



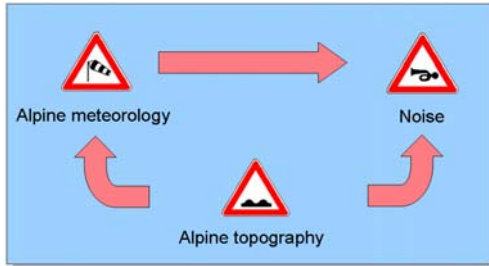
# ALPNAP

Monitoring and Minimisation of Traffic-Induced Noise and Air Pollution Along Major Alpine Transport Routes  
[www.alpnap.org](http://www.alpnap.org)



## Traffic noise in Alpine valleys

### Noise propagation in Alpine valleys



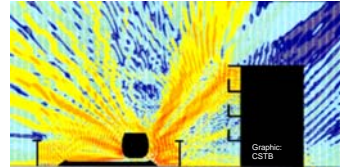
#### ➤ Complex interaction of topography meteorology and noise propagation

- Development of slope winds and valley winds.
- Frequent formation of inversions in valleys.
- Complex source geometries (viaducts, tunnel portals).
- Amphitheater effect.



Photo: Medizinische Universität Innsbruck

### Noise modelling and mapping



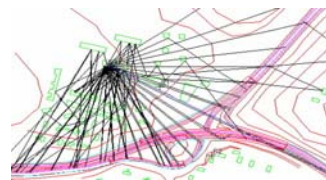
Graphic: CSTB

#### ➤ Comprehensive numerical models allow to assess

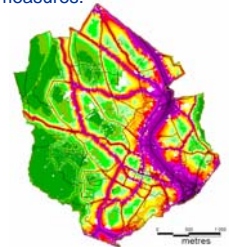
- the acoustical effects in complex environments,
- special source geometries and noise protection installations,
- the influence of mountain-specific meteorological peculiarities.

#### ➤ New GIS-integrated 3D noise mapping tools are used

- to describe the noise impact in populated areas,
- to assess the effects of noise mitigation measures.



Graphic: CSTB



Graphic: CSTB

### Noise measurement campaign

#### ➤ Coordinated campaign in the Tyrolian Unterinntal

- special observing period November 2005 – February 2006
- several 1-day intensive observing periods with additional sensors

#### ➤ Synchronous measurements across the valley

- Meteorology
- Air pollution
- Noise



Graphic: Medizinische Universität Innsbruck



Photo: DLR

### Health impact of noise

#### ➤ High sensitivity to noise in Alpine areas

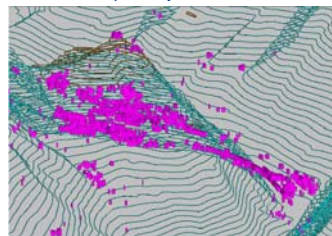
- former studies showed health impact at lower noise levels than in urban or suburban situations
- to calculate difference in the Disability Adjusted Life Years (DALY) two strategies will be employed in ALPNAP

#### ➤ Representative phone survey

- Perception, annoyance, disturbance
- Doctor's diagnoses and prescriptions for main health outcomes

#### ➤ Intensive survey (selected participants)

- Diary survey over a week
- Monitoring of stress indicators, the immune system, and the respiratory and cardiovascular functions



Graphic: CSTB



Photo: Medizinische Universität Innsbruck

#### Contact the Lead Partner:

Dr. Dietrich Heimann, DLR Institut für Physik der Atmosphäre, Oberpfaffenhofen, D-82234 Weßling, Germany  
Tfn: +49-8153-28-2508, Tfx: +49-8163-28-1841, eMail: d.heimann@dlr.de