

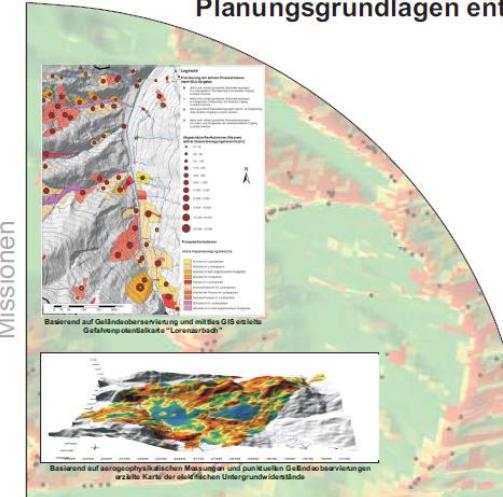
Wissen ist (Geo)Gefahrenprävention

- was wir an der Geologischen Bundesanstalt dafür tun -

Datengrundlagen schaffen

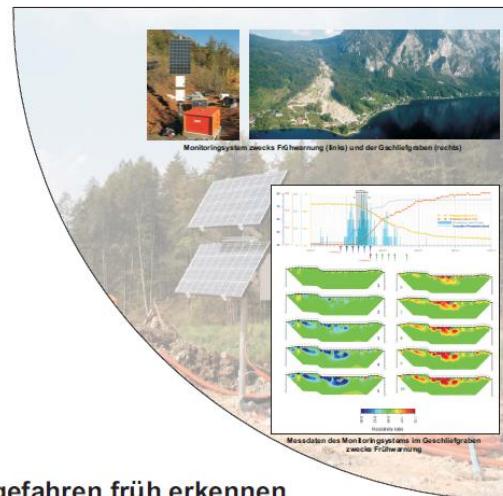


Planungsgrundlagen entwickeln



Missionen

Missionen



Geogefahren früh erkennen



unsere

Wissen austauschen/vermitteln

Datengrundlagen schaffen



Aerogeophysikalische
Messungen

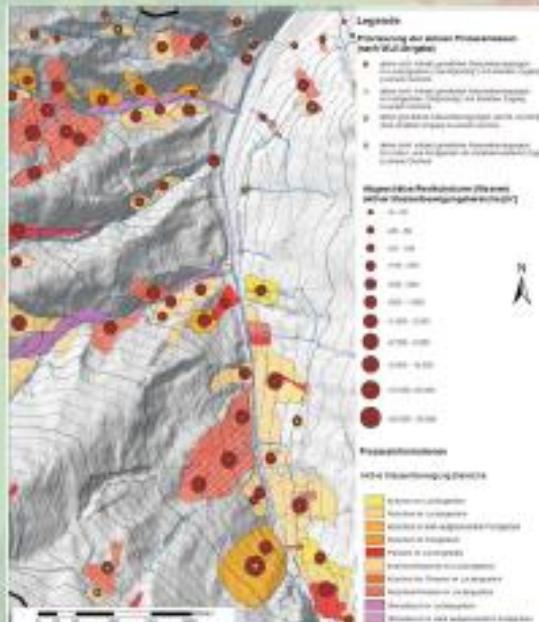


Geländebeobachtungen und dadurch erzielte Karten

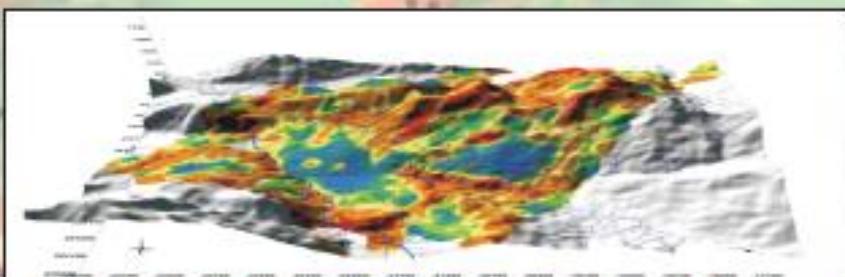


Digitale Datenaufbereitung mittels Datenbank und GIS zwecks Erzeugung eines digitalen Prozesskatalogs

Planungsgrundlagen entwickeln



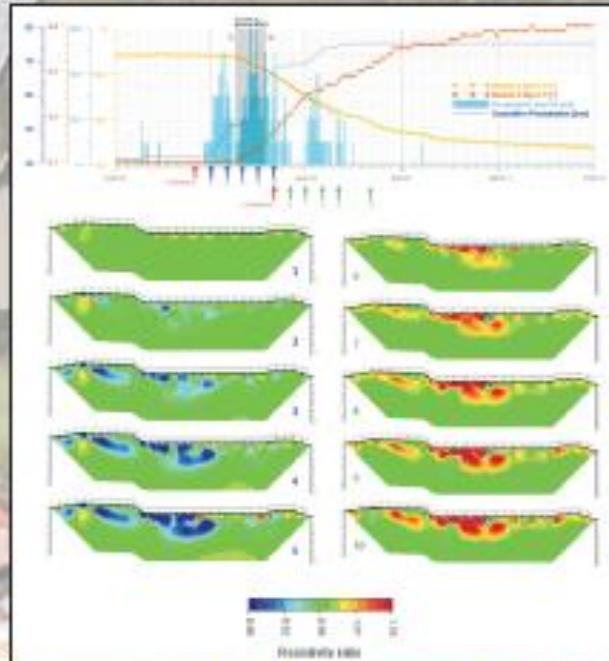
Basierend auf Geländeobersicht und mittels GIS erzielte
Gefährdungsanfälligkeit "Lorenzarbach"



Basierend auf aerogeophysikalischen Messungen und punktuellen Geländeobersichtsermittlungen
erzielte Karte der elektrolytischen Untergrundwiderstände



Monitoringsystem zwecks Frühwarnung (links) und der Geschiebefallen (rechts)



Messdaten des Monitoringsystems im Geschiebefallen
zwecks Frühwarnung

Geogefahren früh erkennen

GELMON LANDSLIDE MONITORING NETWORK





Wissen austauschen/vermitteln



The SAFELAND Project: GEOMONITORING at the Landslide of GSCHLIEFGRABEN

ROBERT SUPPER & IVO BARON

B. Jochum, A. Ita, K. Motschka, E. Winkler



Geological Survey of Austria

THE PARTNERSHIP:



Geological Survey of Austria

moser / jaritz

ZIVILTECHNIKERGESELLSCHAFT
INGENIEURBÜRO FÜR GELOGIE, HYDROGEOLOGIE UND GEOTECHNIK



C.S.G. s.r.l.
Centro Servizi di Geoingegneria



Forsttechnischer Dienst für
Wildbach- und
Lawinenverbauung
Sektion Oberösterreich

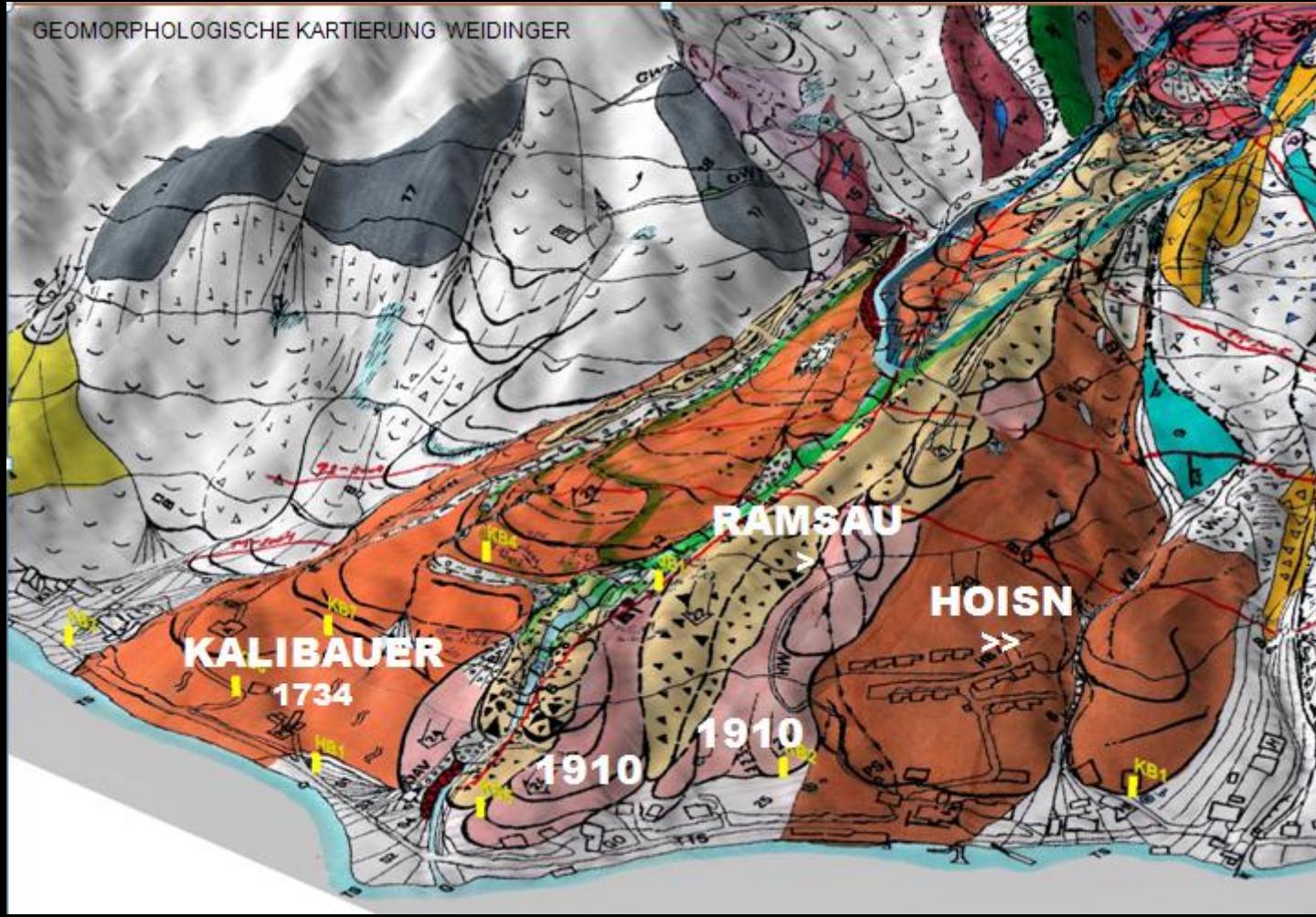


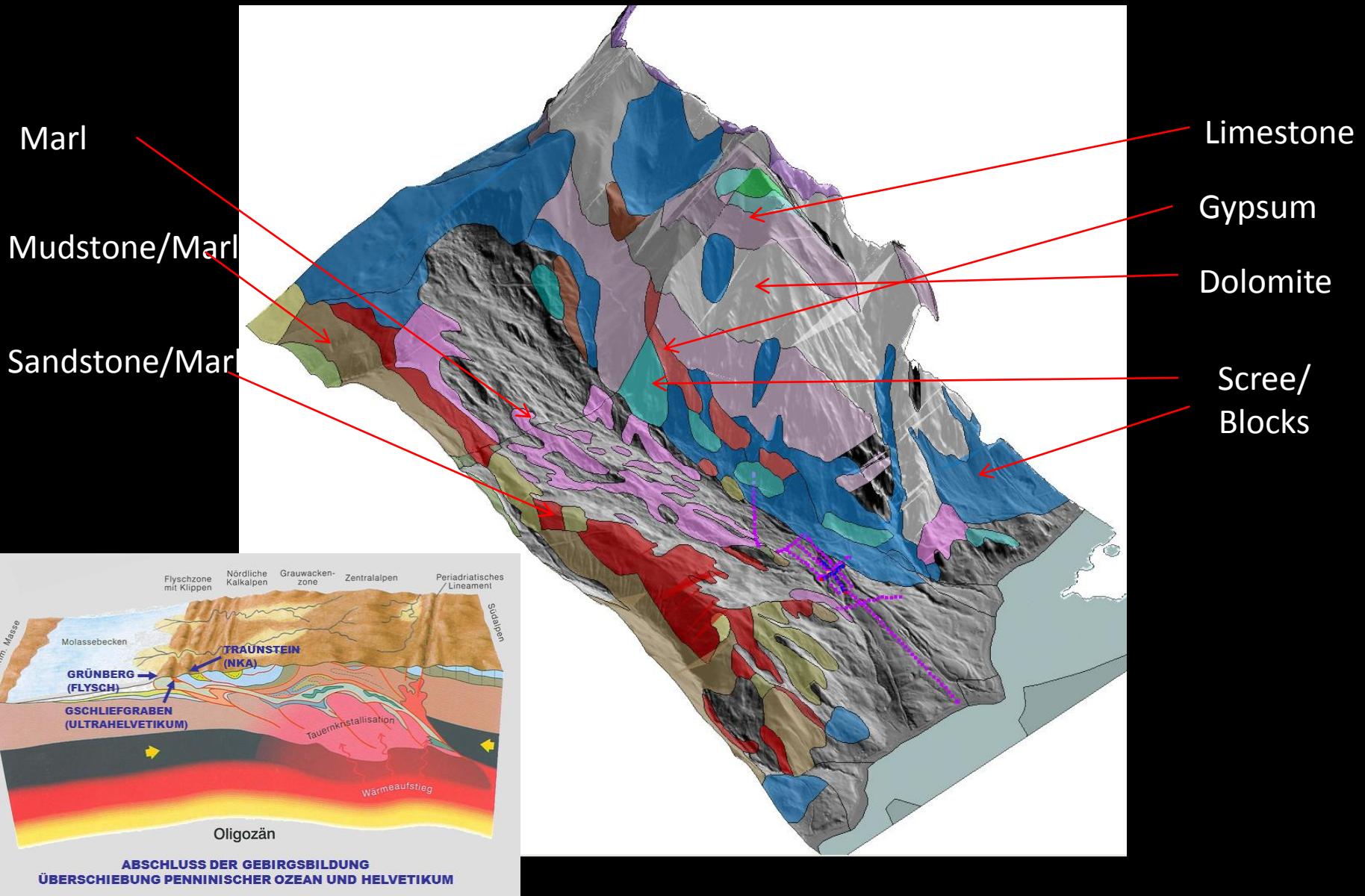
The ultimate solution for
Differential stability control
of landslide, cutting and engineering works



R. Supper, GEOLOGISCHE BUNDESANSTALT

GEOMORPHOLOGISCHE KARTIERUNG WEIDINGER





Hot Spot Area GSCHLIEFGRABEN

Exploring internal structure:
AIRBORNE GEOPHYSICS





R. Supper, GEOLOGISCHE BUNDESANSTALT

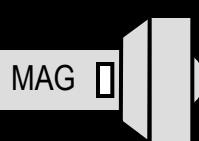
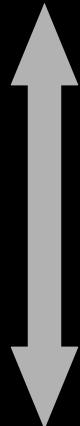


R. Supper, GEOLOGISCHE BUNDESANSTALT

INVESTIGATING THE SUBSURFACE STRUCTURE OF SOCORRO ISLAND



data monitoring and recording



laser-altimeter – RIEGL

GPS navigation – 2*TRIMBLE 2000
(GLONASS ASHTECH*)

infrared sensor (8-13mm) - RAYTEK

video camera (flightpath recorder)

gamma ray spectrometry -
PICODAS PGAM-1000
1 NaJ crystal mit 4.2 l "UP"
8 NaJ crystals mit 33.6 l "DOWN"

Passive microwave antenna

4 frequency electromagnetic system

$f_1 = 340$ Hz horizontal coplanar loops

$f_2 = 3200$ Hz vertical coaxial loops

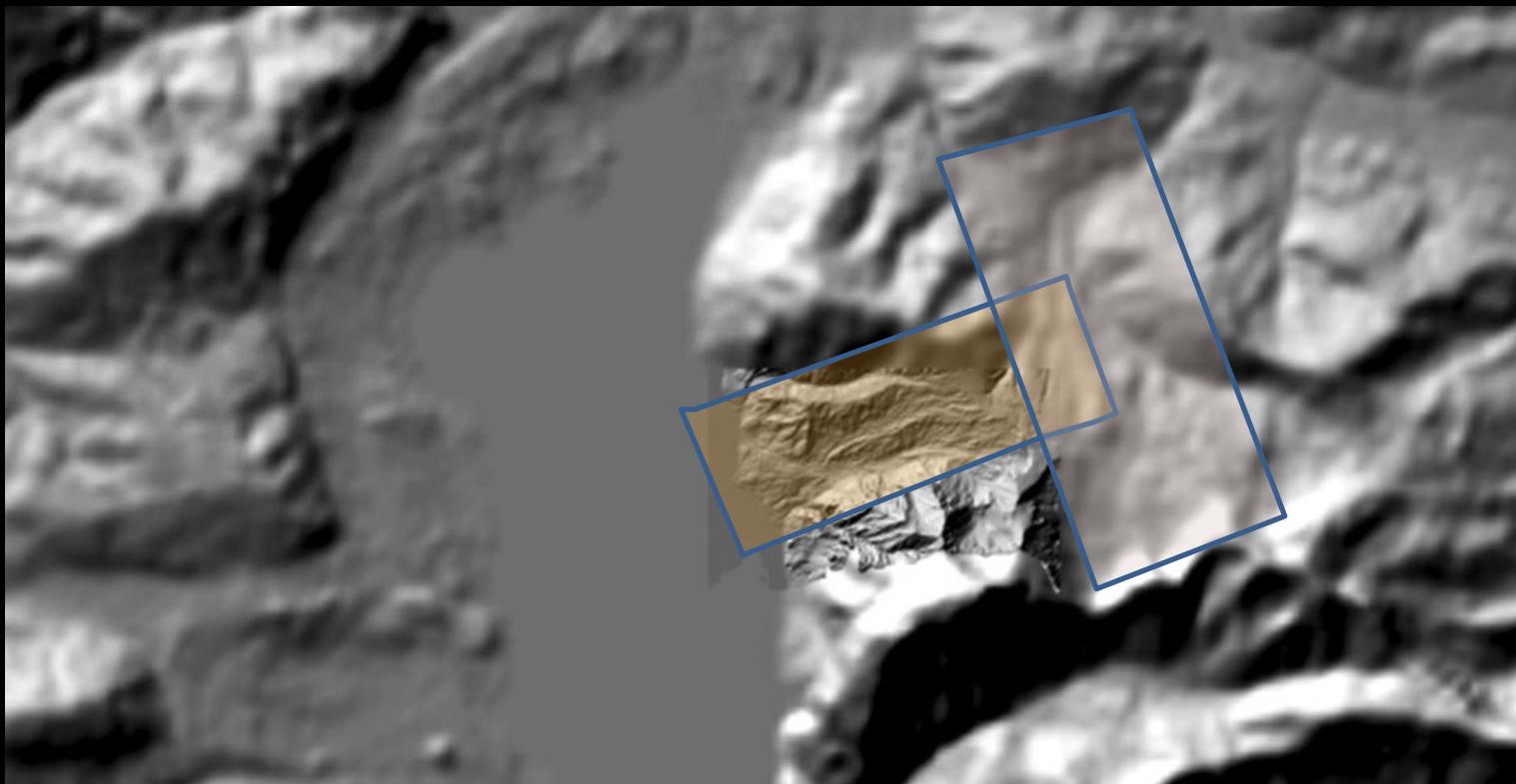
$f_3 = 7190$ Hz horizontal coplanar loops

$f_4 = 28850$ Hz vertical coaxial loops

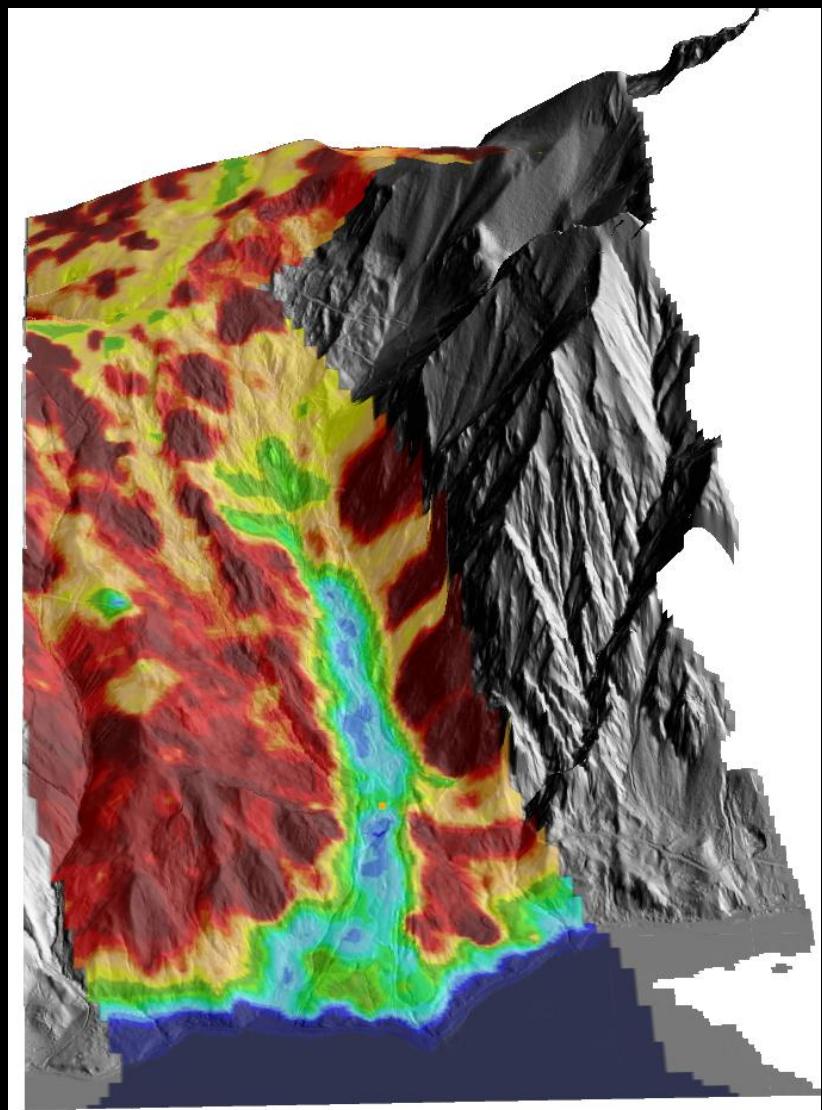
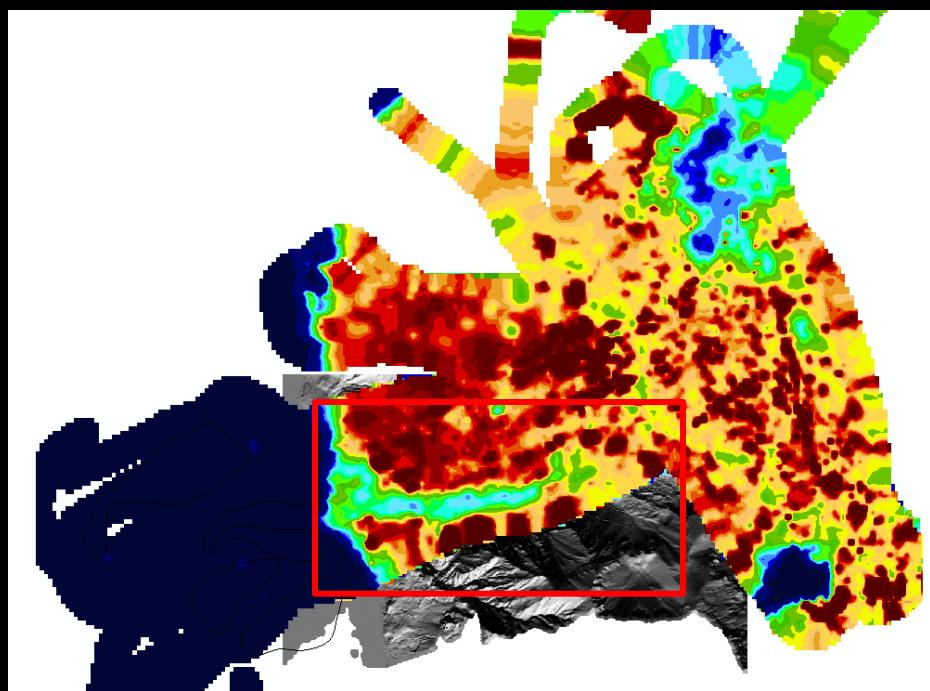
Cesiumtype magnetometer Scintrex CS-2

The Austrian Airborne System

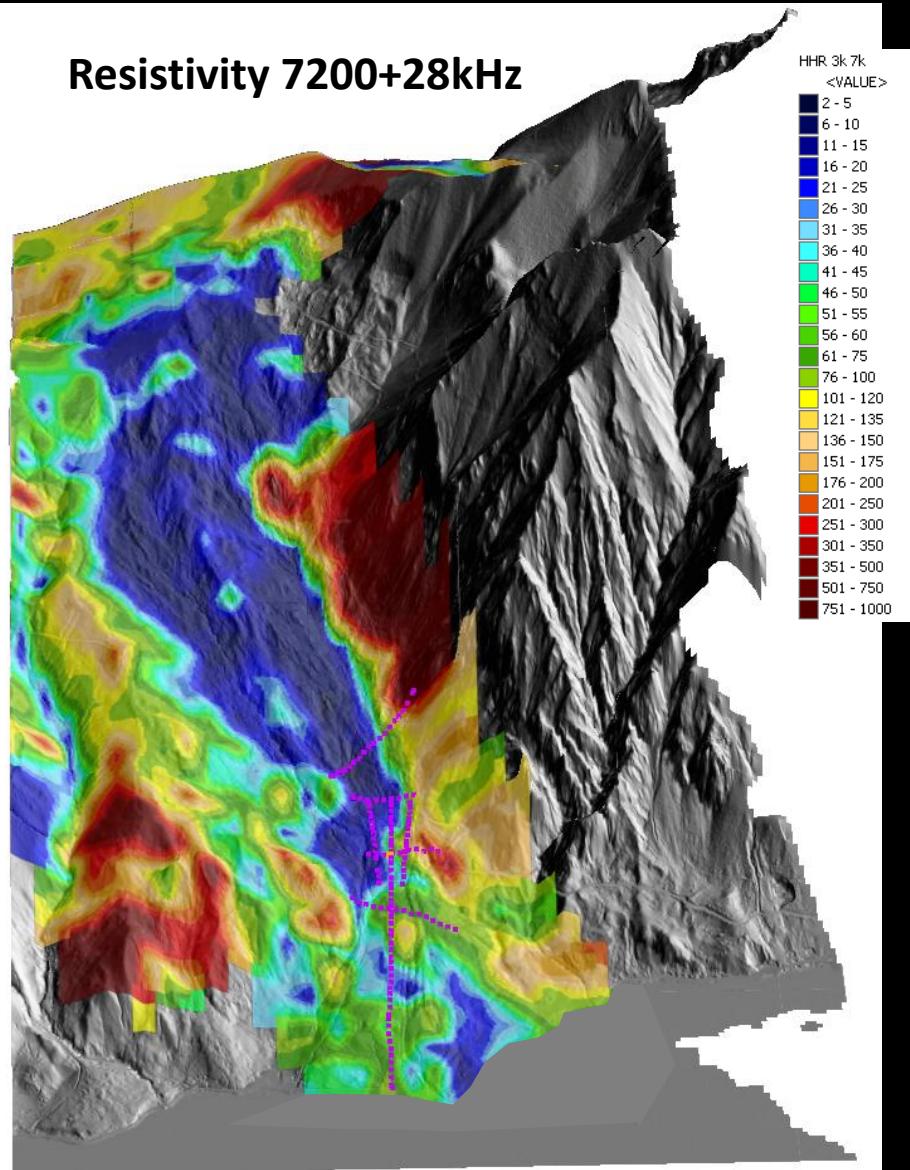
Airborne Geophysics – Investigation Area



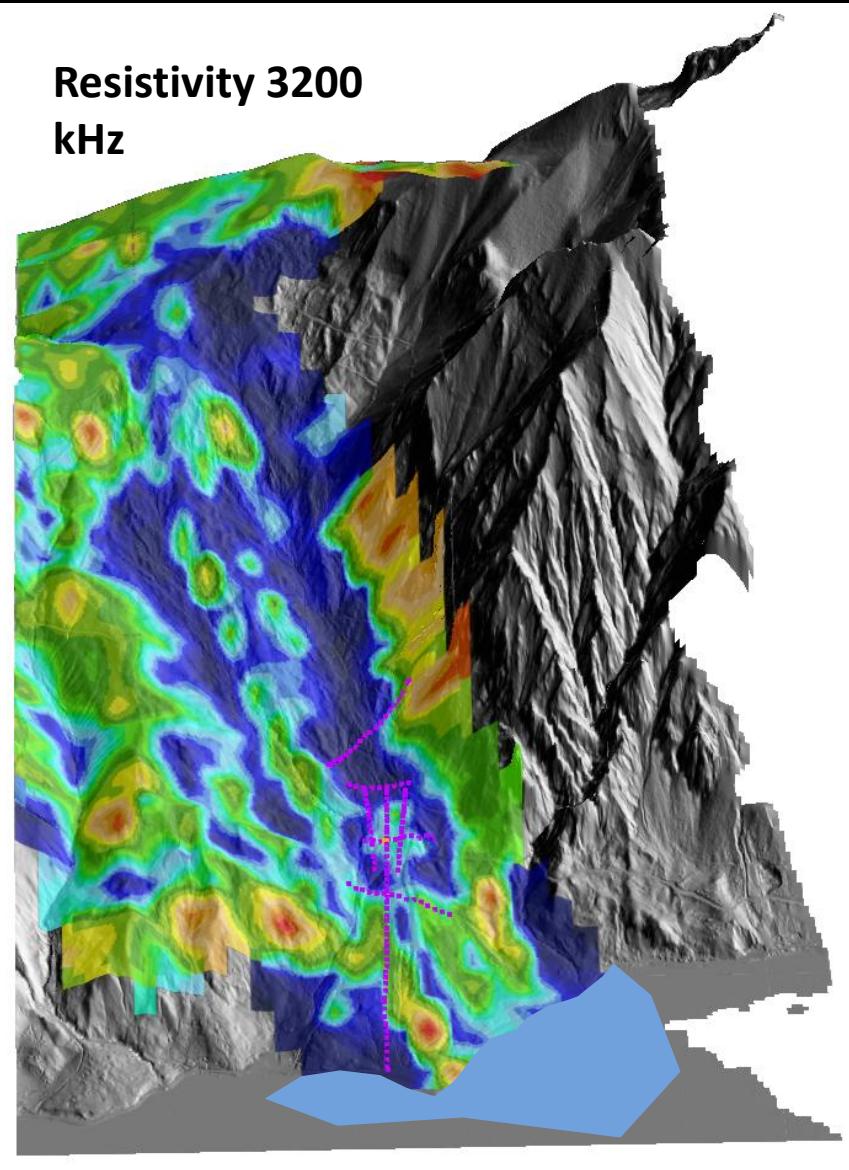
SOIL MOISTURE (Passive Microwave)



Resistivity 7200+28kHz



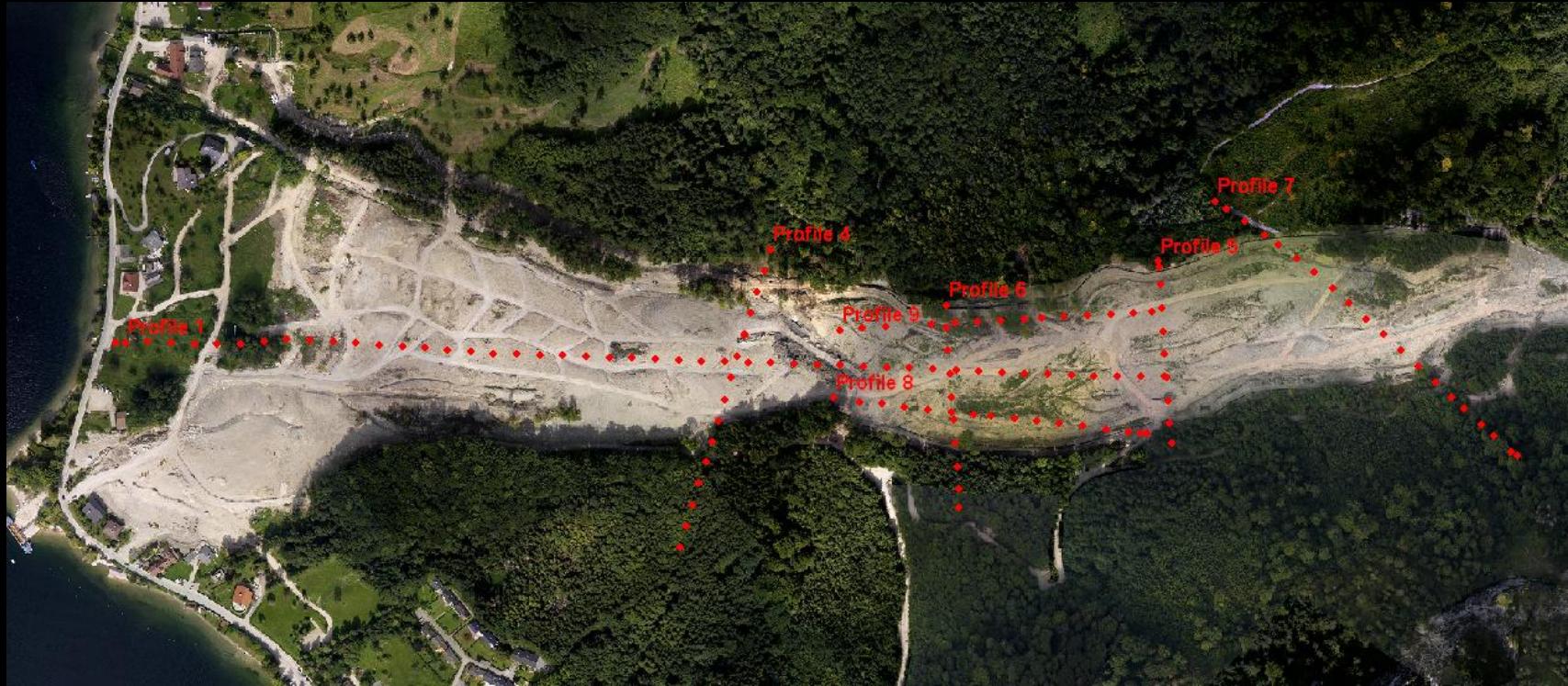
Resistivity 3200 kHz



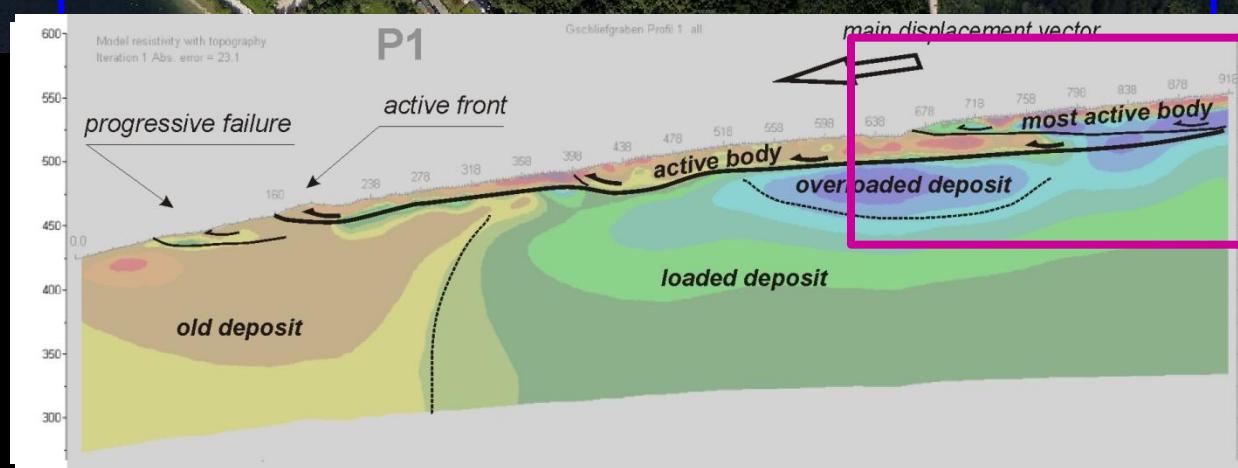
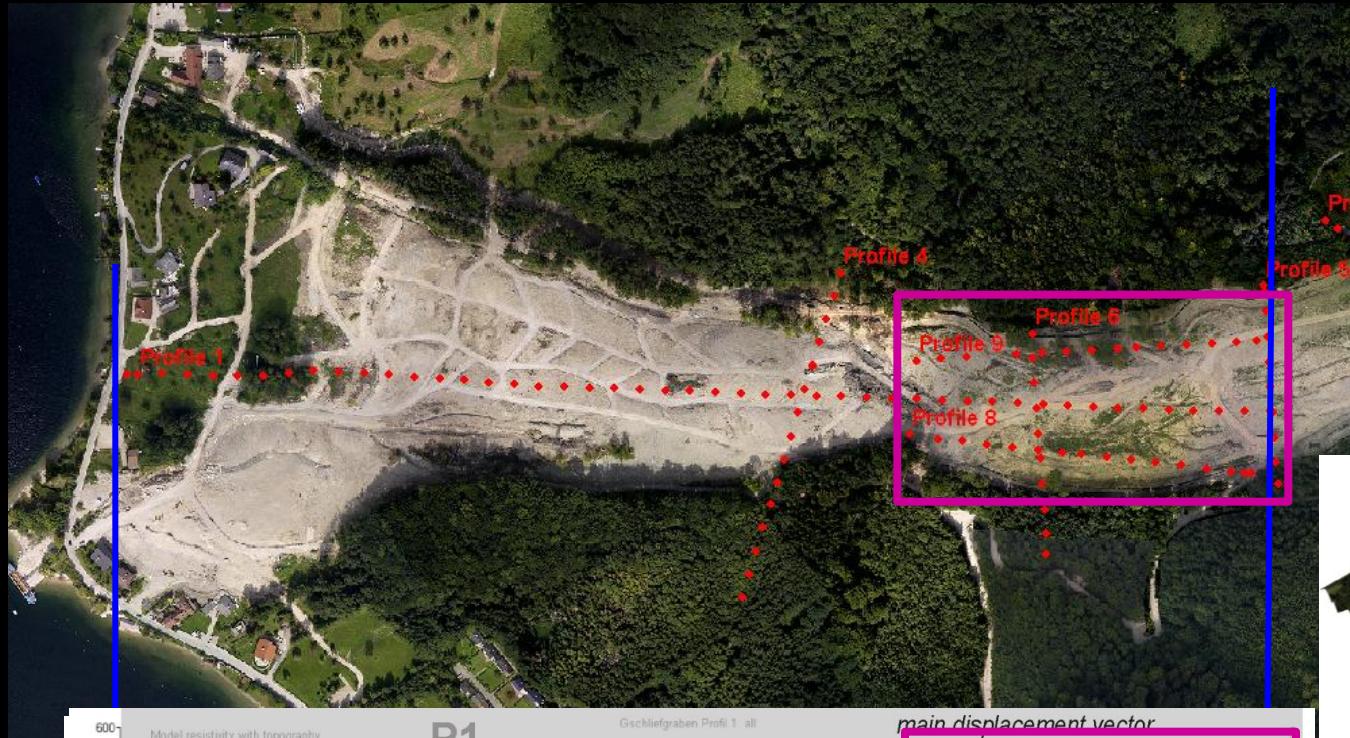
Hot Spot Area GSCHLIEFGRABEN

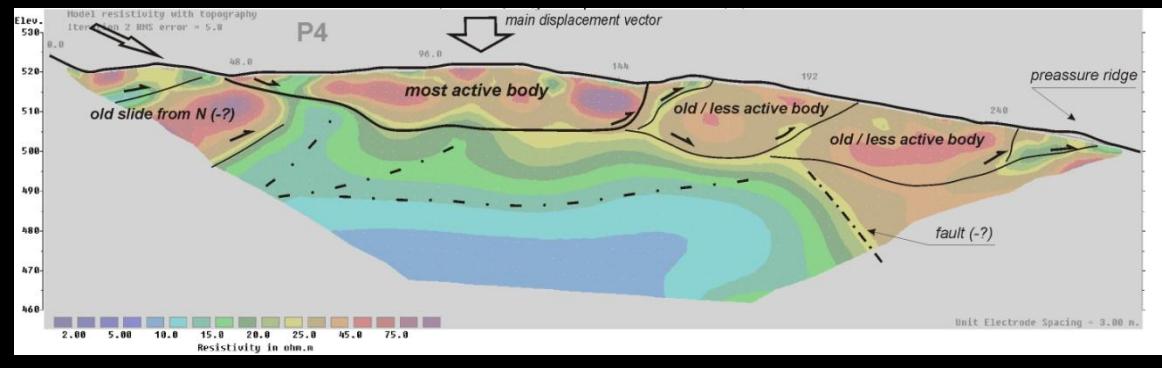
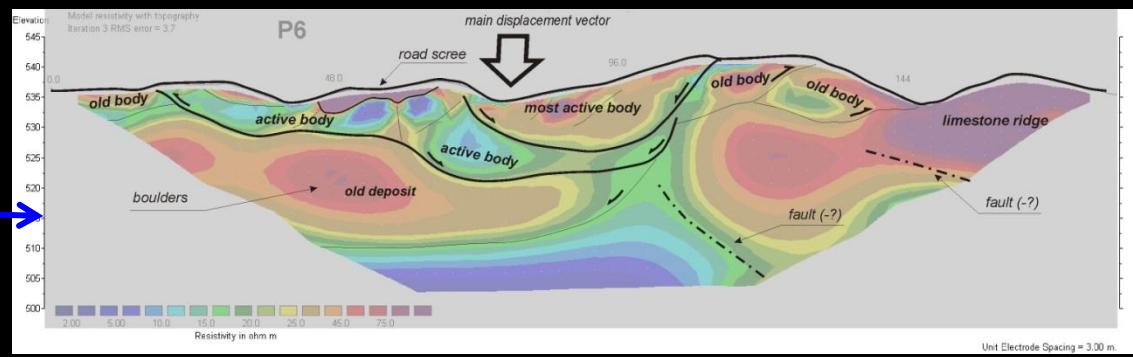
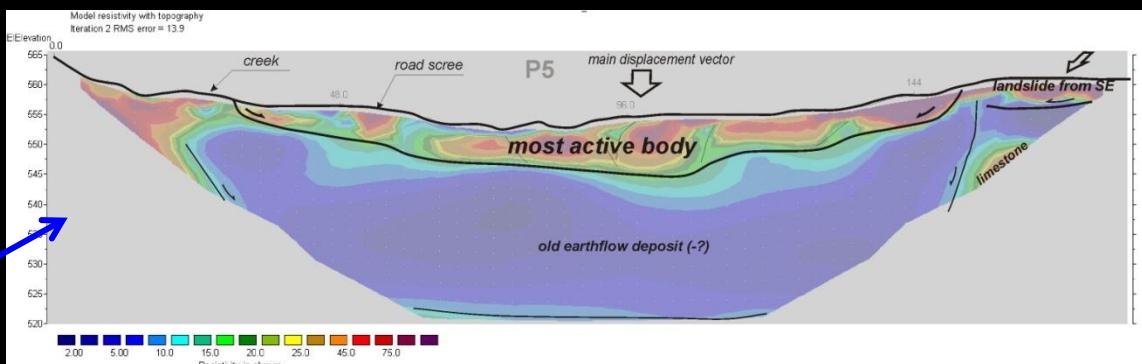
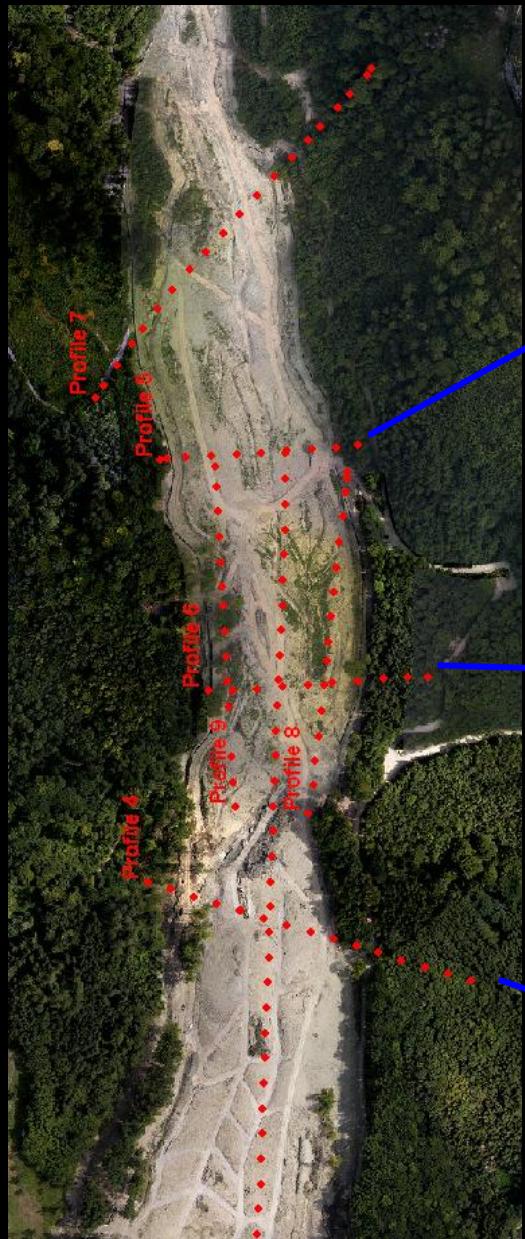
Investigation of 3D geometry:
GEOELEKTRICS





-> Optimised position of monitoring profiles





Hot Spot Area GSCHLIEFGRABEN

**Test of Early Warning System:
INCLINOMETER - DMS**



GSCHLIEFGRABEN – Automatic Inclinometer (DMS)





R. Supper, GEOLOGISCHE BUNDESANSTALT

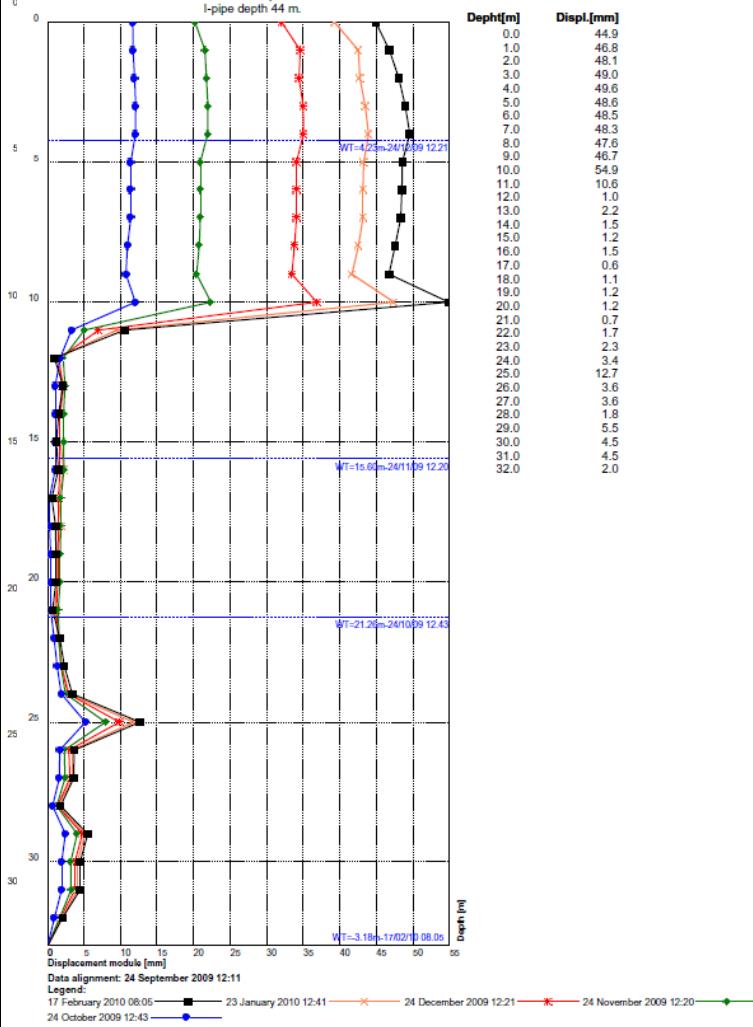


GSA01A-033-0909: Total displacement (A) - Cumulative - 30 Novembre 2009

DMS GSA01A-033-0909: Total displacement (A) - Cumulative

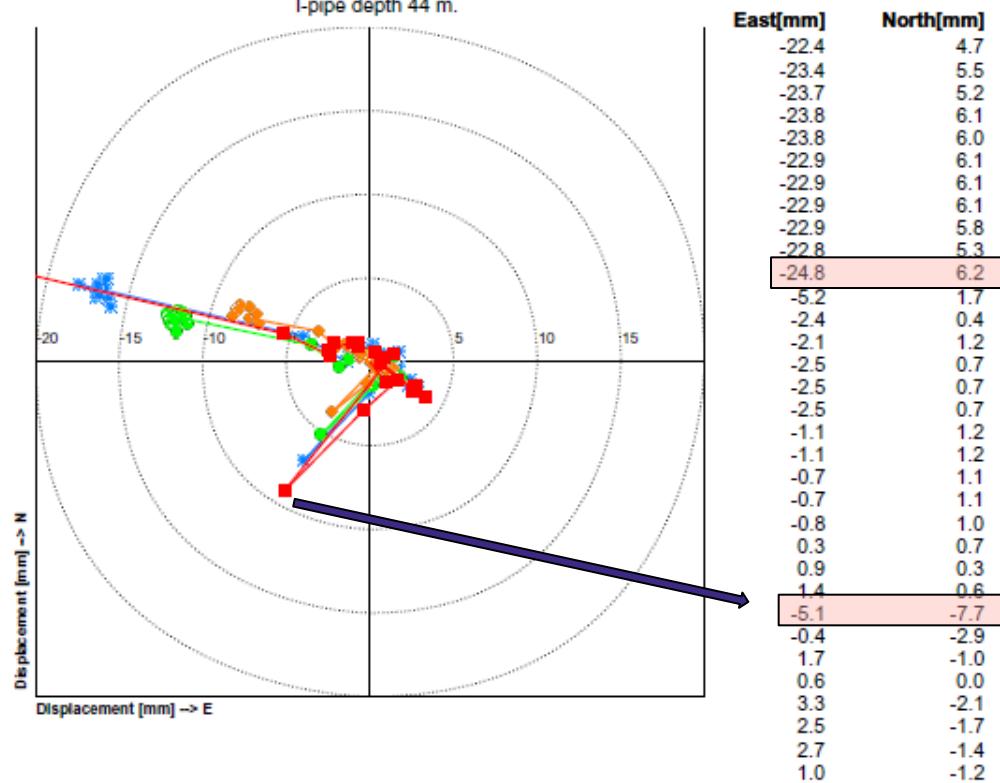
Report

Contractor: Geological Survey of Austria - Wildbach und Lawinenverbauung
 Site: Gschleifgraben (Gmunden)
 Project: DMS 1IMT+1IUT+3IIT
 Monitoring interval: 0-33m pc
 Installation date: 22/09/2009
 Calibration date: 23/09/2009
 Data alignment: 24/09/2009
 Note: Borehole depth 55 m.
 I-pipe depth 44 m.



GSA01A-033-0909: Polar diagram - Cumulative - 30 Novembre 2009

Contractor: Geological Survey of Austria - Wildbach und Lawinenverbauung
 Site: Gschleifgraben (Gmunden)
 Monitoring interval: 0-33m pc
 Installation date: 22/09/2009
 Calibration date: 23/09/2009
 Data alignment: 24 Settembre 2009
 Project: DMS 1IMT+1IUT+3IIT
 Note: Borehole depth 55 m.
 I-pipe depth 44 m.

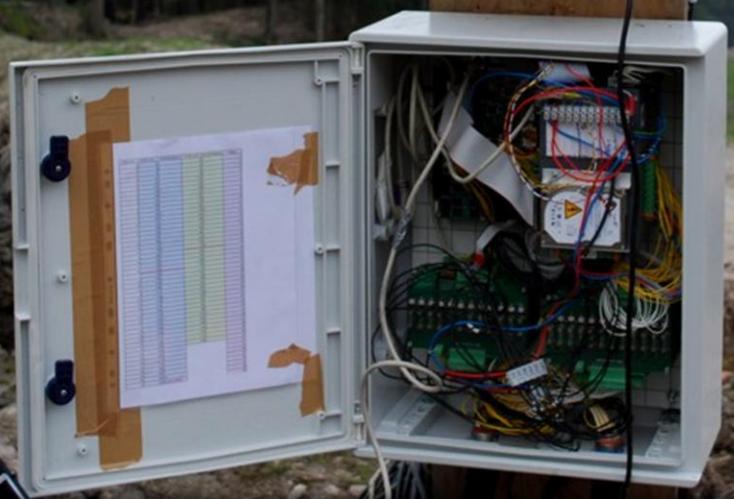


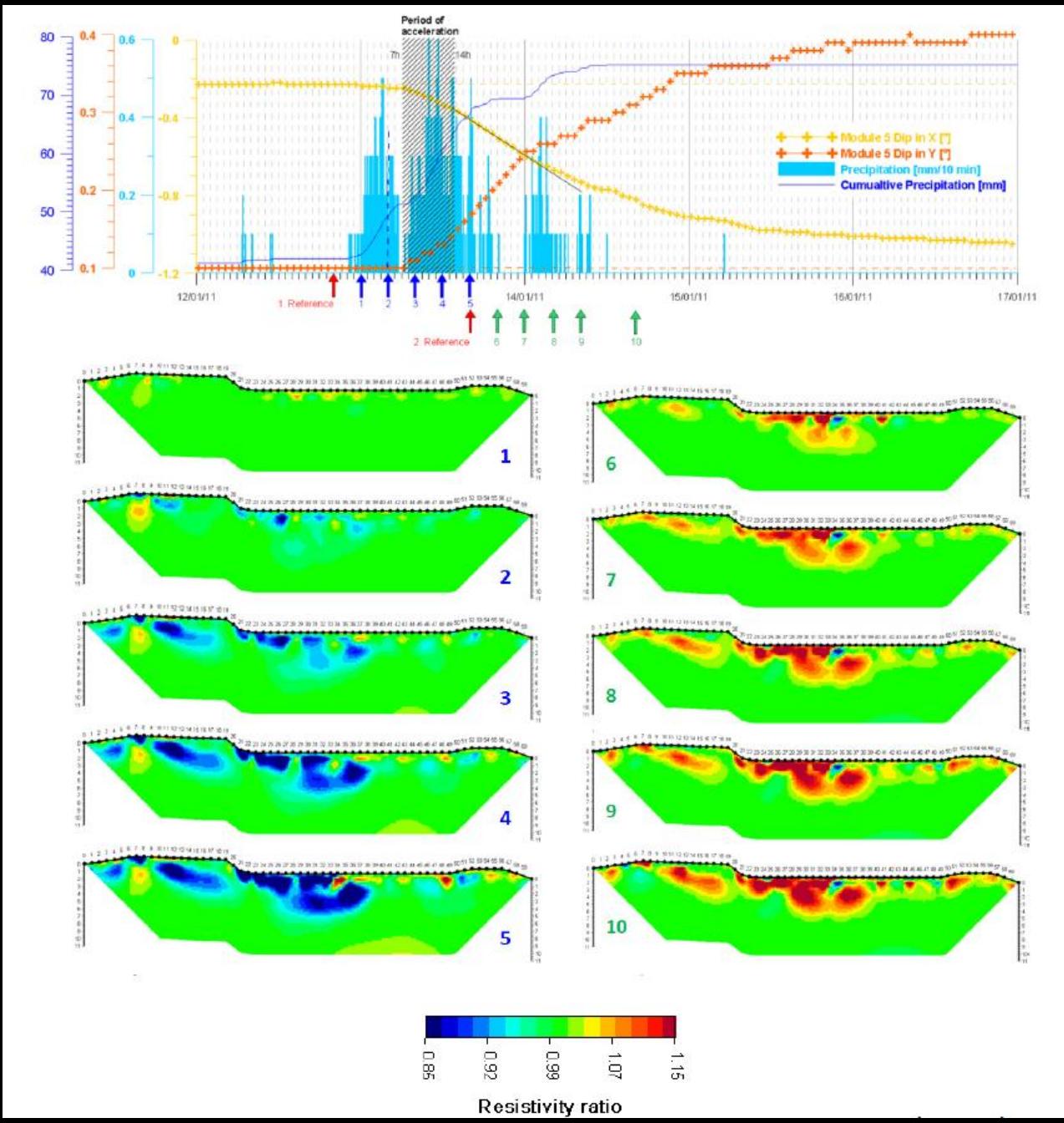
Hot Spot Area GSCHLIEFGRABEN

Test Monitoring System
GEOELEKTRICS









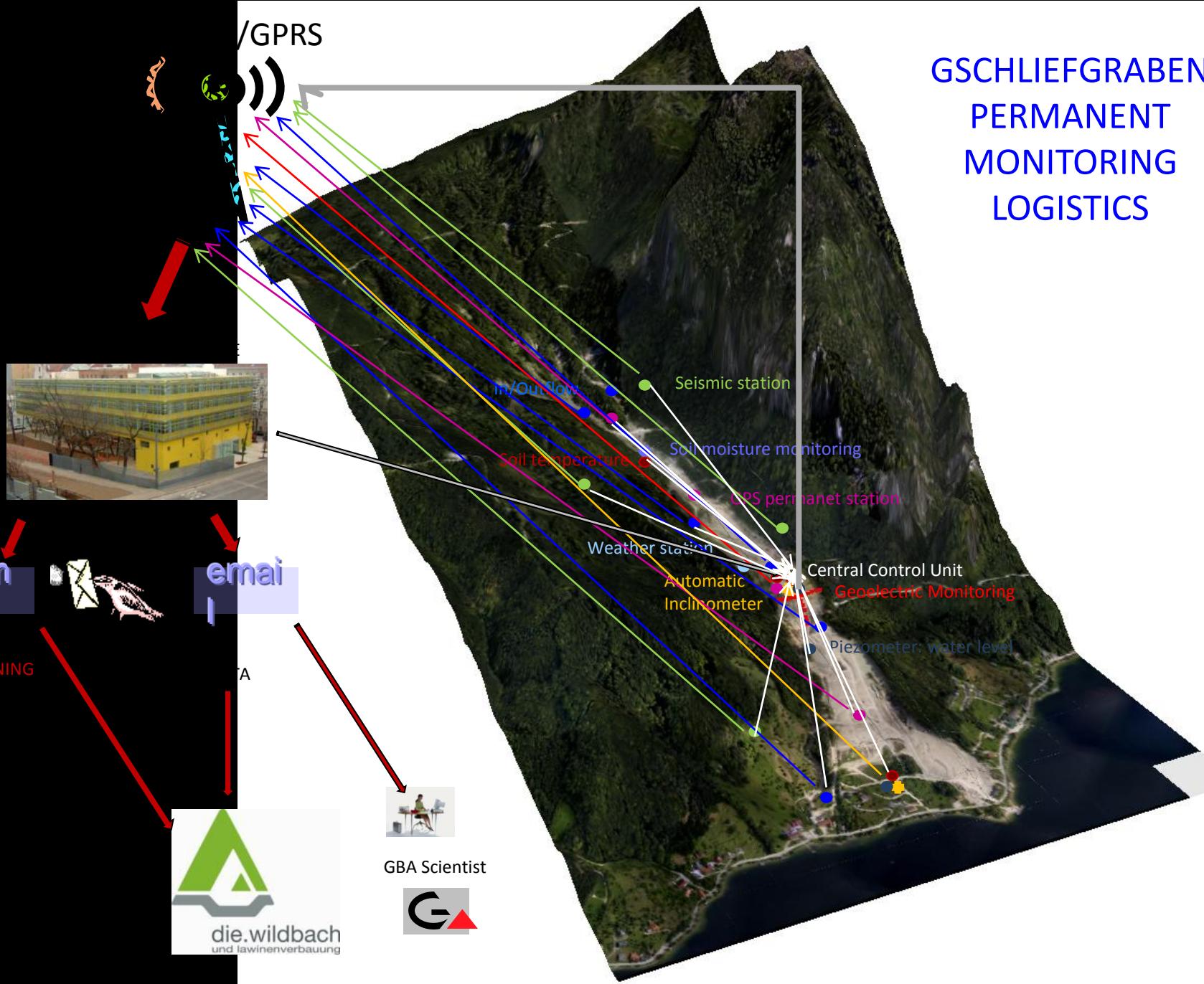
CURRENT ACTIVITY

- Design of comprehensive monitoring strategy:

Additional sensors

Setting up logistics for early warning

GSCHLIEFGRABEN PERMANENT MONITORING LOGISTICS





Thank you for your attention !