustainable development for future generations.

## 2. Workshop proceedings

The workshop consisted of two parts: The exhibition of natural hazard models and a discussion about recommendations for future events and natural hazard communication.



### 3. Exhibition of the natural hazard models and risk communication tools

#### 1. Interactive models for flood protection – (Slovenia)

The models teach children and adolescents that sometimes flood dams invite children as a playground, but in the case of an extreme event, they pose a serious danger. For example, dam fractures, leaks, and landslides are illustrated in a playful way and help the children to understand the danger.



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#### 2. Biber Berti – (Austria)

Biber Berti is a successful instrument for bringing children and young people closer to natural hazards. The cartoons of Biber Berti and his friends are the main actors who live in the mountainous country. They take the children on an exciting journey to the Alpine region. Here they show them the beauties but also the threats of nature. Depending on the season, they learn what types of snow and avalanches there are, why floods occur and what protective measures have been developed.



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### 3. Model of a river section with two check dams – (Austria)

The model shows a river section with two technical mitigation structures. Water runs in the channel and transports sediment (pebbles) and wild wood. The model shows the function of torrent check dams. Children learn how wood debris is filtered out of a torrential flow and how the run-off is reduced by the mitigation structure to a harmless level.



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### 4. Memory game – (Italy, Province of Bozen)

A memory game with pictures of natural hazards, buildings, measures, rivers, river regeneration and recreational function presents natural hazard management.



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### Communication tools for flood prevention – (Bavaria)

Whether river floods or heavy rainfall events: all floods are united by the fact that there can never be one hundred percent protection. It needs the commitment of many people to make their individual contribution to prevention. This requires close cooperation between all stakeholders involved, because effective flood protection is a joint social task. Here the participants learn what each one individually can contribute for their own precaution.



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## 5. Augmented Reality Sandbox – (Austria)

The Augmented Reality Sandbox combines 3D visualization applications with a practical sandbox to convey geoscientific concepts. The Augmented Reality (AR) sandbox allows the user to create a topography by modelling sand, which is then complemented in real time by a height colour map, topographic contour lines, and simulated water. The system illustrates geographical, geological and hydrological concepts such as a topographic map, the meaning of contour lines, water catchment areas, catchment basins, dams, etc.



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## 6. Rock fall model – (Austria)

The model demonstrates the triggering of rock fall in inclined terrain and shows the trajectory of rocks in an event. Here, the protective effect of the forest is particularly discussed. A healthy and dense forest can both prevent the onset of a snow slab avalanche and stop falling rocks, thus protecting the underlying houses and infrastructure.



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## 7. Model for flood protection of a house – (Austria)

Groundwater / flood buoyancy model: After a flood event, the cellar is pumped empty. If this happens too quickly, the surrounding groundwater can cause the house to float and thus damage the building structure. The participants themselves can pump the cellar of the scale model house empty and observe the buoyancy of a model house.



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## 8. Models of different types of barriers for torrent and avalanche control - (Austria)

The different modes of operation (filtering e.g. of sediment or wild wood, dosage to a harmless amount of run-off...) can be explained and illustrated by means of the models. The models show different types of check dam structures of the Austrian Torrent and Avalanche Control.



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## 4. Documentation of the discussion about knowledge transfer and risk communication

Moderation: Dr. Natalie Prügler (KLAR! - Climate Change Adaptation Model Region Ennstal)

### Discussion Questions:

1. In what way are you and/or your institution active in natural hazard knowledge transfer and risk communication?
2. Taking into account today's exhibition and your experience, what are good and efficient ways and methods to increase knowledge and awareness for natural hazard management with youth?
3. What should be avoided in risk communication and natural hazard knowledge transfer?
4. What is the most important aspect when communicating risk and natural hazard management to children and youth?
5. Can you think of possible Alpine-wide ways of cooperation/ network/ support/ ... to improve risk communication and natural hazard knowledge transfer?

### Notes from the discussion:

#### **Goal: Awareness Raising**

- Collection of good practise examples
- Learning from each other

**Ad 1.)** - Many institutions are involved in cooperation with schools and school events. Some institutions also organize school projects (e.g. a field trip).

- An Austrian good practise example is "Biber Berti", which is successful instrument for bringing children and young people closer to natural hazards working also with physical interactive models. Cartoons.

- Another interesting initiative are the "Walderlebniszentren" ("forest adventure centres") that are a state funded on-site forest education.

**Ad 2.)** - A very efficient way of increasing knowledge and awareness are school events and cooperation with education institutions and teachers.

- Taking into account the preceding exhibition, interactive models that can be touched and give haptic feedback are a very useful tool in transferring knowledge. Both for children and for adults it is important to touch and play to convey complex information in an easy and understandable way (-> physical interactive models).

- Games such as "Memory" and the use of digital technologies (e.g. 3D map, augmented reality...) raise interest for the topic especially in the young generation.



**Ad 3.)** - An often-neglected issue in the communication is the investment in staff. Institutions, that want to communicate with children in a successful way need to have a proper budget and staff with good coordination.

- Another gap in the transfer of knowledge is a poor interaction with schools.
- Only communication via print media & flyers is not going to bring expected results, because people do not remember the information for long.
- A very technical language/style of presentation might scare people off.
- An aversion to use new technologies (e.g. 3D-video, virtual reality) will result in the situation that one can reach fewer people with the information.
- Big events with lots of organisation effort for only small groups/ school classes naturally have a big untapped potential.

**Ad 4.)** - A very important aspect in the communication of natural hazards is budget (EU, funding...). Therefore a political decision needed, which allows allocating funds for structures. A political network for this issue would increase the success.

- A big step towards a better communication is done by voluntary work/initiative. It is of greatest importance to have dedicated staff. In addition, here the institutions have to keep in mind the comprehensive coordination of the initiatives.
- An easy way to reach youth is with school projects (e.g. field trip). To set up these projects, close cooperation with schools and teachers is necessary. Ideally a self-explaining package for teachers (practicable, with a specific delivery, short: ~20 minutes presentation) could be developed. Within this package it would be important for children to trigger curiosity and to touch and play -> physical interactive models. Further improved paper documents like flyers etc. could accompany the package.
- For a comprehensive communication strategy, it would be advisable to create a character/visibility/corporate identity.
- Establish an "institutionalized" risk communication.
- Systematic inclusion of models in planning and building phase (concrete actual project models) in collaboration with local actors would enhance a sense of ownership.
- The use digital technologies (e.g. 3D map, interactive map, virtual reality, 3D glasses, augmented reality...) is an important aspect to visualize natural hazards.

**Ad 5.)** - An Alpine-wide workshop with teachers would support the building of a network and improve risk communication and natural hazard knowledge transfer

- A study on status quo and existing models would be useful to get an overview about the currently used teaching methods.



## 5. Documentation of the comments on the White Boards

### Goal: Awareness raising

- Collection of good practise examples
- Learning from each other

### Output: Recommendation for further action / events

### Good practise examples & recommendations

- School events/cooperation
- "Real" events simulation (alarm, technical measures...)
- Interactive models that can be touched
  - Mandate
  - Budget (EU, funding...)
  - Voluntary work/initiative
  - Important to have dedicated staff, allocate funds
- Create character/visibility/CI
- Biber Berti
- Political decision needed -> allocate funds for structures
- Professional association by region for disaster risk reduction communication
- Comprehensive coordination of initiatives needed
- Use political networks
- Cooperation between prevention and civil protection
- Feedback loops
- Games and models as output
- Reach youth with school projects (e.g. field trip)
- Establish "institutionalized" risk communication
  - Cooperation with schools and teachers
- Improved paper documents: flyers,... combined with models for teachers
- Systematic inclusion of models in planning and building phase (concrete actual project models)
- Use digital technologies (e.g. 3D map)
  - Interactive map
  - Involve local actors (ownership)
- School competition on natural hazards
- Use virtual reality, 3D glasses, augmented reality,... to visualize natural hazards



- Self-explaining package for teachers (delivery, practicable, short: ~20 minutes)
- (for children) important to touch and play -> physical interactive models
- “learning by playing”
- Cartoon/popular culture
- “Walderlebniszentren” (state funded)
  - Combining info, models, forest
  - Waldpädagogik (forest education)
- Adventure Days together with project
- Diversify tools (VR, models, adventure days,...)
- Trigger curiosity

### To avoid in risk communication

- No investment in staff
- No coordination / bad structures
- Poorly interacting with schools
- Only communication via print media & flyers
- Technical language/style of presentation
- Aversion to use new technologies (e.g. 3D-video, virtual reality)
- Big event with lots of organisation effort for only small group/class

### Future Actions

- Workshop with teachers
- Study on status quo and existing models

