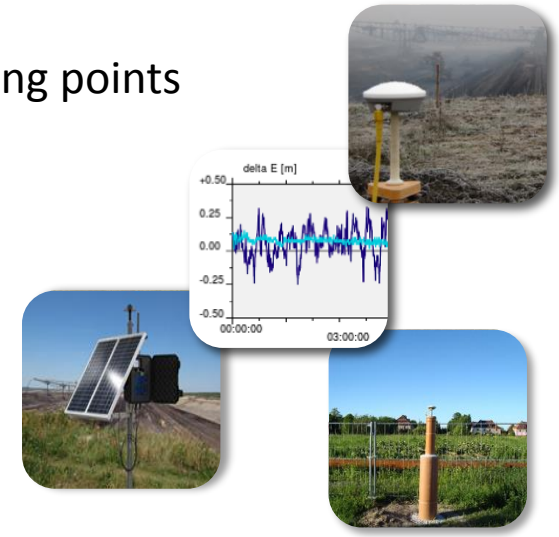
Monitoring with low-cost GNSS receivers

Alberding GmbH

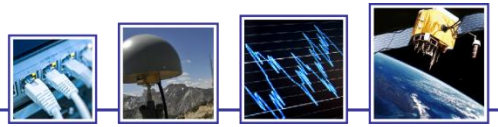
Why GNSS? – Your advantages!

- free of charge and available worldwide
- No line of sight connection is necessary to the measuring points
- Robust & low-maintenance
- Independent of weather conditions
- 24 hours / 365 days
- High 3D accuracy (cm-mm)
- High data rates



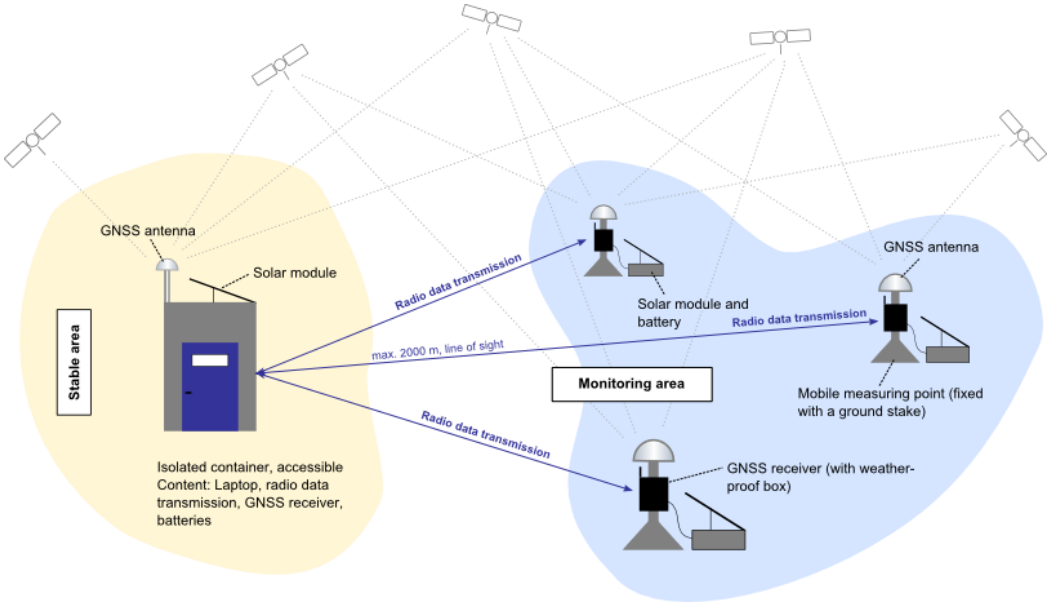
You can benefit from the combination of GNSS and other measuring systems (e.g. radar interferometry)!

Reasons why GNSS is not used more commonly



Limiting factors:

- Hardware costs per measuring point (high sensor price)
- Power supply and data transmission are needed at the sensor
- Setup costs (logistics)
- monitoring software price
- Costs for system maintenance
- …

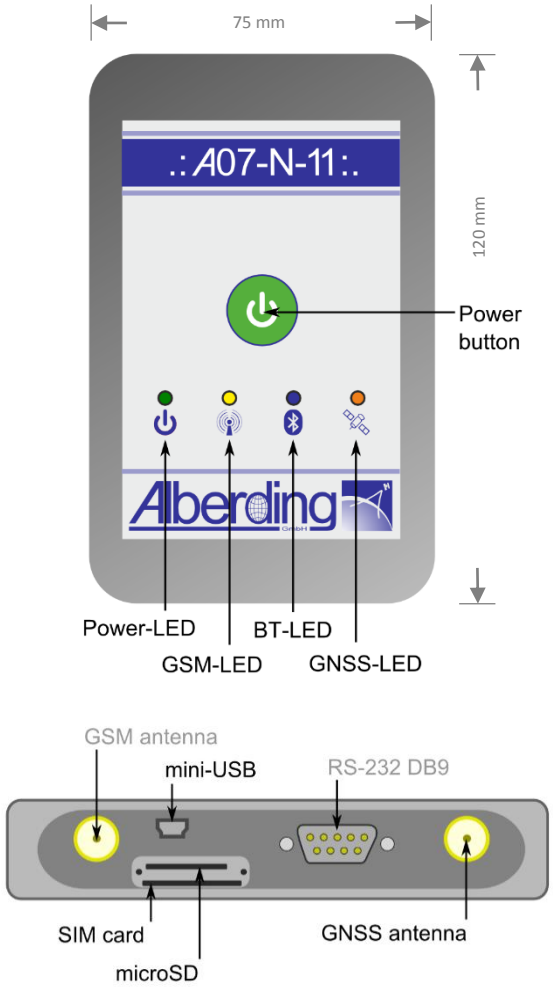


example: RTK montoring system

Alberding GmbH developed a more attractive and more efficient hardware solution for your monitoring applications - the A07 monitoring system.

Alberding A07-MON sensor: Hardware

- Integrated L1 GNSS multi-constellation receiver with raw data interface
- External GNSS antenna connector
- Integrated battery (rechargeable via mini-USB)
- Integrated GPRS modem with antenna (optional: external GSM antenna connector)
- Integrated memory (MicroSD card)
- Integrated processor (data management)
- Integrated Bluetooth module with antenna
- RS232 serial port
- Integrated IMU sensor board (optional)
- Membrane keypad with On/Off button and status LEDs
- CE certified



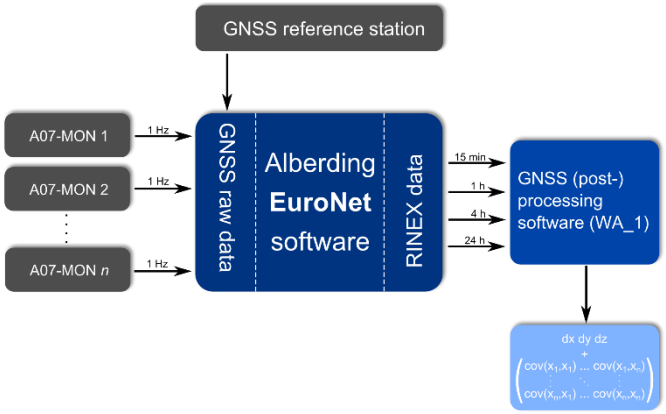
Alberding A07-MON sensor: Firmware

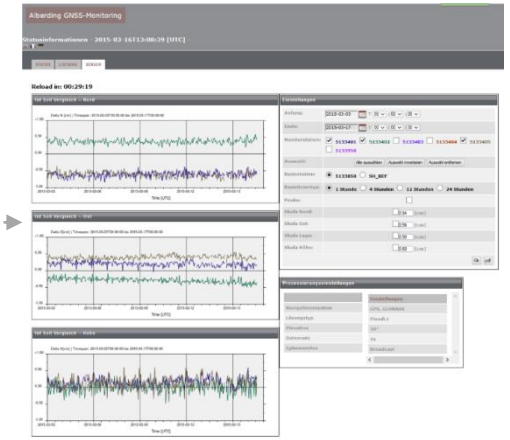
- Streaming of GNSS raw data (Ntrip)
- File storage and file transfer
- Setting operating times to plan measurements
- Acquisition of sensor data via serial port (RS232)
- Power and data management
- Configuration via SMS
- Configuration tool
- Intelligent algorithm supporting domestic data roaming

Alberding GNSS monitoring software

- GNSS data management
- Automatic processing at user-definable intervals
- Statistics: variance comparisons

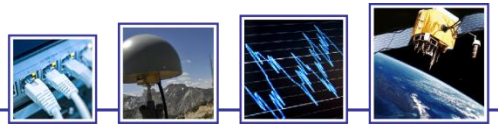
- Comfortable access via the **web interface**
- Visualisation of time series
- Alerting



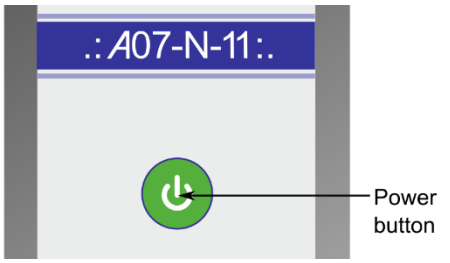


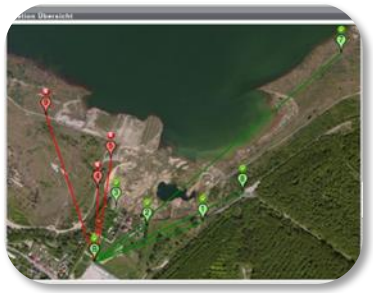
The Alberding GNSS monitoring software is offered as a processing service by Alberding GmbH.

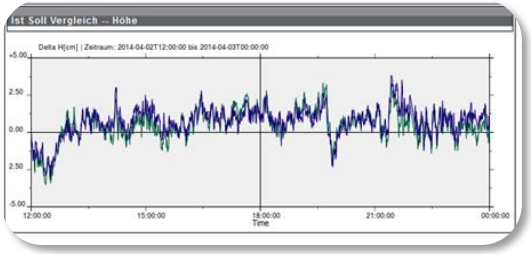
Advantages of the A07 monitoring system



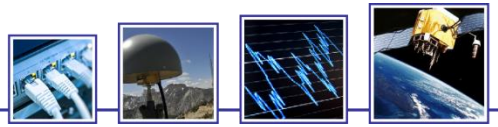
- Easy installation
- Pre-configured sensors
- Single-button operation
- Automatic data transmission (mobile Internet)
- Automatic data analysis
- Access to the monitoring software via web interface
- Weatherproof box with cable connectors, 2 batteries and charge controller
- Autonomous operation mode (e.g. using solar panels)





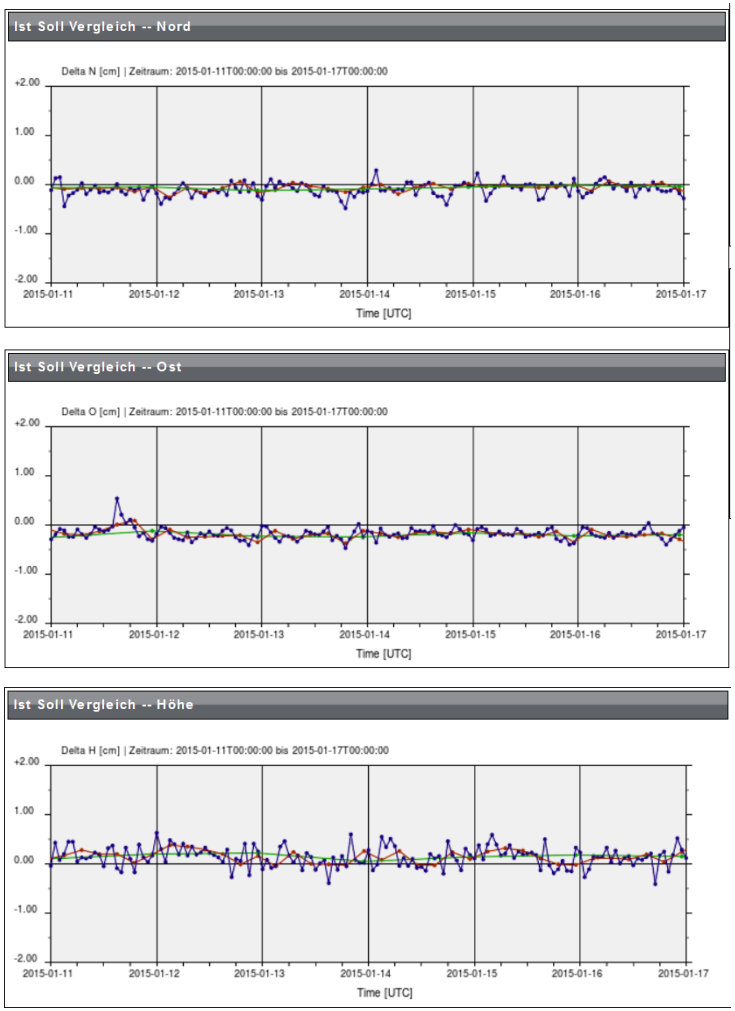


Application fields



- Landslide monitoring
- Surface subsidence monitoring of underground operations
- Open-cast mine highwall stability monitoring
- Long-term deformation monitoring of abandoned mines
- Deformation monitoring of:
  - Dams
  - Bridges
  - Tunnels
  - Embankments
  - Storage caverns
- Glacier flow monitoring
- ...

Processing example – short baseline



Period 10.01.2015 – 17.01.2015
Baseline: approx. 200 m
Y scale: ± 2 cm

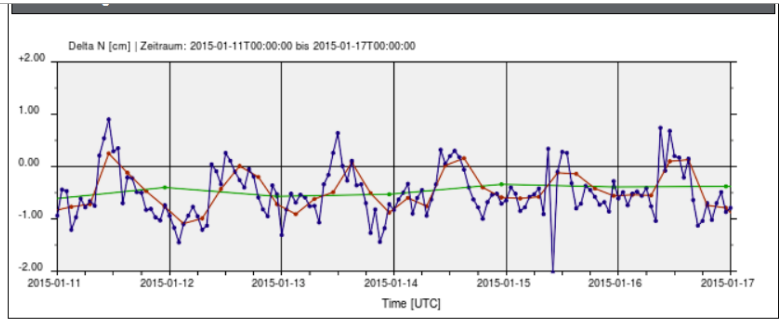
Reference station: Trimble BX982
Rover: Alberding A07

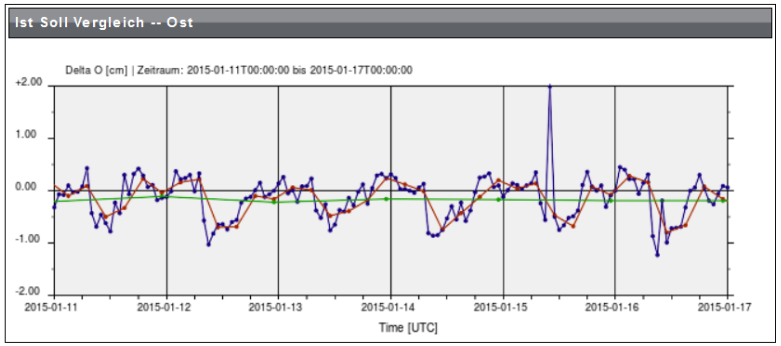
Processing intervals:

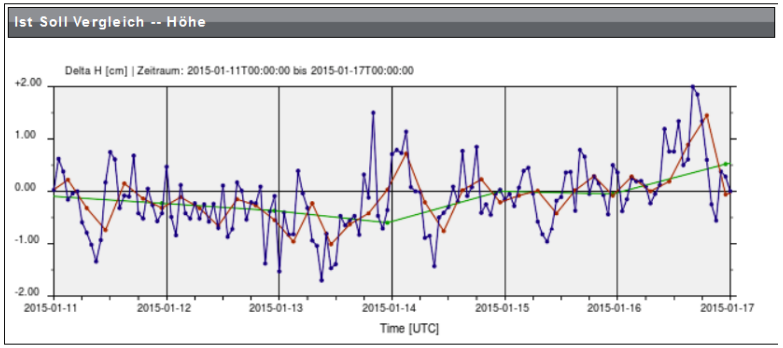
- Blue: 1 hour
- Red: 4 hours
- Green: 24 hours

For short baselines (here: 200 m) a positioning accuracy of 5 mm or higher can be achieved with one-hour-processing intervals.

Processing example – longer baseline







Period 10.01.2015 – 17.01.2015
Baseline: approx. 6500 m
Y scale: ± 2 cm

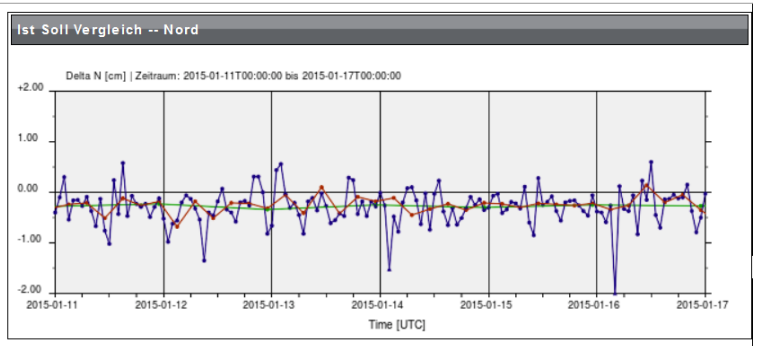
Reference station: Trimble BX982
Rover: Alberding A07

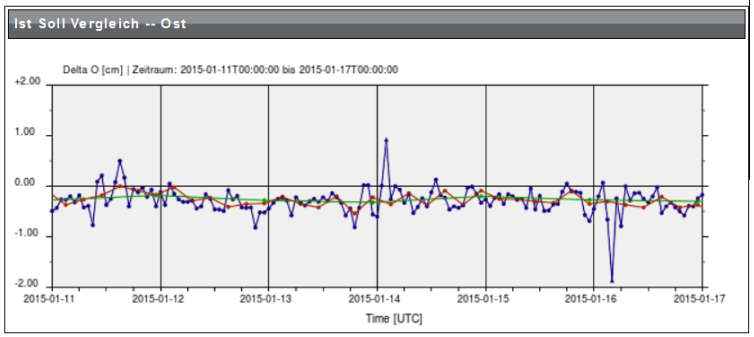
Processing intervals:

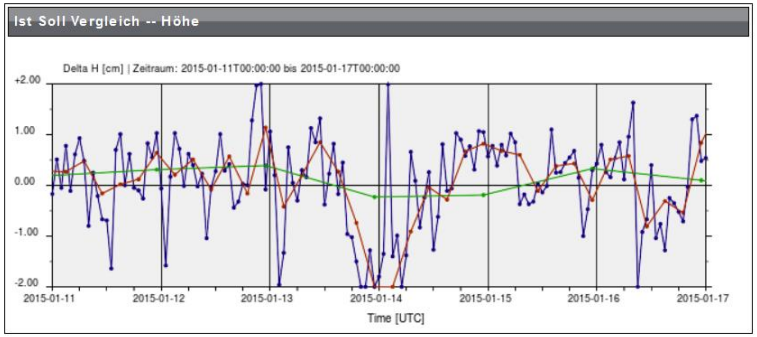
- Blue: 1 hour
- Red: 4 hours
- Green: 24 hours

For longer baselines (here: 6500 m) the positioning accuracy decreases for short processing intervals. However, the 24-hours-solution still provides accuracies of approx. 5 mm.

Processing example – SAPOS VRS







Period 10.01.2015 – 17.01.2015
SAPOS VRS 5 km
Y scale: ± 2 cm

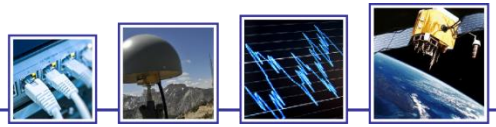
Reference station: SAPOS VRS
Rover: Alberding A07

Processing intervals:

- Blue: 1 hour
- Red: 4 hours
- Green: 24 hours

There is no need to set up your own reference station when using a reference service, e.g. SAPOS. The 24-hours-solution is still in the range of approx. 5 mm.

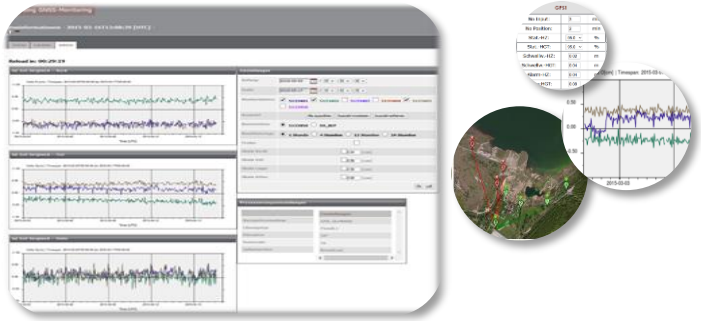
Alberding A07 monitoring system



The low-cost solution for your monitoring tasks:

Alberding A07-MON sensor

+



Alberding GNSS monitoring service

Interested?


Do not hesitate to contact us!
Alberding GmbH
Ludwig-Witthöft-Straße 14
15745 Wildau
Germany
Tel.: +49 3375 52 50 370
Fax: +49 3375 52 50 377
E-Mail: info@alberding.eu
Web: www.alberding.eu