

# Monitoring of an Alpine landslide using dense seismic observations: combining Distributed Acoustic Sensing and 1000 autonomous nodes

Tjeerd Kiers

## Supervision ETH

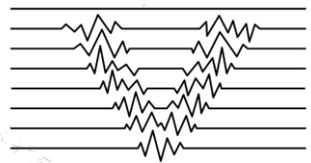
- Dr. Cédric Schmelzbach
- Dr. Pascal Edme
- Dr. Antonio Rinaldi
- Prof. Hansruedi Maurer
- Prof. Johan Robertsson

## Collaboration

- Florian Amann (*RWTH*)
- Fabian Walter (*WSL*)
- Patrick Paitz (*WSL*)
- Philippe Roux (*ISTerre*)
- A. Lecointre (*ISTerre*)
- *Stryde*
- *Geopraevent*

## Help in the field

- Janosch Beer
- Timothee Delcourt
- Aris Kwadijk
- David Sollberger
- Jonas Muller
- Marco Schmidt
- Sebastian (SPIN)
- Julius (SPIN)
- and many more....



# CUOLM DA VI LANDSLIDE



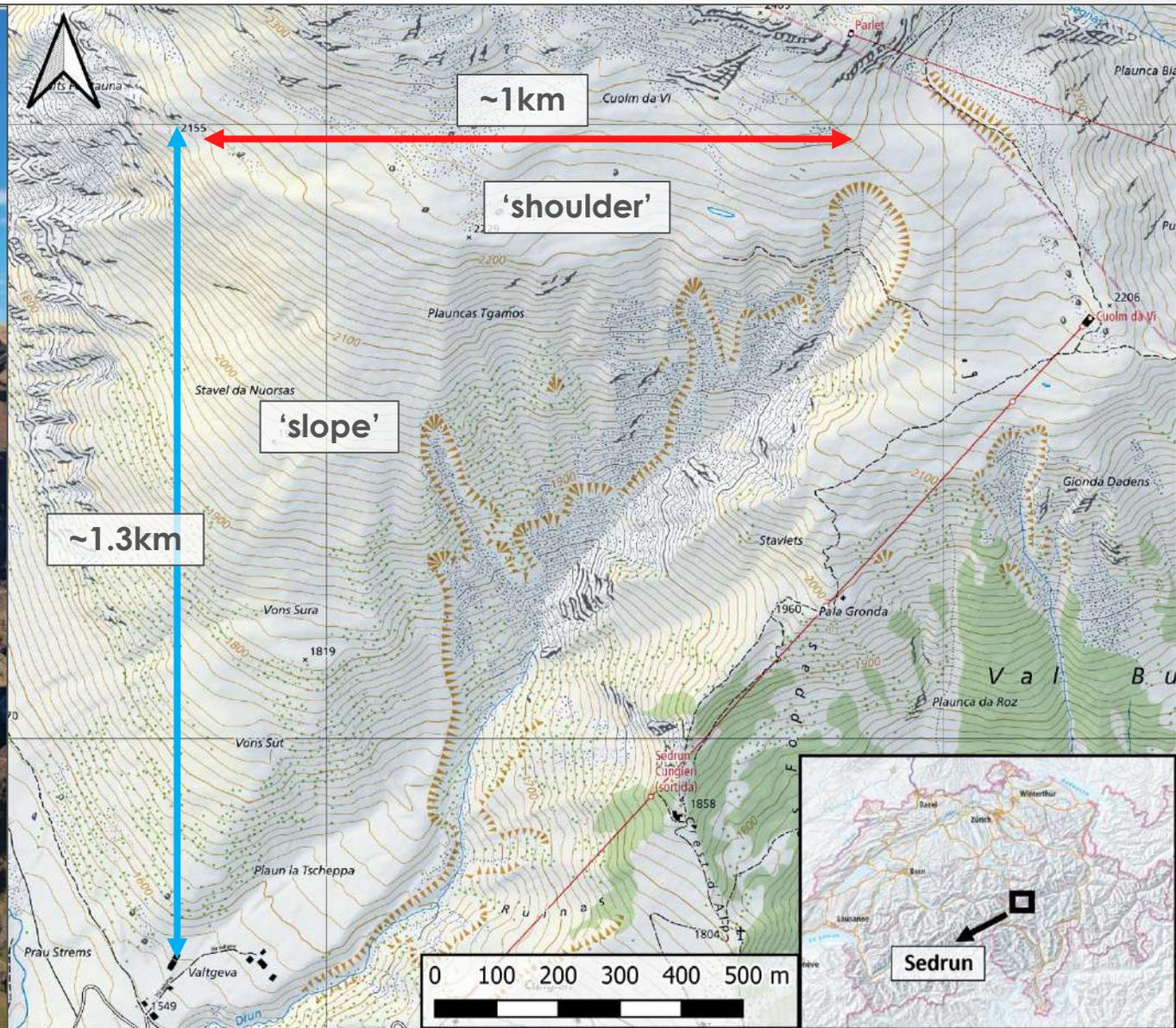
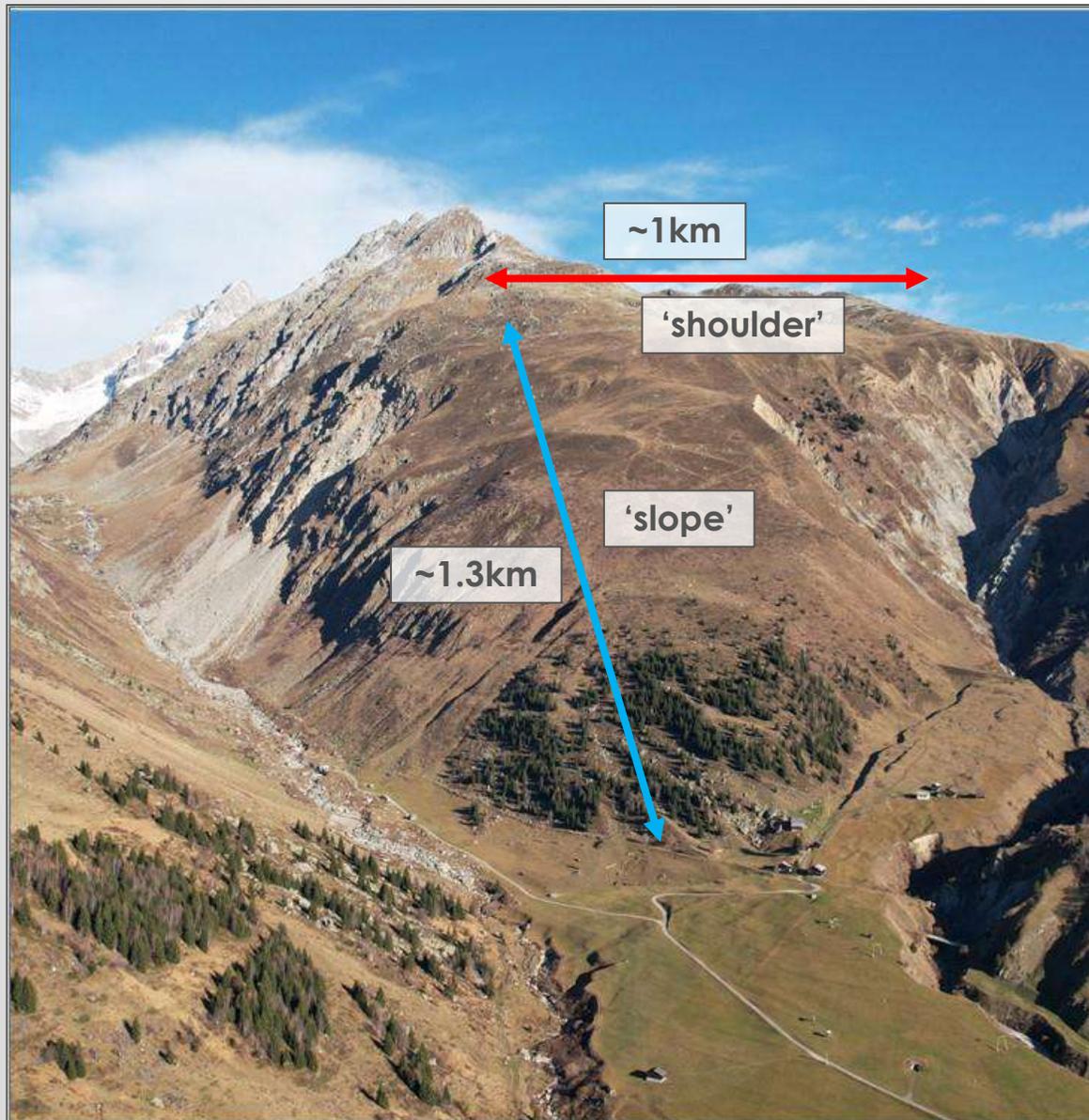
# CUOLM DA VI LANDSLIDE

## Project goals:

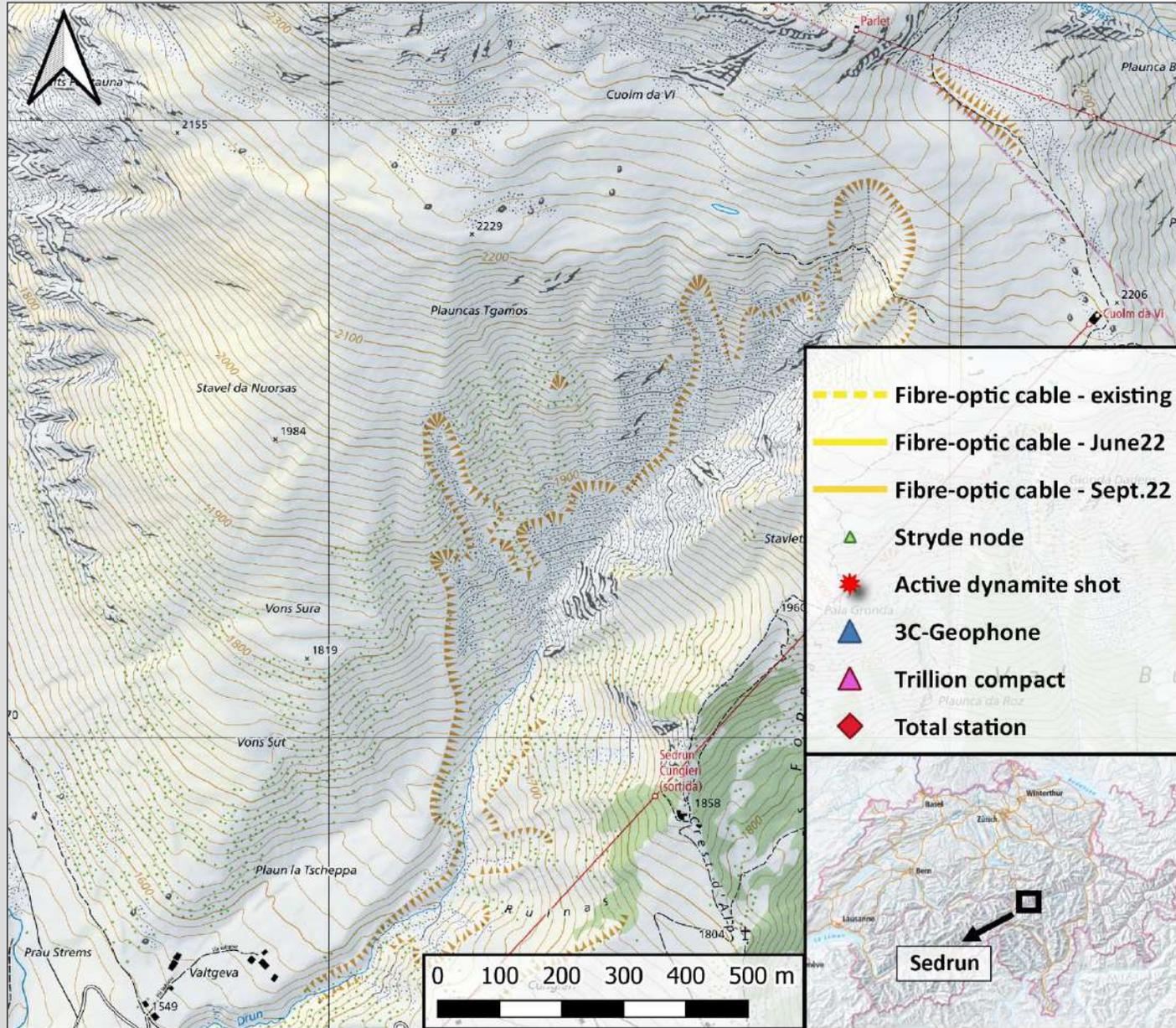
→ Develop new seismic strategies for landslide characterization & monitoring

1. Characterization of landslide body
2. Monitor landslide dynamics
3. Integrating different observables

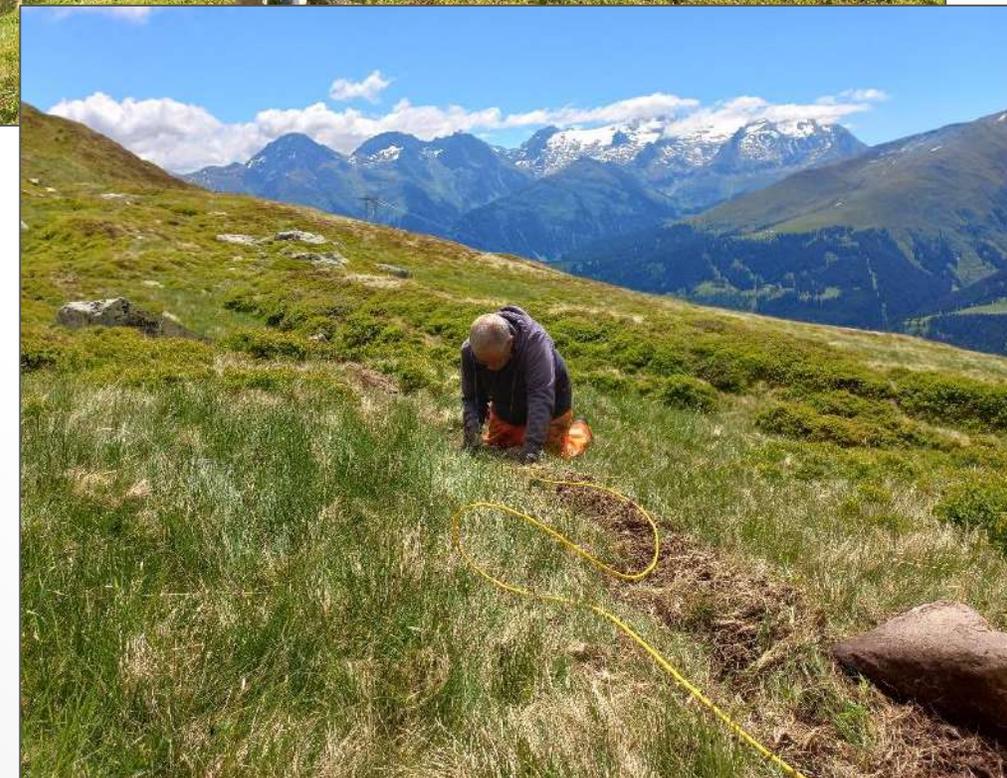
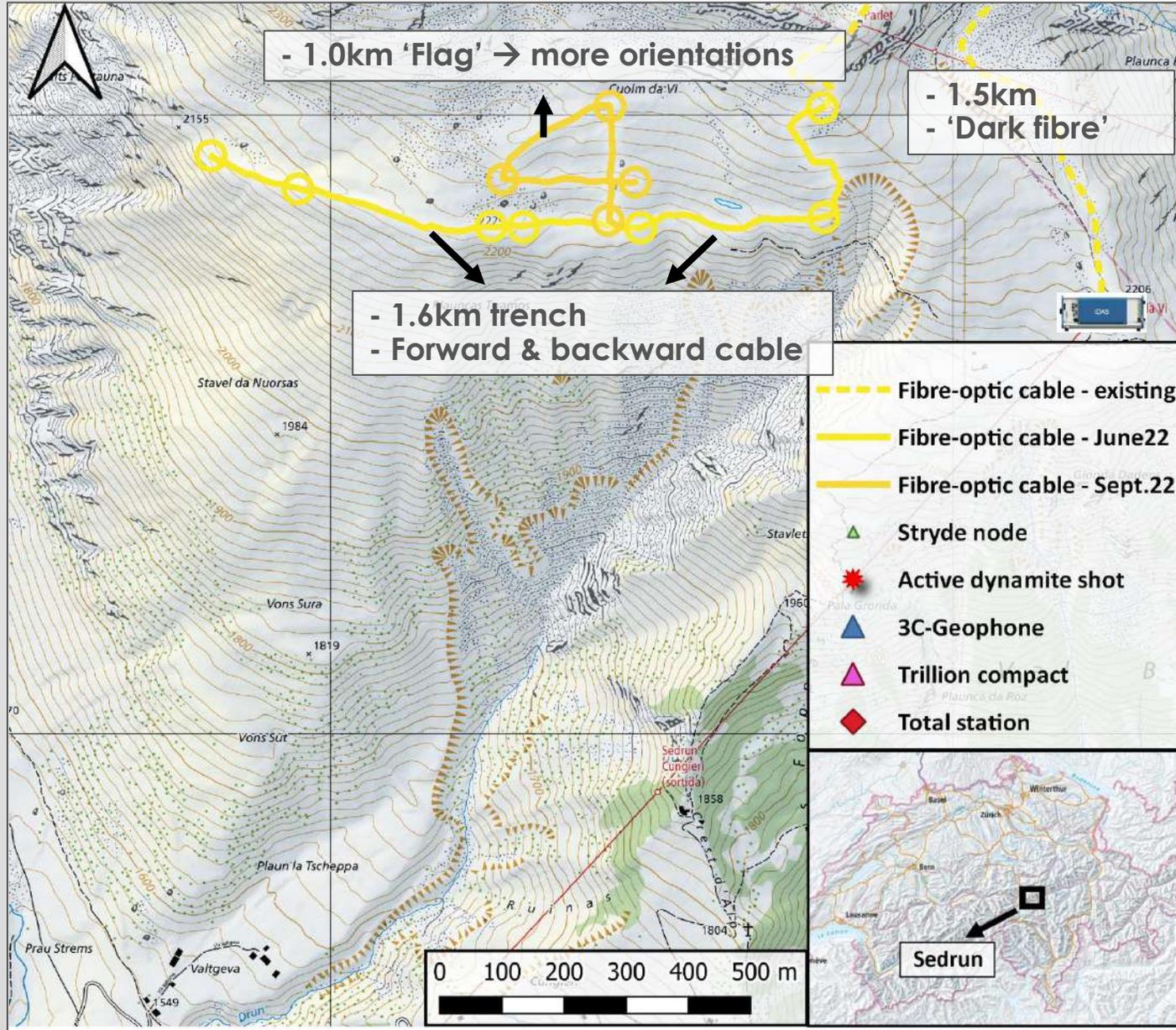
# CUOLM DA VI LANDSLIDE



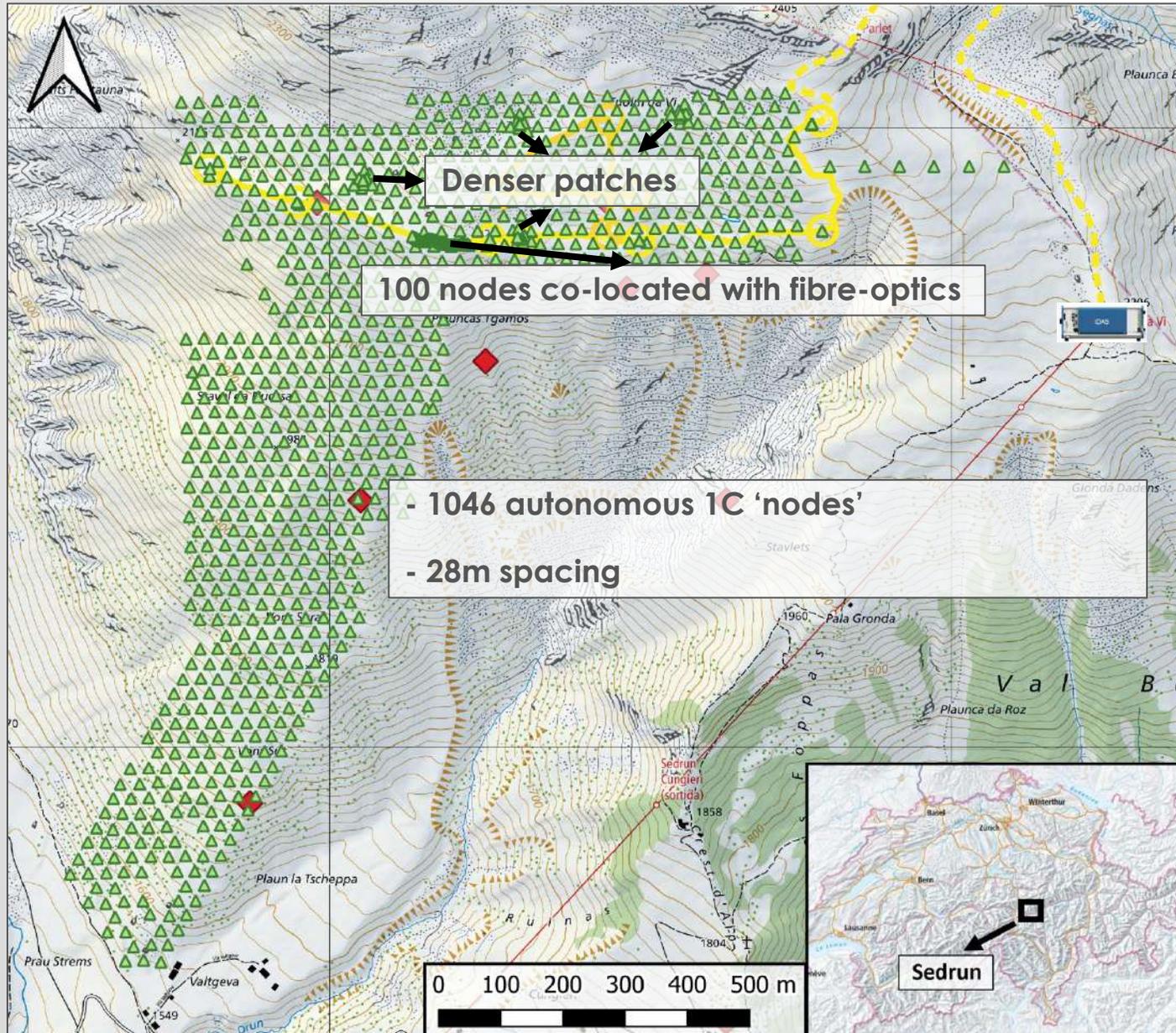
# FIELD DEPLOYMENT



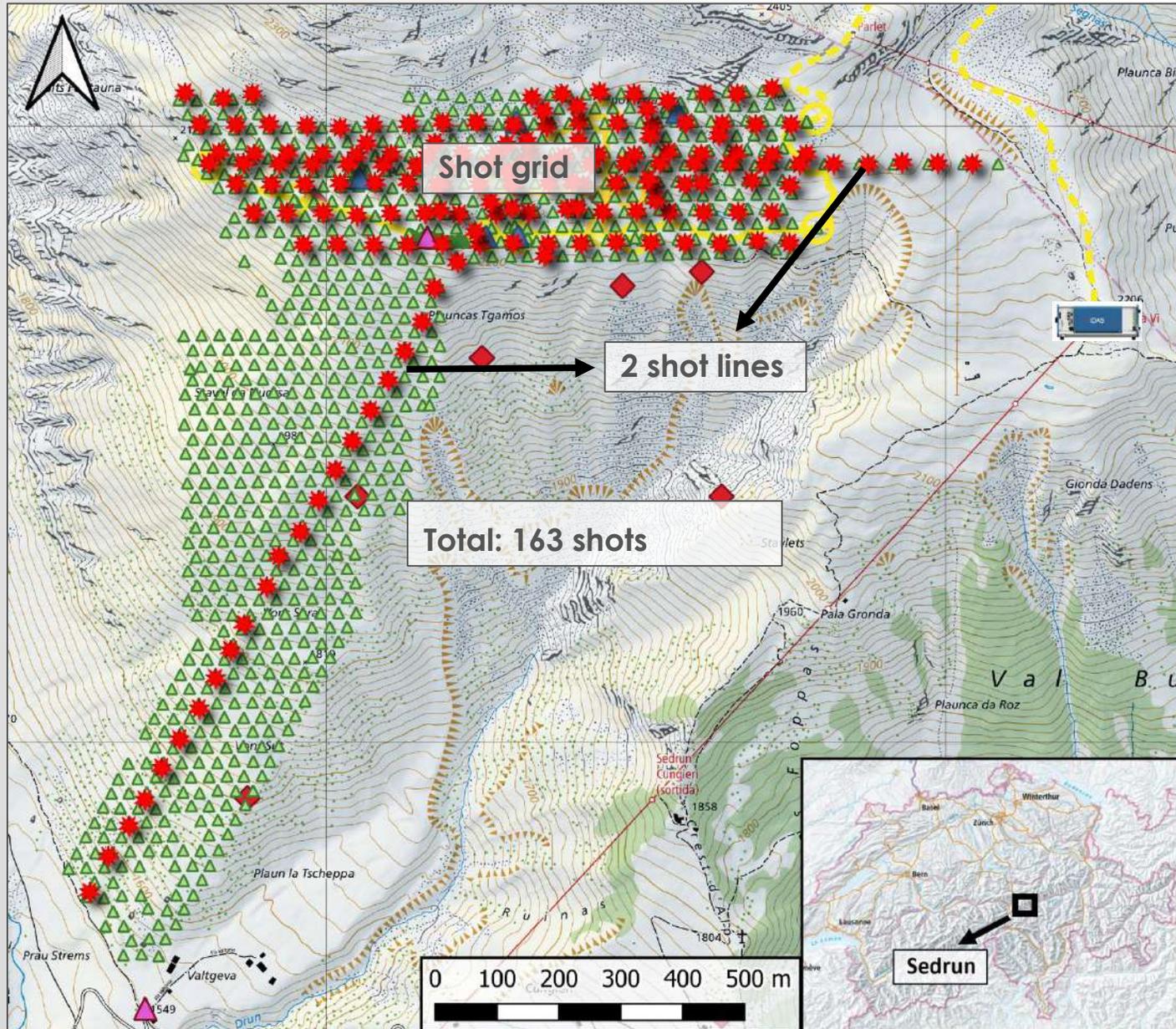
# FIBRE-OPTICS (DAS & DSS)



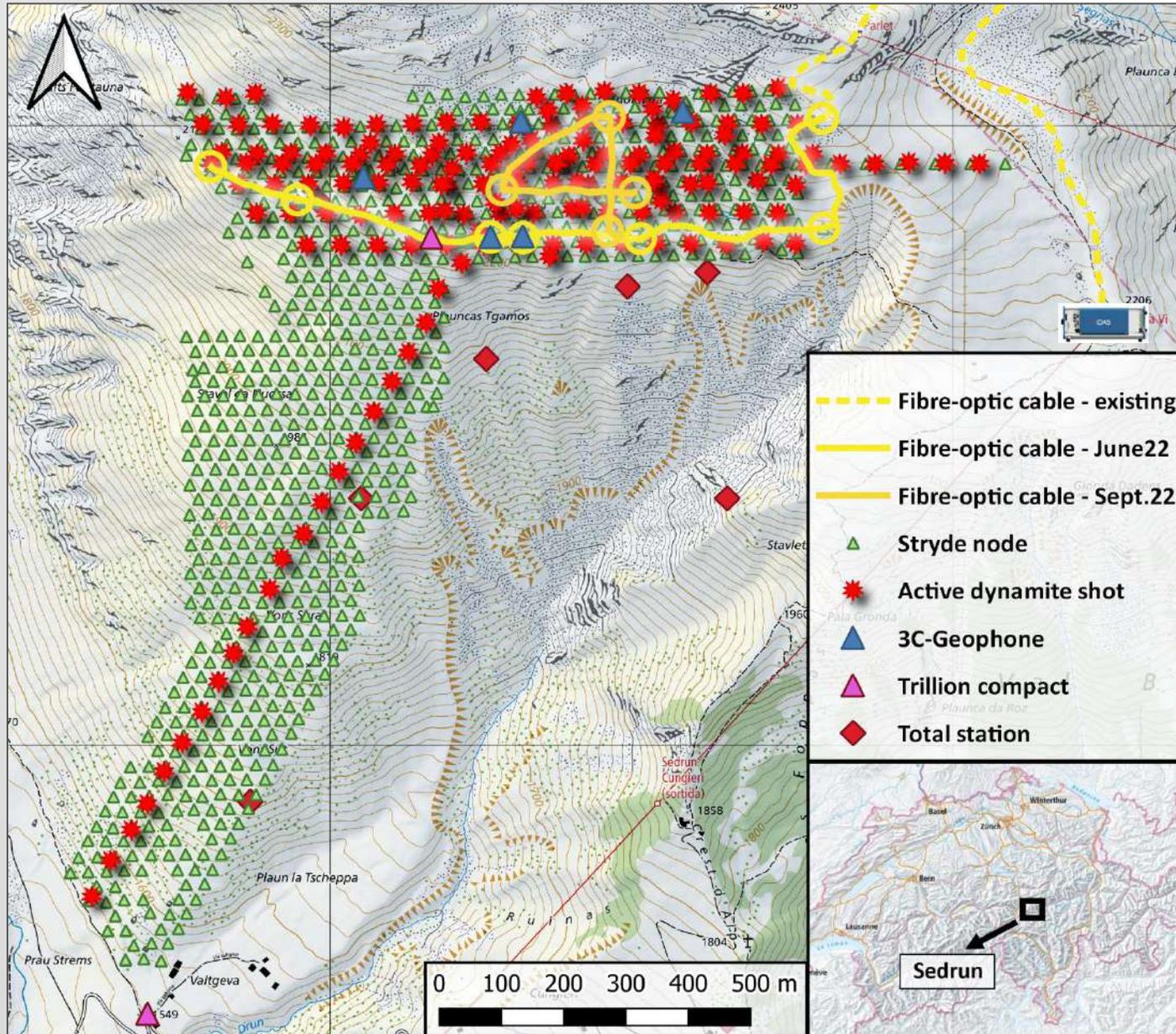
# NODAL ARRAY (STRYDES)



# ACTIVE DYNAMITE SHOTS



# RECORDED DATA



- **Nodal array (Strydes)**

- Summer 2022: **4 weeks**
- **Active** and **passive**
- **Retrieved** in August 2022

- **Fibre-optics: DAS**

- Summer 2022: **4 weeks**
- **Active** and **passive**
- Long-term installation
- Currently: **5-month** acquisition (full spring)

- **Fibre-optics: DSS**

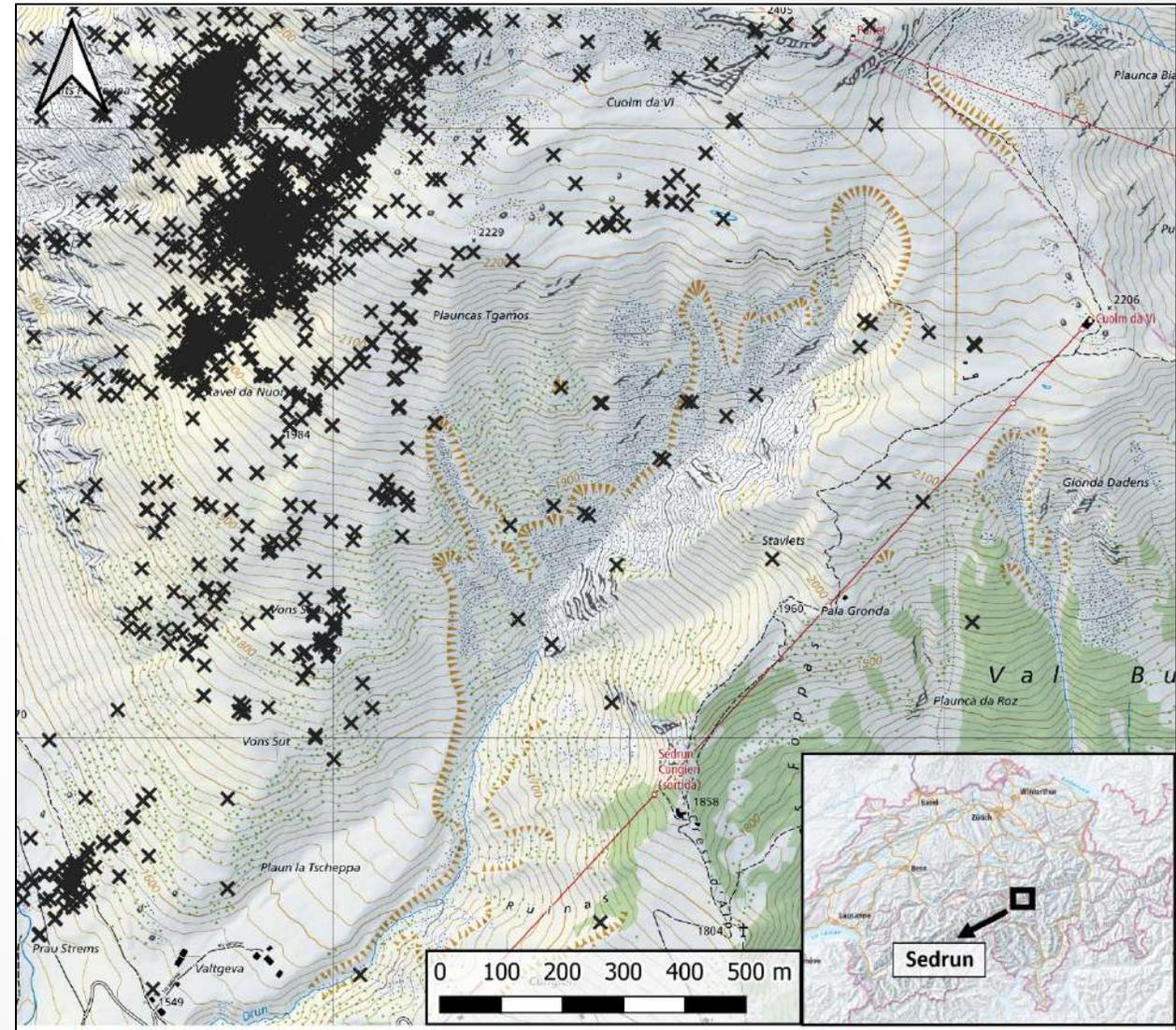
- Long-term installation
- **Full year** monitoring: **1-month** intervals

# AT THE MOMENT:

- Analysing & localizing micro-seismicity
- Matched Field Processing

Always happy to discuss! E.g.:

- Micro-seismicity localization strategies
- Opportunities / Potential of this data set
- Sharing (pieces of) data



# THANK YOU FOR YOUR ATTENTION!



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