GiGa infosystems

GST User Meeting 2026

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

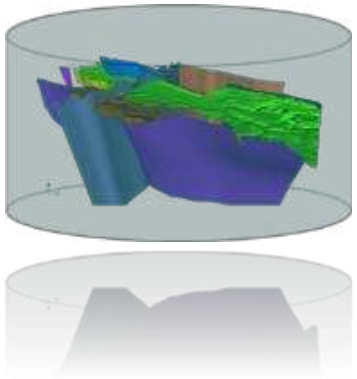
Disclaimer

* 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 (even publicly)
* We can provide guidance to achieve nice results with your data, don't hesitate to ask

Agenda

* 9.00 – 11.00 Developments of 2025, Paul Gabriel

GiGa infosystems



- Team of 10
  (3 Backend, 1.5 Desktop, 4 Web, 0.5 DevOps)
- **Oracle Partner, GIS Award**
- Cooperation with
  - TU Bergakademie Freiberg
  - Petex (MOVE)





Developments in 2025

* 336 Bugs fixed
* 297 Improvements/Tasks
* 146 New Features
* 2 GST Releases

Developments in 2025

* Geotest, SaaS
* Schweizer Salinen AG, SaaS in Switzerland
* Schlewsig-Holstein, via LBEG
* Hamburg, via LBEG
* LBGR, SaaS

Developments in 2025

- Main developments with HLNUG, nagra and Saline:
  - **OGC API Features**
  - **Borehole rights, Borehole log rights**
  - **Boreholes as 3d Tiles and GeoJSON**
  - **SEGY Upload improvements**
  - **Regular SGrid slicing**

SCHWEIZER SALINEN SALINES SUISSES

nagra.

HLNUG
Für eine lebenswerte Zukunft

Developments in 2025

- Main developments with swisstopo:
  - **“Polygon” support**
  - **“Polygon” triangulation**
  - **Profile export in paper space**
  - **Profile export formats**
  - **Profile filtering**
  - **Ribbon style faults in 3d exports**
  - **GST Desktop improvements**
  - **GTT revamp**
  - **OGC API Processes**
  - **Kubernetes support**

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Bundesamt für Landestopografie swisstopo

Developments in 2025

- Main developments with LfU Bavaria and LBGR Brandenburg:
  - **Improved Error messages**
  - **Borehole download as CSV and LAS**
  - **Borehole log download as LAS**
  - **Proxy capabilities when connecting to GST**

Bayerisches Landesamt für Umwelt

LBGR

Developments in 2025

- Main developments with LBEG Niedersachsen and LAGB Sachsen-Anhalt:
  - **Improvements with display of solids**
  - **Download of arbitrary additional data**
  - **Download of linked features**
  - **Dynamic Coloring of Voxets and SGrids**
  - **Use of Regions for Voxets and SGrids**

LBEG Landesamt für Bergbau, Energie und Geologie
GEOZENTRUM HANNOVER

SACHSEN-ANHALT

Developments in 2025

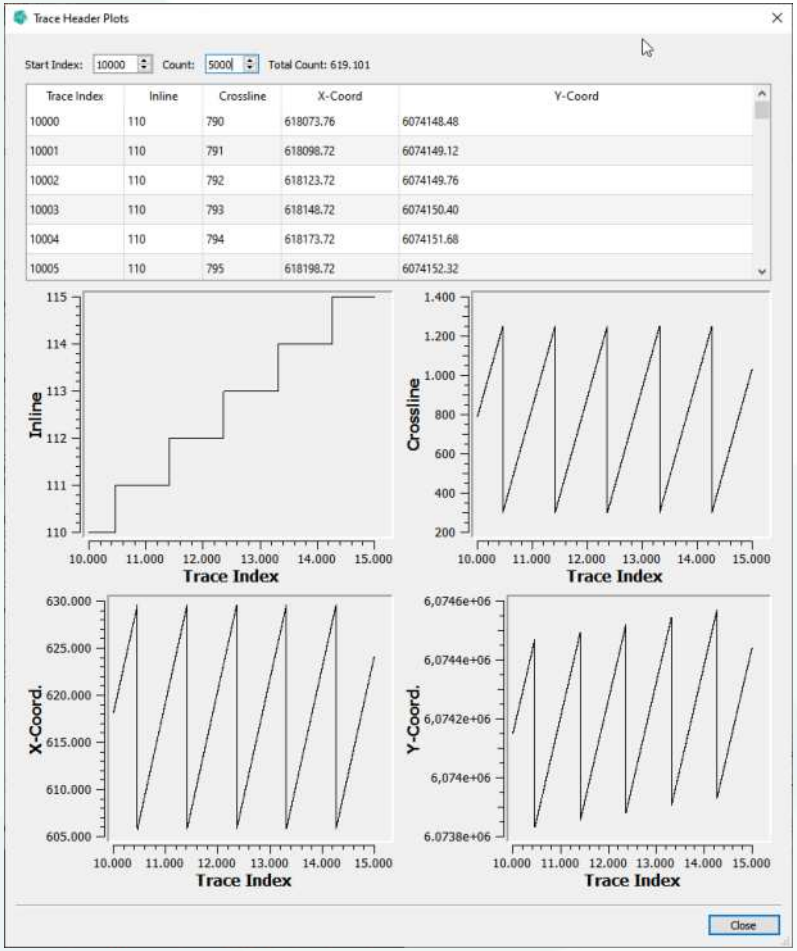
- GiGa:
  - **Move to Gitlab as source management**
  - **Releases will be at new location**
  - **Working in 3 week sprints**
  - **Performance improvements for less RAM use**
  - **Faster loading times of GST Web**
  - **Better loading of larger geometries (100s MB – 2 GB)**
  - **More general approach to Shape collections**
  - **2865 Web Tests, 31% Coverage**
  - **9039 Backend Tests, 80% Cov**
  - **148 Desktop Tests**

Developments in 2025 – GST[AR]

- Improvements QR Code support
- AppClips for iOS
  - Allow for scanning QR codes and view models without installing GST[AR] prior only (iOS)
- Treasure hunt at Geo4Göttingen 2025

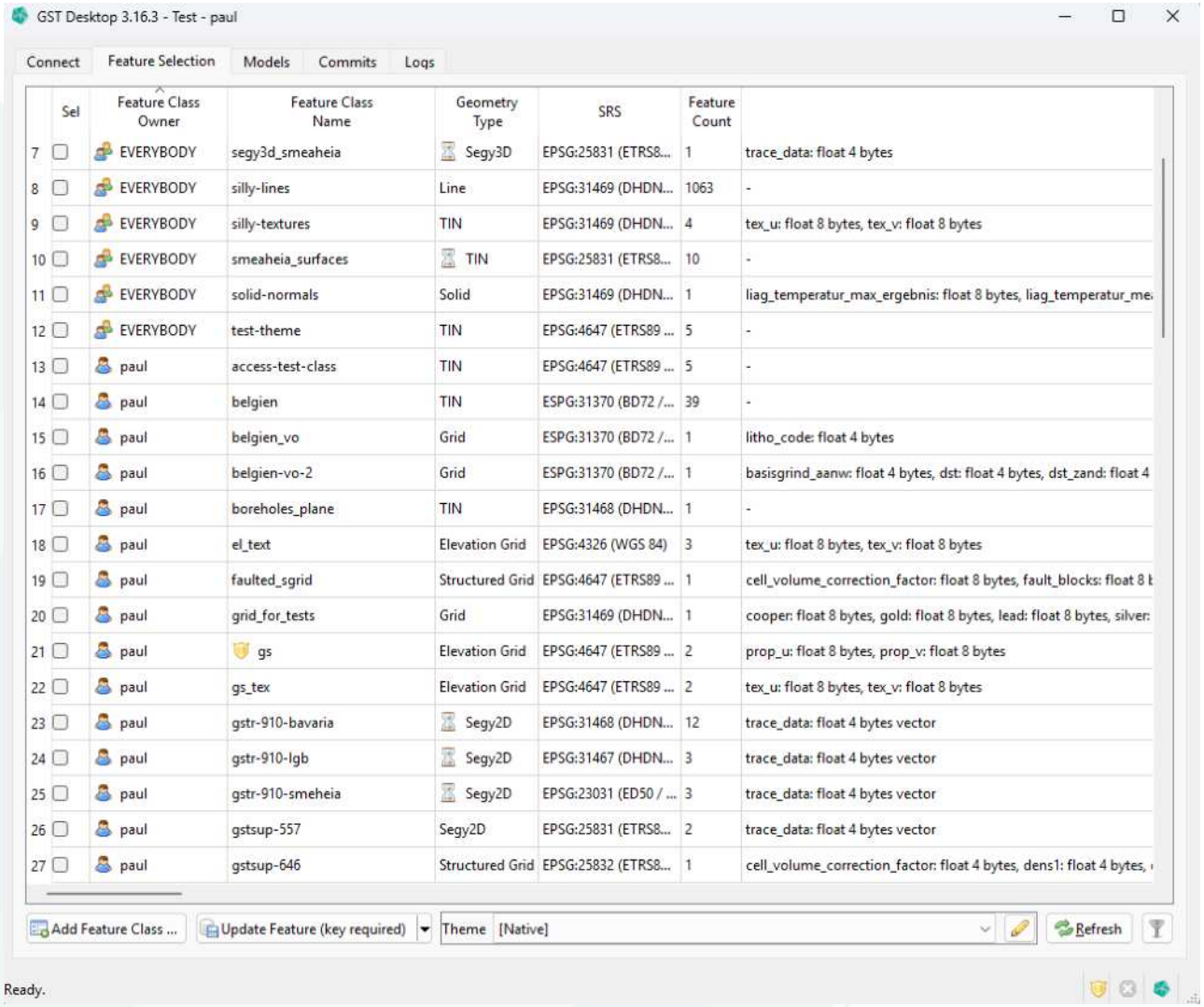


Improved SEGY Upload



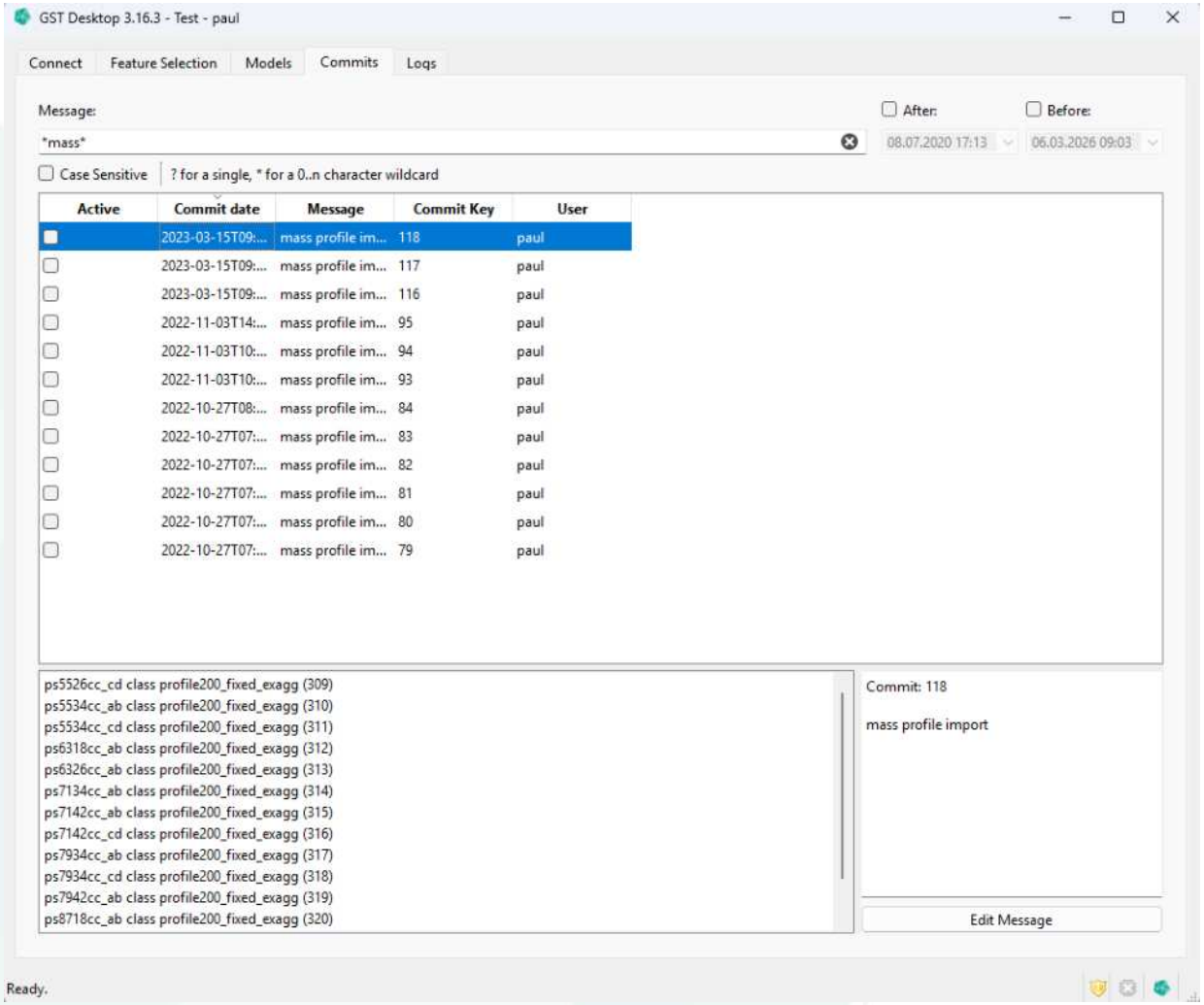
* Detailed geometric information per trace
* Plots allowing to visually correlate geometry
* Provides hint if SEGY import options have been set correctly

Distinct column for owners

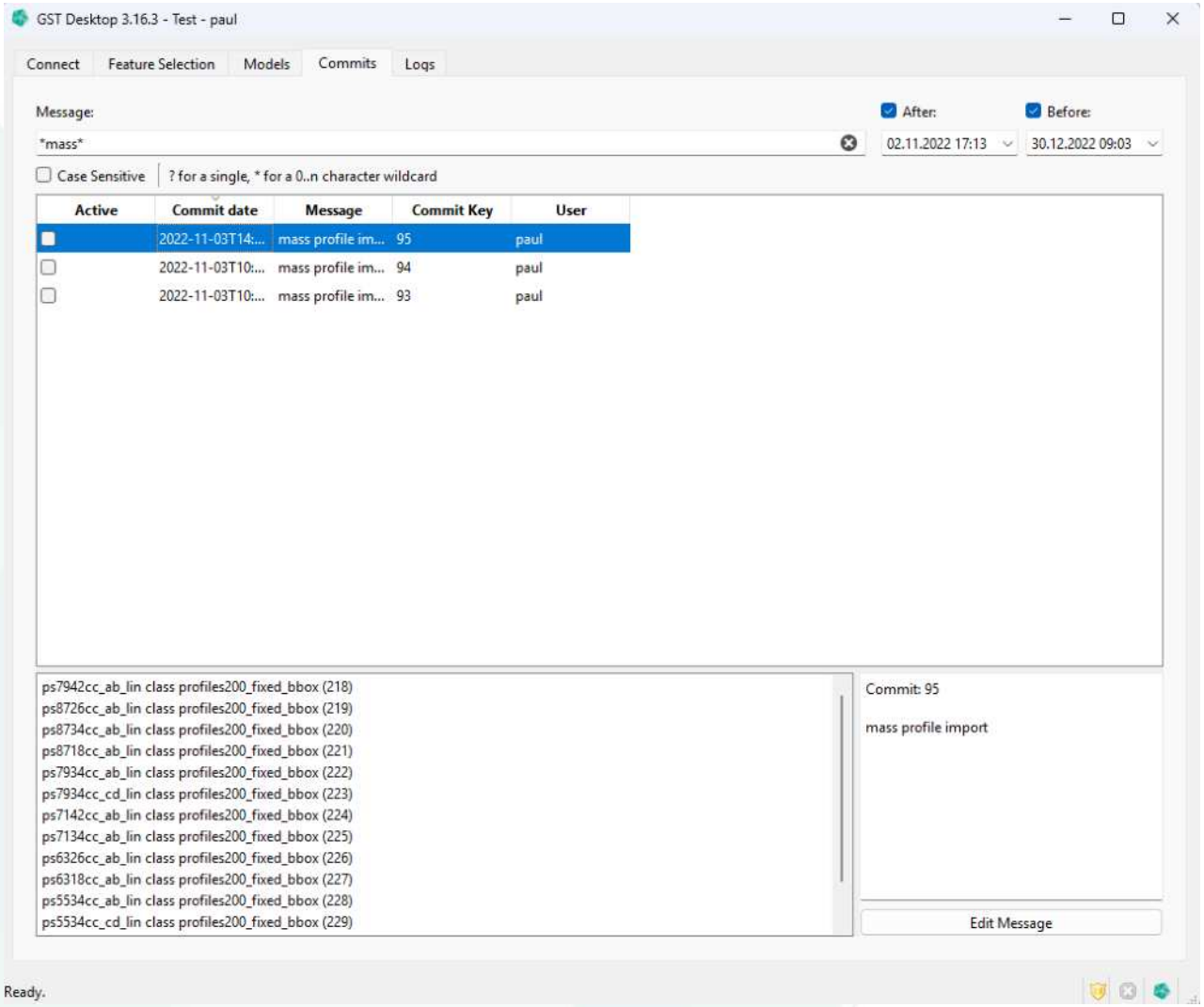


	Sel	Feature Class Owner	Feature Class Name	Geometry Type	SRS	Feature Count	
7	☐	EVERYBODY	segy3d_smeaheia	Segy3D	EPSG:25831 (ETRS8...	1	trace_data: float 4 bytes
8	☐	EVERYBODY	silly-lines	Line	EPSG:31469 (DHDN...	1063	-
9	☐	EVERYBODY	silly-textures	TIN	EPSG:31469 (DHDN...	4	tex_u: float 8 bytes, tex_v: float 8 bytes
10	☐	EVERYBODY	smeaheia_surfaces	TIN	EPSG:25831 (ETRS8...	10	-
11	☐	EVERYBODY	solid-normals	Solid	EPSG:31469 (DHDN...	1	liag_temperatur_max_ergebnis: float 8 bytes, liag_temperatur_me
12	☐	EVERYBODY	test-theme	TIN	EPSG:4647 (ETRS89 ...	5	-
13	☐	paul	access-test-class	TIN	EPSG:4647 (ETRS89 ...	5	-
14	☐	paul	belgien	TIN	ESPG:31370 (BD72 /...	39	-
15	☐	paul	belgien_vo	Grid	ESPG:31370 (BD72 /...	1	litho_code: float 4 bytes
16	☐	paul	belgien-vo-2	Grid	ESPG:31370 (BD72 /...	1	basisgrind_aanw: float 4 bytes, dst: float 4 bytes, dst_zand: float 4
17	☐	paul	boreholes_plane	TIN	EPSG:31468 (DHDN...	1	-
18	☐	paul	el_text	Elevation Grid	EPSG:4326 (WGS 84)	3	tex_u: float 8 bytes, tex_v: float 8 bytes
19	☐	paul	faulted_sgrid	Structured Grid	EPSG:4647 (ETRS89 ...	1	cell_volume_correction_factor: float 8 bytes, fault_blocks: float 8 b
20	☐	paul	grid_for_tests	Grid	EPSG:31469 (DHDN...	1	cooper: float 8 bytes, gold: float 8 bytes, lead: float 8 bytes, silver:
21	☐	paul	gs	Elevation Grid	EPSG:4647 (ETRS89 ...	2	prop_u: float 8 bytes, prop_v: float 8 bytes
22	☐	paul	gs_tex	Elevation Grid	EPSG:4647 (ETRS89 ...	2	tex_u: float 8 bytes, tex_v: float 8 bytes
23	☐	paul	gstr-910-bavaria	Segy2D	EPSG:31468 (DHDN...	12	trace_data: float 4 bytes vector
24	☐	paul	gstr-910-lgb	Segy2D	EPSG:31467 (DHDN...	3	trace_data: float 4 bytes vector
25	☐	paul	gstr-910-smeheia	Segy2D	EPSG:23031 (ED50 / ...	3	trace_data: float 4 bytes vector
26	☐	paul	gstsup-557	Segy2D	EPSG:25831 (ETRS8...	2	trace_data: float 4 bytes vector
27	☐	paul	gstsup-646	Structured Grid	EPSG:25832 (ETRS8...	1	cell_volume_correction_factor: float 4 bytes, dens1: float 4 bytes,

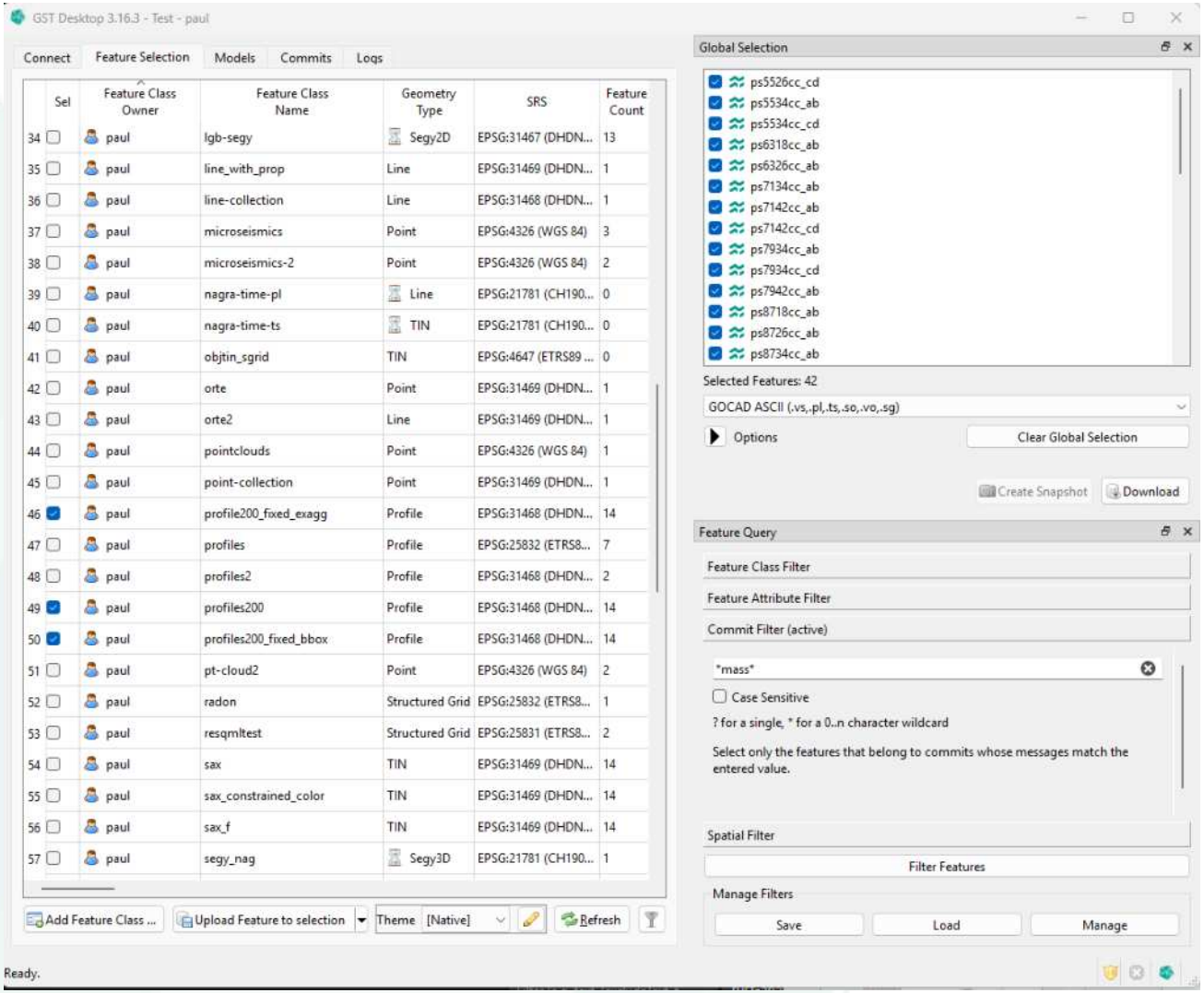
Commit search



Commit search



Commit filter

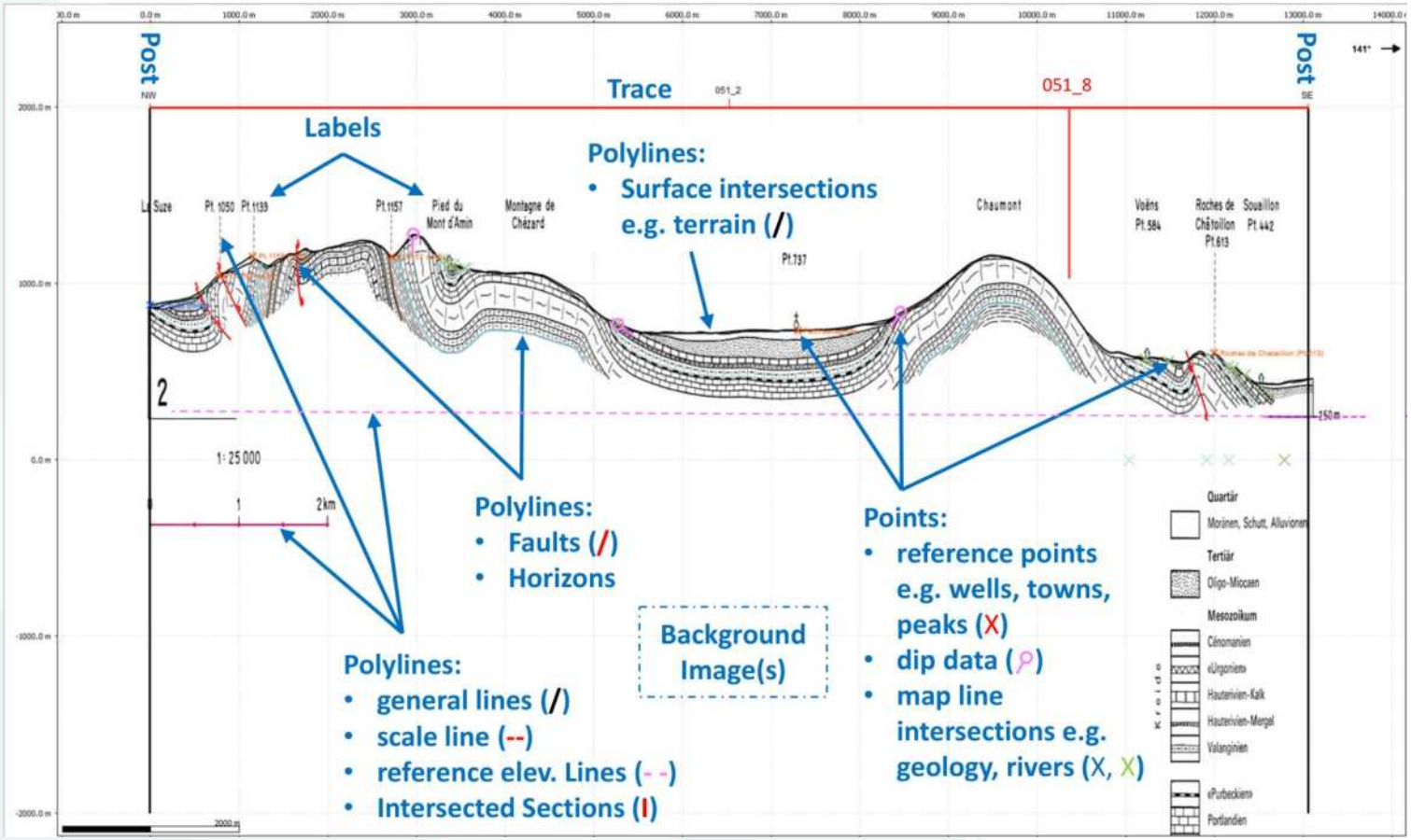


Variable Geometry Types for Profiles



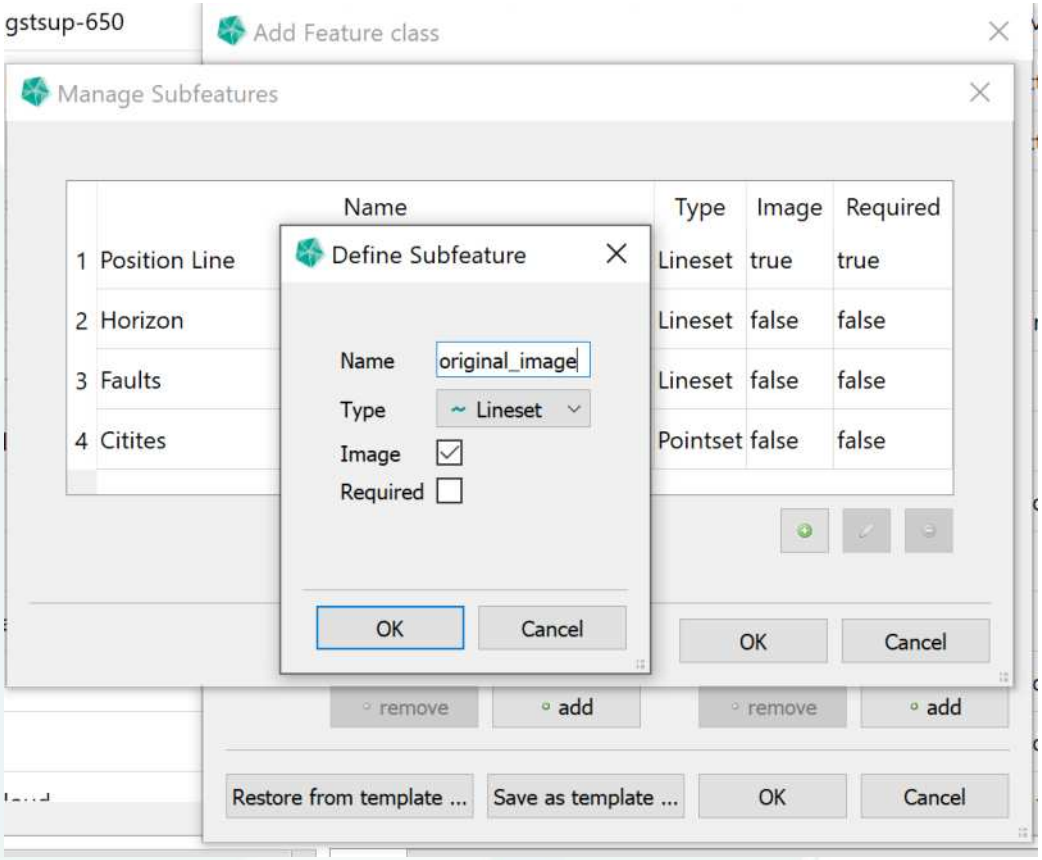
- **GST** can manage Geological Profiles
- Profiles are a distinct feature type in **GST**
- Assign arbitrarily sub-types
- Current sub-types are
  - Points
  - Lines
- Store images on Profiles
- Can be set as required

Variable Geometry Types for Profiles



Created by Lance Reynolds, swisstopo

Variable Geometry Types for Profiles



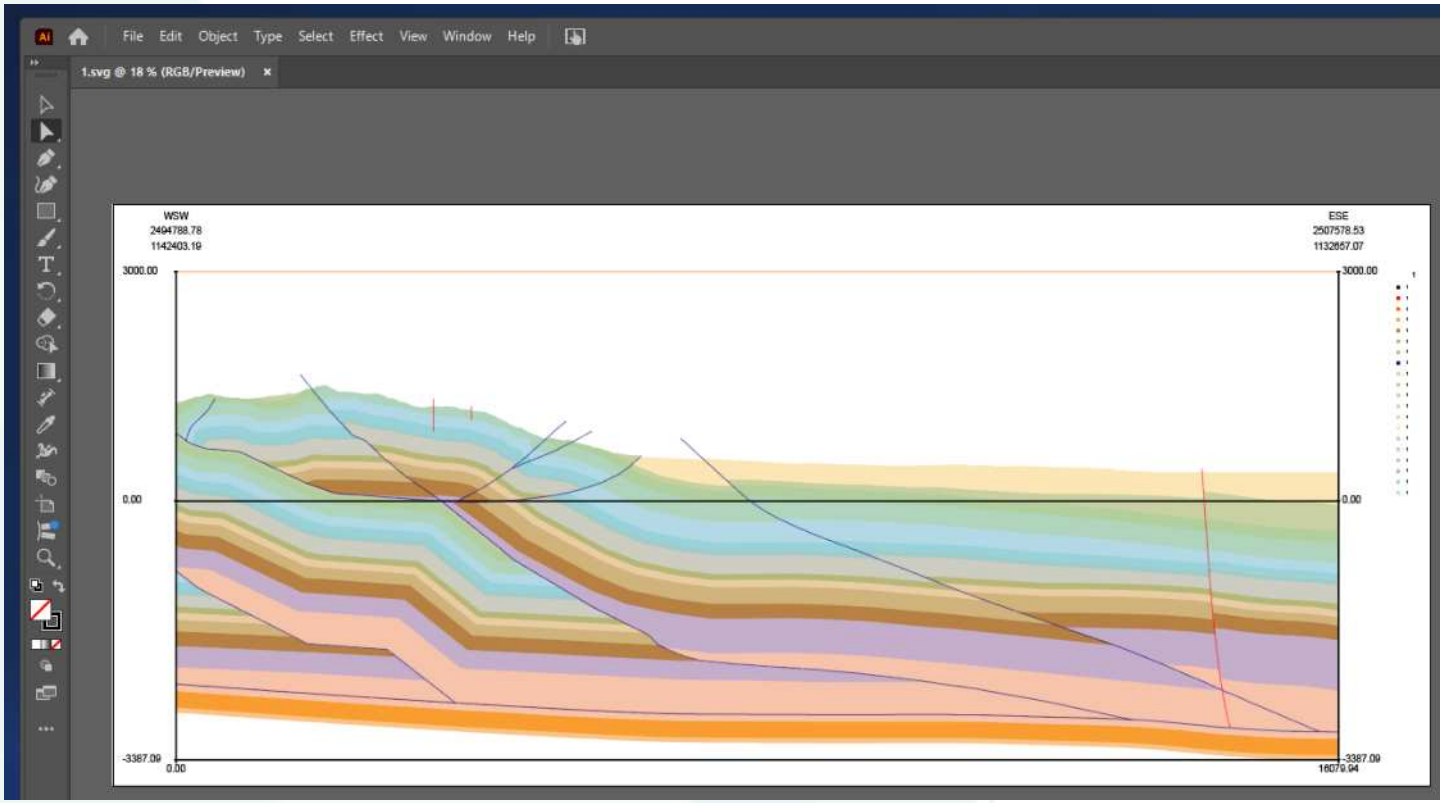
“Polygon” Support



* Closed Lines with Feature Attribute `shapetype` and value `polygon`
* Need some triangulation for 3d export formats, especially 3d tiles
* Closed surfaces in 2d export: SVG

Profile Export – 2d

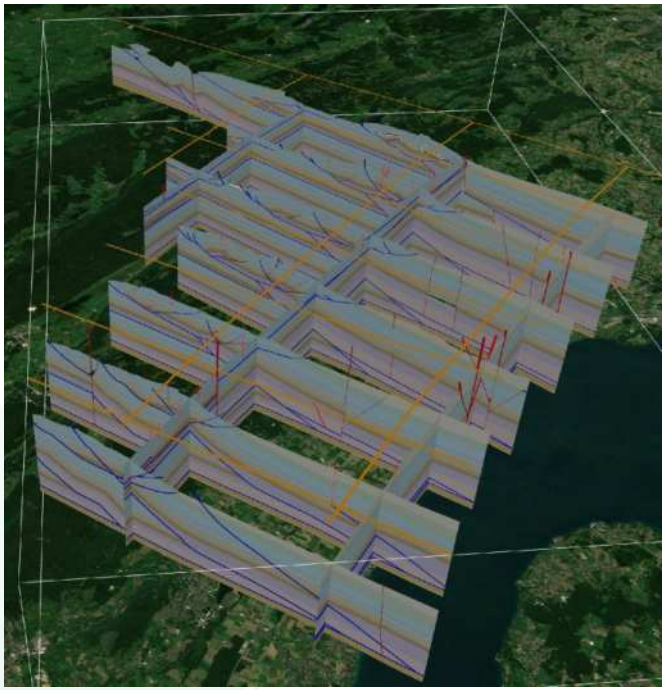
* Respect special lines
* Respect `shapestyle`, e.g. Dashed lines



Created by Lance Reynolds, swisstopo

Profile Export – 3d

- Triangulation in for 3d formats
- Faults as Ribbons
- New formats: 3dtiles, 3d geopackage

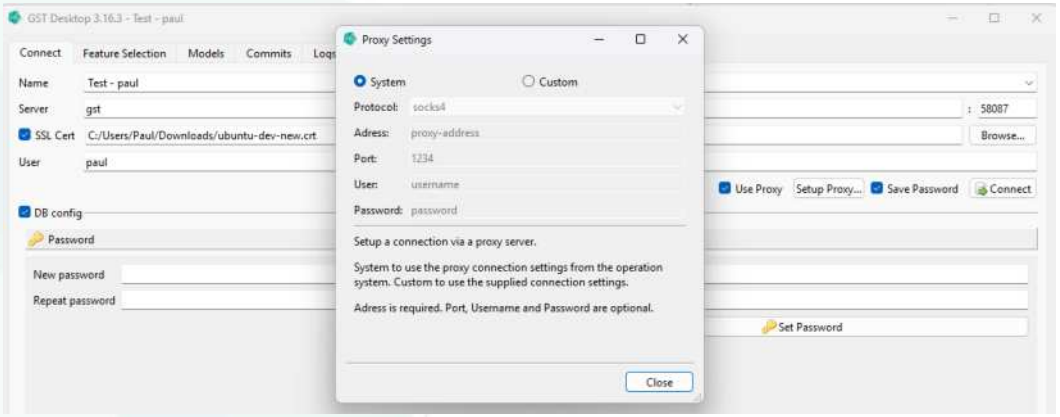


Created by Lance Reynolds, swisstopo

Proxy Settings for GST



- Can use system proxies
- Can use custom proxy settings
- Tunnels GST Desktop traffic
- Easier in some corporate environments
- Supports socks4, socks5, http and https
- Supports credentials

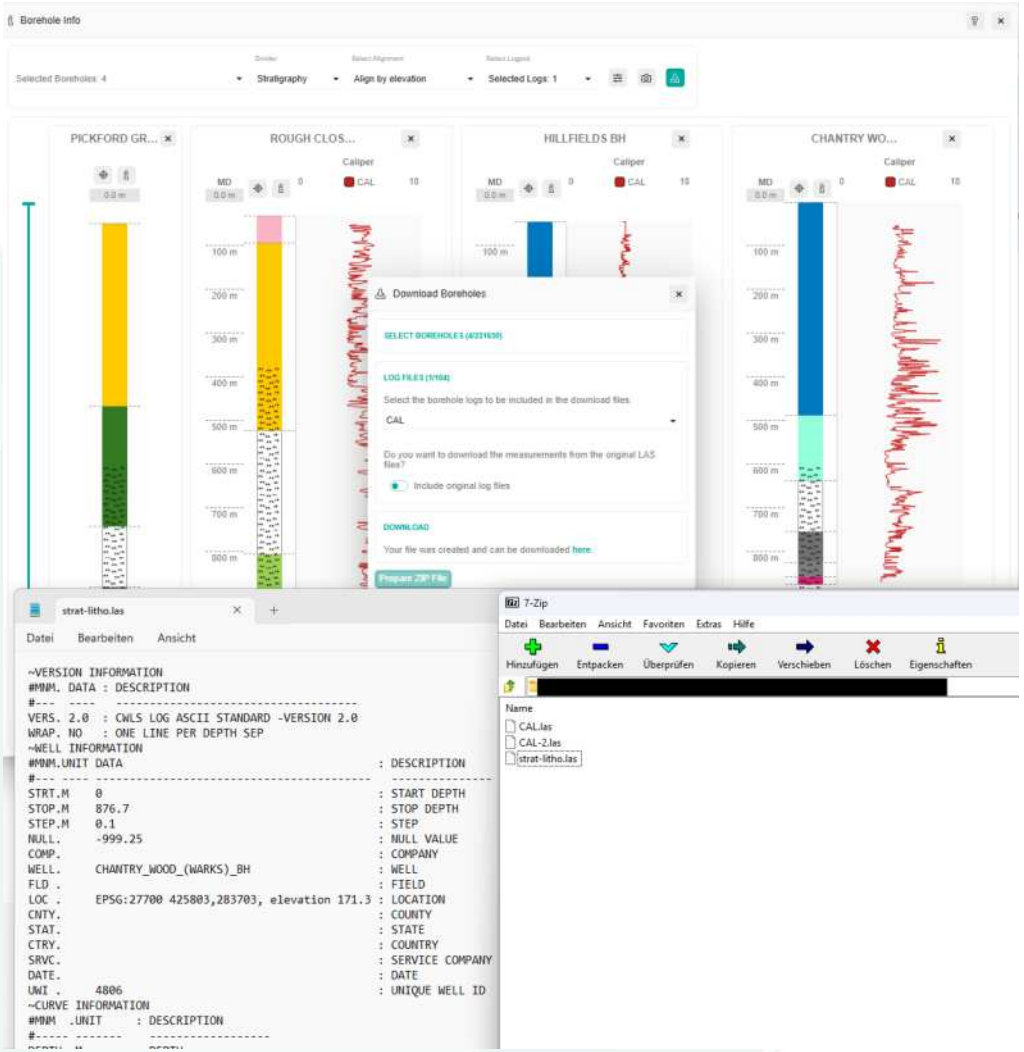


Borehole rights and downloads



* Boreholes can be restricted to GST users, GST Groups, GST Webusers
* Borehole logs can be restricted too
* Allows for visible borehole but hidden (e.g. confidential) borehole logs
* Boreholes and Borehole Logs can be downloaded as LAS and CSV
* Borehole Download right has to be granted on GST Webusers

Borehole rights and downloads



GTT Revamp



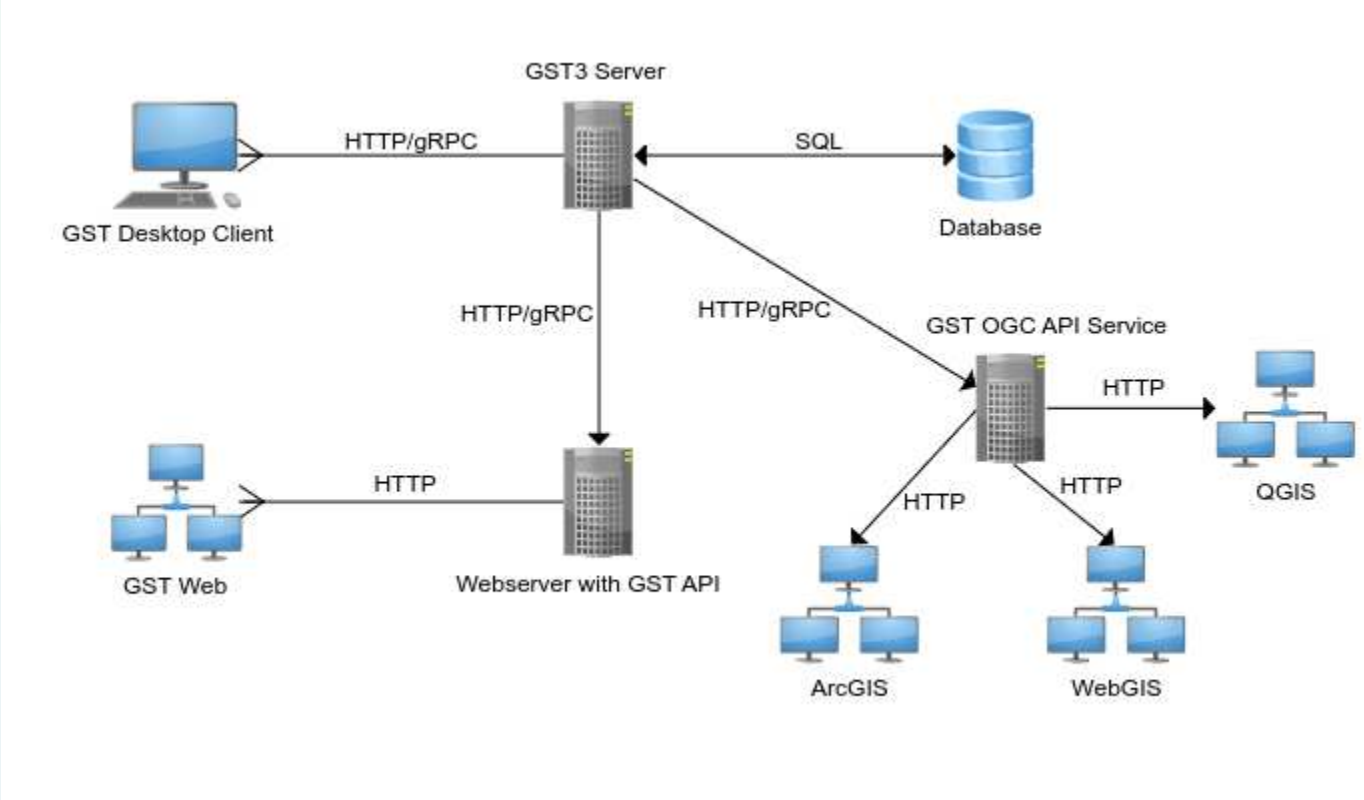
* Old GTT did not work on all systems, was not reproducible
* New GTT with more Rust and better frontend framework
* Removal of unneeded functionality
* Comes with Stable API, thus backwards compatible from 3.17 on
* Integration of new feature types:
  * SEGY
  * Grids
  * Profiles

OGC API



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

OGC API


GST3 Server
HTTP/gRPC
SQL
GST Desktop Client
Database
HTTP/gRPC
HTTP/gRPC
GST OGC API Service
HTTP
QGIS
HTTP
HTTP
HTTP
GST Web
Webserver with GST API
ArcGIS
WebGIS

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,
});

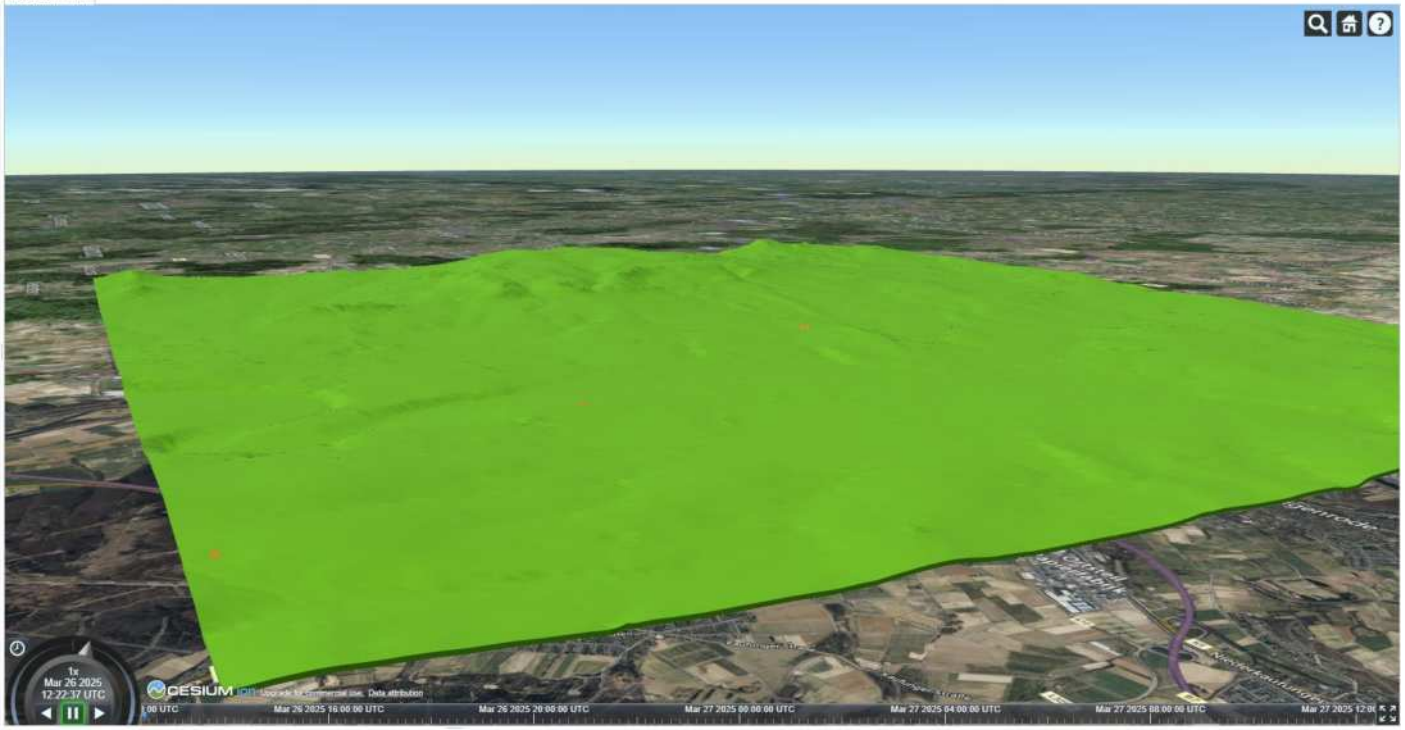
try {
  //const tileset = await Cesium.Cesium3DTileset.fromIonAssetId(2275207);
  //viewer.scene.primitives.add(tileset);

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

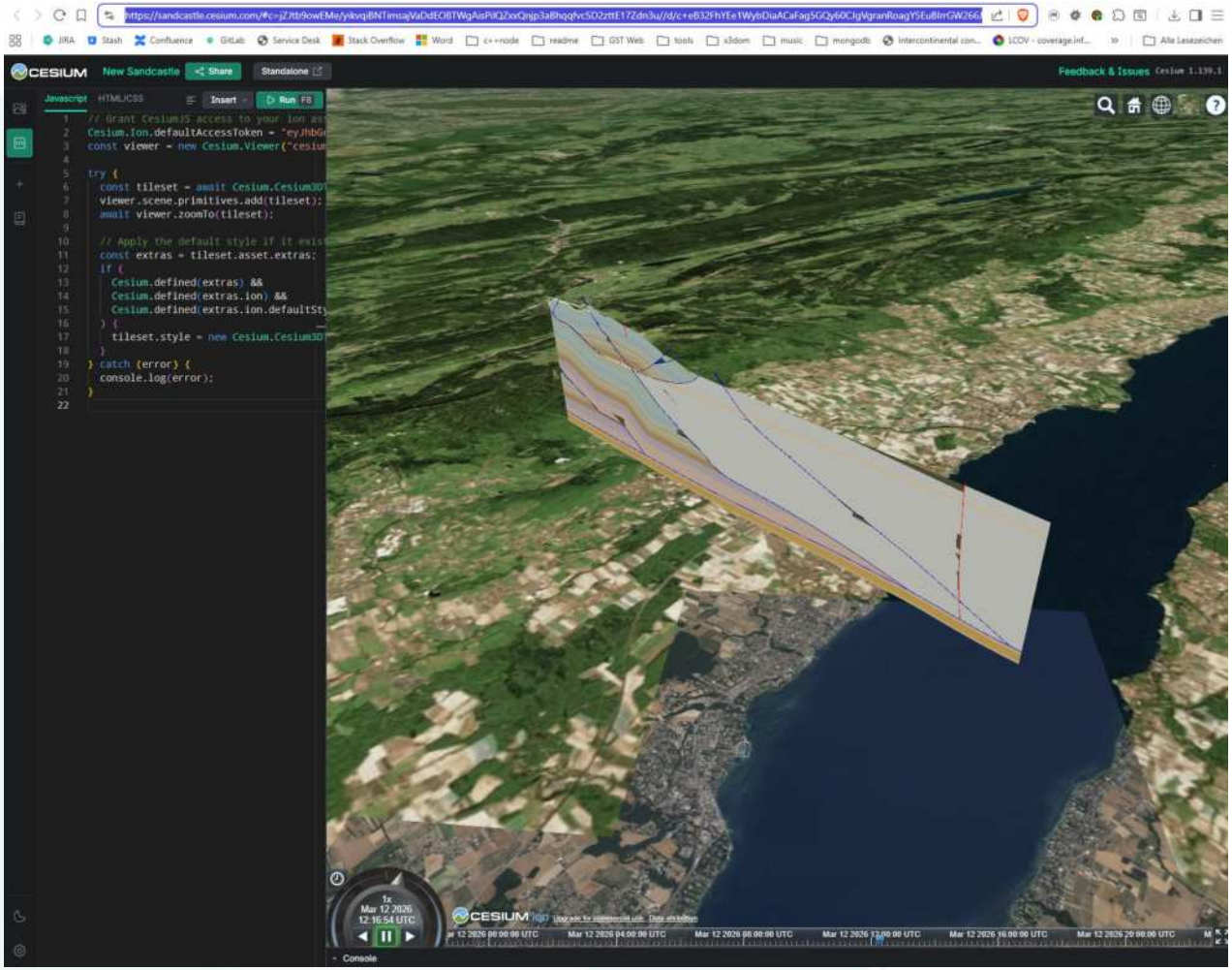
  console.log("before 3d tiles load");
  const tileset_giga = await Cesium.Cesium3DTileset.fromUrl(
                                  tems.com/collections/762/styles/11"
  );
  console.log("after 3d tiles load");
  viewer.scene.primitives.add(tileset_giga);

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

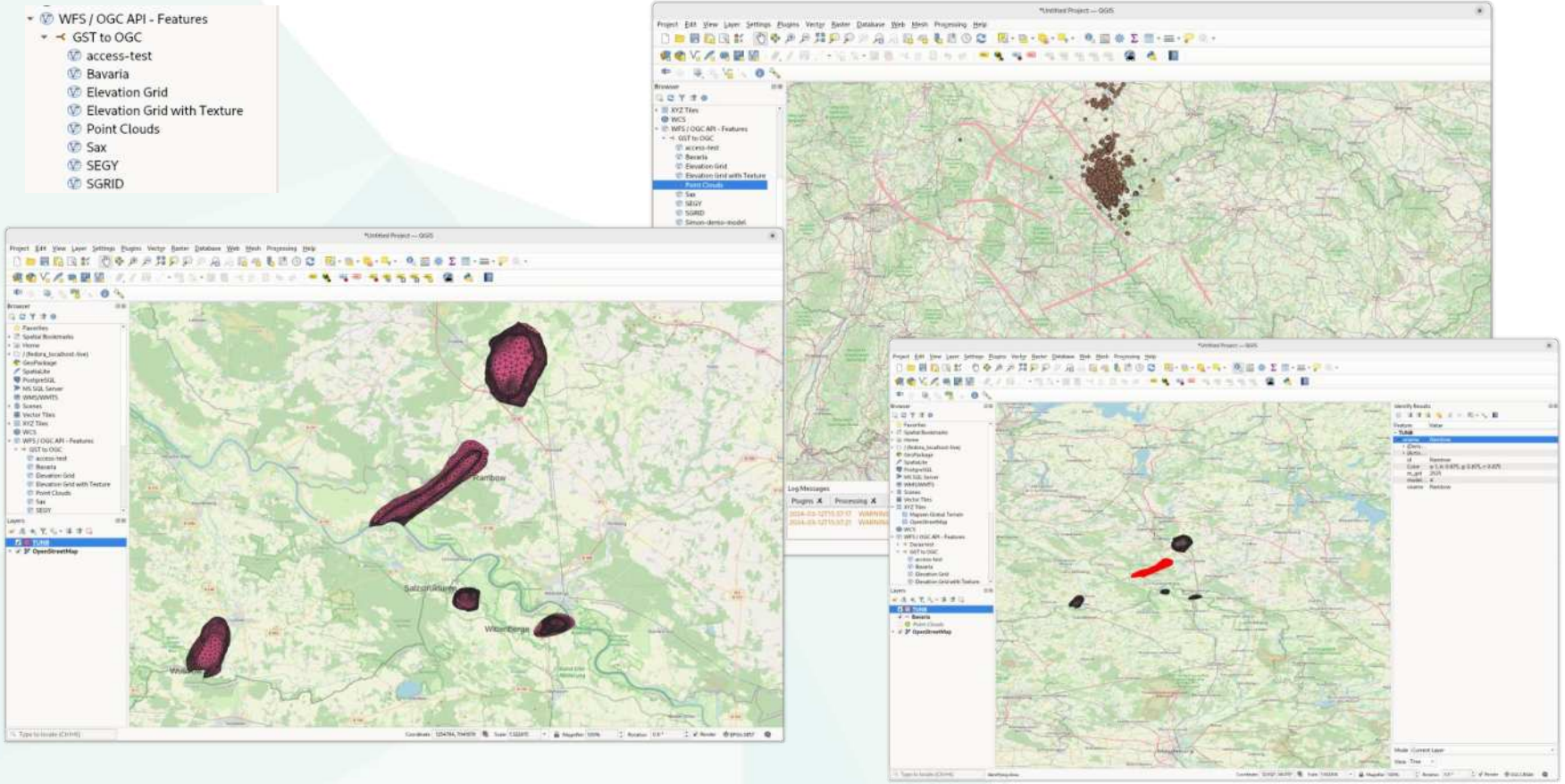
Cesium 1.127



OGC API Volumes



OGC API Features



OGC API Processes



* First Process: Features Within Bounds - Download features from various sources inside the requested bounds
  * GST
  * STAC (SpatioTemporal Asset Catalog)
  * WMS
  * WMTS
  * External Files
  * FDSN1.2
* Allows to create a dataset with auxiliary data without the need to duplicate data in GST
* More Processes to come, e.g. Virtual Boreholes and Cross Sections

OGC API



* Allows display Boreholes as 3d tiles and GeoJSON

* Allows to create SGrid sections (intersections of the vertically shifted SGrid surface with the SGrid itself)

GST Web



- More general approach to Shaapefile collections -> general collections -> renaming in GST 3.18
- Allows to create distinct features but only a single entry in the model tree
- Increased Vertex count -> fewer requests -> faster visualization
- Fast loading of GST Web in general
- Improved performance especially for solids

GST Web



* GST can link arbitrary data via m_additional_download, m_replace_download attributes
* Data will be added to download file
* Display less resoluted geometry in GST web, make high resolution available for download
* Allows for addition or replacement

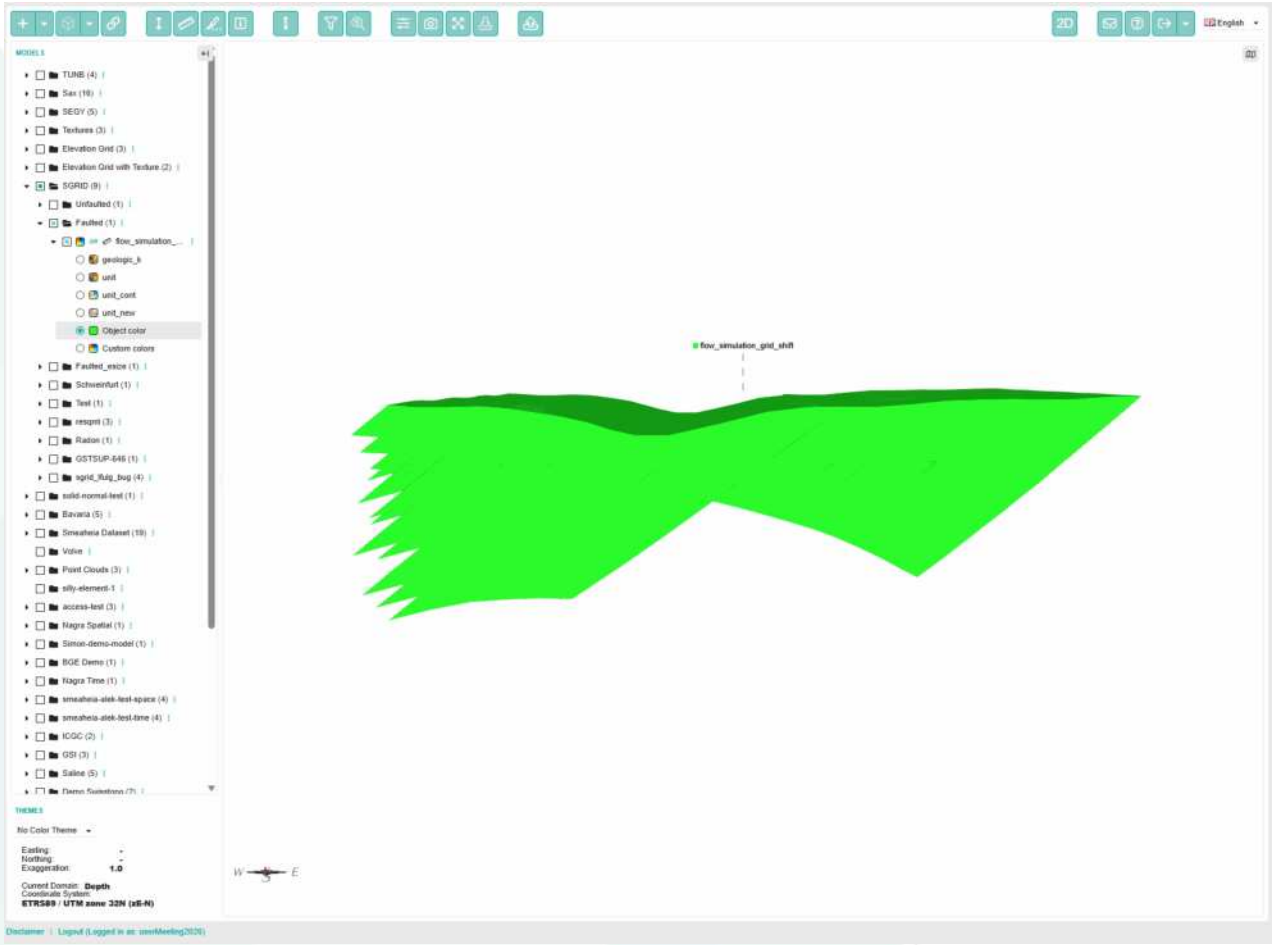
GST Web – Regions and Dynamic Coloring



* Dynamic coloring works with SGrids and Grids (Voxet)

* Users can change colorization on the fly

GST Web – Regions and Dynamic Coloring





Questions?

Remarks?

Wishes?

Provisional Roadmap 2026

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

Provisional Roadmap 2026

- Support of different borehole sets (shallow, deep, geothermal, etc pp)
- Basic feature manipulation
  - e.g. move 300m higher (z = z + 300)
- Time slider for feature attributes
- Time-Depth-Relation for boreholes
- Option to display either depth or time domain models
- Contourlines and colorization
- Your input ...

Thank you!





Questions?

Remarks?

Wishes?

Thank you!

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