



Landslide Investigation using Remote Sensing and Geophysics



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Geologische Bundesanstalt



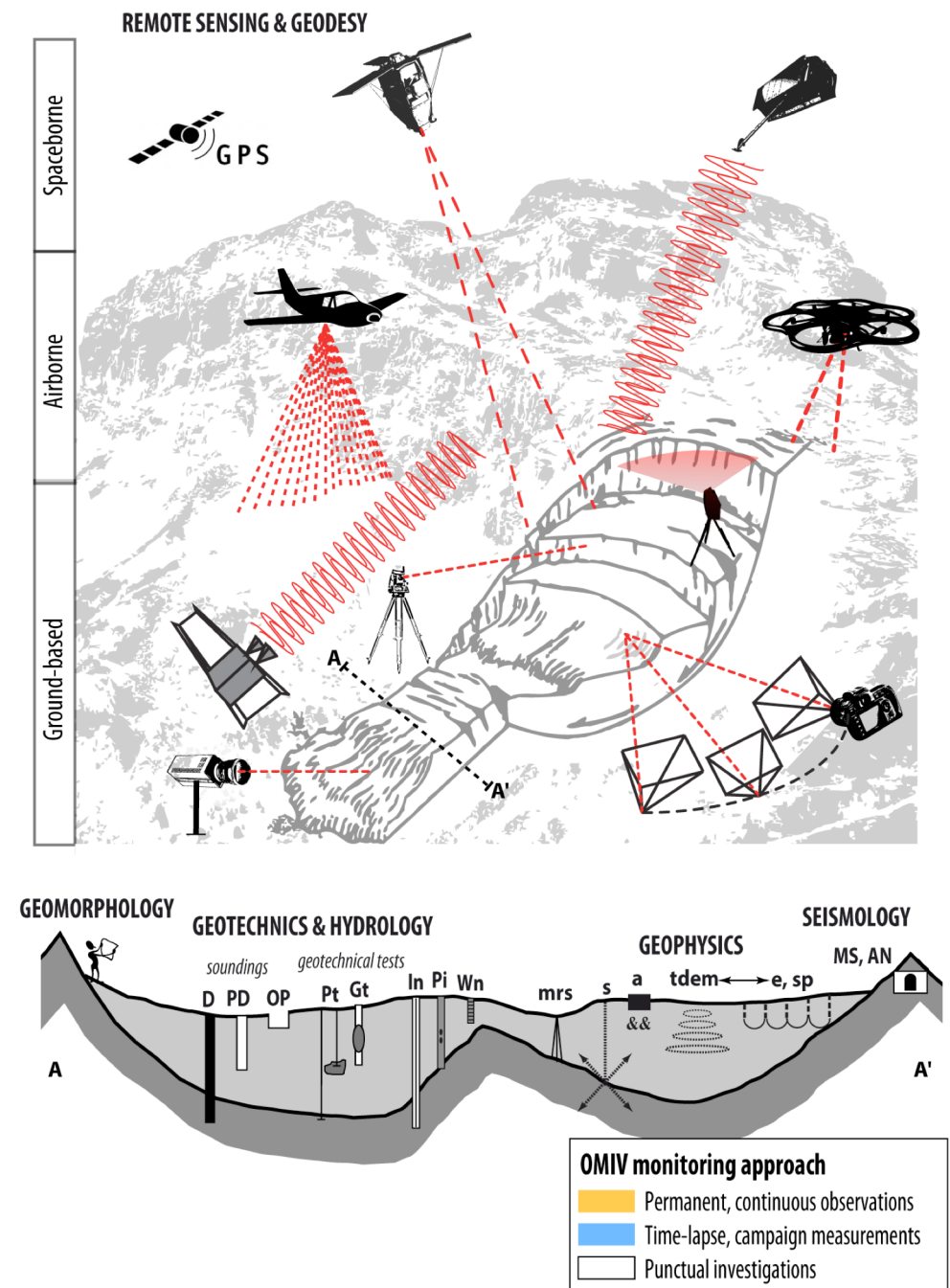


A multi-technique monitoring strategy to document landslides dynamics and response to climate forcings

- To sample different variety of rocks, geometries, and dynamics
- To provide long-term and harmonized datasets



Hydro-geophysics with ERT monitoring



Long-term permanent monitoring

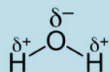
Observation tasks (TO): Surveying methods				
 Geodesy Relief	 Seismology	 Hydro-geophysics	 Hydro-chemistry	 Meteorology
Sensors GNSS Total station LiDAR Camera Satellite Products Position Displacement map Volume Change map	Sensors 1C/3C seismometers accelerometers Products Seismic catalogue 1. Simple: detection 2. Advanced: localization dynamic prop.	Sensors DC resistivimeter (surface, borehole) Products Apparent resistivity	Sensors Piezometer Conductivimeter Water sampling Products Water level Soil moisture Conductivity Water quality	Sensors Raingauge Thermometer Pyranometer Anemometer Products Base parameters <i>Rain, T°, radiation</i> Advanced: <i>Effective rainfall</i> <i>Infiltrated water</i>
EOST / IPGS (G. Ferhat)	OSUG / ISTerre (M. Radiguet)	OMERE / GM (S. Gautier)	THETA / CE (C. Bertrand)	OCA / Geoazur (T. Lebourg)

- 5 categories of observations
- Hydro-geophysics on 5 sites

Super-Sauze EOST / IPGS Scient. coordinator: <i>J.-P. Malet</i> Techn. responsible: <i>M. Benbachir</i>	La Valette EOST / IPGS Scient. coordinator: <i>J.-P. Malet</i> Techn. responsible: <i>M. Benbachir</i>	La Clapière OCA / Geoazur Scient. coordinator: <i>T. Lebourg</i> Techn. responsible: <i>M. Vidal</i>	Pégairolles OMERE / GM Scient. coordinator: <i>S. Gautier</i> Techn. responsible: <i>M. Geeraart</i>	Vence OCA / Geoazur Scient. coordinator: <i>T. Lebourg</i> Techn. responsible: <i>M. Vidal</i>
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- Rainfall-induced landslides
- Shallow and deep landslides
- Slow and fast-moving

Long-term permanent monitoring

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Super-Sauze
EOST / IPGS Scient. coordinator: <i>J.-P. Malet</i> Techn. responsible: <i>M. Benbachir</i>

La Valette
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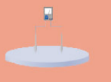
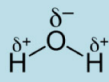
La Clapière
OCA / Geoazur Scient. coordinator: <i>T. Lebourg</i> Techn. responsible: <i>M. Vidal</i>

Pégairolles
OMERE / GM Scient. coordinator: <i>S. Gautier</i> Techn. responsible: <i>M. Geeraart</i>

Vence
OCA / Geoazur Scient. coordinator: <i>T. Lebourg</i> Techn. responsible: <i>M. Vidal</i>

- At the surface : GEOMON4D (multiple gradient) or SYSCAL Pro (dipole-dipole)
- In borehole for 1 site : ImaGeau® (dipole-dipole)
- Daily measurements
- Remote transmission

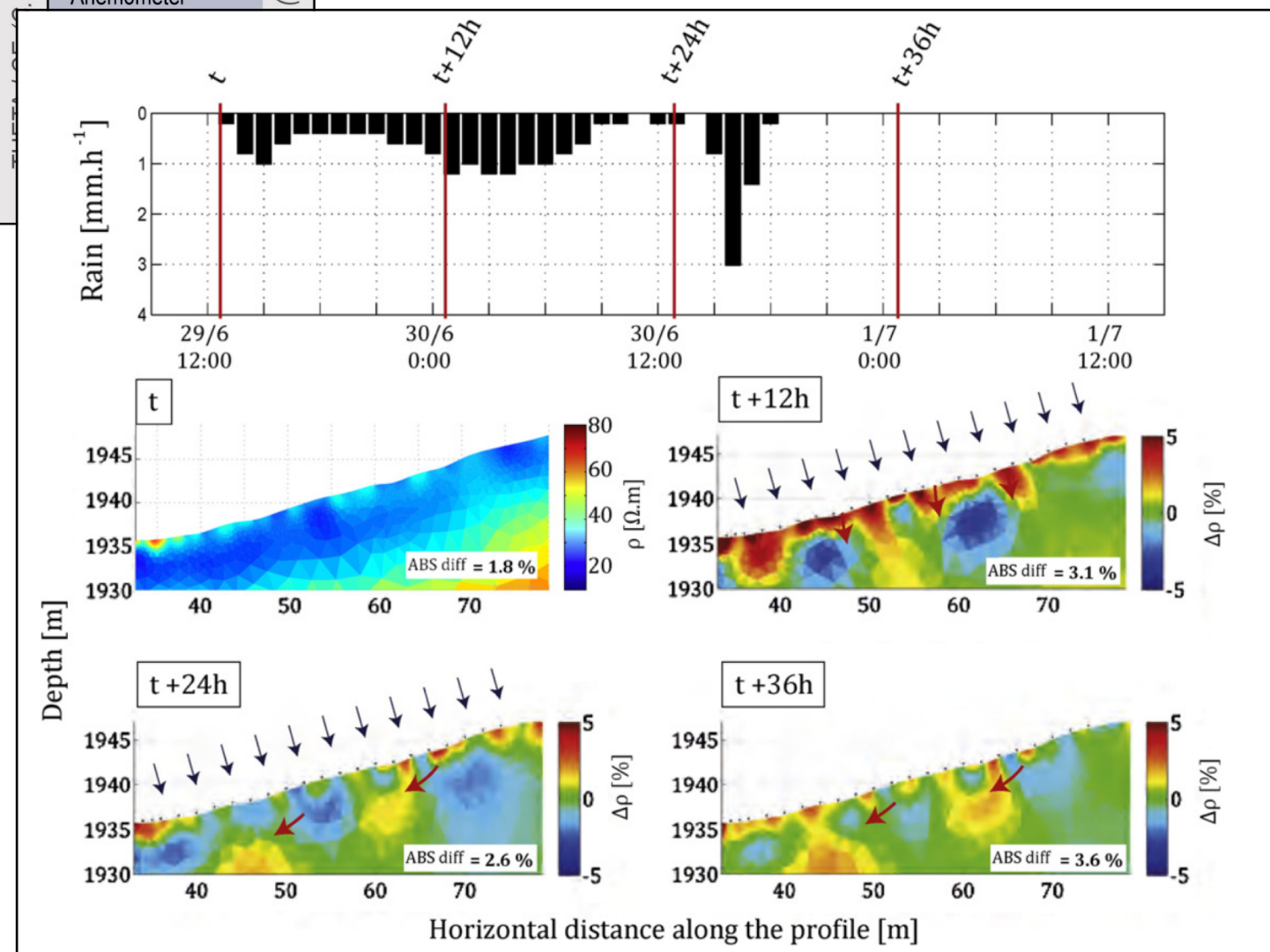
Long-term permanent ERT-monitoring

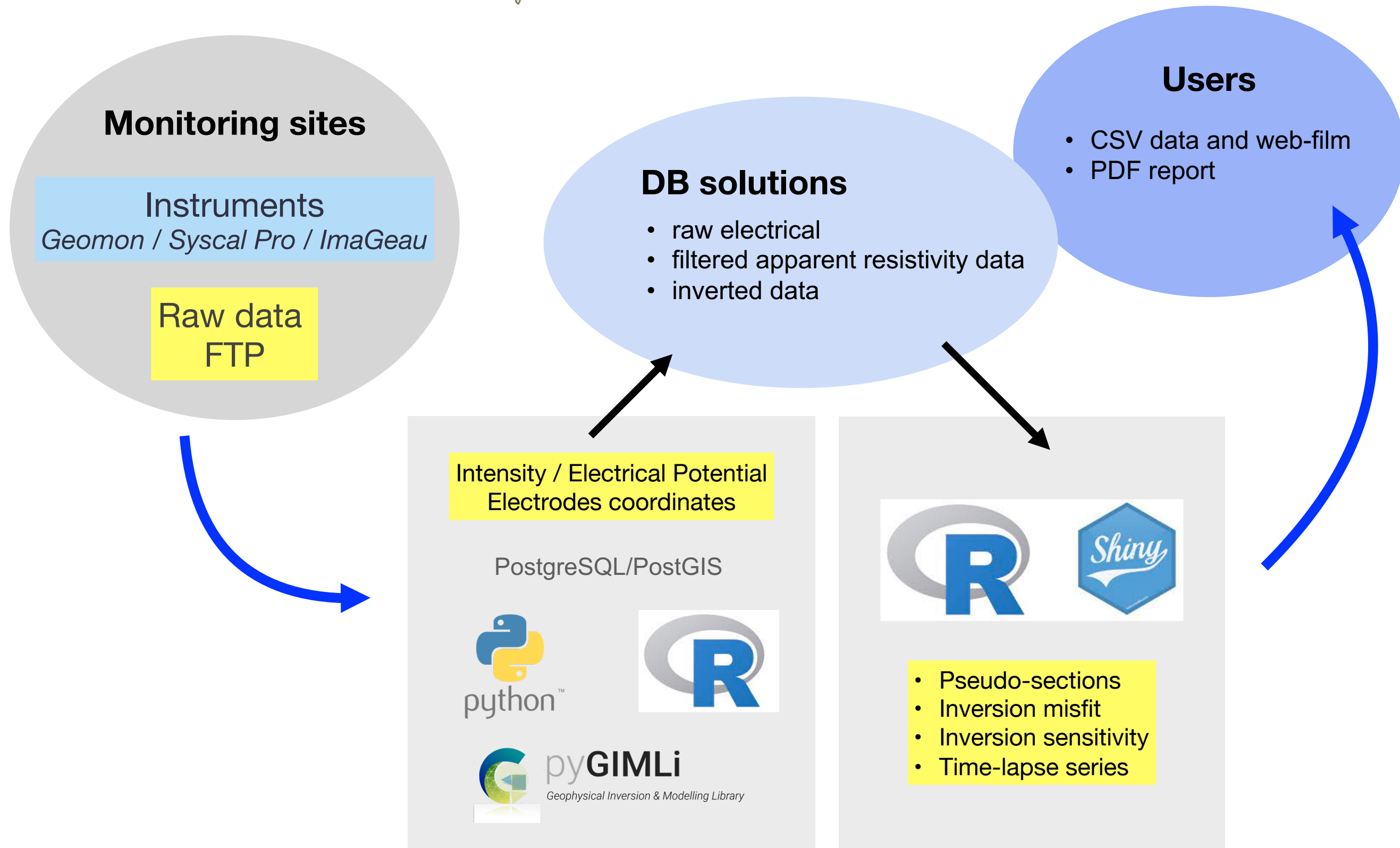
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Gance et al. (2012)

Time-lapse analysis and Joint interpretation

- Geometry of the landslide body
- Water storage
- Underground water flows





CATALOGUE DATABASES MAP TOOLS OSU OREME

Hydrogeophysical data from the National Landslide Observatory (SNO OMIV) (OMIV)

[Home](#) / [Databases](#) / Hydrogeophysical data from the National Landslide Observatory (SNO OMIV)

Time series of electrical resistivity data acquired on OMIV landslides at a daily or sub-daily frequency depending on the sites and observation periods. The data are acquired at the surface through electrical panels or at depths in boreholes. Additional data (logging data, electrical resistivity profiles acquired in temporary campaigns) are provided if available.

Labeling

SNO OMIV

Keywords

[DRILLING GEMET](#)
[GEOPHYSICS GEMET AGROVOC](#)
[LANDSLIDES AGROVOC](#)
[HYDROGEOLOGY GEMET AGROVOC](#)

[HYDROGEOPHYSICS](#)
[ELCTRICAL RESISTIVITY](#)
[SURFACE](#)

INSPIRE theme(s)

[Geology](#)
[Soil](#)
[Environmental monitoring facilities](#)

Contact

[Stéphanie Gautier](#)

[Details](#)
[Metadata](#)

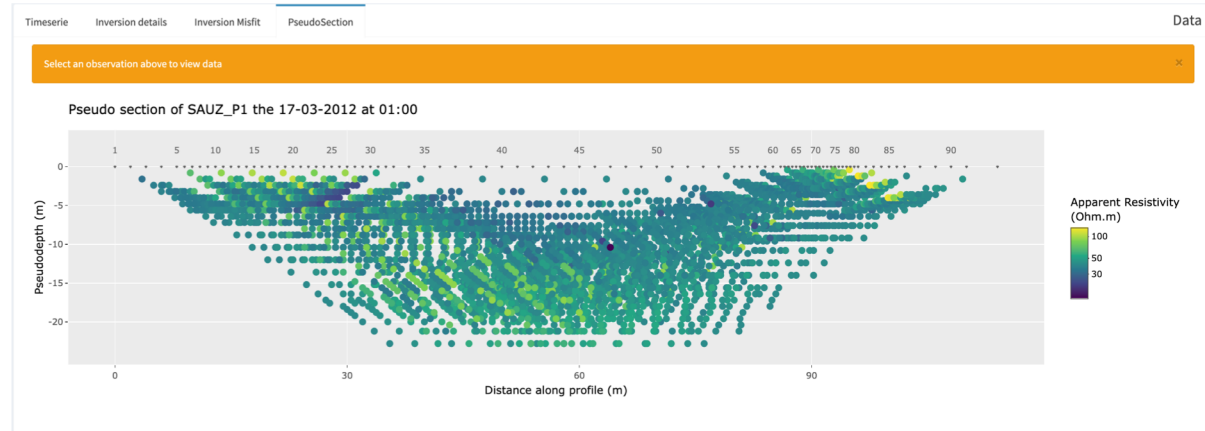
Map

[La Clapière](#)
[La Valette](#)
[Pégairolles](#)
[Super-Sauze](#)
[Vence](#)

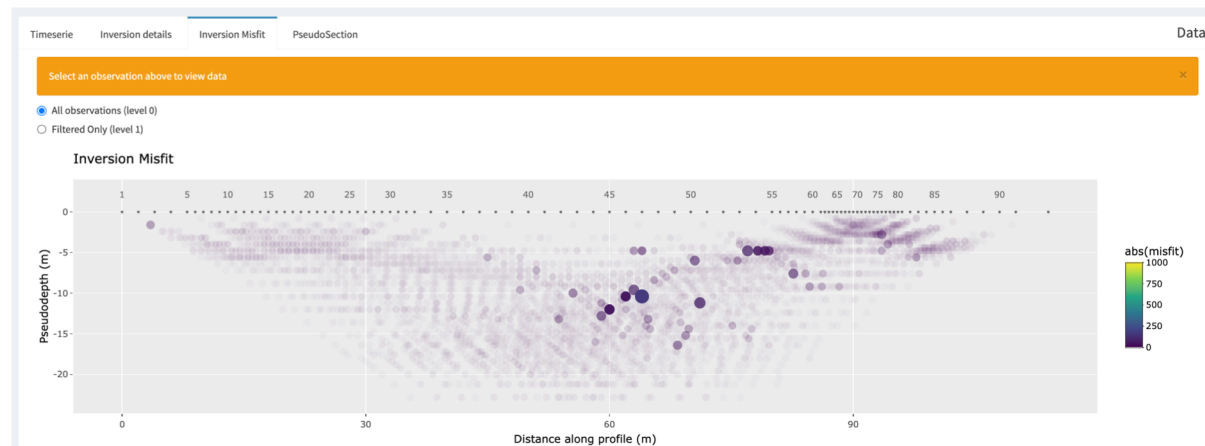


<https://data.oreme.org/observation/omiv>

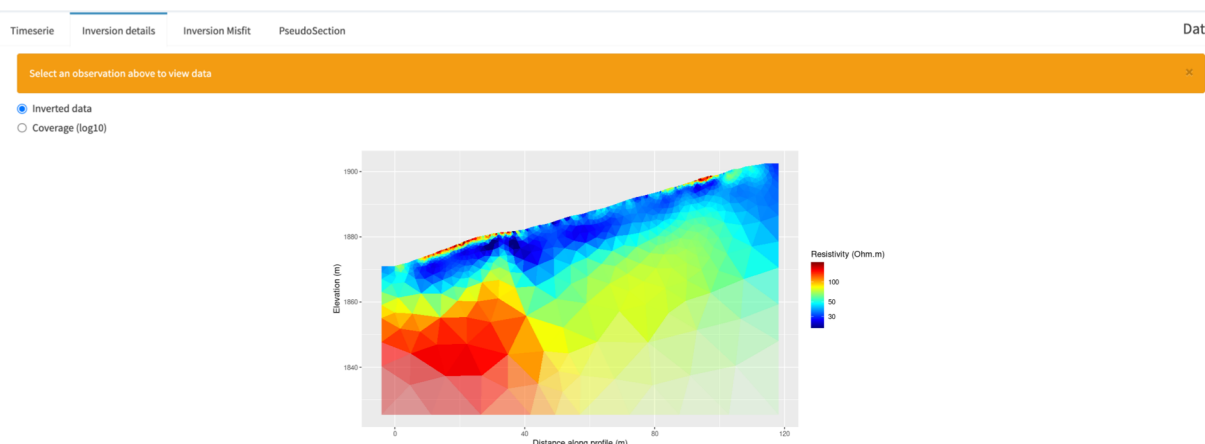
- Apparent resistivity data



- Quality and sensitivity of the inversion



- Inverted Model



OMIV-ERT database

Example of Super-Sauze (French Alps)



- Time-lapse serie

