

# ***RIEGL 3D Terrestrial Laser Scanner On-Board Monitoring Solution***

## ***Case Study Landslide Monitoring***



Thomas Gaisecker  
Manager Business Division Mining  
[tgaisecker@riegl.com](mailto:tgaisecker@riegl.com)

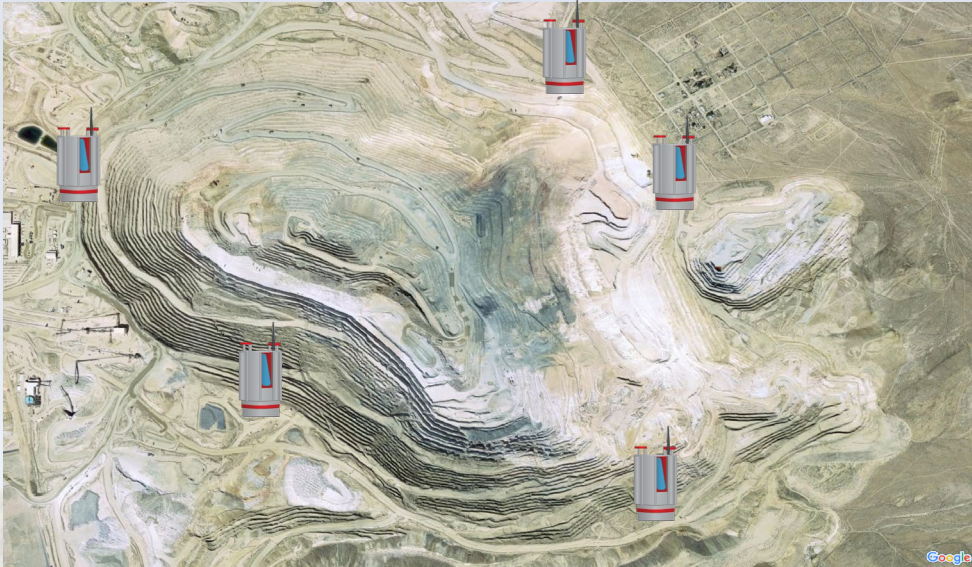


## Content

- *RIEGL VZ-i Series Laser Scanner for Long Range Data Acquisition*
- Mining Apps for Automatic Data Acquisition and Processing
- Case Study Landslide Monitoring
  - Hardware Configuration and Running Monitoring App
  - Scheduling Prism Monitoring
- Prism Monitoring – Comparison with Data from Totalstation



## RIEGL TLS for Monitoring



RIEGL VZ-2000i



RIEGL VZ-4000



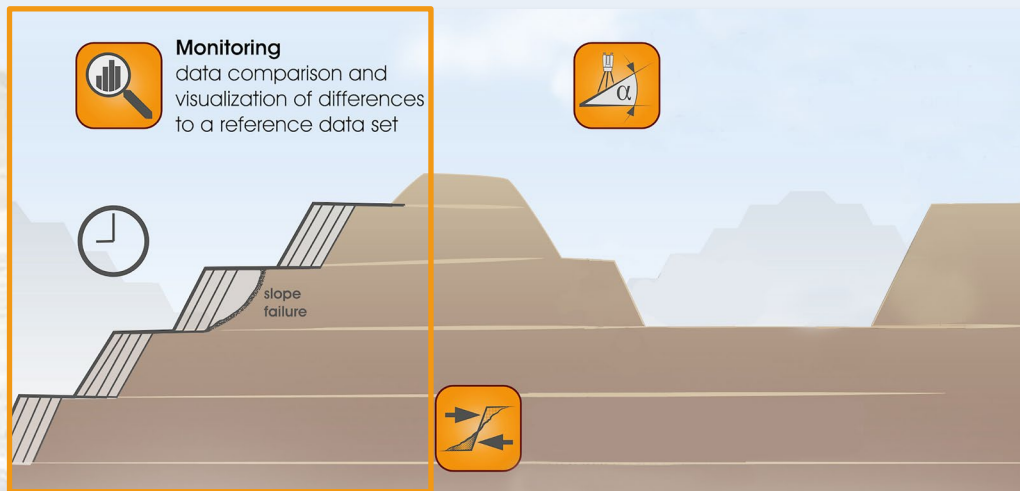
different static setups for sporadic, periodic, or permanent data acquisition

## Monitoring App for RIEGL VZ-i Series

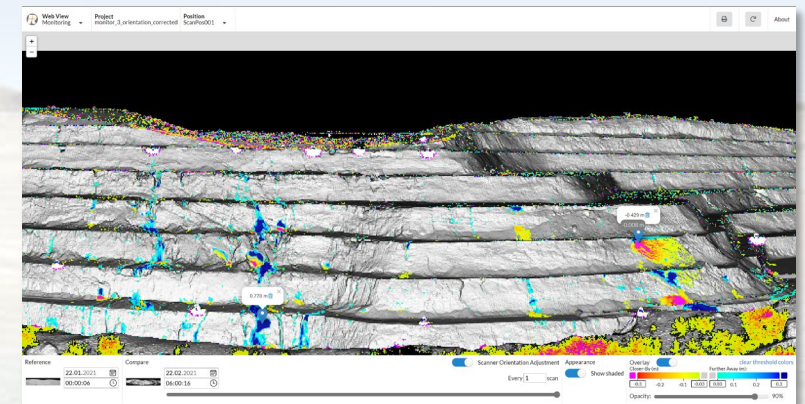
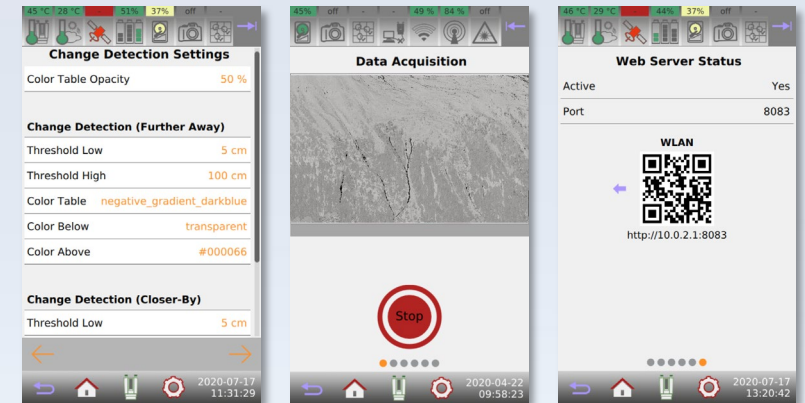
Part-No. SW-GP-02-102-00

Data comparison and visualization of differences to a reference data set

- Enables automatic change detection
- Threshold values for change detection can be flexible defined
- Visualization of the results via web viewer



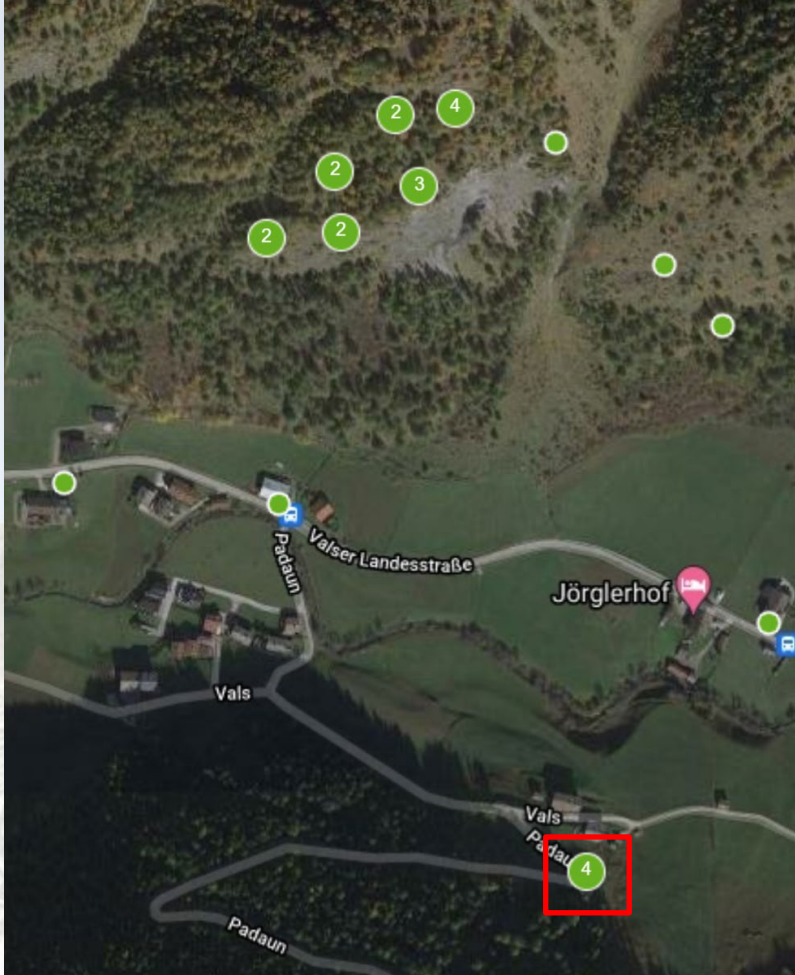
<https://www.youtube.com/watch?v=3Zkiz8tJzBg>





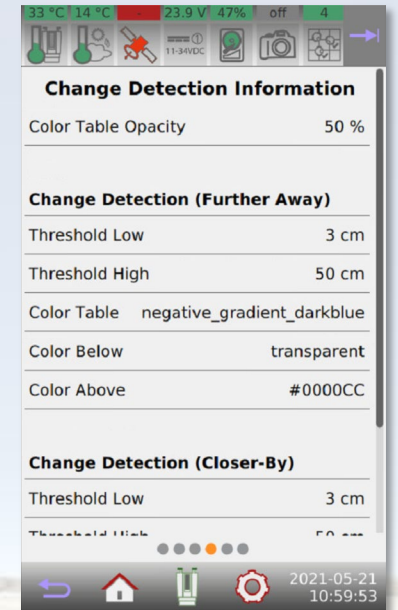
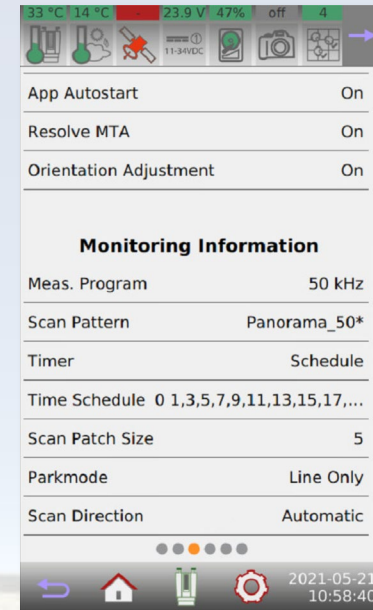
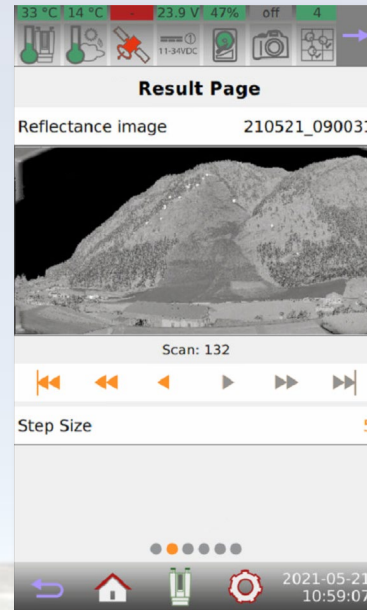
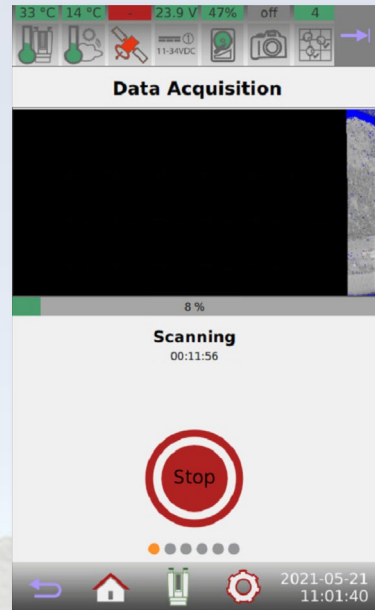
## Case Study – Landslide Monitoring

### Field Situation Vals, Tyrol



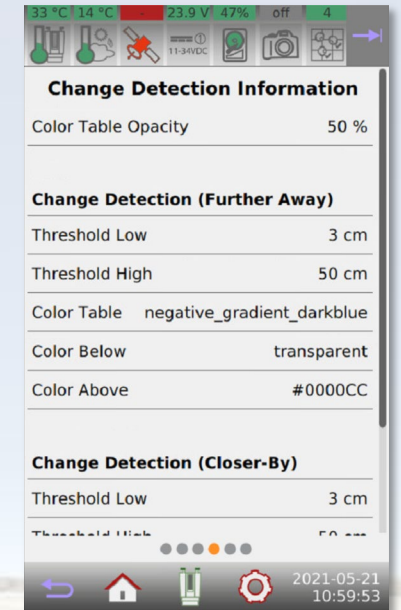
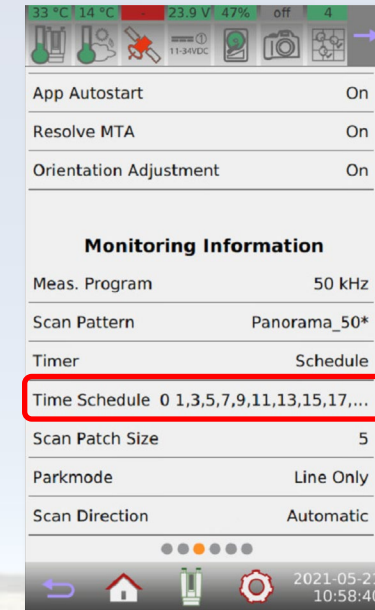
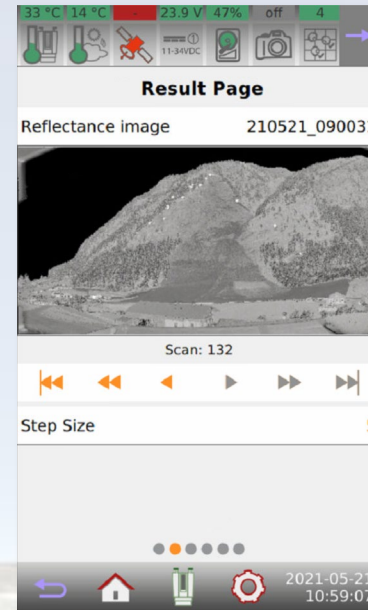
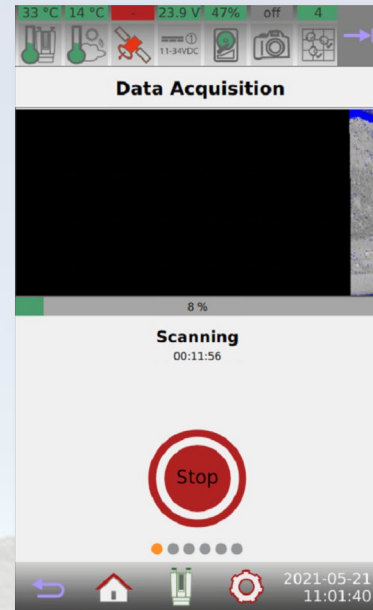


## Configuration – Monitoring App





## Configuration – Monitoring App

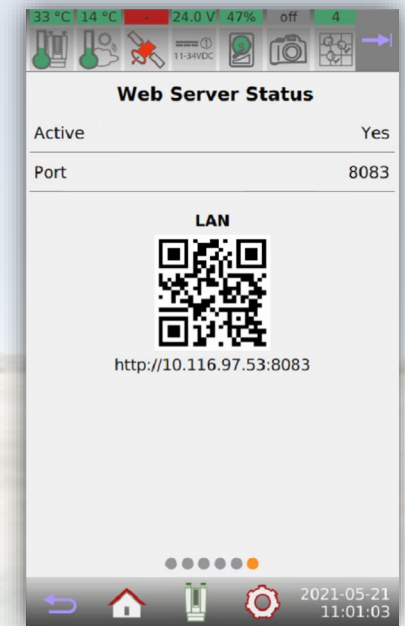
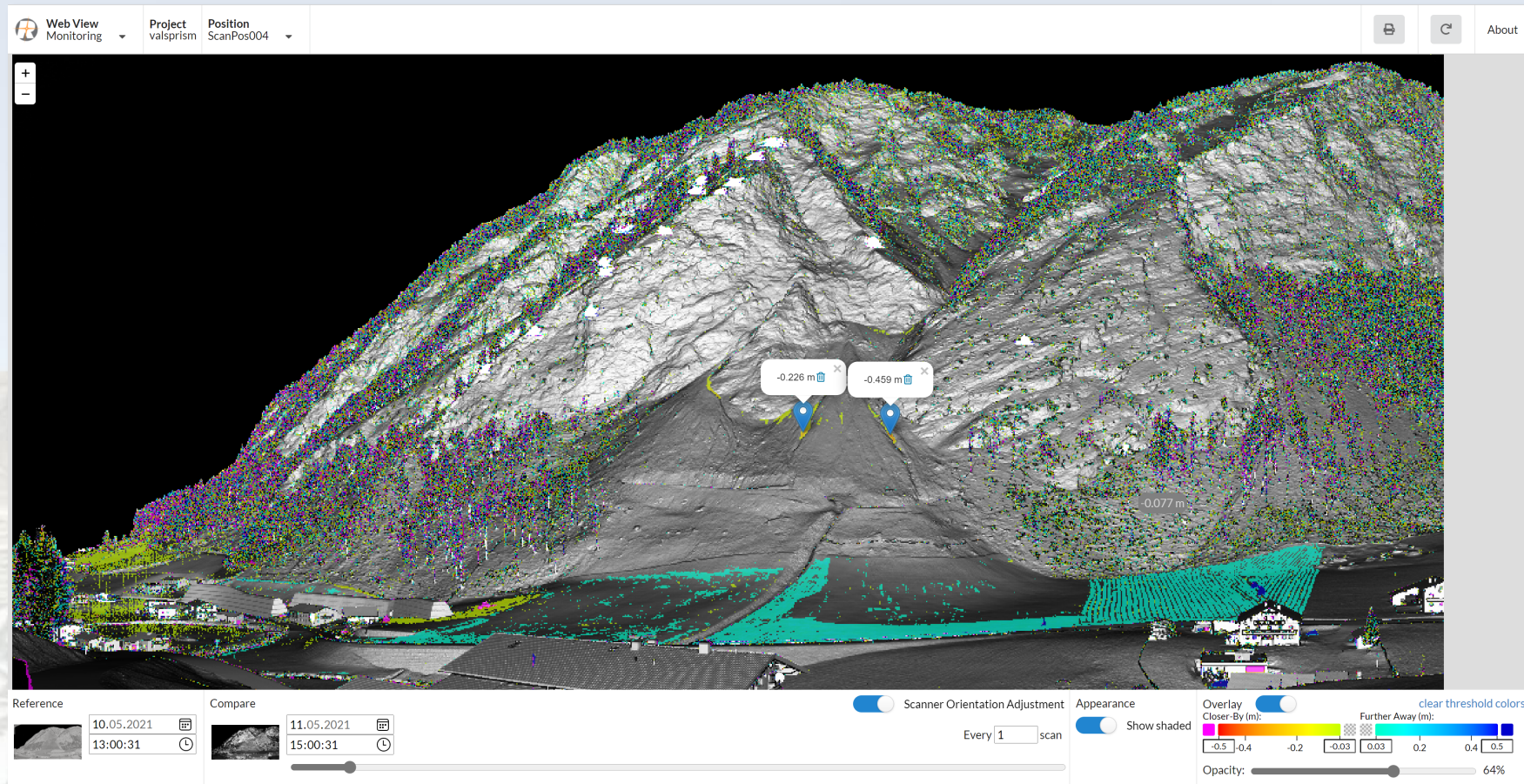


<https://en.wikipedia.org/wiki/Cron>

```
# minute (0 - 59)
# hour (0 - 23)
# day of the month (1 - 31)
# month (1 - 12)
# day of the week (0 - 6) (Sunday to Saturday;
#                          7 is also Sunday on some systems)
#
# * * * * * <command to execute>
```

## Visualization of results

### RIEGL Monitoring App Web-Viewer





## Visualization of results

### RIEGL Monitoring App Web-Viewer - Scanner Orientation adjustment: OFF



Web View Monitoring | Project monitoring\_landslide | Position ScanPos001

Reference: 28.07.2021 12:00:11 | Compare: 31.07.2021 03:00:11

Scanner Orientation Adjustment: ☐ **switched OFF**

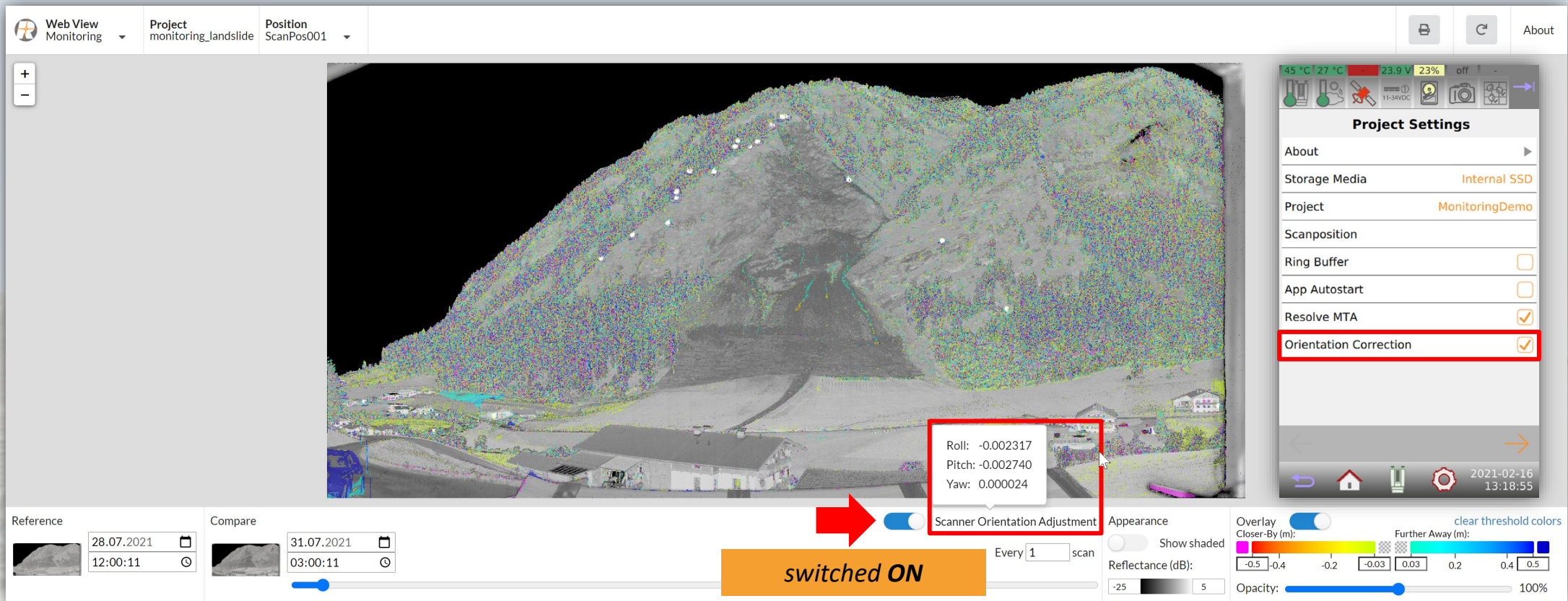
Appearance: Show shaded ☐ Reflectance (dB): -25 to 5

Overlay: Closer-By (m): -0.5 to 0.5 | Further Away (m): 0.03 to 0.5

Opacity: 100%

## Visualization of results

### RIEGL Monitoring App Web-Viewer - Scanner Orientation adjustment: ON



**Web View Monitoring** **Project monitoring\_landslide** **Position ScanPos001**

**Project Settings**

- About
- Storage Media: Internal SSD
- Project: MonitoringDemo
- Scanposition
- Ring Buffer: ☐
- App Autostart: ☐
- Resolve MTA: ☒
- Orientation Correction: ☒**

Roll: -0.002317  
Pitch: -0.002740  
Yaw: 0.000024

**Scanner Orientation Adjustment** ☒ **switched ON**

Reference: 28.07.2021 12:00:11  
Compare: 31.07.2021 03:00:11

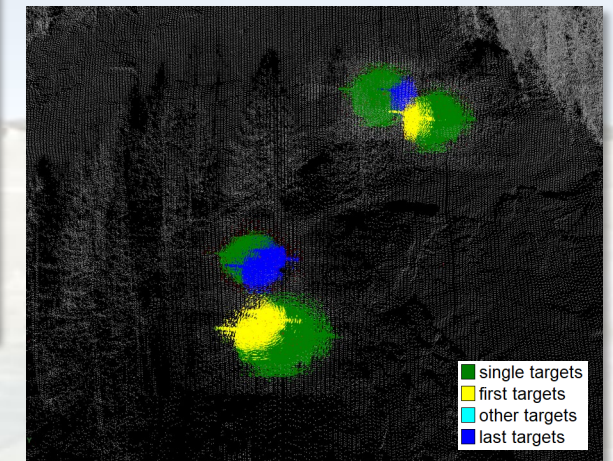
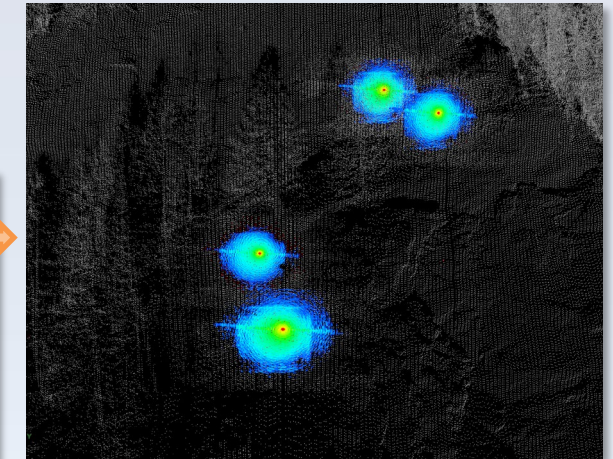
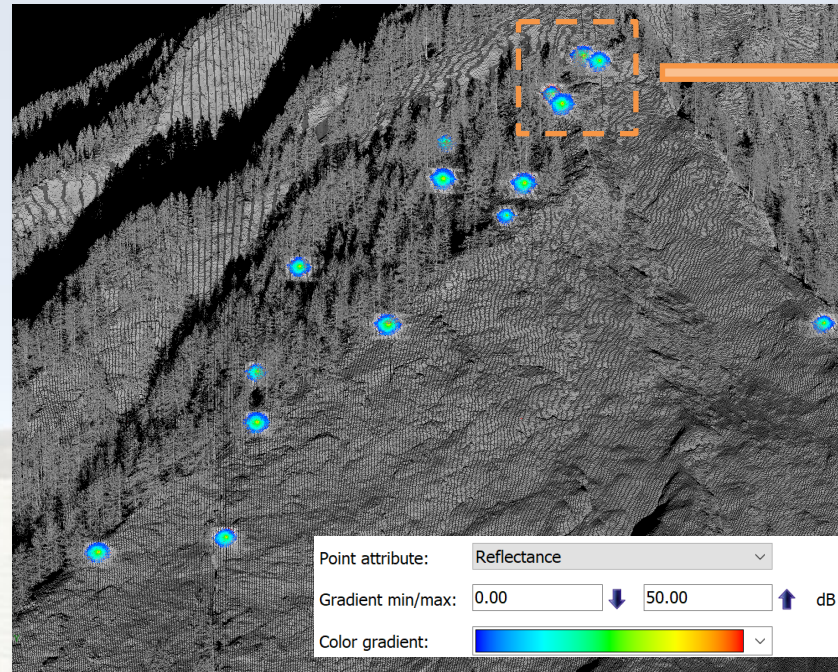
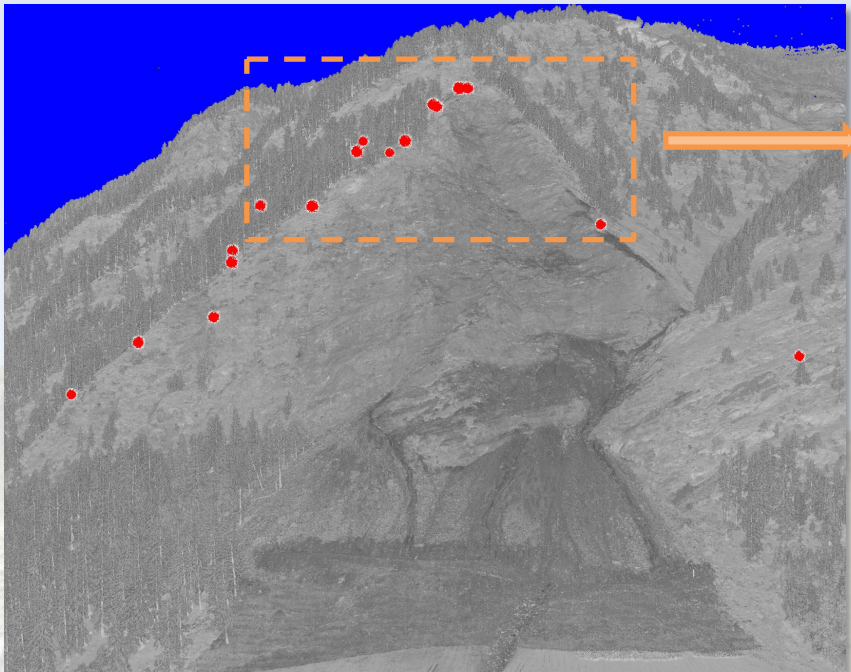
Every 1 scan

Appearance: ☐ Show shaded  
Reflectance (dB): -25 to 5

Overlay: ☒  
Closer-By (m): -0.5 to 0.5  
Further Away (m): 0.03 to 0.5  
Opacity: 100%

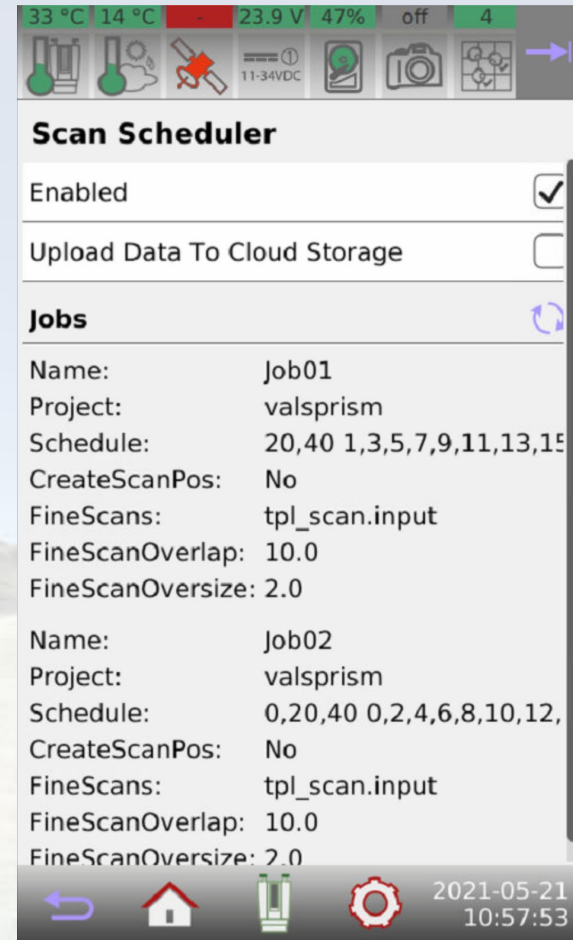
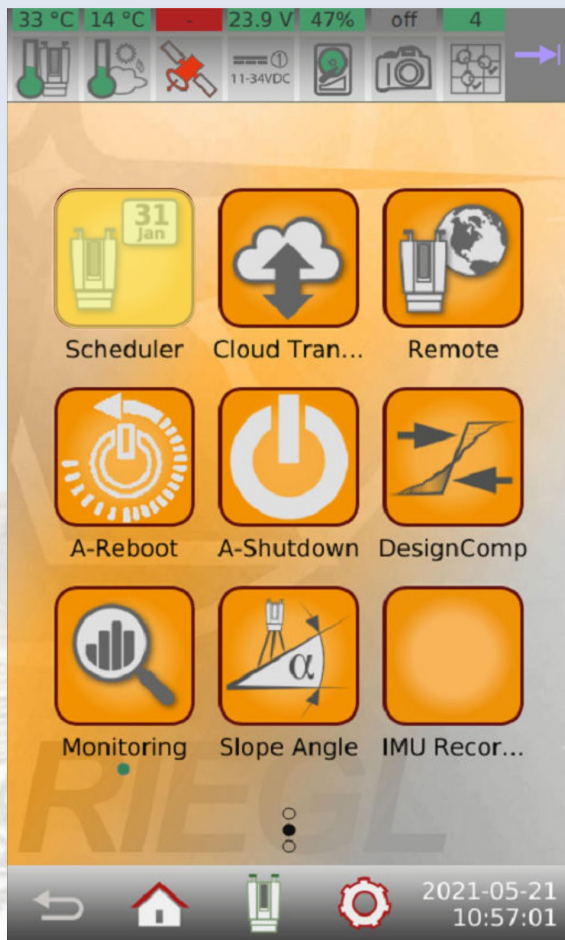


## Utilizing Prisms for Permanent Monitoring



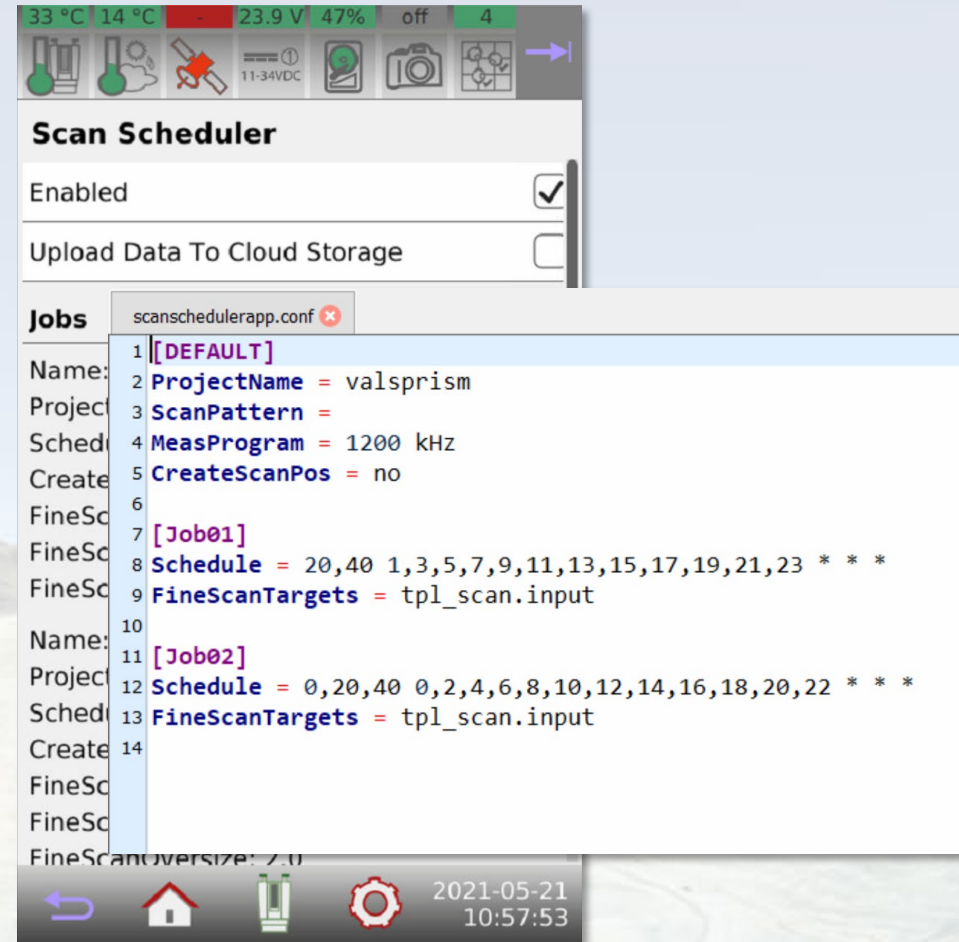


## Configuration – Scheduler App

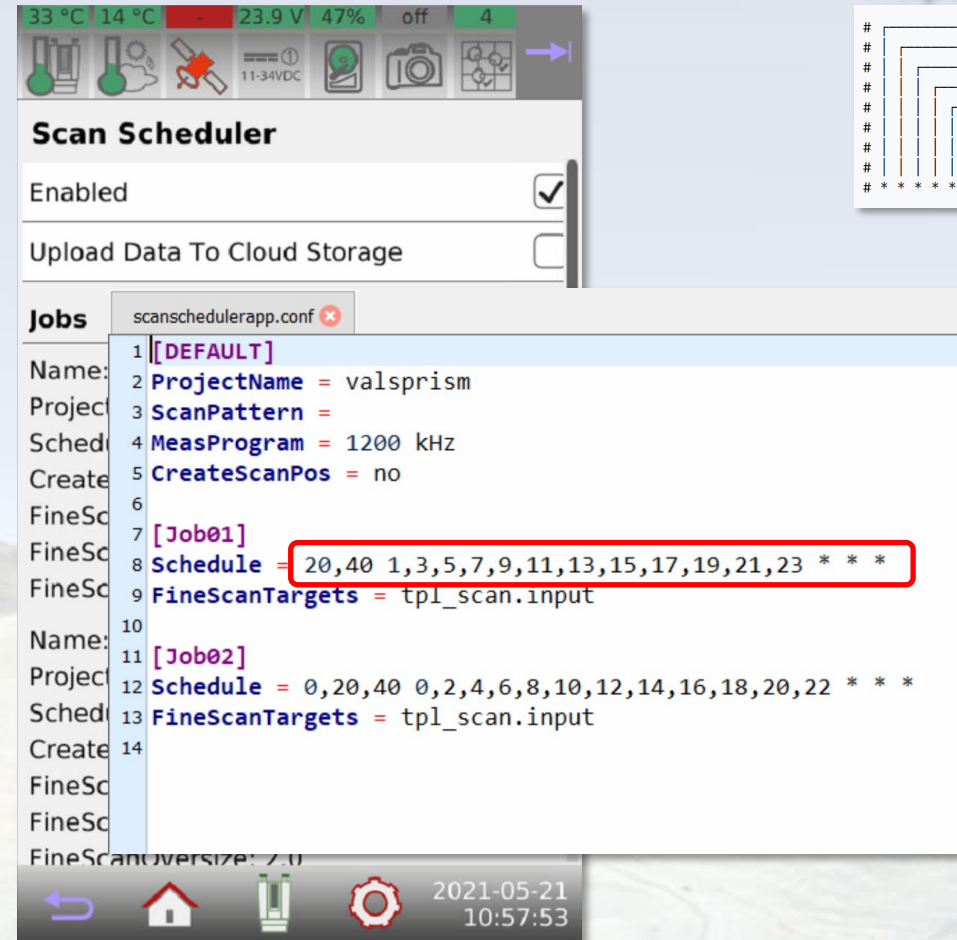




## Configuration – Scheduler App



## Configuration – Scheduler App

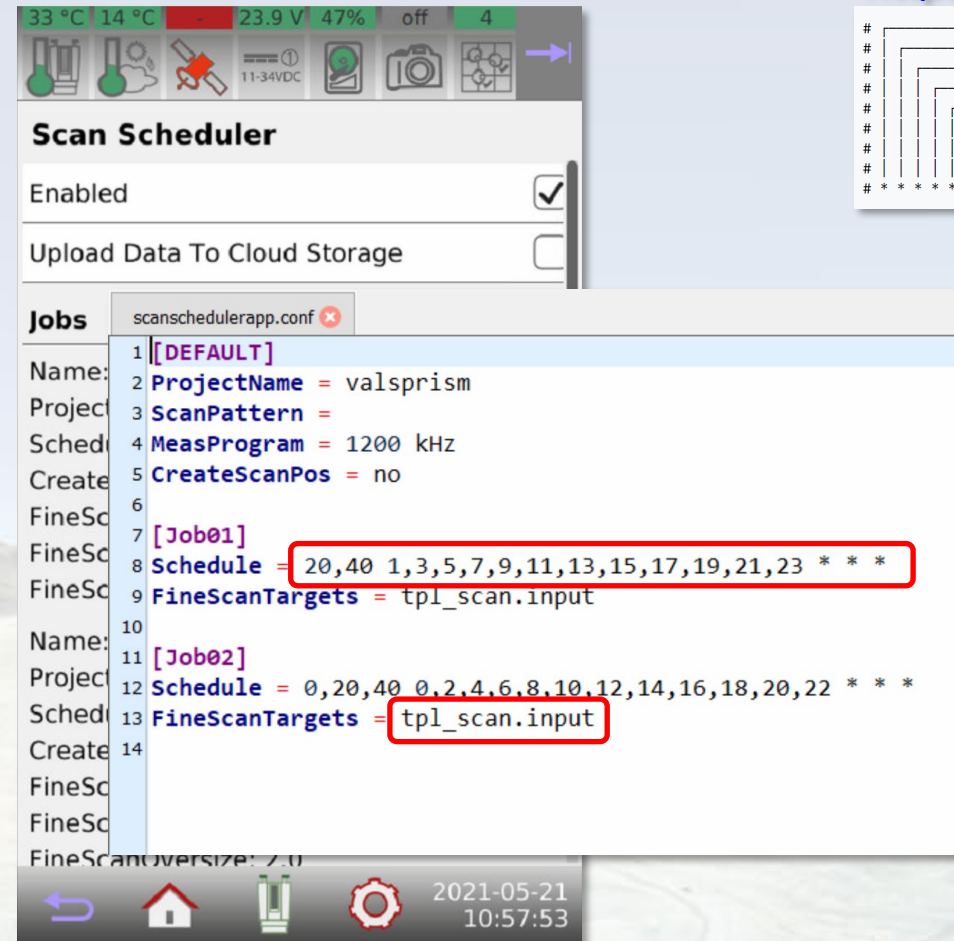


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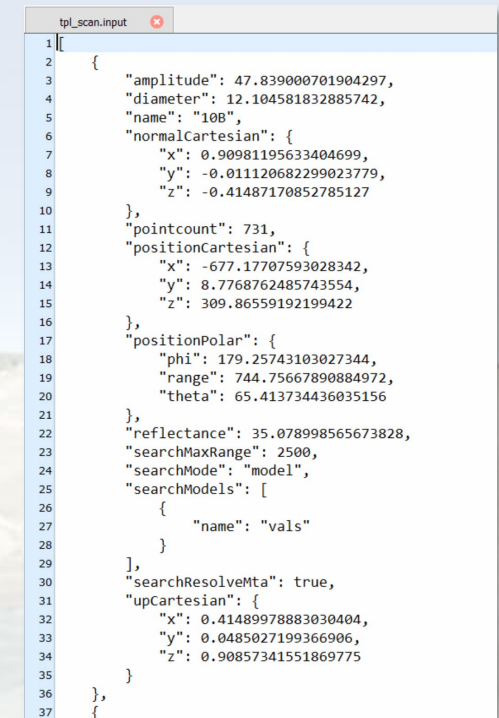


## Configuration – Scheduler App

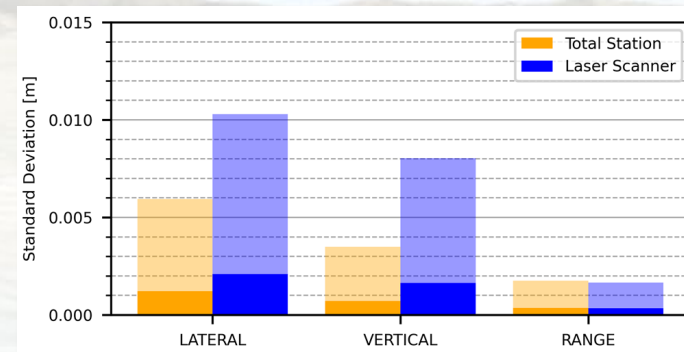
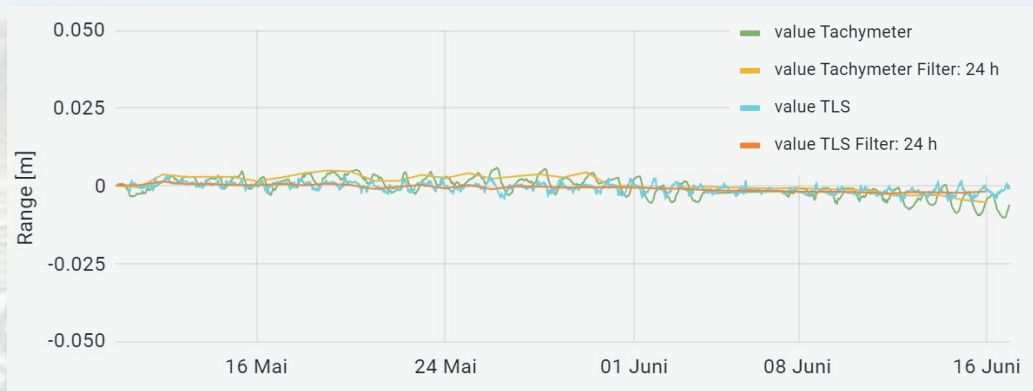
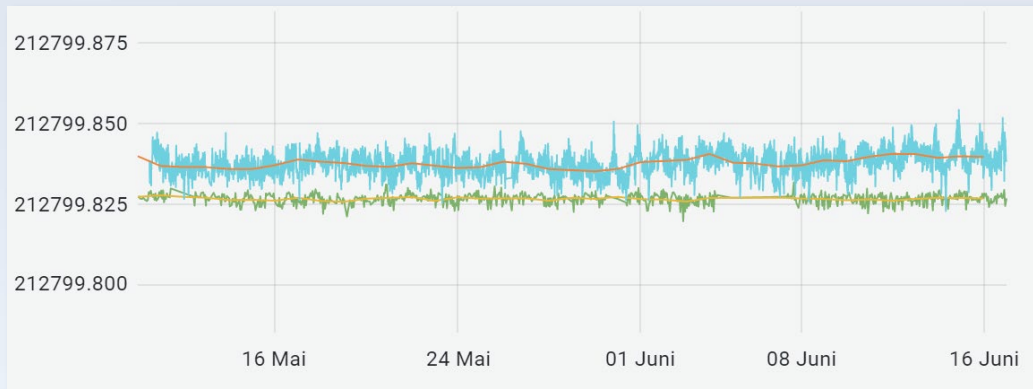


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# * * * * * <command to execute>
```



## Precision/Accuracy Totalstation vs. Scanner





# Thank you for your kind attention!

