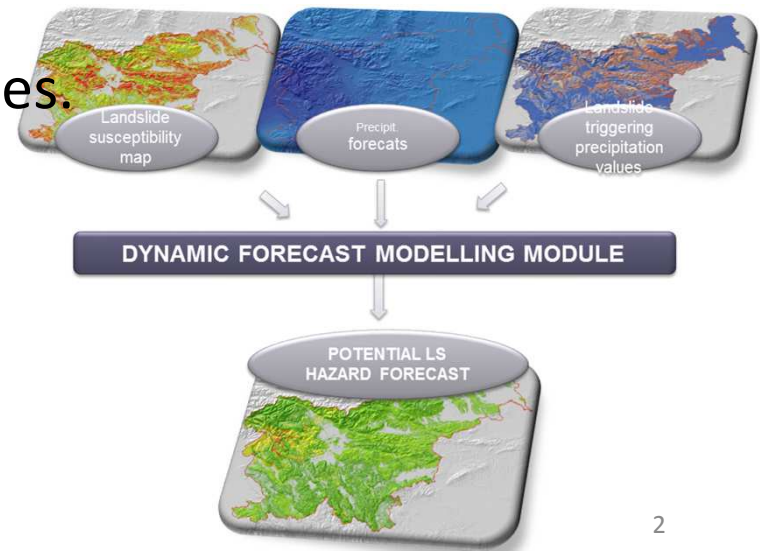
GeoZS

LANDSLIDE SUSCEPTIBILITY MAPS USE CASE

Description of Use Case

- The system is predicting the areas where the probability of triggering landslides is increased due to higher precipitation levels. The endangered zones are predicted using the combination of:
  - A landslide susceptibility model.
  - Precipitation forecasts.
  - Landslide triggering threshold values.



Requirements

Pushing of raw data and the execution of the calculation must: 1. Be automatic 2. Be executed every day with new precipitation forecast
Results shall be disseminated to end-users through a web user interface with standard GIS-functionality.
All maps must be redrawn within 5 seconds after a change in map area.
The map shall be reusable without the need to distribute data or map and it shall be possible to integrate the map in external portals.
Data must be up-to-date and clearly marked with date and time of calculation and validity.
…

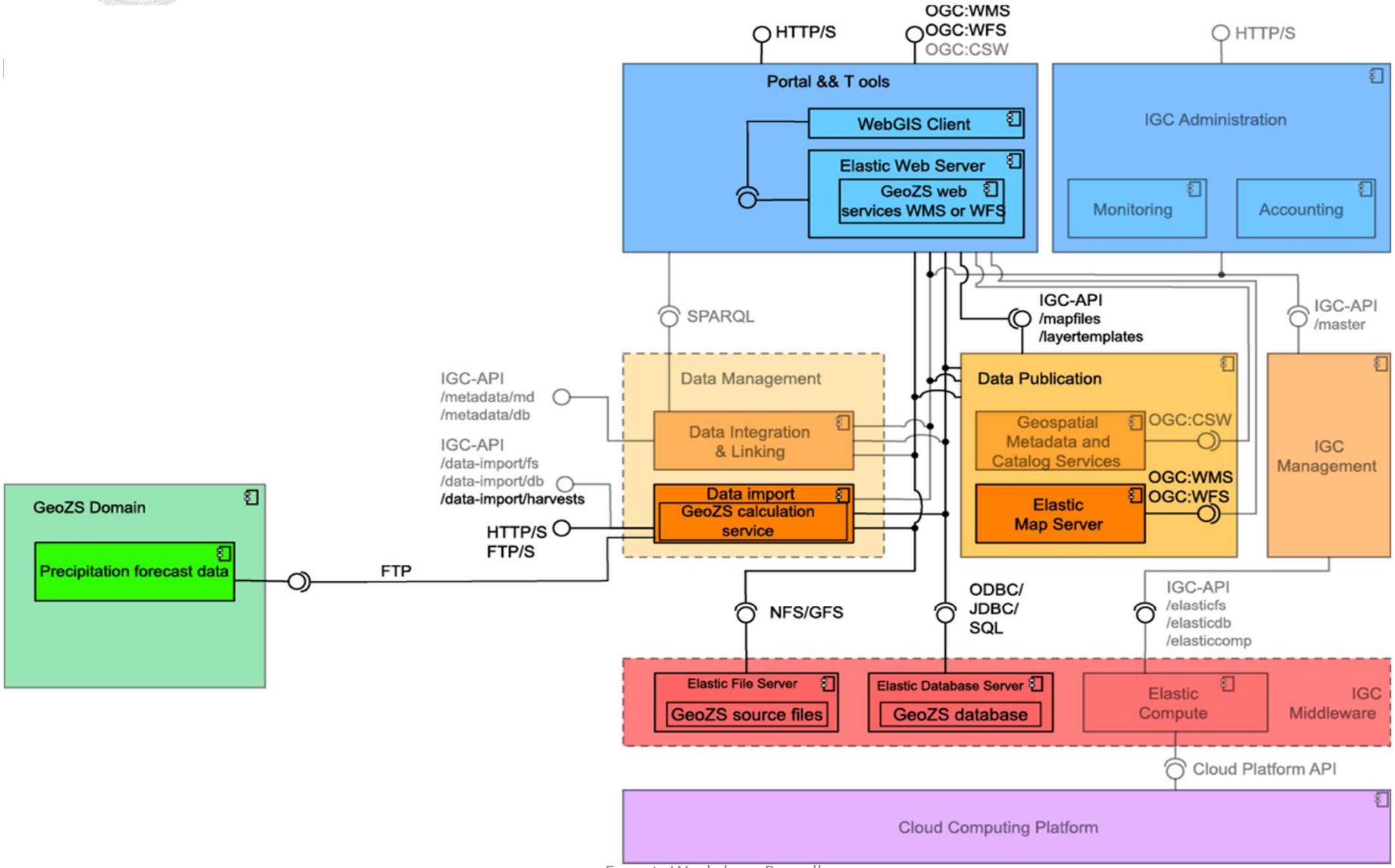
Initial set-up of the system

- Initial import of the GeoZS Susceptibility map database into the INGC platform. This was done in 4 steps:
  1. Create an INGC PostgreSQL database with the GeoZS data-model and a snapshot of the database.
  2. Create GeoZS as a provider within INGC and getting the DBMS connection info through the INGC API Master Service and Elastic Database Service.
  3. Create the same tables of the local PostgreSQL database into the INGC platform.
  4. Insert the latest version of the 2 static tables (Landslide triggering threshold values and landslide susceptibility map) in the INGC GeoZS PostgreSQL database.
- Implement the calculation service:
  1. Uploaded it to the INGC platform using the INGC API Data Import Service.
  2. Start scheduling it using the INGC Scheduling service.
- Implement the web services.

Daily update of the INGC database and calculation of map

1. A service, which collects precipitation forecast data from the Slovenian Environment Agency.
2. The calculation service running at INGC. It
   - Fetches the records from the first service,
   - Performs the “Susceptibility map of triggering landslides due to rainfall forecast” calculations and
   - Inserts records into the database operations.

Integration within the InGeoCloudS Infrastructure



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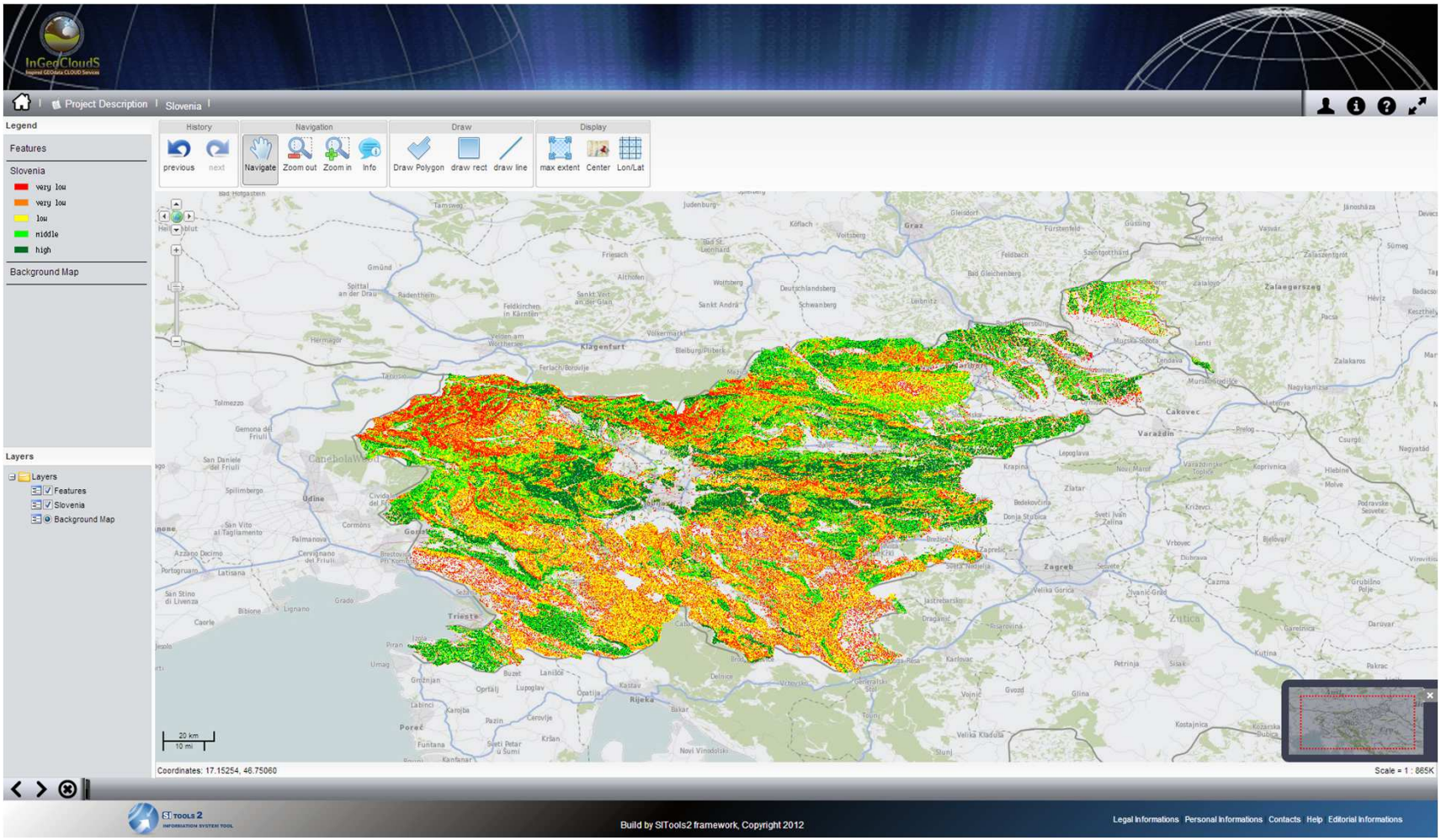
Integration with SiTools



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Concluding remarks

- The use case was not implemented within the GeoZS infrastructure before the INGC project.
- The implementation and operation of the system on INGC has been relatively straight forward.
- Ensure the performance and availability of the service 24/24
- Lower IT costs?
- Testing complex calculations performance

GEUS

Pesticides in groundwater use case

Description of Use Case

The use case shall make it possible for users to find areas where there are high concentrations of pesticides in the groundwater. It could be either pesticide in general or specific pesticides. It shall also be possible to restrict the output to pesticides found at a certain depth interval and/or from certain geology (lithology or lithostratigraphy).

Potential users include NGOs, EEA, national environmental authorities, national or European environmental portals and researchers.

Data is replicated to the INGC platform from GEUS internal database for boreholes and groundwater.

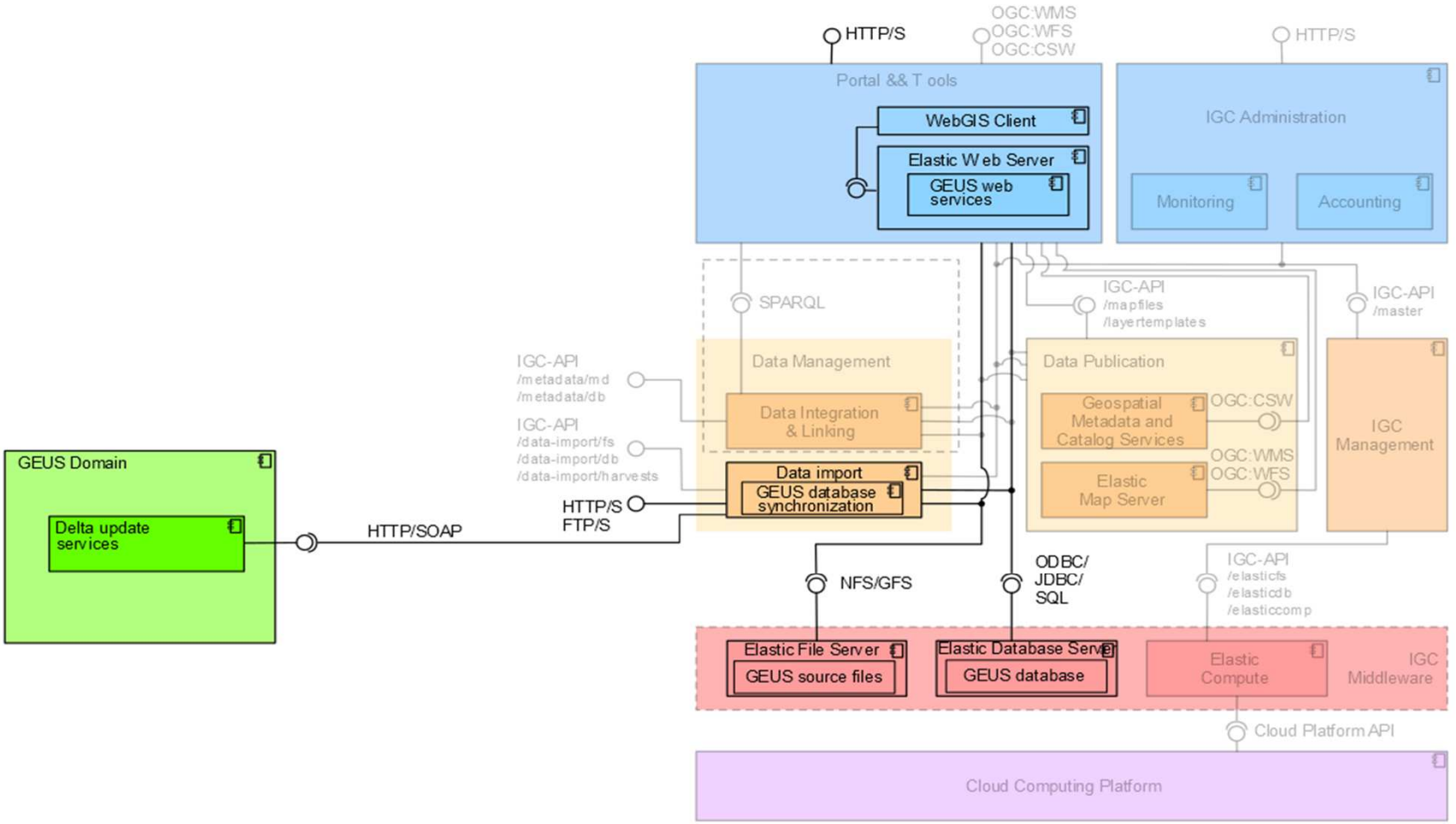
Requirements

Replication from local database to INGC system must fulfil the following requirements: 1. Be automatic 2. Only include data changed since previous replication 3. Be completed within 2 hours
Data in INGC system should not be more than 1 week out-of-date compared to original data in local database and must be clearly marked with last date of replication from local database.
Results shall be disseminated to end-users through a web user interface with standard GIS-functionality.
Map, including boreholes and background maps, must be redrawn within 5 seconds after a change in map area and/or filter criteria for boreholes.
The map must be reusable in other portals using WMS and WFS services exposing borehole locations and results of chemical analyses
…

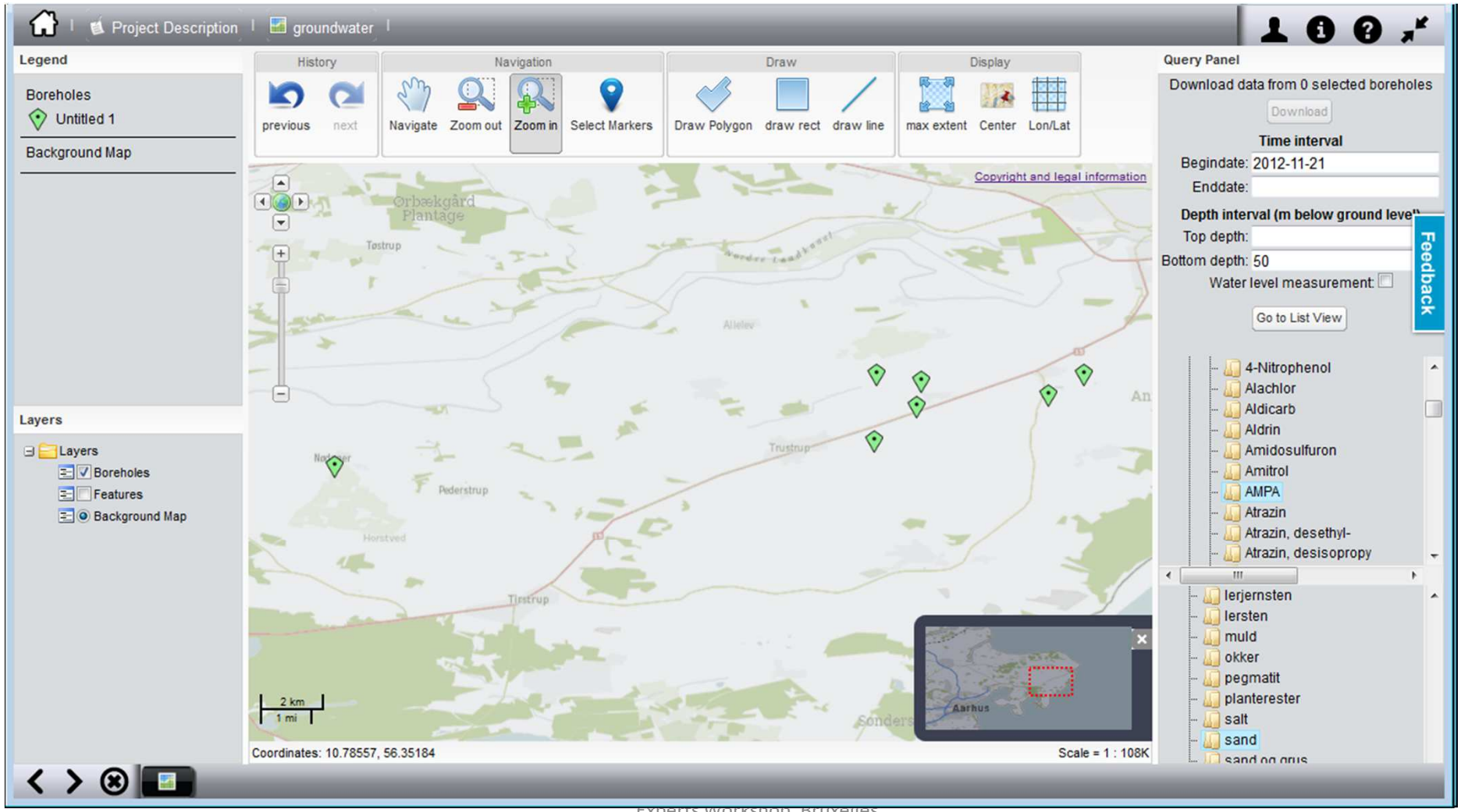
Initial set-up of the system

- Initial import of a part of the GEUS groundwater database into the INGC platform:
  1. Create a local PostgreSQL database with the GEUS data-model and a snapshot of the database.
  2. Create GEUS as a provider within INGC and getting the DBMS connection info through the INGC API Master Service and Elastic Database Service.
  3. Upload a dump of the local PostgreSQL database unto the INGC platform through the INGC API Data Import Service.
  4. Access the instance using Amazon Console, to import the dump into the PostgreSQL database from within INGC.
- Implement a locally hosted service exposing delta-updates of the GEUS database.
- Implements an INGC hosted program to fetch the above records and insert into the INGC database. This was uploaded using the INGC API Data Import Service and is scheduled using the INGC Scheduling Service.

Integration within the InGeoCloudS Infrastructure



Integration with SiTools



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Concluding remarks

- The use case was not implemented within the GEUS infrastructure before the INGC project. Similar web-GIS applications disseminating data from the same database have however been in operation at GEUS for several years.
- The implementation work required on the INGC platform has been comparable to the locally hosted systems.
- The main difference has been that the delta update synchronization mechanism was necessary.