

# ÖBB – Natural Hazard Management

## Management of Weather Events in the Austrian Federal Railways

**RAIN Workshop, Berlin**

**27<sup>th</sup> of February 2015**

Günther Kundela

Line Management and Asset Development





















Track System Engineering

Geotechnics and Natural Hazard Management

## Hazardous Processes – Overview

**The Natural Hazards are partly predictable and influenceable**

This overview shows which natural hazards occur in Austria and are relevant for the railway infrastructure. Furthermore, their predictability and influenceability are evaluated.

<b>Natural Hazard</b>	<b>predictable</b>	<b>influenceable</b>
Earthquake		
Rockfall		
Slide		
Continuous rainfall		
Thunderstorm		
Torrential process		
Flood		
Avalanche		
Gale		
Forest fire		

# Floods





# Slides





# Avalanches



# Rockfall





# Gale





# Windthrow





## Hundred Year Flood, June 2013



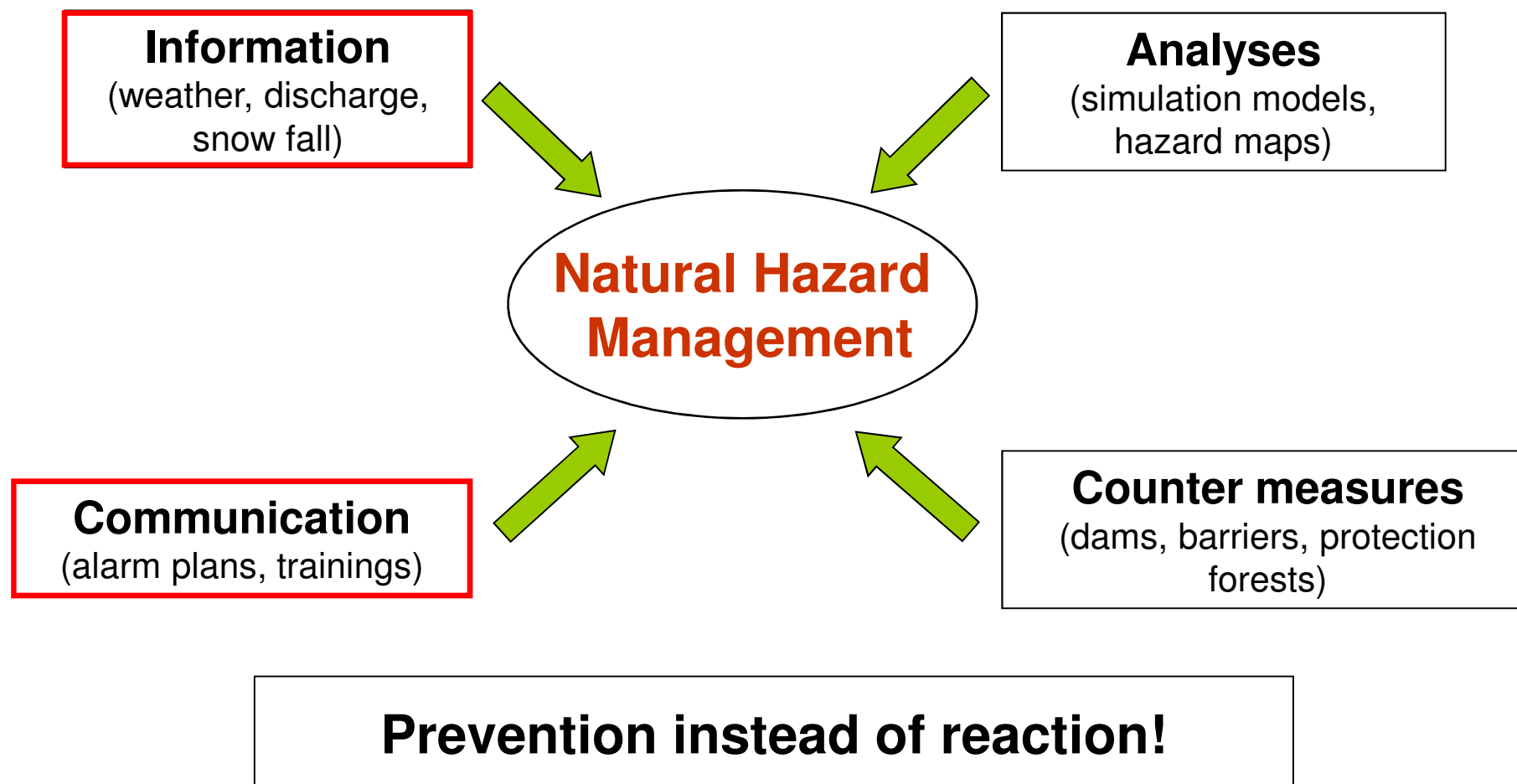


## Hundred Year Flood, June 2013



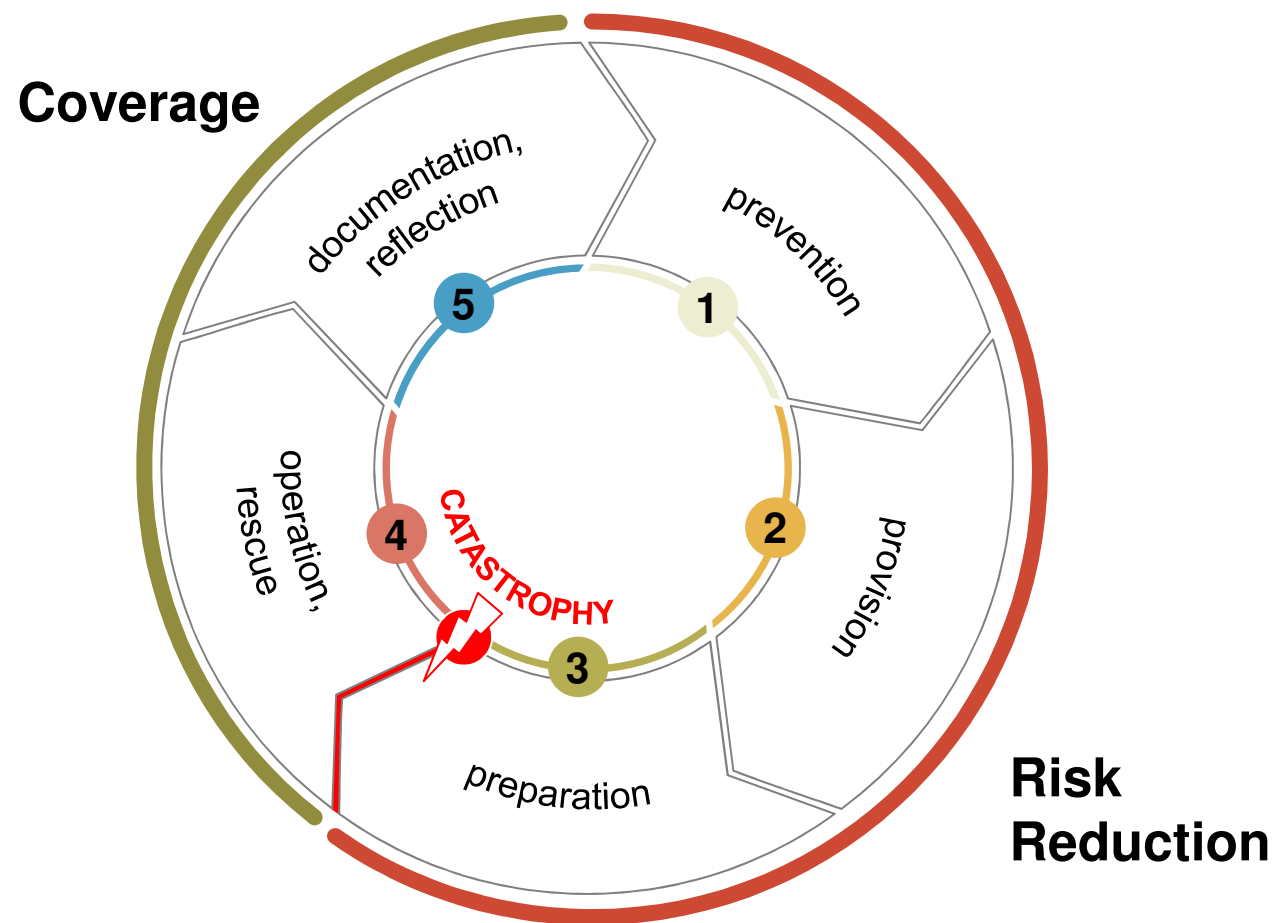


## Basic Strategy



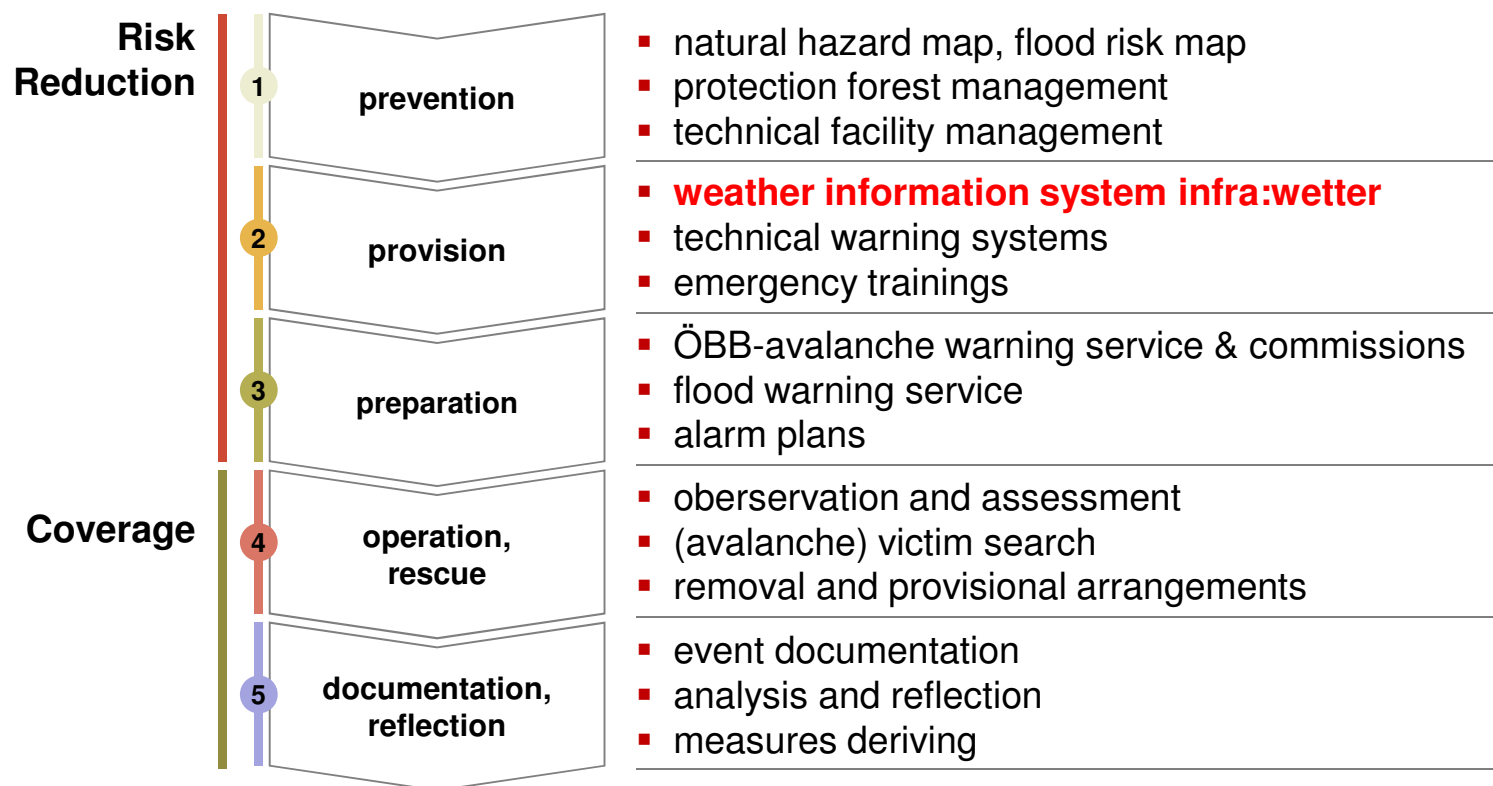
# Risk Cycle

The work of the Natural Hazard Management follows the risk cycle





## Strategies and Tools



## Strategies and Tools – infra:wetter

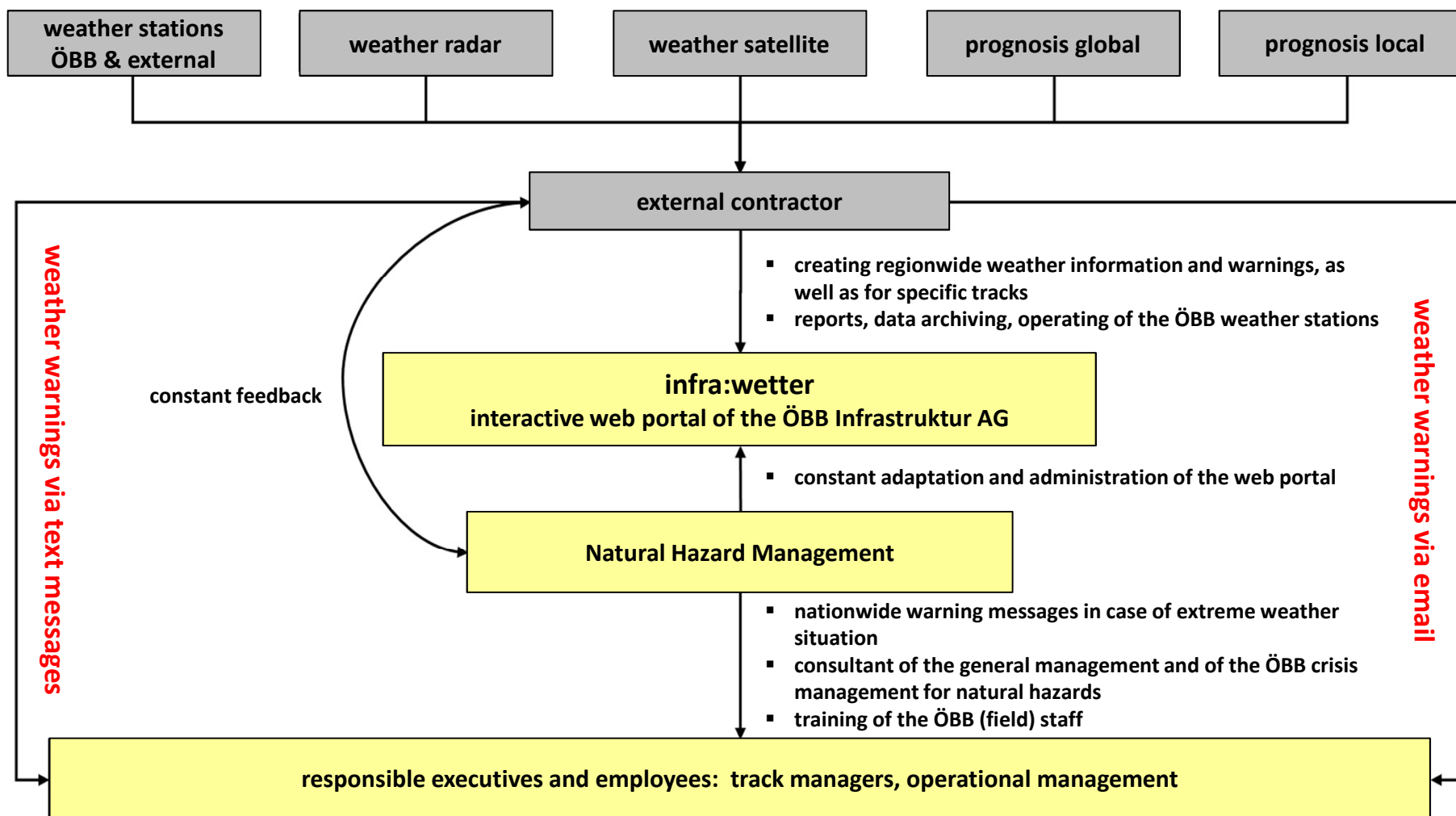
### The objectives of the weather information and warning system infra:wetter

- Design, development, provision and operation of a flexible and constantly extendable, **regionwide weather information system**
- **Standardised** and replicable **weather warnings** in case of heavy snowfall, gale, rain, or glaze for specific railway tracks **via text message and email**
- Warnings and forecasts **for specific tracks**
- Optimizing resources for the **snow clearance**
- ÖBB operated weather stations further improve the forecast quality
- Availability of skilled meteorologists
- Flood warnings
- Special information on fire risk

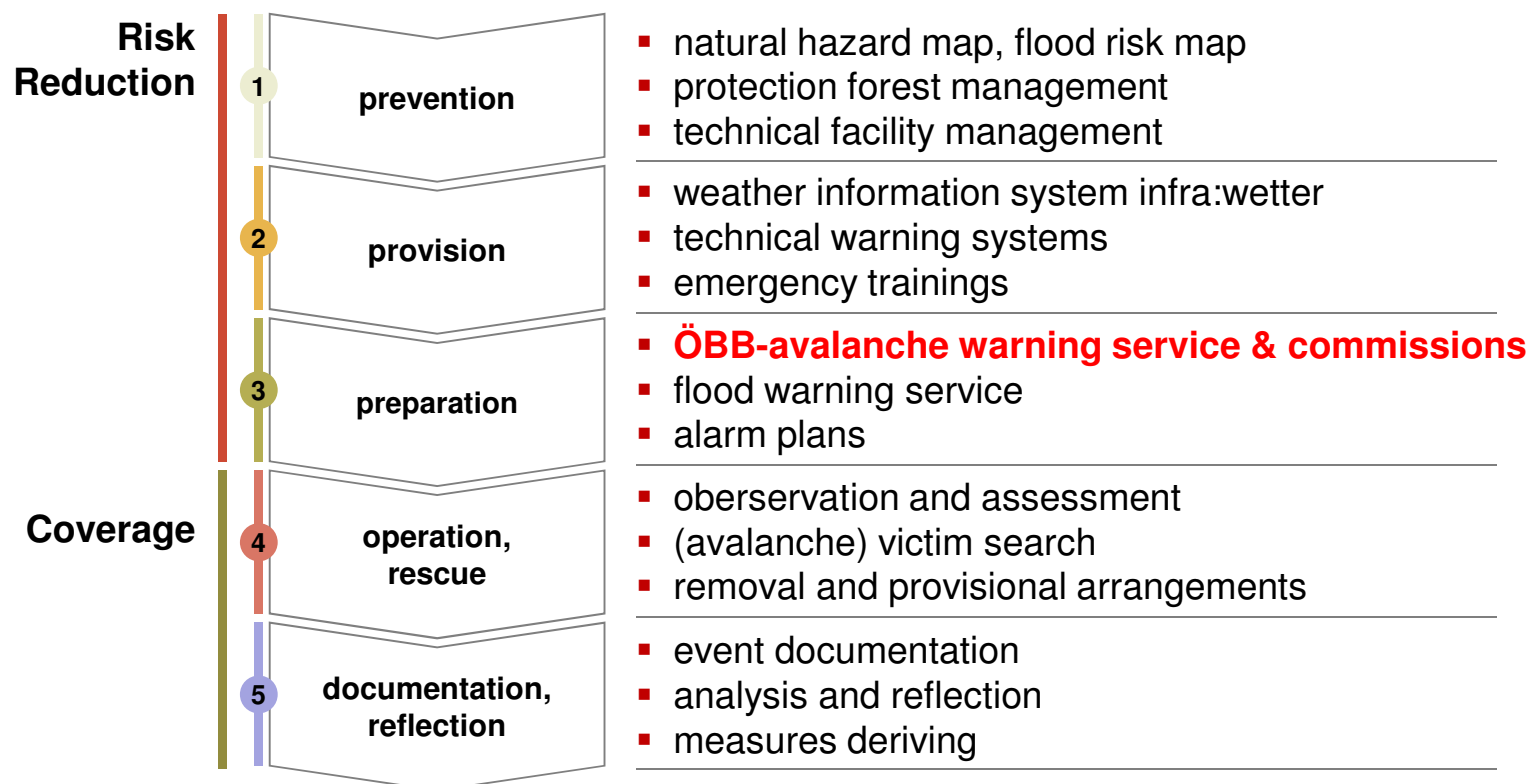




## Strategies and Tools – infra:wetter

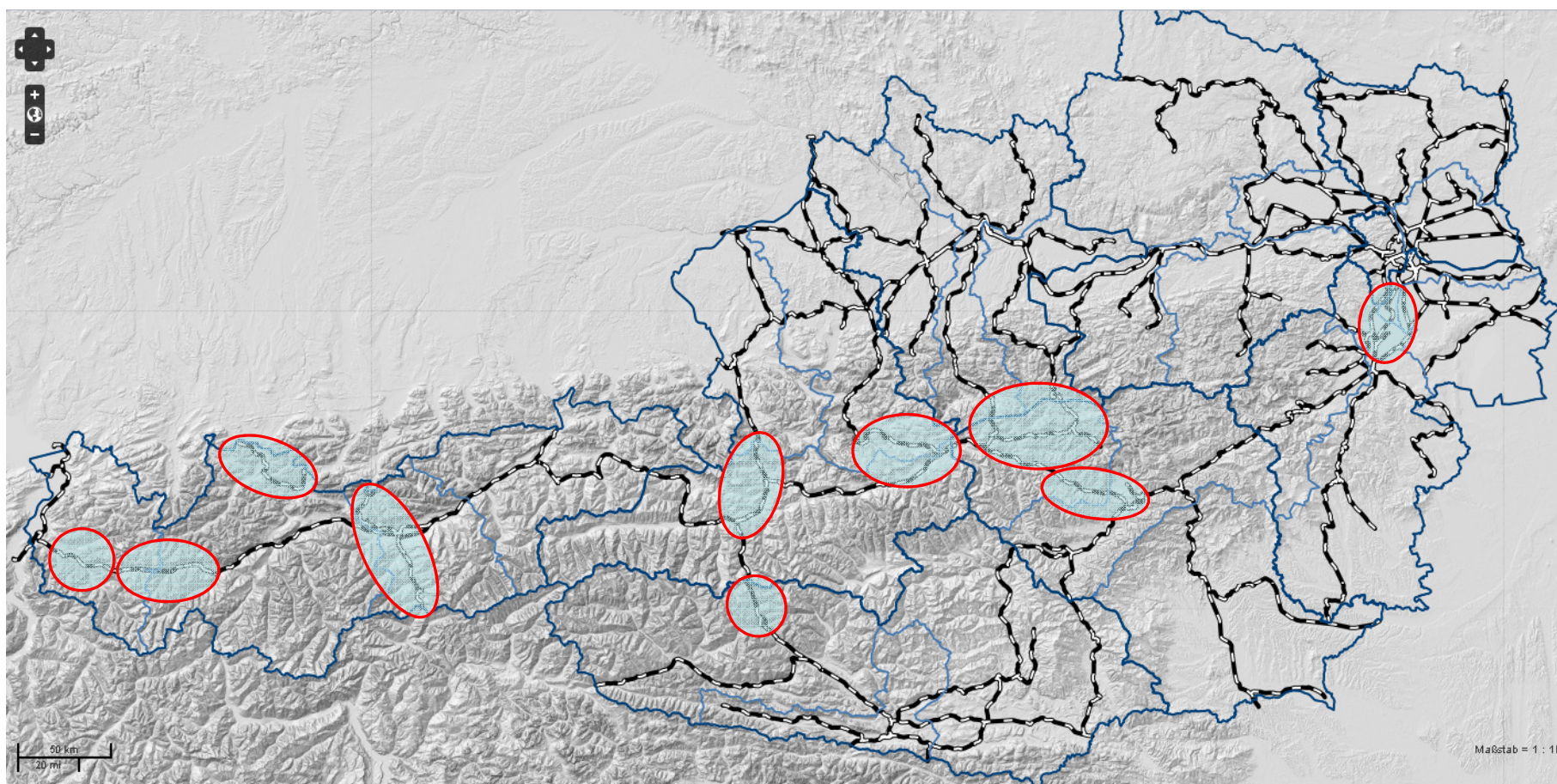


# Strategies and Tools



# ÖBB Avalanche Warning Service & Commissions

## The locations of the ÖBB Avalanche Commissions

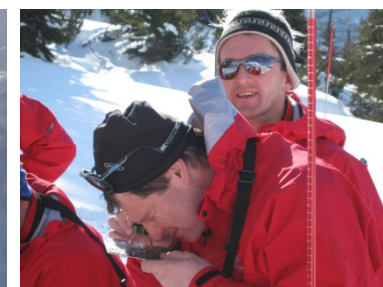




# ÖBB Avalanche Warning Service & Commissions

## Principles

- operational avalanche warning service
- trained avalanche specialists
- evaluation within commissions
- advice for the decision maker
- instruction-freedom
- expert opinion
- premium training
- equipment provided by the employer
- cooperation with the ministries, national disaster management, avalanche warning services, district administrations, municipalities



## ÖBB Natural Hazard Management – Outlook

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- **Early warning systems provide flexibility regarding climate change.**
  
- **The ÖBB Avalanche Commissions have proven to be very effective.  
There will be applied a similar institution regarding all the „water related hazards“.**
  
- **ÖBB Flood Risk Warning Service**

