GiGa infosystems

GST User Meeting 2025

Webex Meetings

* Everyone is muted by default
* We welcome to see your face, but it is not a must
* Raise your hand if you want to ask an immediate questions
* Use “Questions & Answers” or “Chat” to ask a general question; will be answered later
* Easy chat/Further questions during break

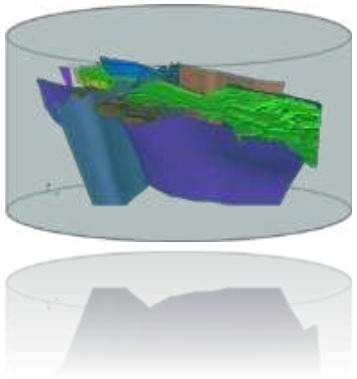
Disclaimer

* We are not geologists/geoscientists, we may use wrong terms
* We demonstrate with possibly wrong examples here and there
* We are happy if you correct us or provide us with real data we can use and show
* We can provide guidance to achieve nice results with your data, don't hesitate to ask

Agenda

* 9.00 – 10.40 Developments of 2024, Paul Gabriel
* 10.40 – 11.00 GST at HLNUG, Rouwen Lehné
* 11.00 – 11.15 Discussion/Break
* 11.15 – 11.30 GST at nagra, Kaspar Merz
* 11.30 – 12.30 Future Developments – Ideas –Feedback, Paul Gabriel

GiGa infosystems



* Team of 8
  (2.5 Backend, 1.5 Desktop, 3 Web, 0.5 DevOps)
* **Oracle Partner, GIS Award**
* Cooperation with
  * TU Bergakademie Freiberg
  * Petex (MOVE)



Developments in 2024

* 336 Bugs fixed
* 15 Improvements
* 33 New Features
* 1 GST Release
* 39 Issues closed in Servicedesk, 41 new ☹ (3 waiting for customer, 11 in progress)

Developments in 2024

* Rheinland-Pfalz, on premise
* Baden-Württemberg, on premise, docker
* Schweizer Salinen AG, PoC with SaaS

Developments in 2024

* Main developments with HLNUG, nagra and BGE:
  * **Interactive correlation plots**
  * **Customizable Borehole logviews**
  * **OGC API Volumes**
  * **Quality Control of Boreholes with 3d Model**

BGE BUNDESGESELLSCHAFT FÜR ENDLAGERUNG

nagra.

HLNUG Für eine lebenswerte Zukunft

Developments in 2024

- Main developments with swisstopo:
  - **Variable Geometry types for Geological Profiles**
  - **DXF export format**
  - **Storage of images**
  - **Versioned Attribute Values**

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Bundesamt für Landestopografie swisstopo

Developments in 2024

- Main developments with BGR:
  - **Borehole ML import**
  - **Signature for Petrography**
  - **Multilanguage support**

Developments in 2024

- Main developments with LfU Bavaria and LfULG Saxony:
  - **Extended Rights Managment**
  - **Geothermie Infoportal**

Bayerisches Landesamt für Umwelt

LANDESAMT FÜR UMWELT, LANDWIRTSCHAFT UND GEOLOGIE | Freistaat SACHSEN

Developments in 2024 – GST[AR]

- Small improvements for Android and iOS
  - Better handling of failed downloads
- AppClips for iOS
  - Allow for scanning QR codes and view models without installing GST[AR] prior



GST Desktop

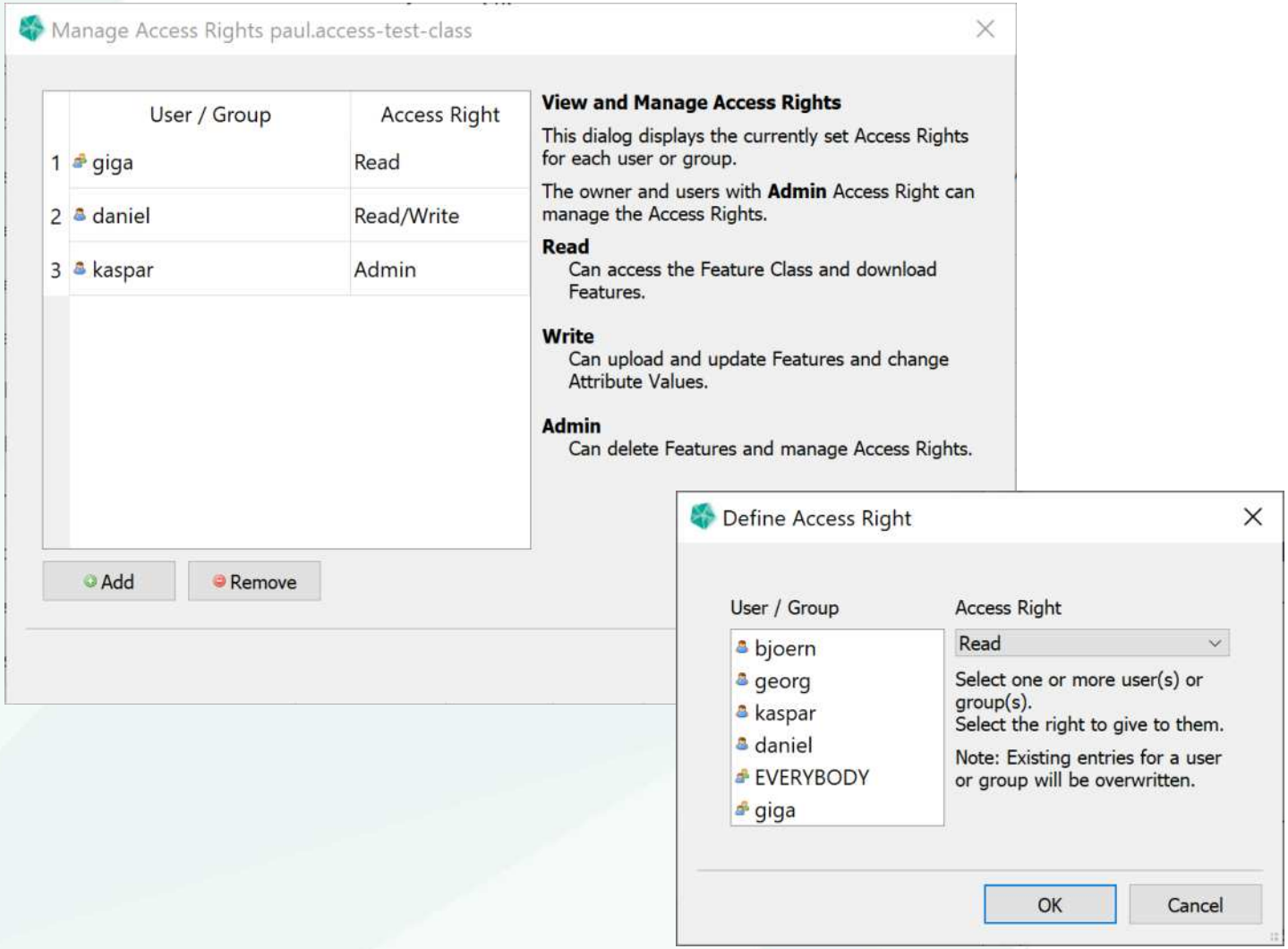
* Change the SRS of a FC without transformation
* Post edit of commit messages
* Set coordinates systems for OBJ on up- and download
* Improved Histogram to see the current values
* Use min and max from histogram directly to adjust color maps

Extended Rights Management

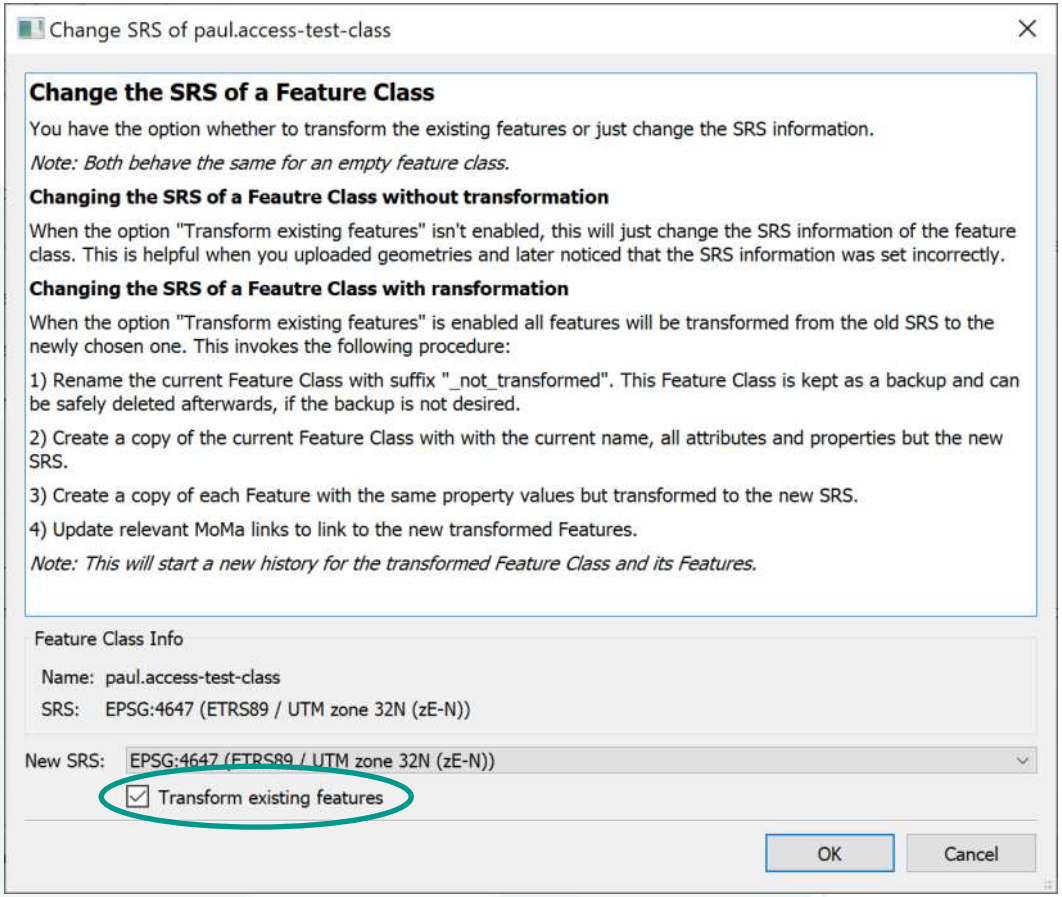


- Implemented for feature classes, models and model properties
- More flexible by allowing:
  - To add multiple users and groups
  - To use distinct access rights

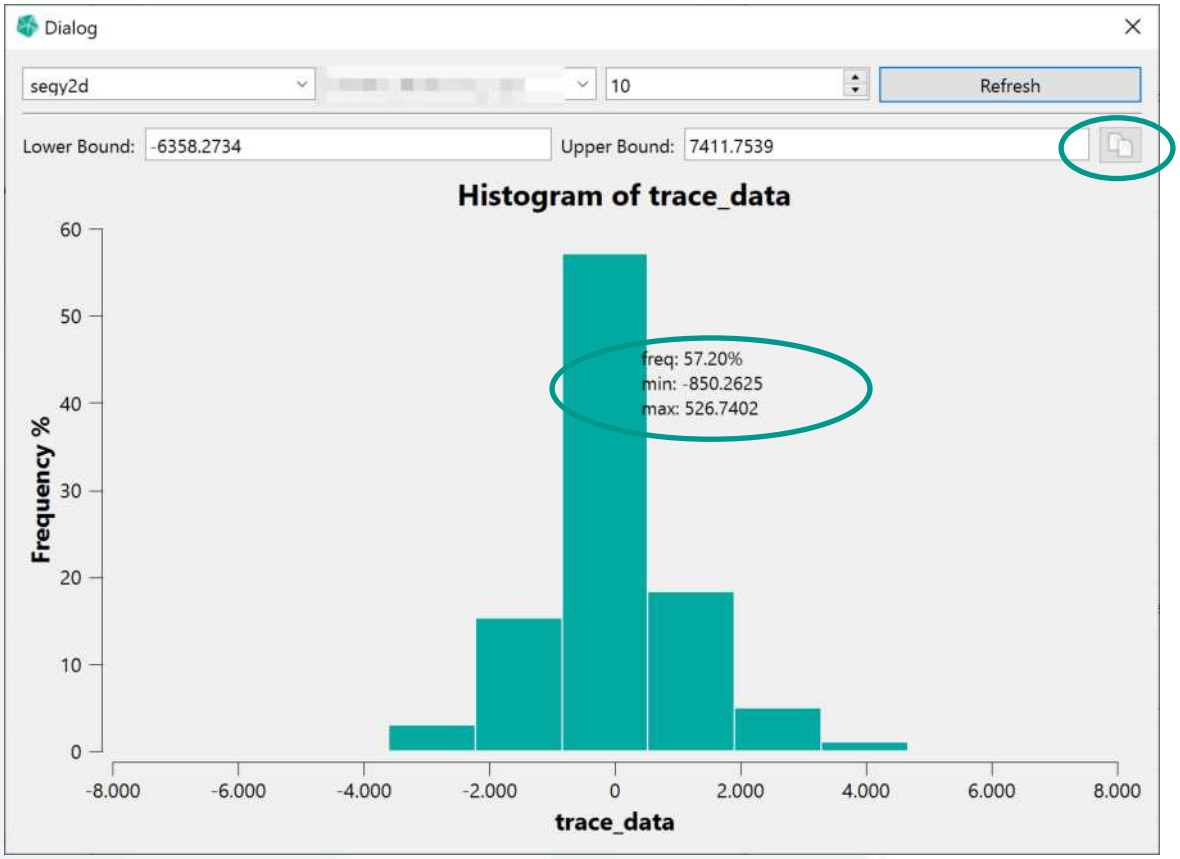
Extended Rights Management



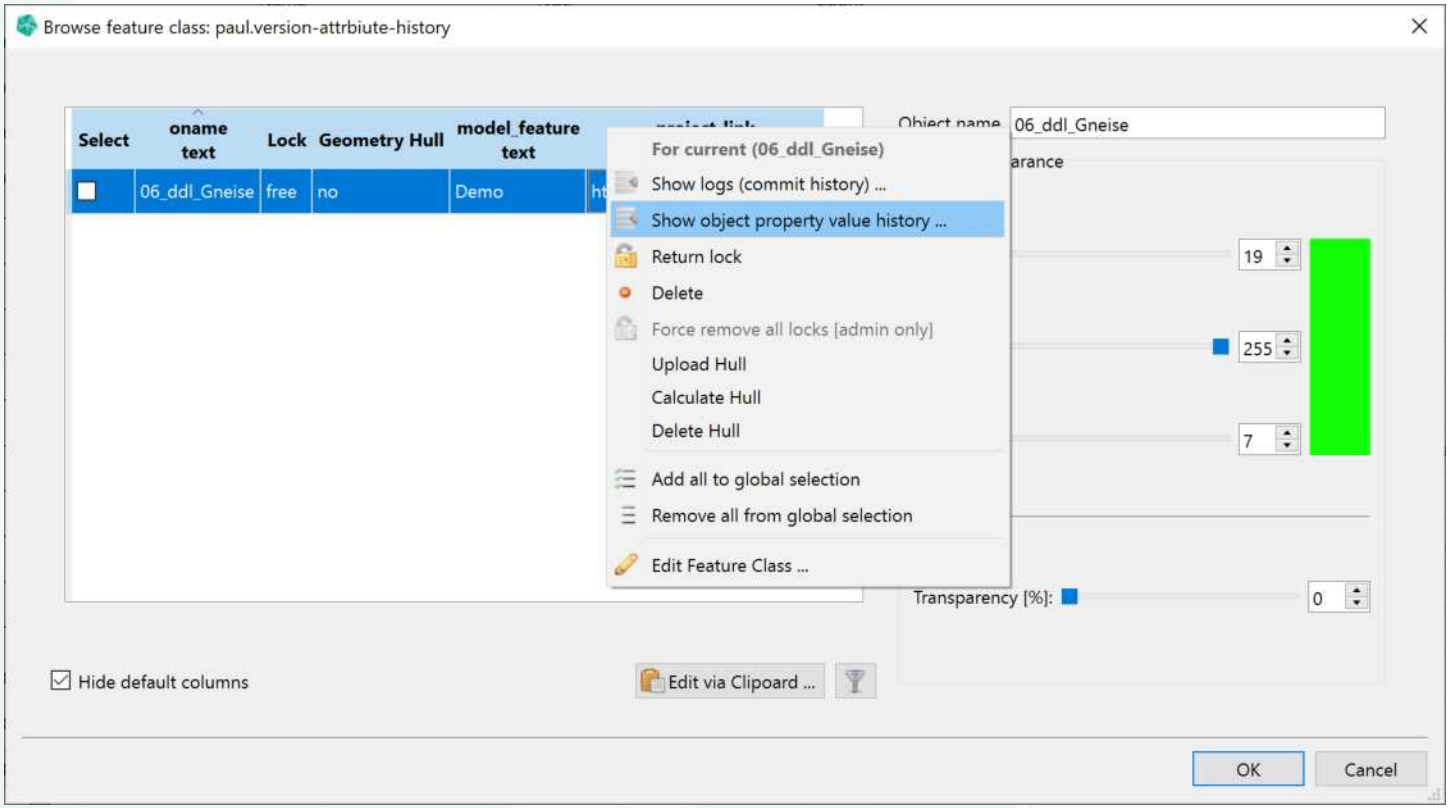
Change SRS without transformation



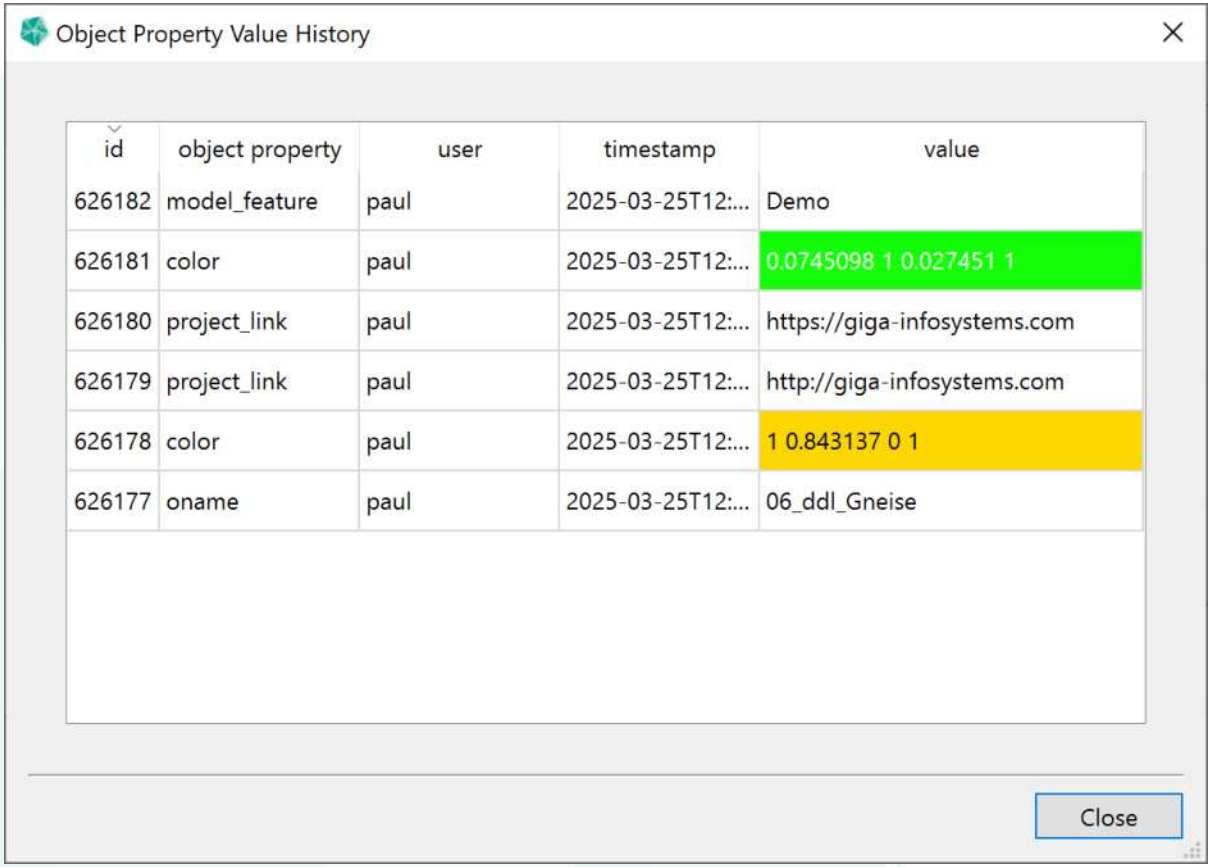
Improved Histogram



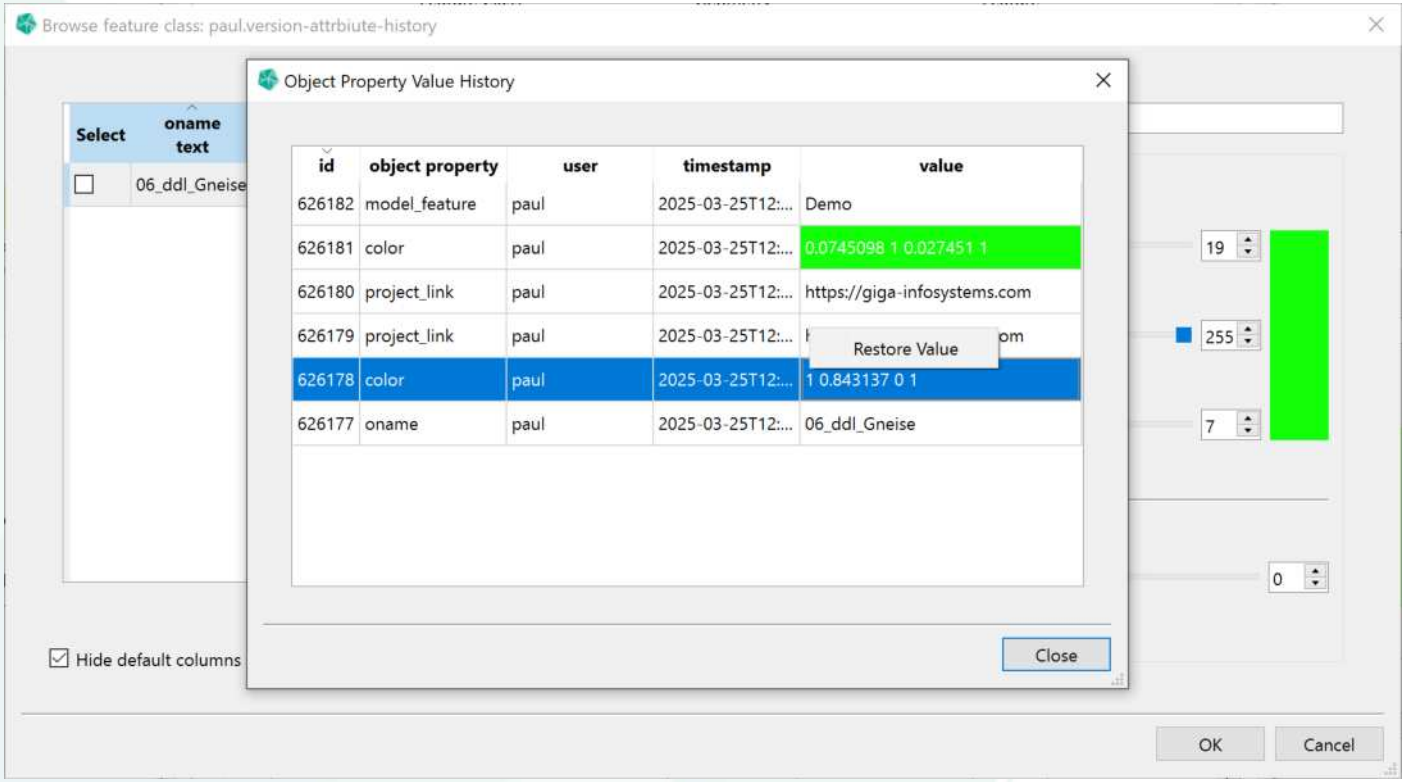
Version Attribute History



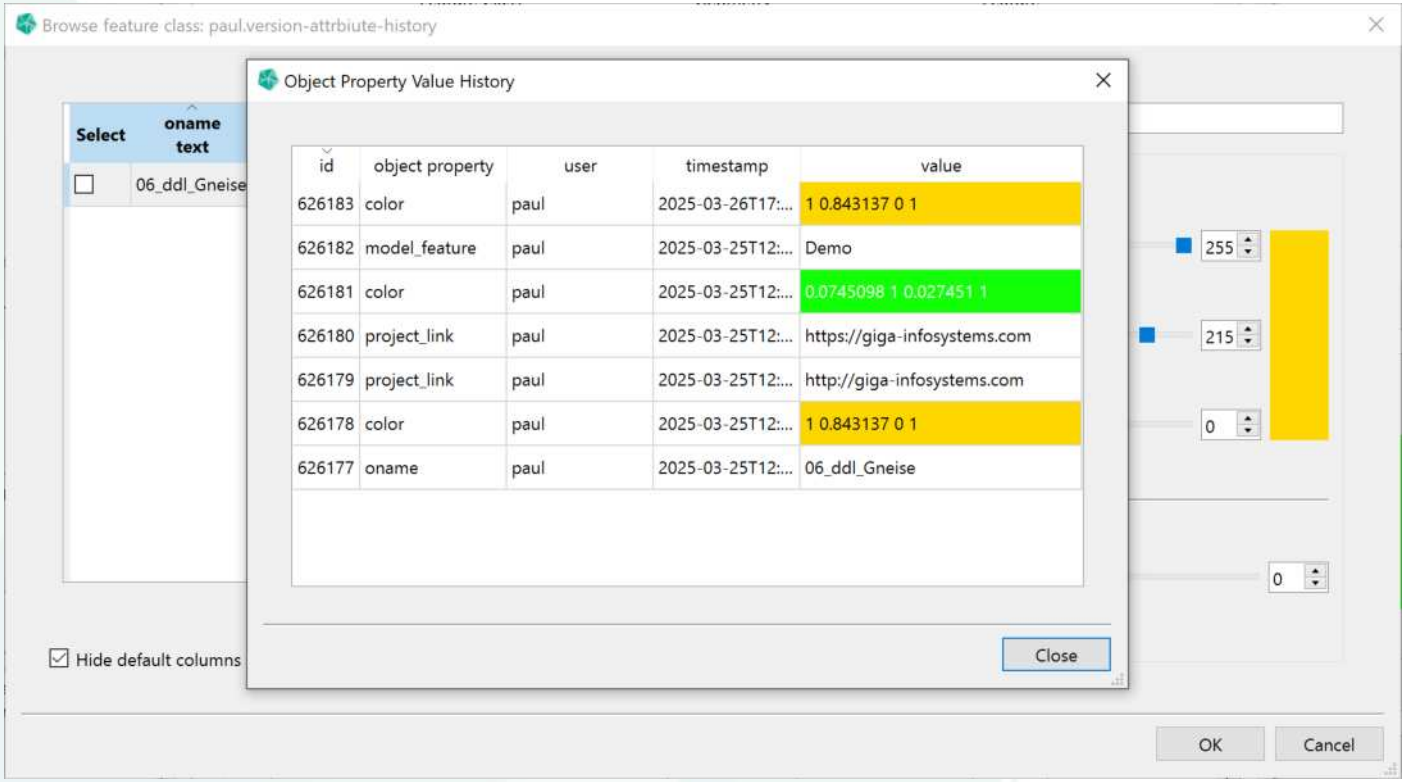
Version Attribute History



Version Attribute History



Version Attribute History

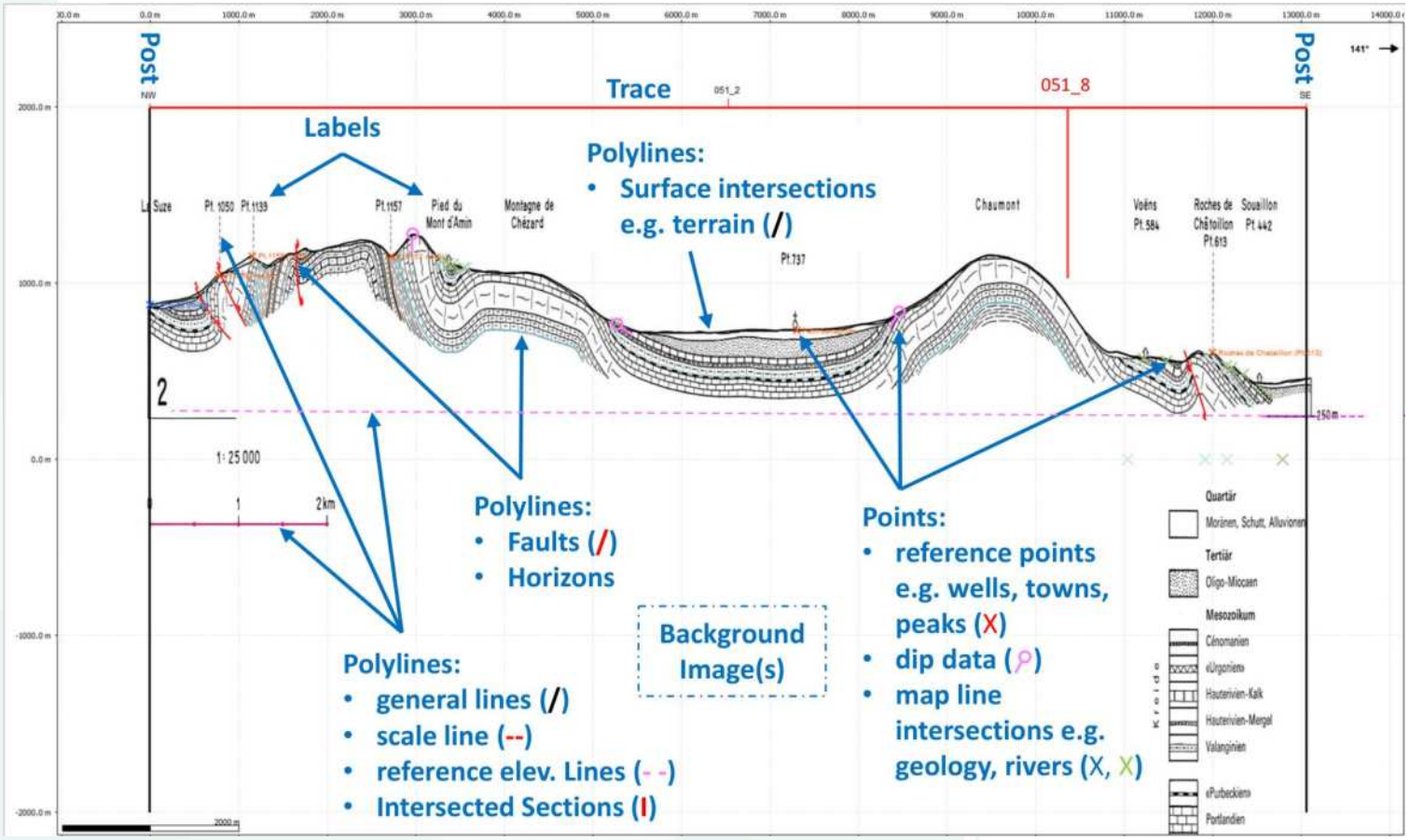


Variable Geometry Types for Profiles



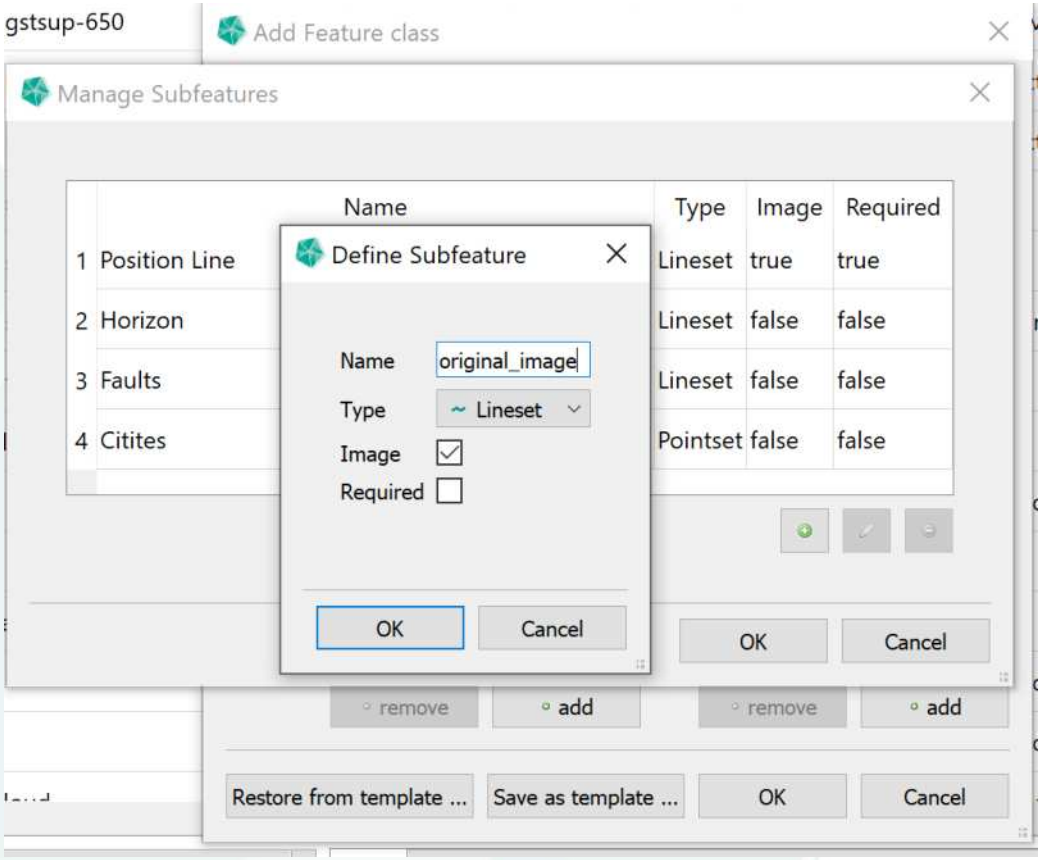
- **GST** can manage Geological Profiles
- Profiles are a distinct feature type in **GST**
- Assign arbitrarily sub-types
- Current sub-types are
  - Points
  - Lines
- Store images on Profiles
- Can be set as required

Variable Geometry Types for Profiles



Created by Lance Reynolds, swisstopo

Variable Geometry Types for Profiles



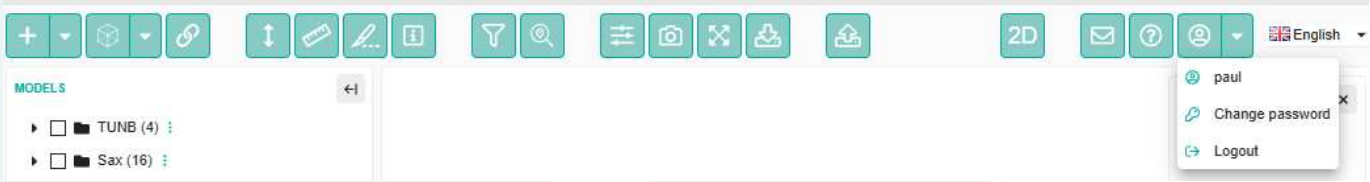
GST Web

- Extended Model tree to display properties
- Segmentation as visualization mode for structural grids (SGrids) and regular grids (Voxets)
- Web users can change their own password
- Items Manager has been improved to support TINs
- Extended User Manual

Extended Model Tree



Web Users Change their own password

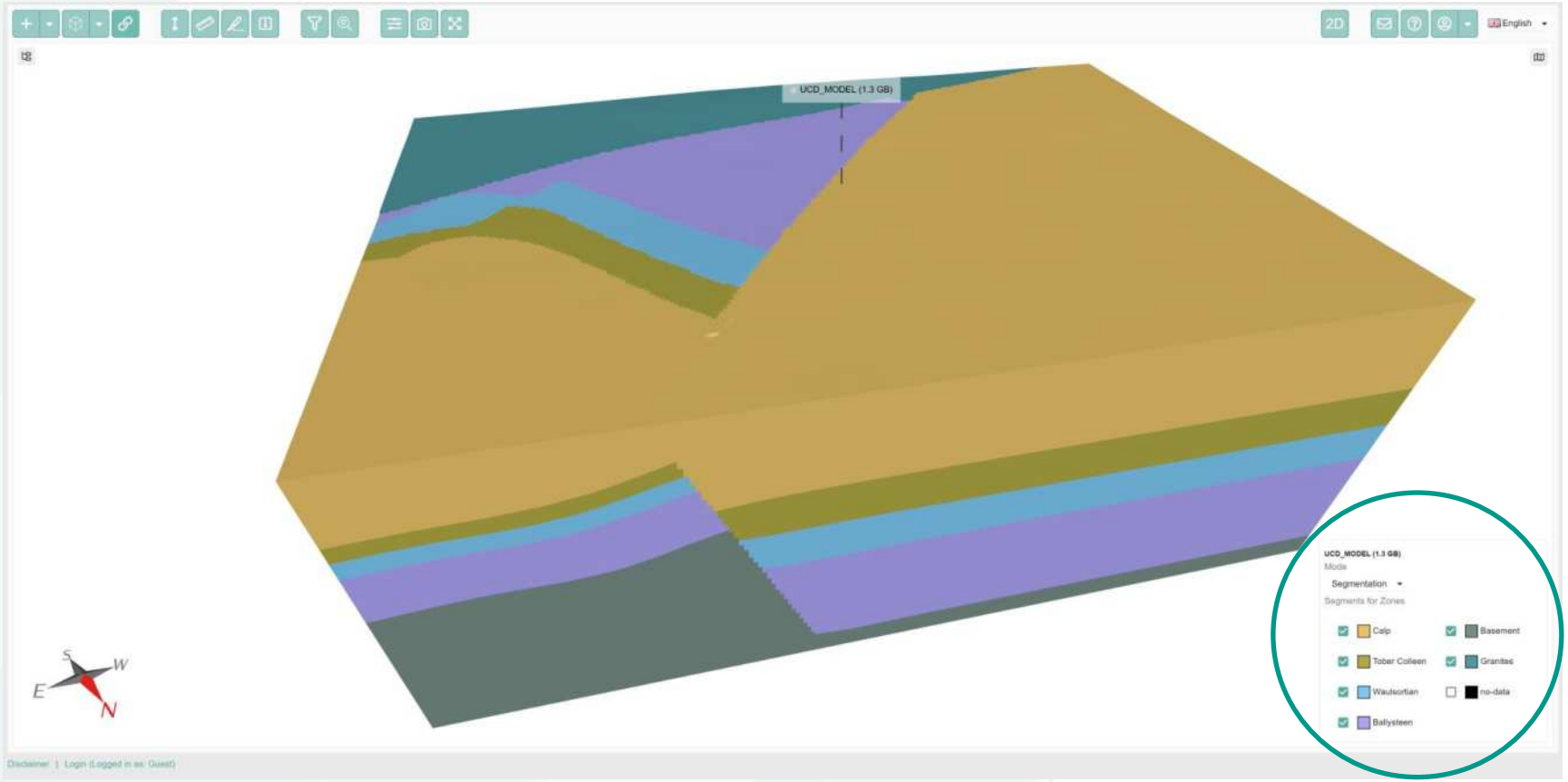


Segmentation – Isosurfaces

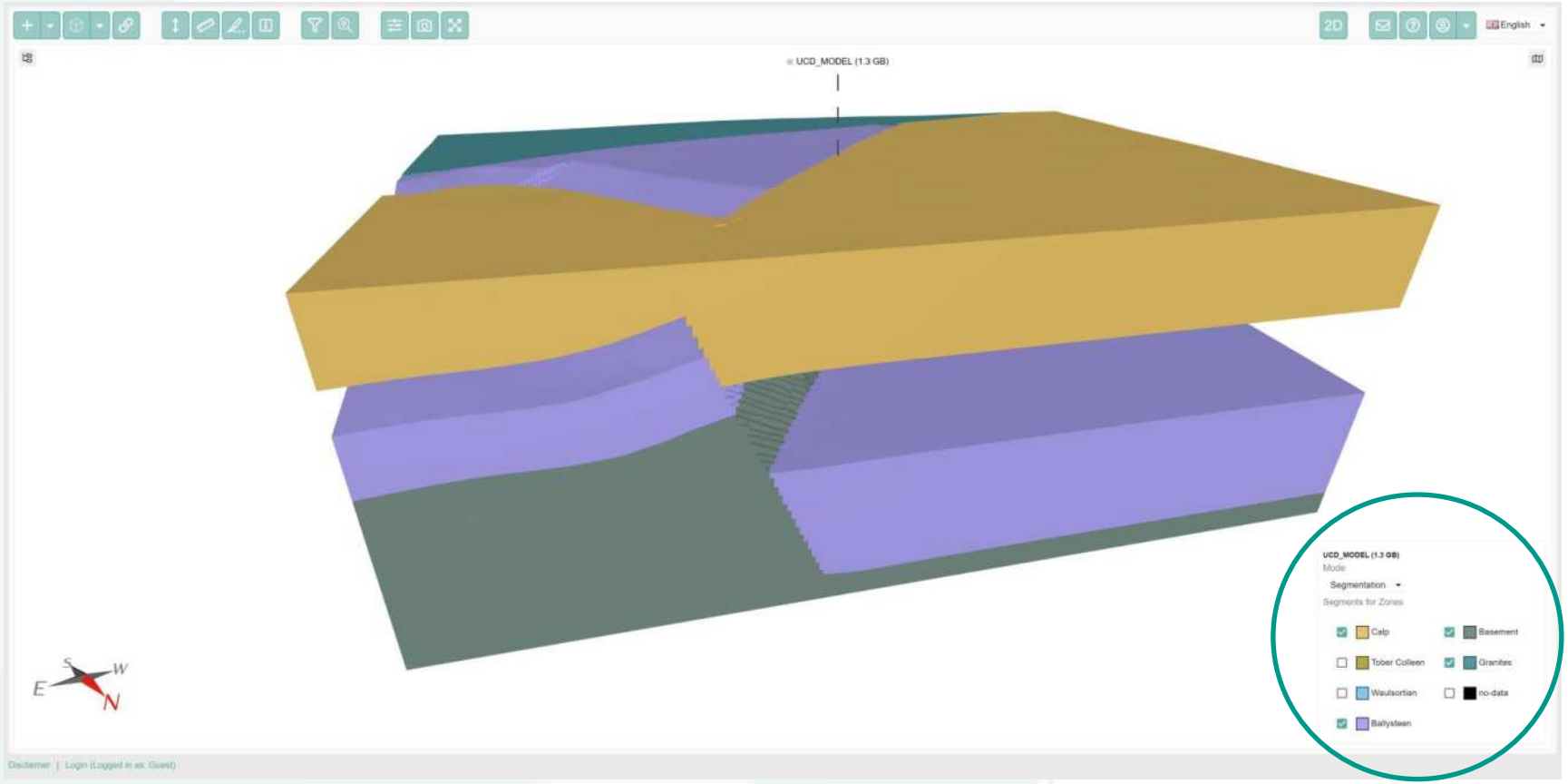


- Similar to isolines
- “a surface that represents points of a constant value within a volume”
- Works via themes
- Implemented for stratigraphic grids and voxets
- Can be accessed via web

Segmentation – Isosurfaces



Segmentation – Isosurfaces

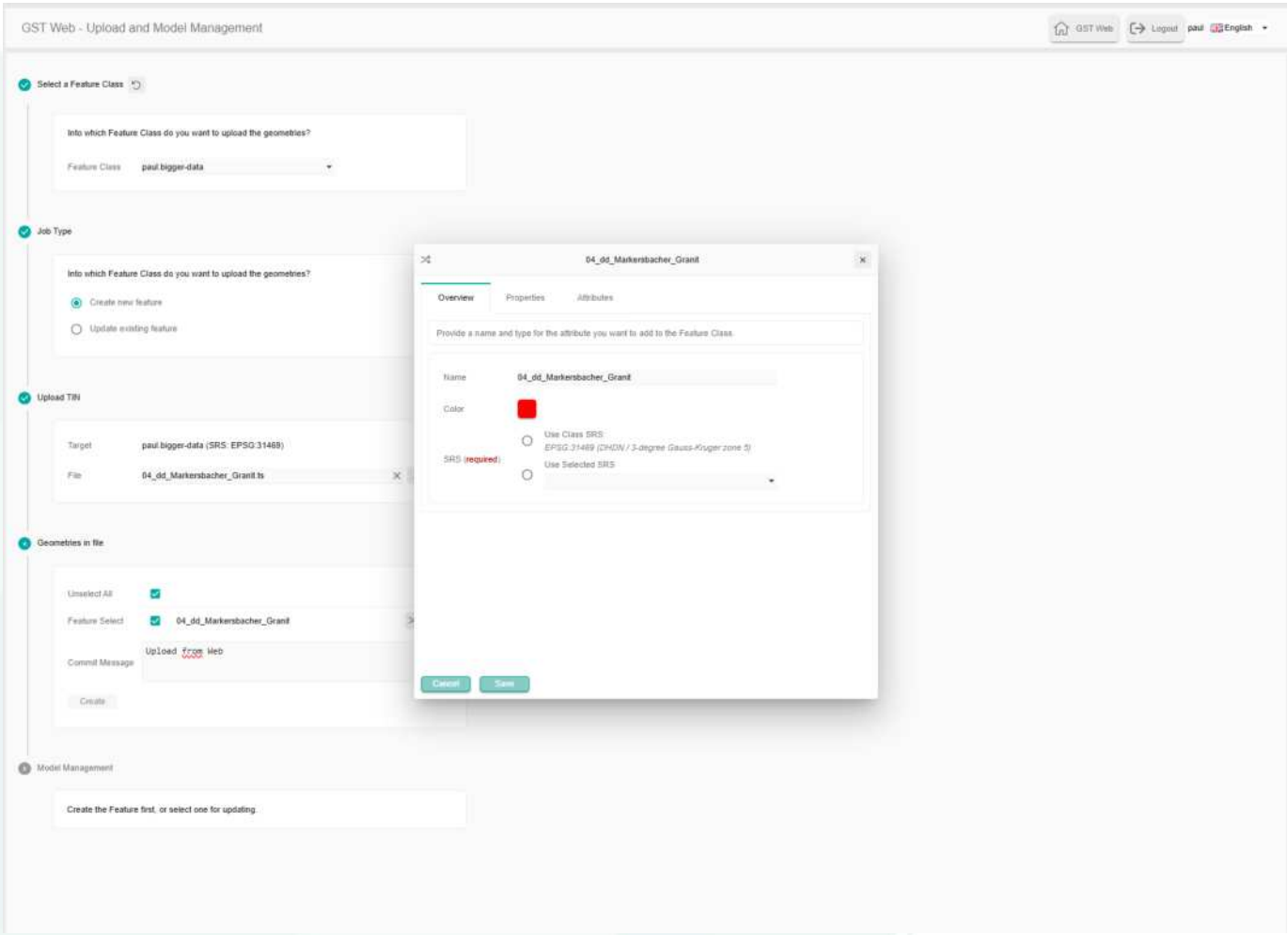


Items Manager



- Support TINs and Profiles
- Guided Upload Process
- May act as mailbox with external partners
- Allows linking in Model Tree
- More feature types are coming

Items Manager

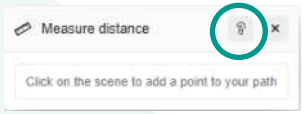


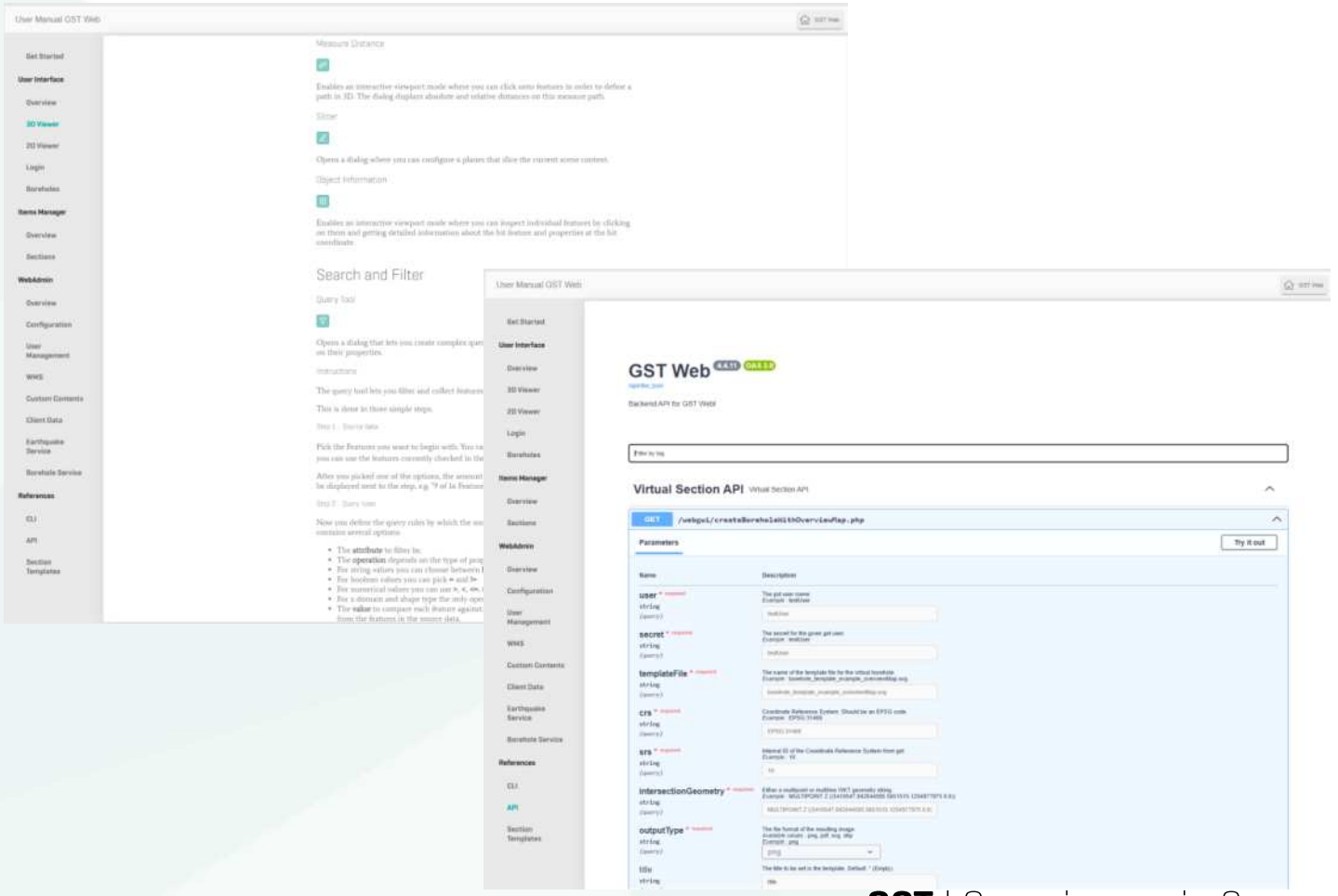
Extended User Manual



- Major Rework of all sections
- New admin manual
- Can be accessed from dialogs
- Can be accessed via /manual
- Provides API documentation in OpenAPI format

Extended User Manual

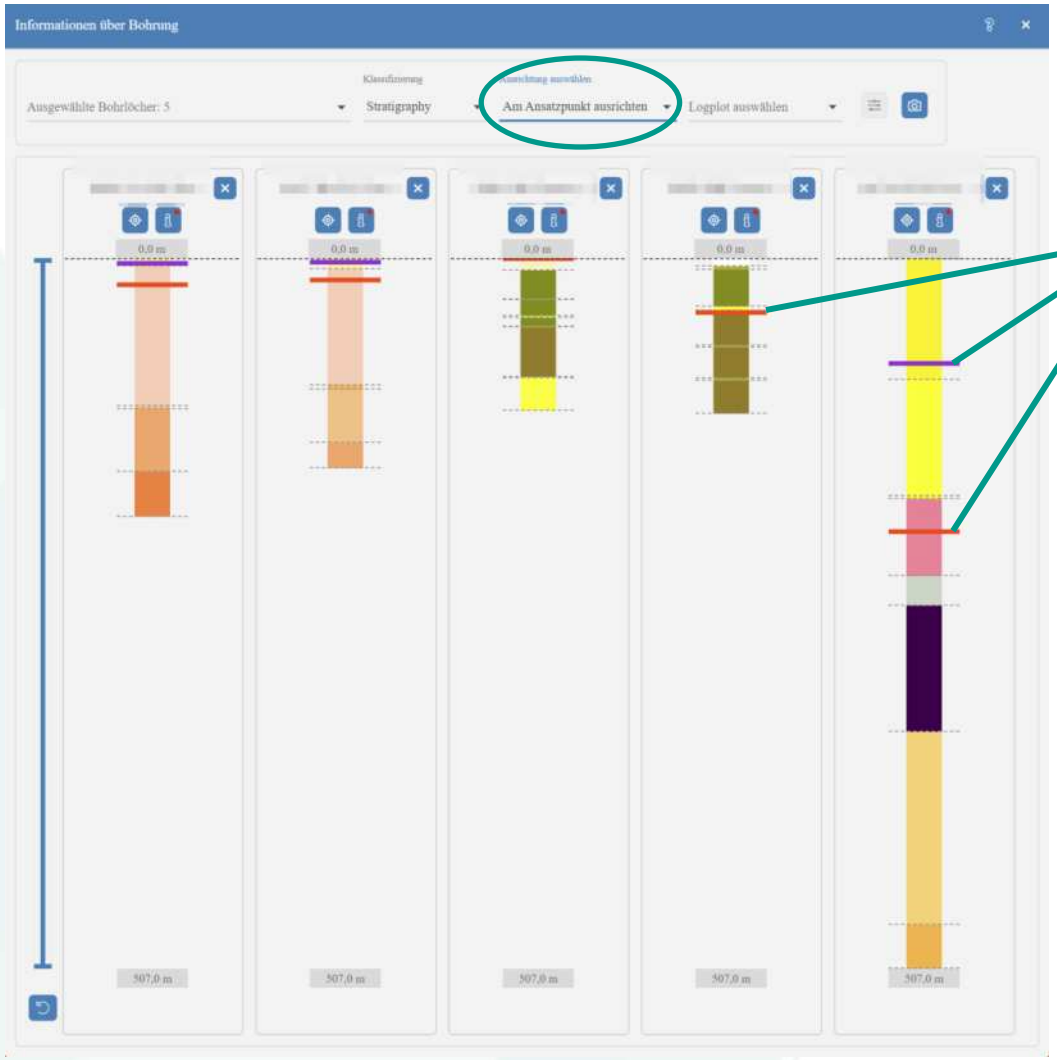




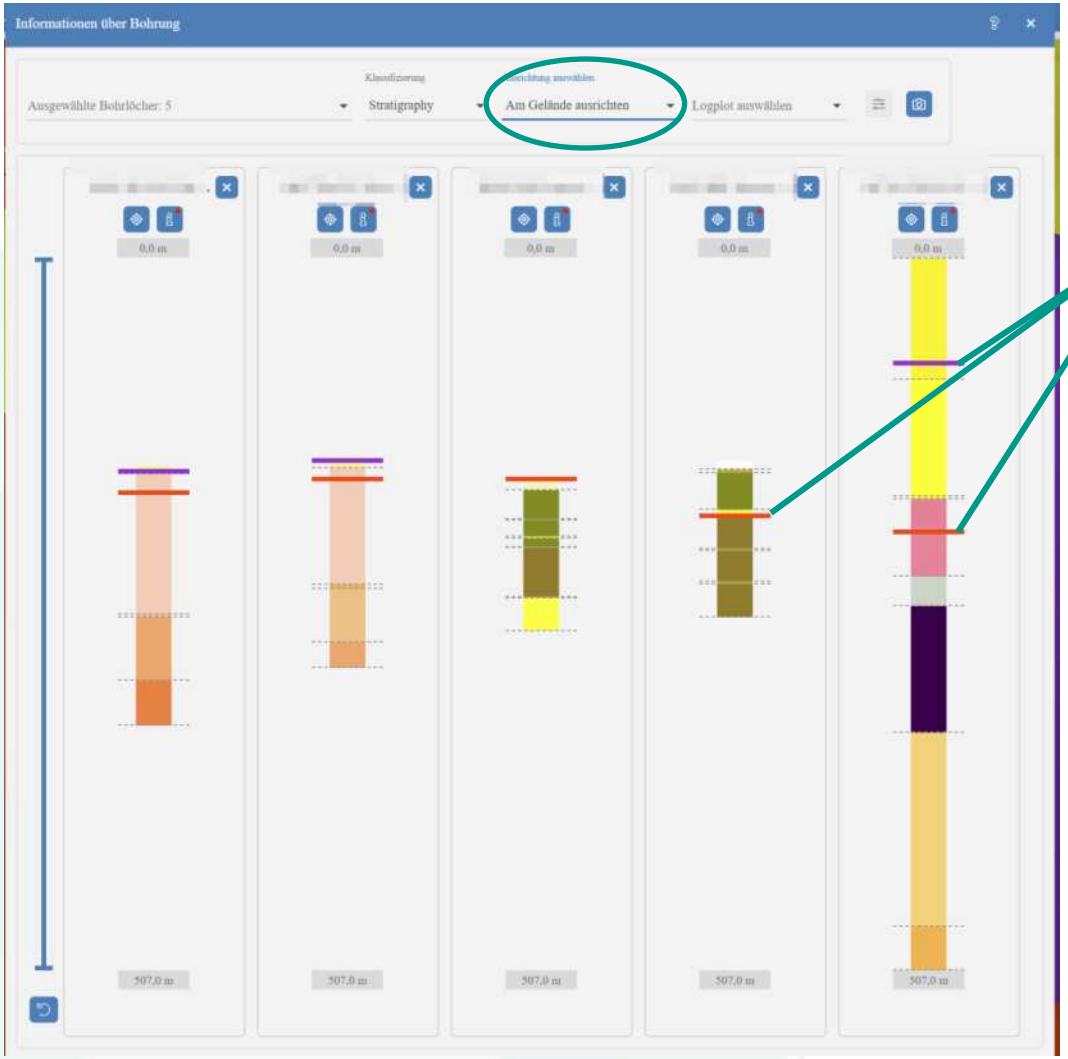
Interactive borehole correlations

- Add multiple boreholes
- Overlay multiple curves in one plot
- Add up to 3 plots per borehole
- Predefine curve styles as admin
- Align boreholes
  - At elevation
  - At layer top or bottom
  - At 3d model

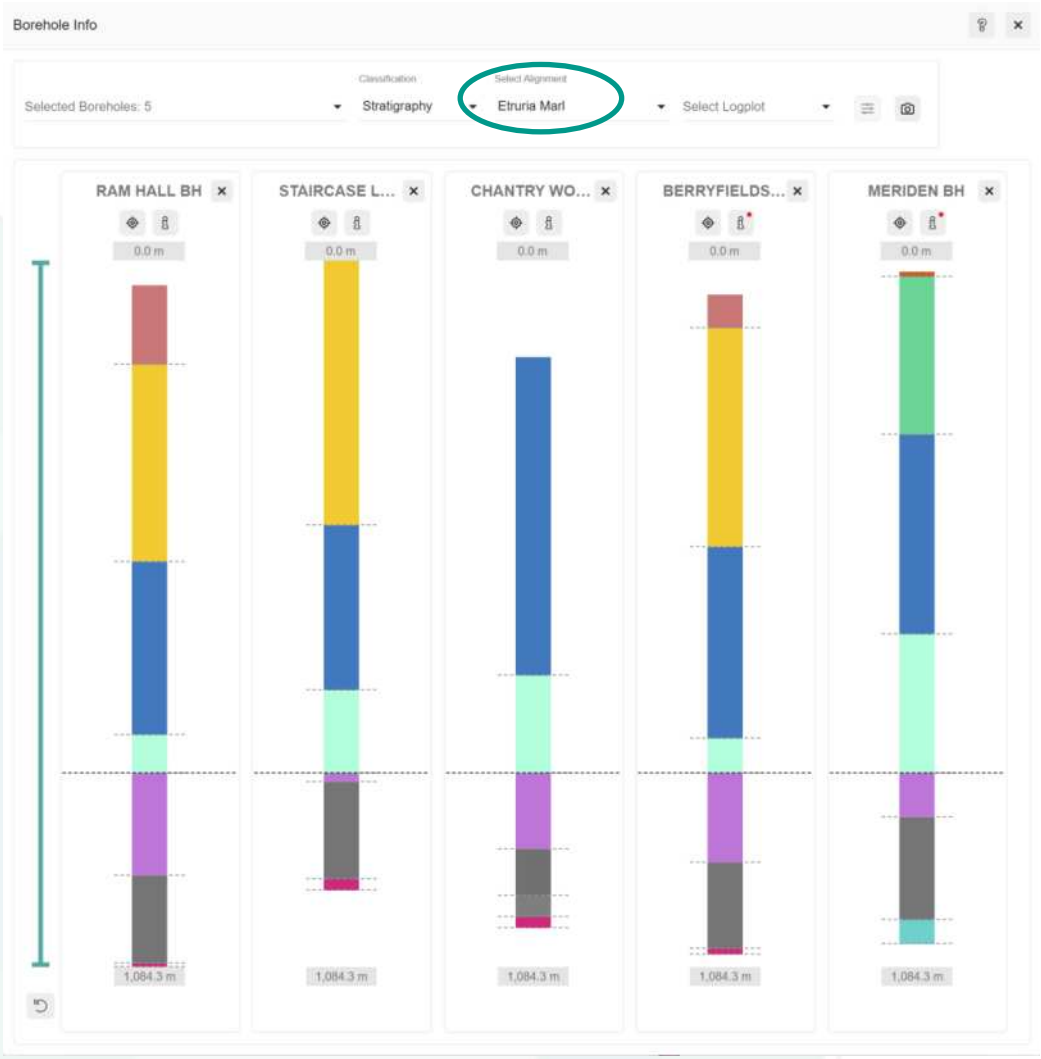
Interactive borehole correlations



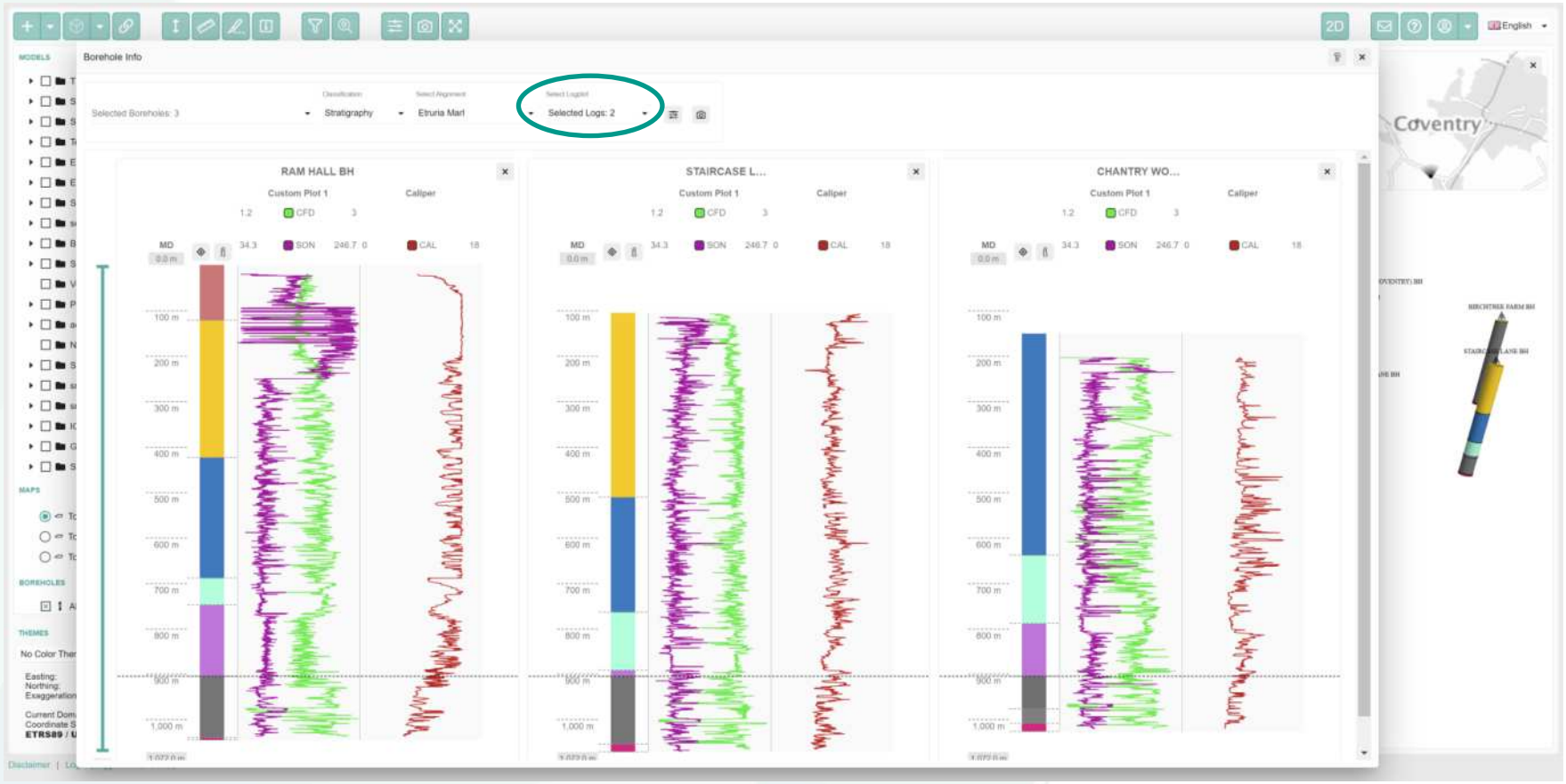
Interactive borehole correlations



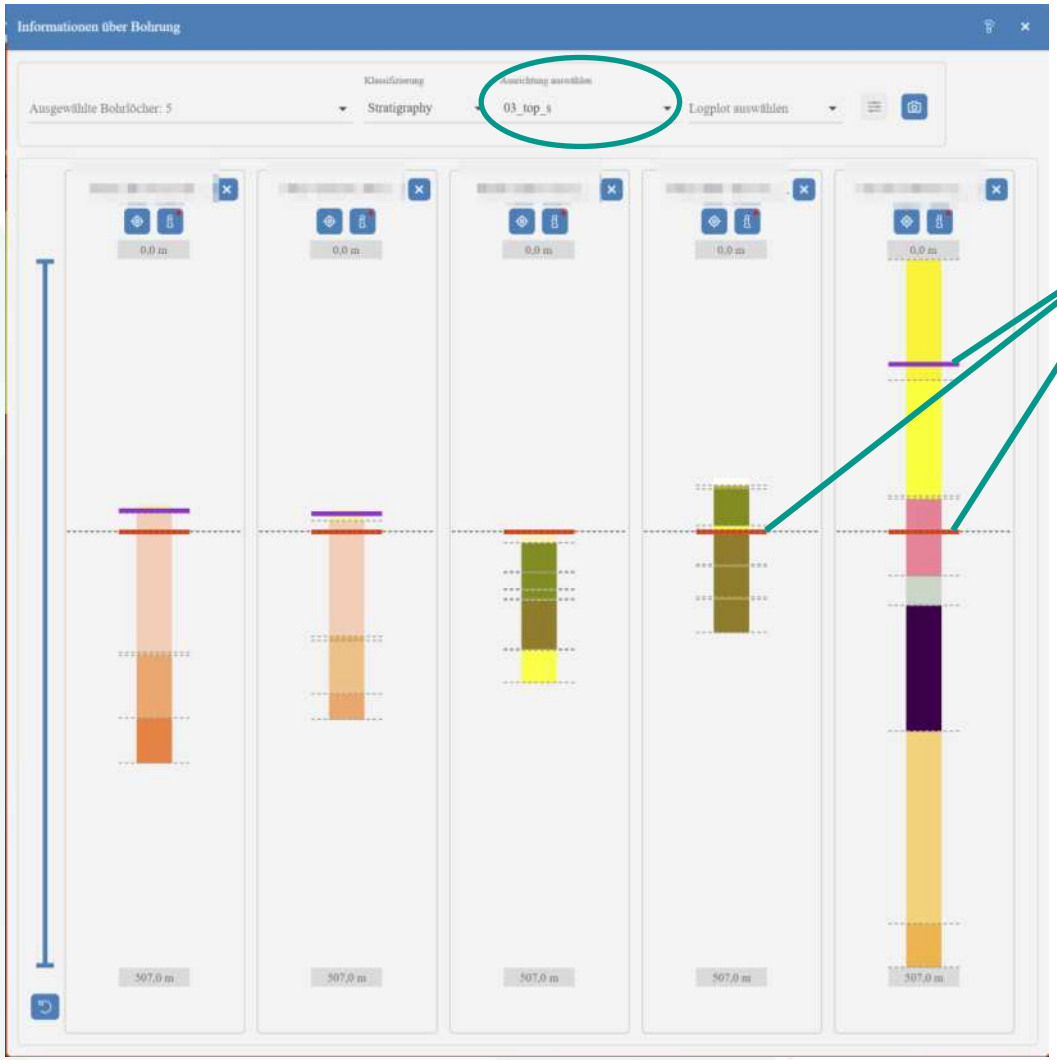
Interactive borehole correlations



Interactive borehole correlations

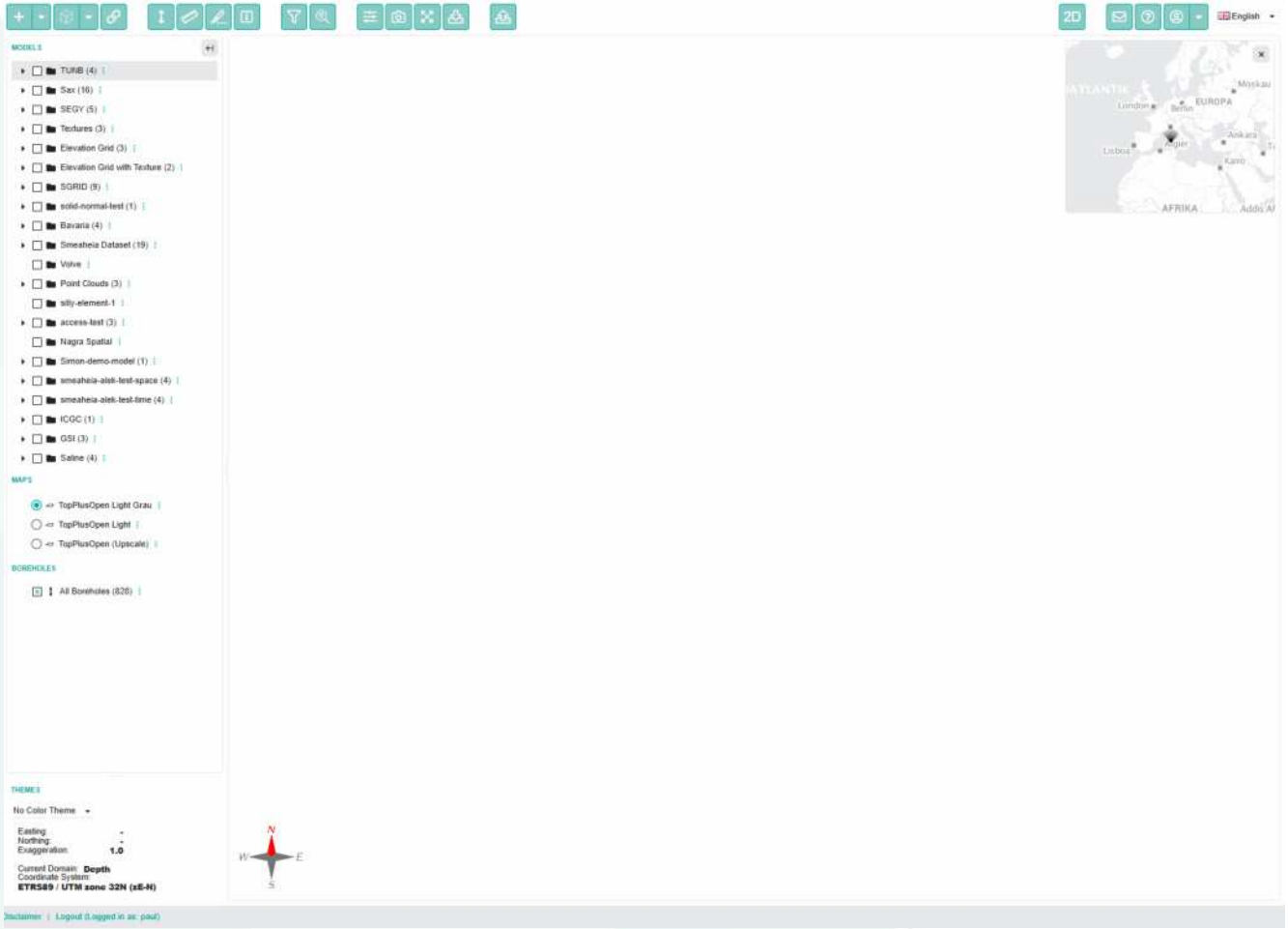


Interactive borehole correlations

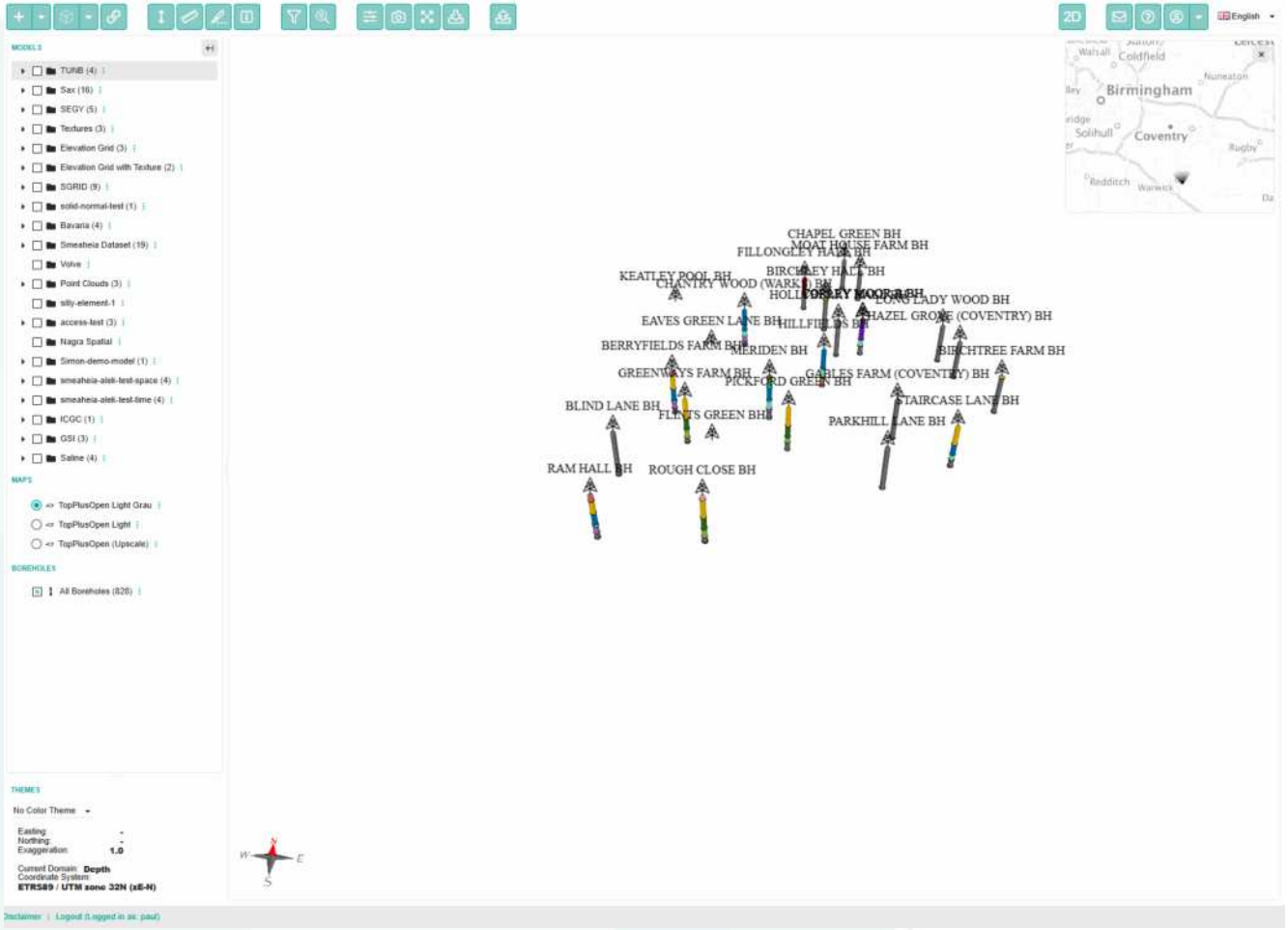


3d Model

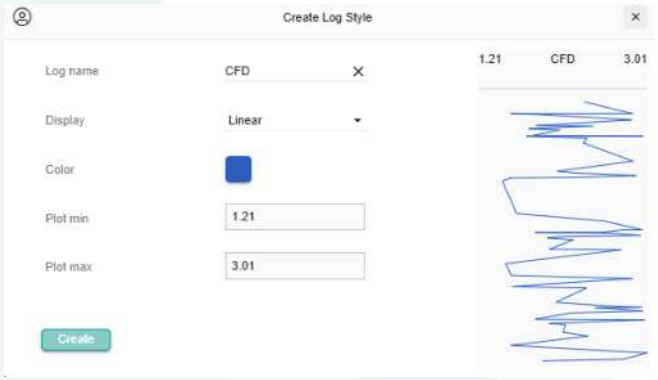
Interactive borehole correlations

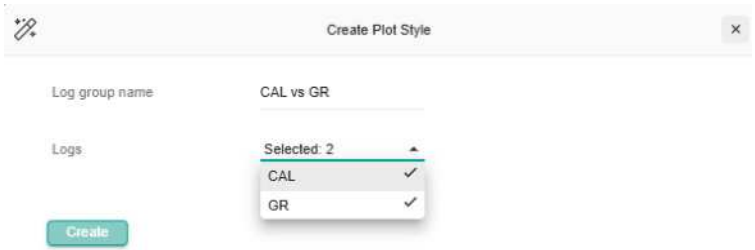


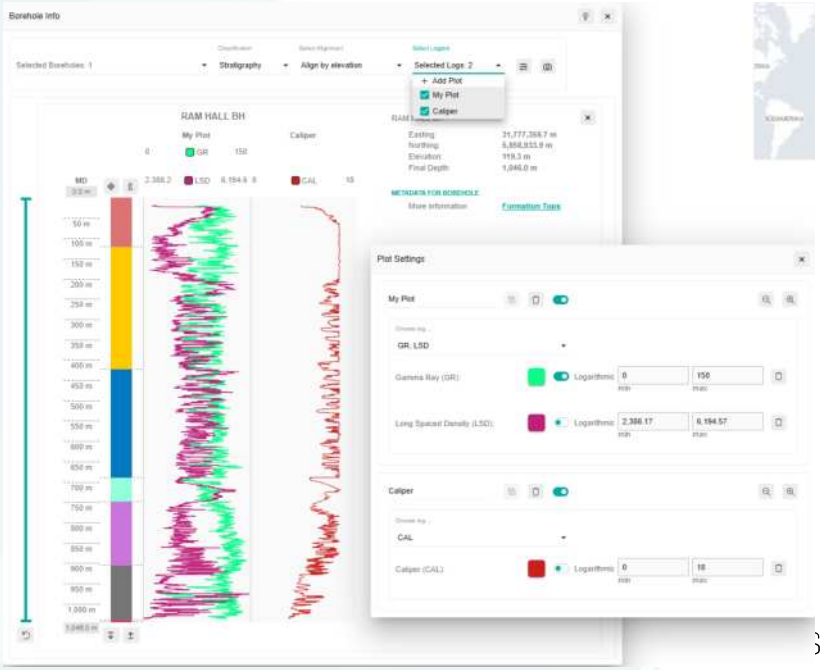
Interactive borehole correlations



Interactive borehole correlations







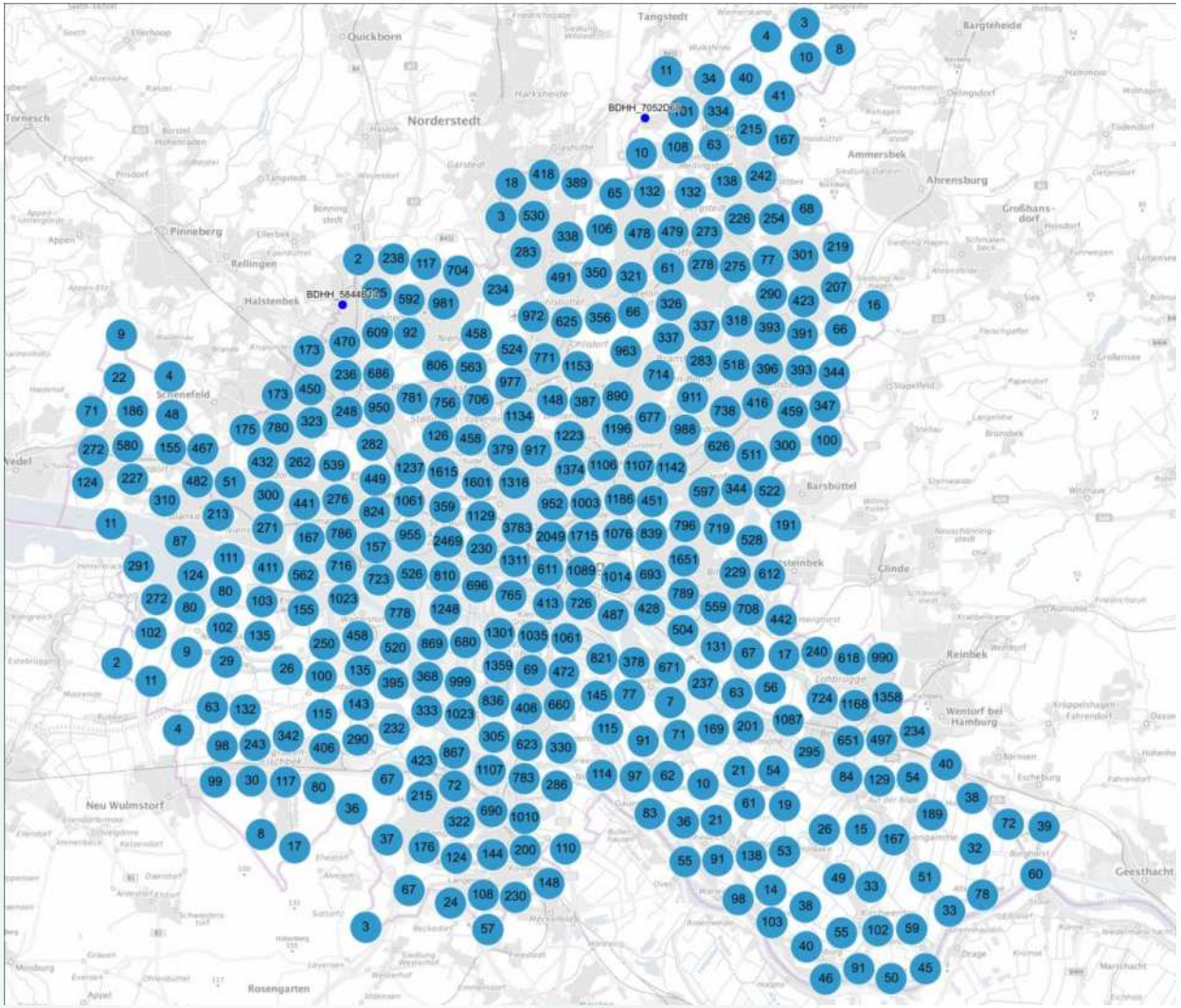
BoreholeML Import



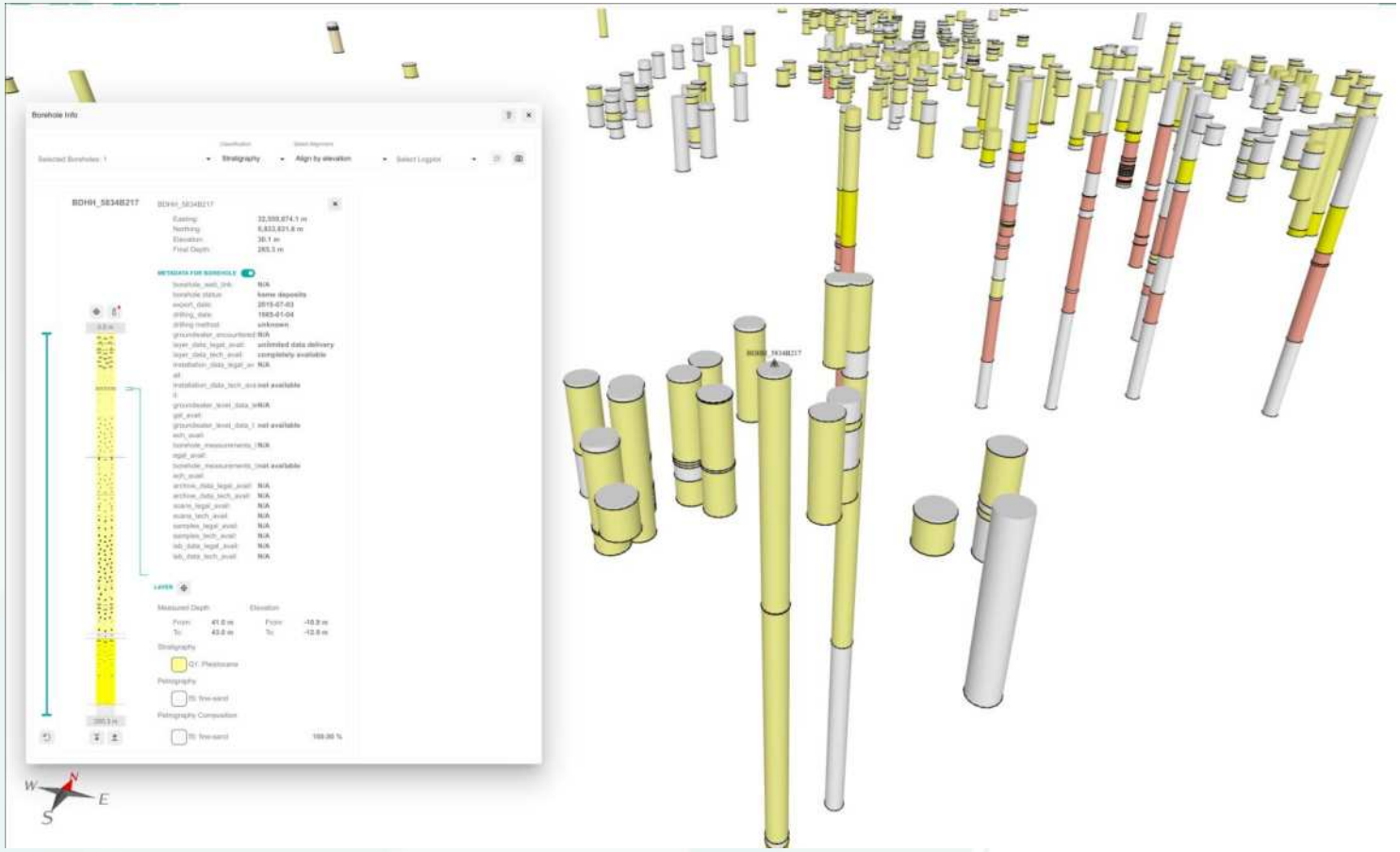
```
ξ ../../target/release/borehole_ml_importer --database-url /tmp/import_hamburg.db ~/Documents/test_data/borehole_ml/hamburg-bml/
Try to parse /home/weiznich/Documents/test_data/borehole_ml/hamburg-bml/borehole_page_1.xml
    Imported with 0 errors and 20071 warnings
Try to parse /home/weiznich/Documents/test_data/borehole_ml/hamburg-bml/borehole_page_10.xml
    Imported with 0 errors and 20762 warnings
Try to parse /home/weiznich/Documents/test_data/borehole_ml/hamburg-bml/borehole_page_100.xml
    Imported with 0 errors and 20907 warnings
Try to parse /home/weiznich/Documents/test_data/borehole_ml/hamburg-bml/borehole_page_101.xml
    Imported with 0 errors and 18551 warnings
Try to parse /home/weiznich/Documents/test_data/borehole_ml/hamburg-bml/borehole_page_102.xml
    Imported with 0 errors and 15445 warnings
Try to parse /home/weiznich/Documents/test_data/borehole_ml/hamburg-bml/borehole_page_103.xml
    Imported with 0 errors and 14920 warnings
Try to parse /home/weiznich/Documents/test_data/borehole_ml/hamburg-bml/borehole_page_104.xml
```

* BML Files in a single directory
* 200k boreholes (Hamburg) are imported in ca 1 min

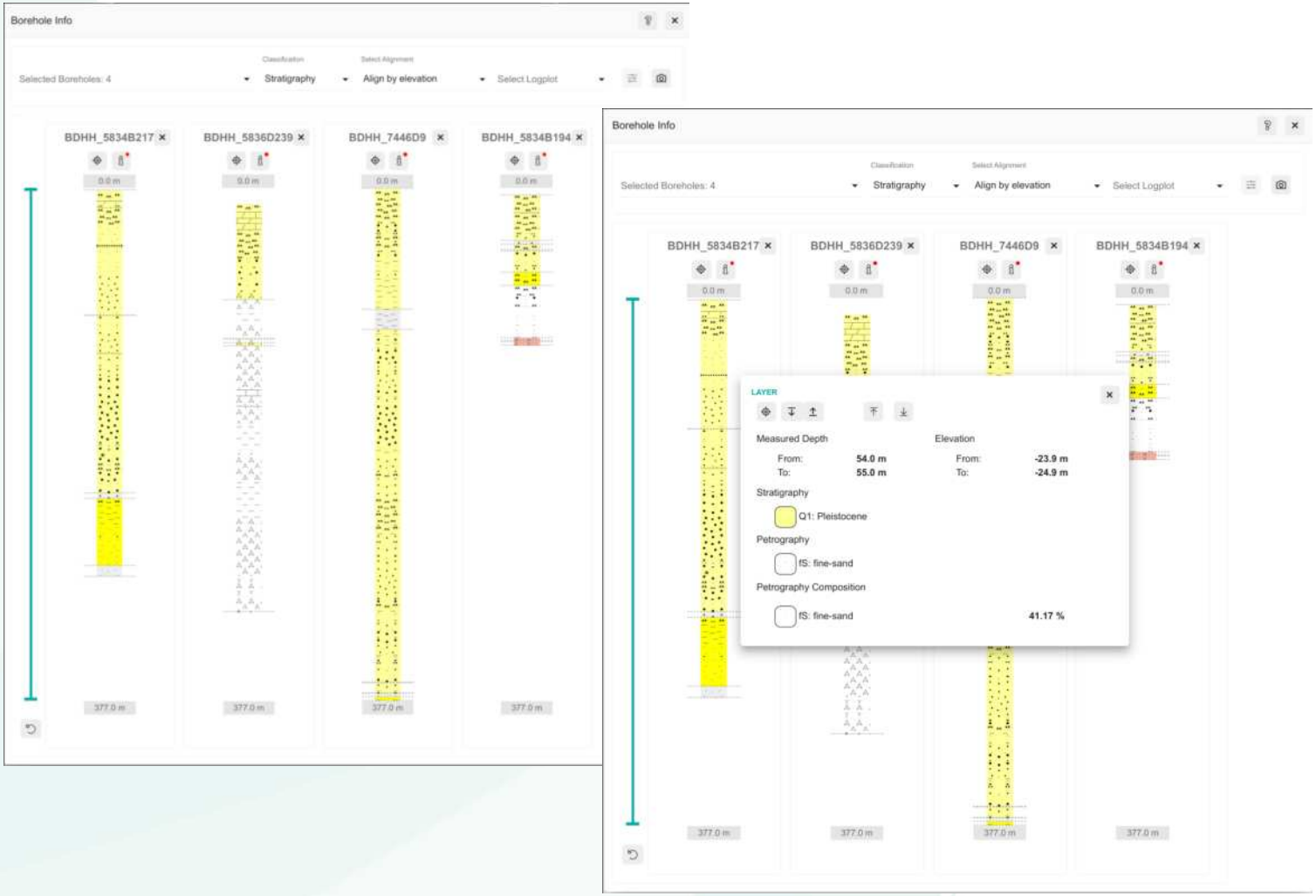
BoreholeML Import



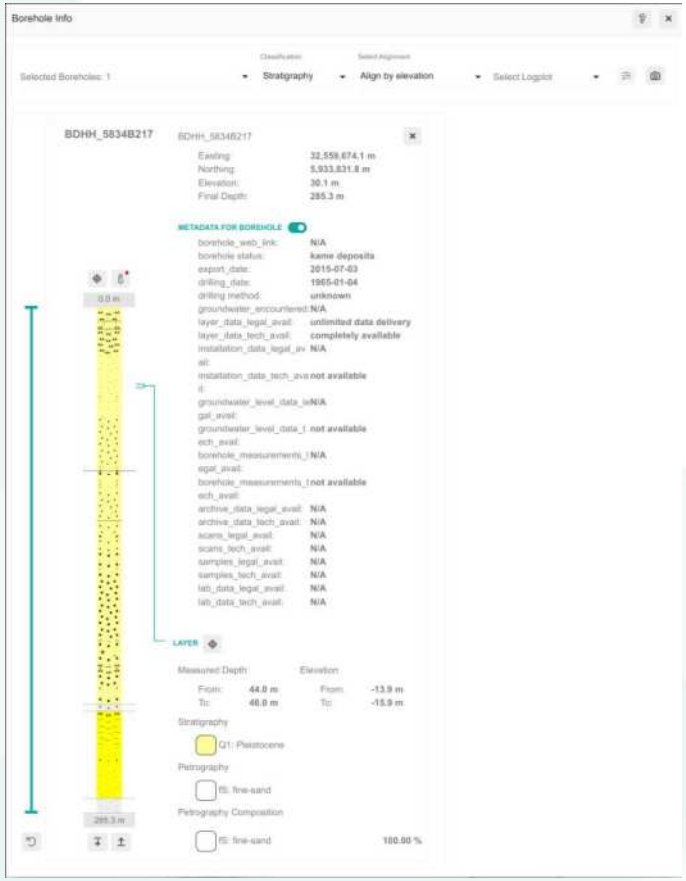
BoreholeML Import

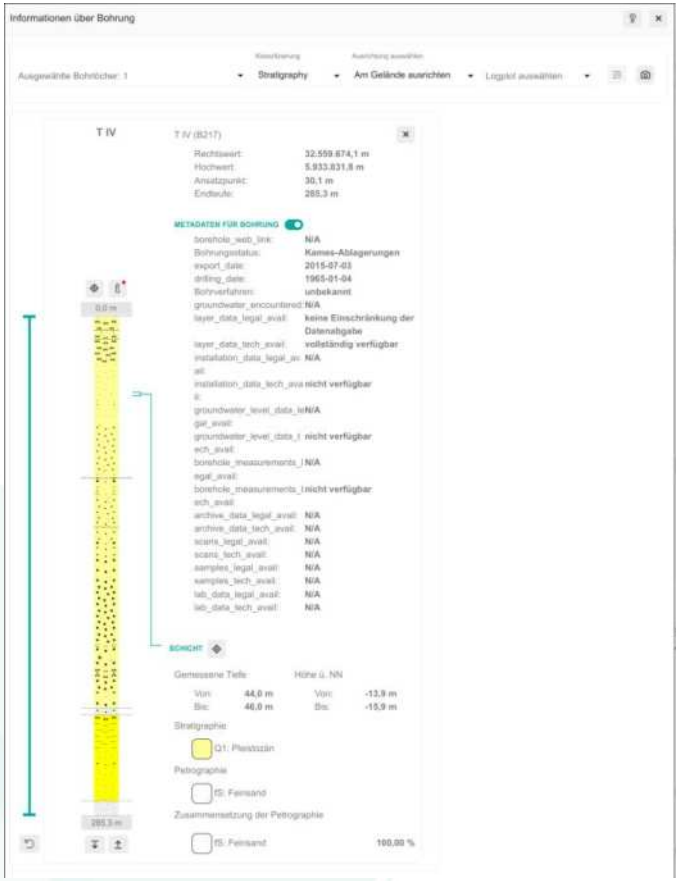


Signaturs


Borehole Info
Selected Boreholes: 4
Stratigraphy
Align by elevation
Select Logplot
BDHH_5834B217
BDHH_5836D239
BDHH_7446D9
BDHH_5834B194
LAYER
Measured Depth
From: 54.0 m
To: 55.0 m
Elevation
From: -23.9 m
To: -24.9 m
Stratigraphy
Q1: Pleistocene
Petrography
fS: fine-sand
Petrography Composition
fS: fine-sand
41.17 %

Language support





GST Server



- Improved handling of large geometries, esp SEGY and Solids
- Improved handling of thousands of sub geometries by magnitudes
- Improved error and status messages
- Allowing to use more SSL certificates
- Added Input formats:
  - VTK
  - GeoH5
- Added Output formats:
  - DXF
  - GeoJSON

GST Server



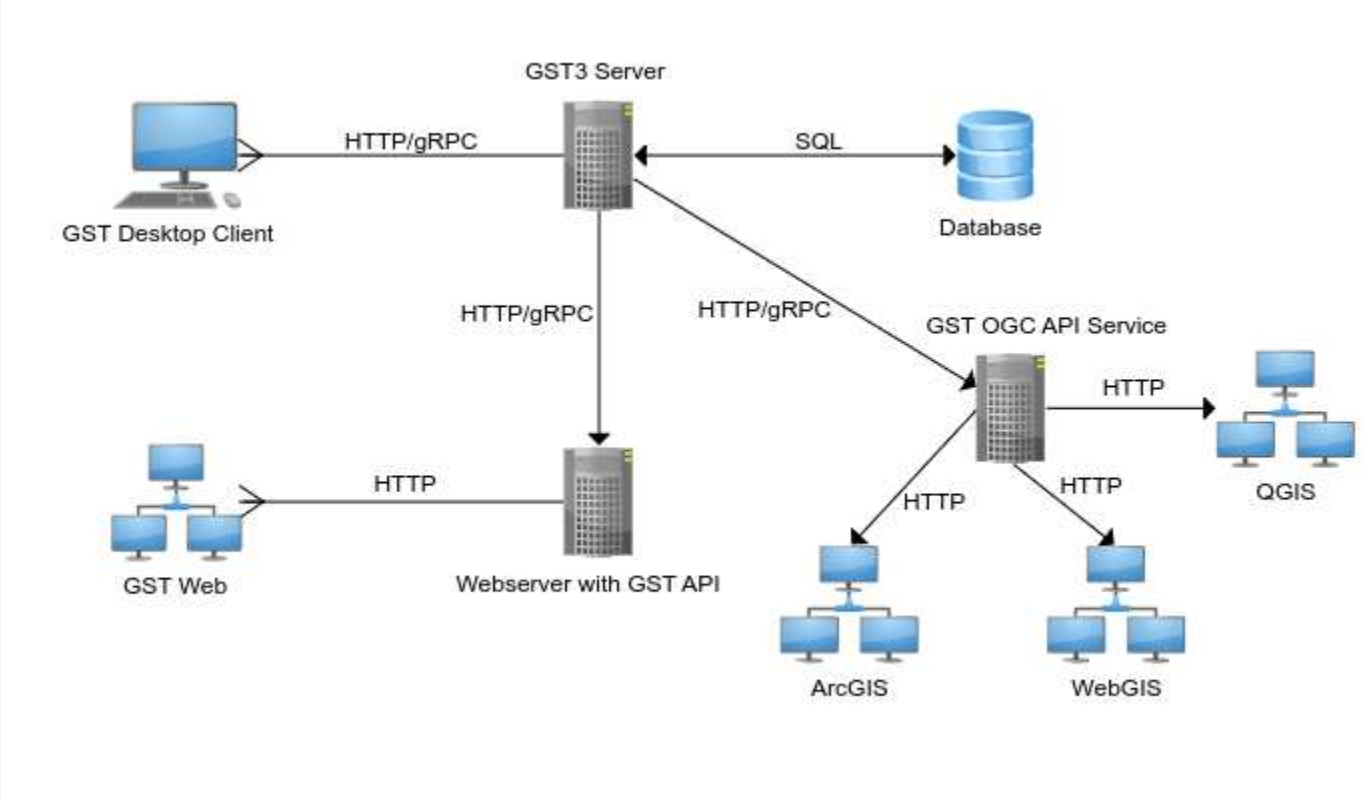
* Integration of GDAL and Proj -> no extra setup needed
* Better caching
* Many bug fixes
* Many small improvements

OGC API Volumes



- Allows providing standard way to access 3d data
- Multiple Modules
  - (Features)
  - Styles
  - Volumes
- Tested in Cesium environments with Kassel and Darmstadt

OGC API Volumes



OGC API Volumes

JavaScript code | HTML body & CSS

```
const viewer = new Cesium.Viewer("cesiumContainer", {
  // This is a global 3D Tiles tileset so disable the
  // globe to prevent it from interfering with the data
  //globe: false,
  // Disabling the globe means we need to manually
  // re-enable the atmosphere
  skyAtmosphere: new Cesium.SkyAtmosphere(),
  // 2D and Columbus View are not currently supported
  // for global 3D Tiles tilesets
  sceneModePicker: false,
  // Imagery layers are not currently supported for
  // global 3D Tiles tilesets
  baseLayerPicker: false,
  // Use the Google geocoder instead of Bing
  //geocoder: Cesium.IonGeocodeProviderType.GOOGLE,
});

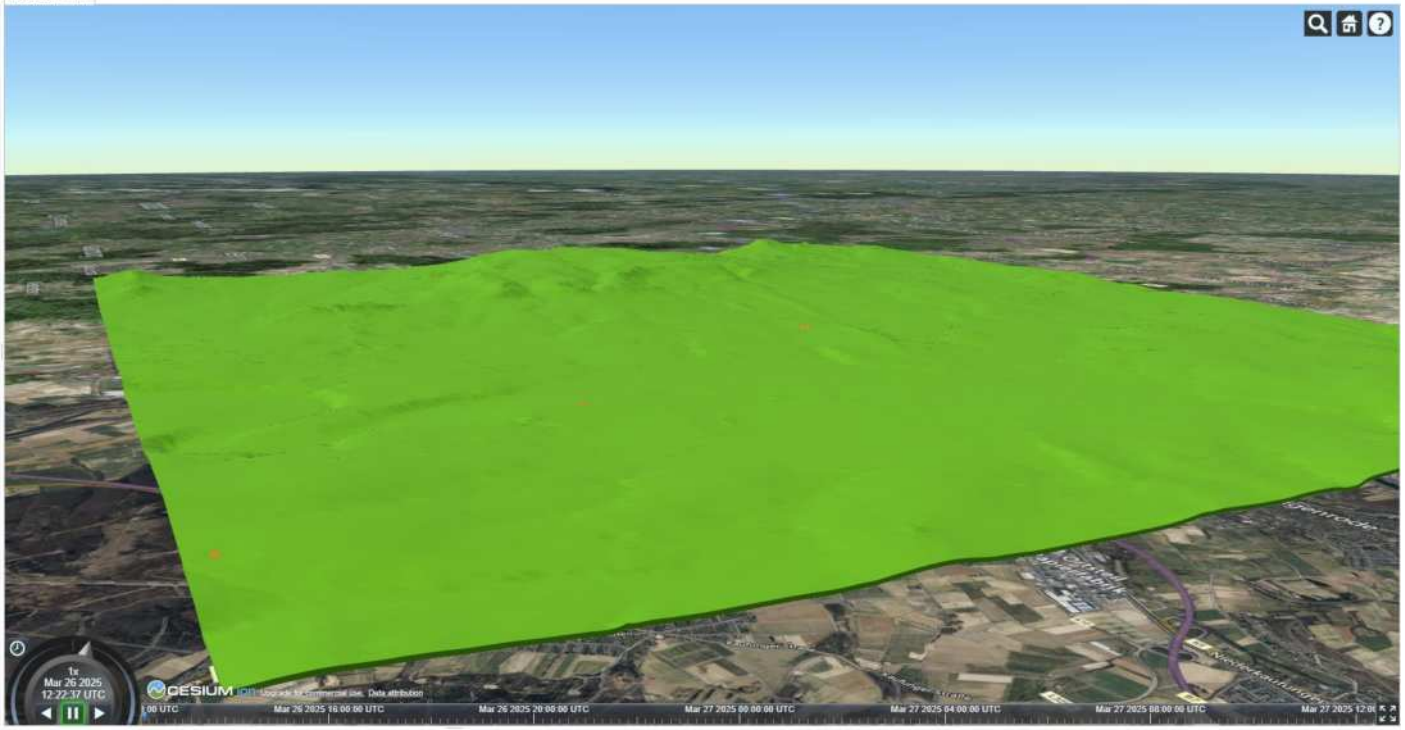
try {
  //const tileset = await Cesium.Cesium3DTileset.fromIonAssetId(2275207);
  //viewer.scene.primitives.add(tileset);

  const layer = viewer.imageryLayers.addImageryProvider(
    await Cesium.IonImageryProvider.fromAssetId(3),
  );

  console.log("before 3d tiles load");
  const tileset_giga = await Cesium.Cesium3DTileset.fromUrl(
                                  tems.com/collections/762/styles/11"
  );
  console.log("after 3d tiles load");
  viewer.scene.primitives.add(tileset_giga);

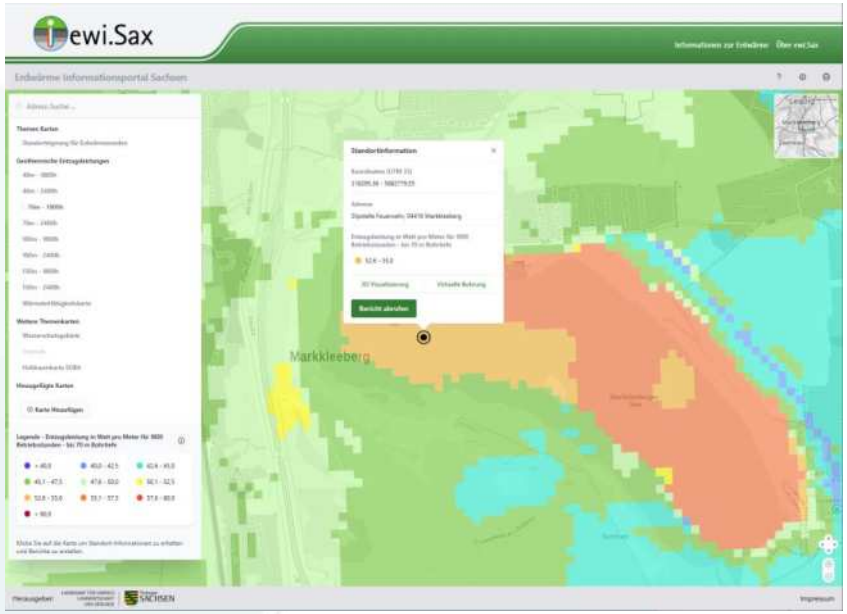
} catch (error) {
  console.log(error);
}
```

Cesium 1.127

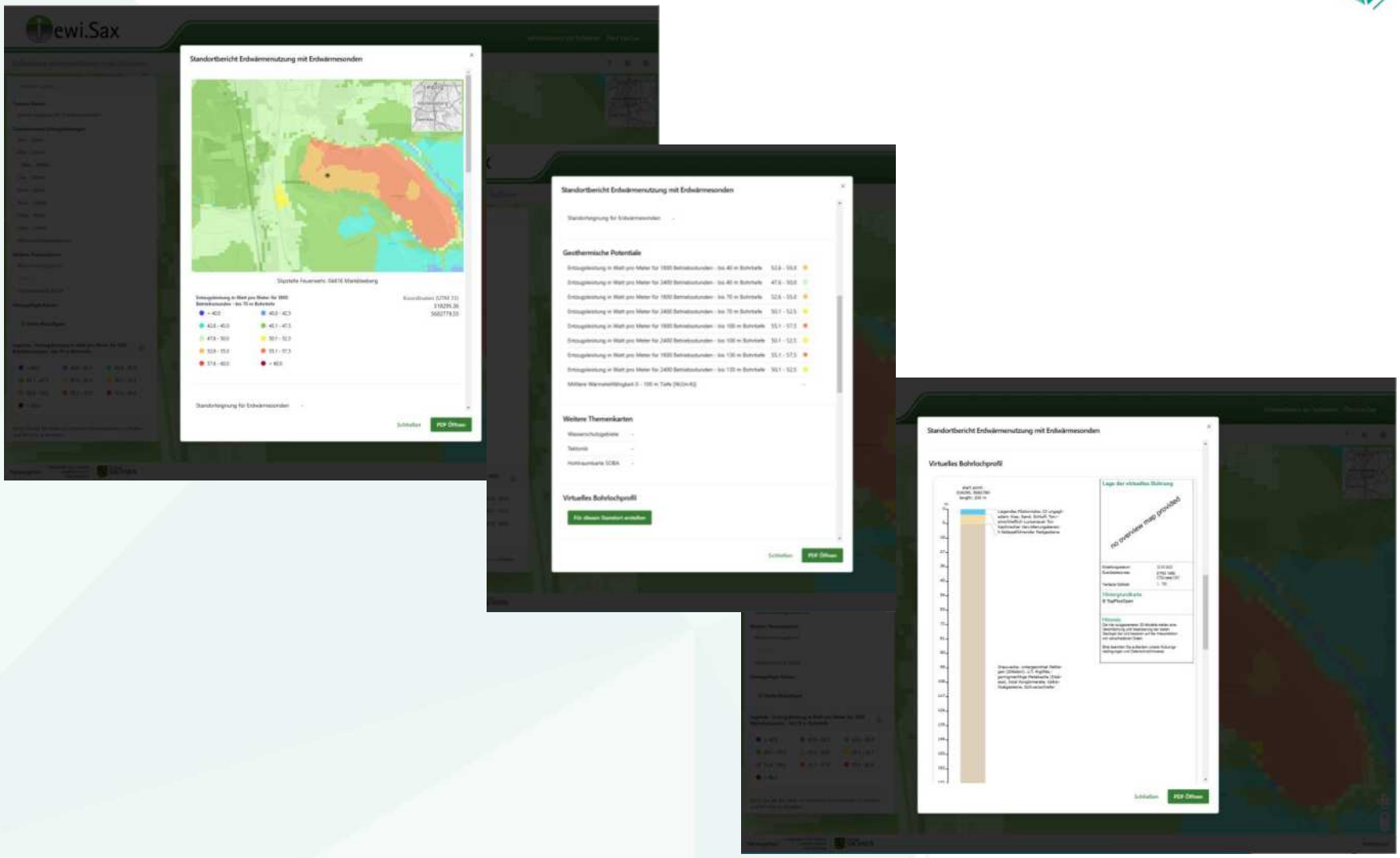


Informationsportal Erdwärme Sachsen

- Contract with LfULG Saxony
- Project runtime: Jan 2024 – Nov 2024
- Implementation of an Information portal for geothermal energy
- Several prepared maps
- Incorporation of WMS
- Generation of reports
- Address search
- Admin area to change texts
- Similar to Geoplasma project



Informationsportal Erdwärme Sachsen





Questions?

Remarks?

Wishes?



Rouwen Lehné (Geological Survey Hesse)

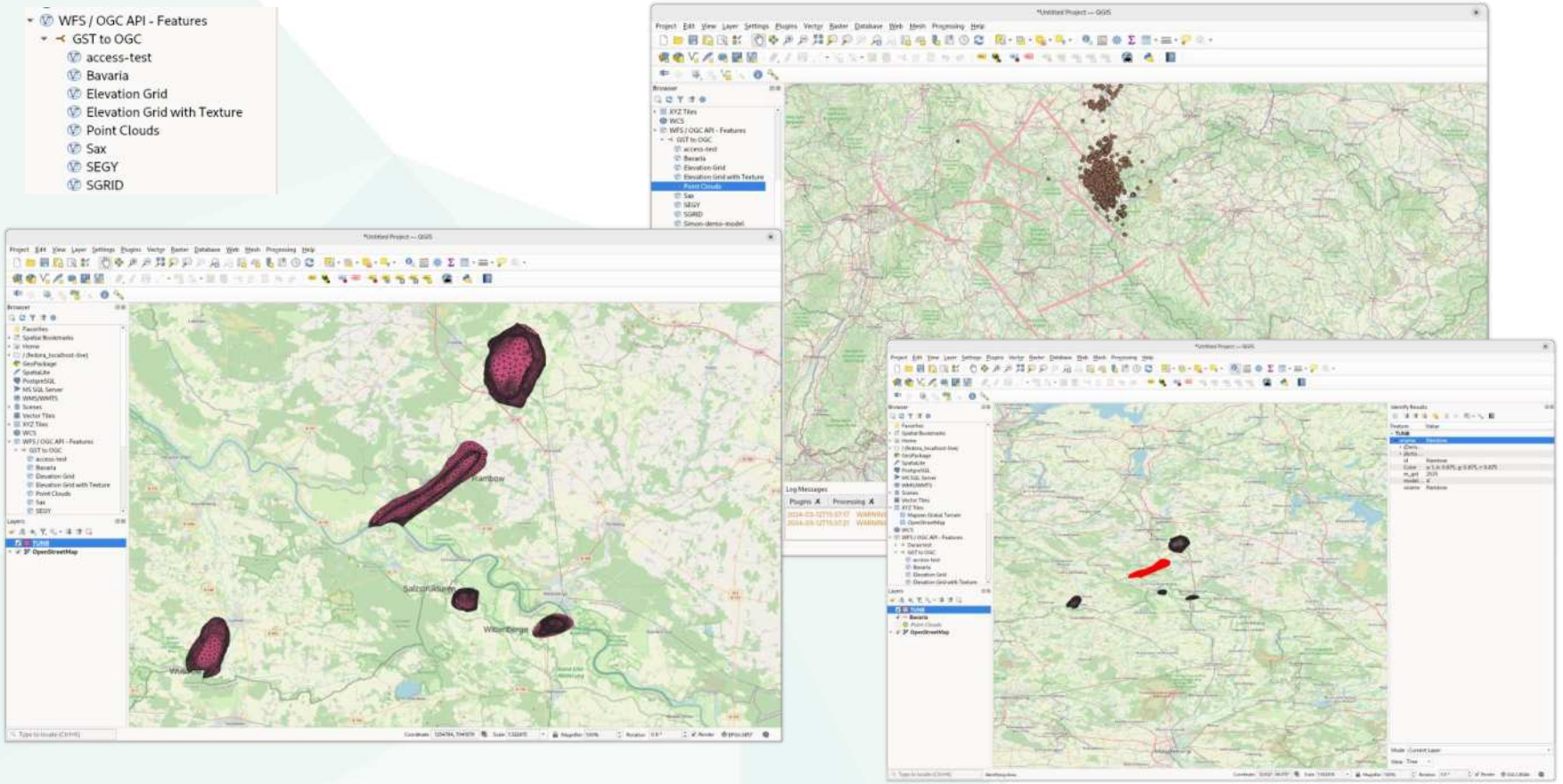


Kaspar Merz (nagra)

Provisional Roadmap 2025

* Borehole Export as 3d tiles and wl
* OGC API Process -> Aggregator
* OGC API Features

Provisional Roadmap 2025 | OGC API Features



Provisional Roadmap 2025

* Desktop (pre)View tab (2D map±sections OR simple 3D)
* Store colors on Points / Simplexes
* SEGY info Dialog
* Multiple borehole classifications
* Dynamic coloring in GST Web
* Predefined borehole filters

Provisional Roadmap 2025

* Support of different borehole sets (shallow, deep, geothermal, etc pp)
* Basic feature manipulation
  * e.g. move 300m higher (z = z + 300)
* Your input ...

Thank you!





Questions?

Remarks?

Wishes?

Thank you!

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