

# Terraweb



## Introduction

Terraweb is a monitoring tool designed for surveyors, geologists, civil engineers and more. It is a web based platform, built on top of Terramove and Terramove 3D databases, as a solution that can be deployed on self-hosted servers, or be served as a service. Using Terraweb, engineers can inspect measurements from a variety of topographical, geotechnical and environmental sensors. Furthermore it supports a lot of useful features like real time alerting and TBM monitoring, which we're going to discuss in depth in the following chapters.

## Methodology

The set up of a project is based on the following steps

- Initialize database
- Set appropriate access to users, according to the privileges they have on the project
- Set sensors in database with proper information and settings
- Set sensor groups
- Feed the database with measurements
- Define chart settings
- View charts/generate reports

## Highlights

- Project Map
- Plan View
- Charts
- Alerts
- Custom View Monitor
- Editor
- Reports
- SQL Tool
- Link with DMS system

## Features

- View Vector Displacement History
- View Vertical deformation history in contours
- 3D Inclinator charts
- Custom chart page
- Custom sensor
- User friendly environment
- Load geojson files

## Supported Sensors

### Surveying Points

- Level Points
- 3D Points
- Point Groups
- Tunnel Points
- Tunnel Sections
- Deformation Groups
- Vertical Shafts

### Geotechnical Instruments

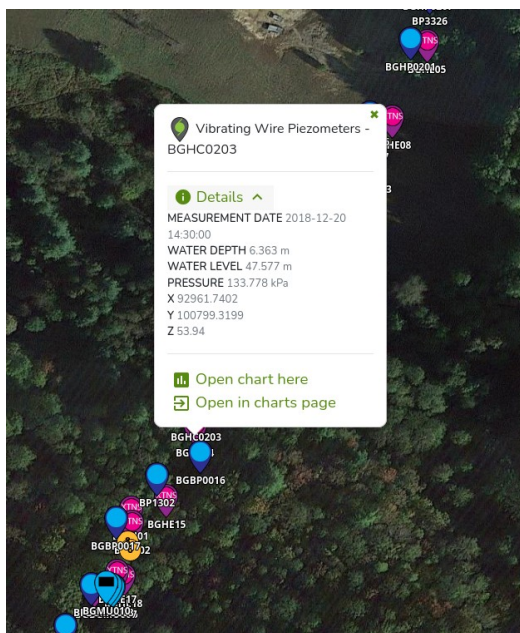
Supported geotechnical instruments of Terraweb are the following:

- Piezometers
- Vibrating Wire Piezometers
- Crackmeters
- Load Cells
- Pressure Cells
- Extensometers
- Tilt Sensors
- Strain Gauges
- Strain Gauges (in Average form)
- Inclinometers
- Sliding Micrometers
- Magnetic Extensometers
- Vibrating Sensors
- Noise Sensors
- Thermistors
- Custom General sensors
- Seismographs

## Various Data

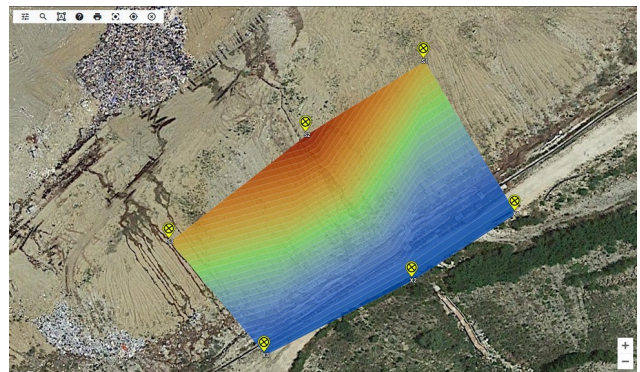
- Meteorological Data
- Geological Data

## Plan View



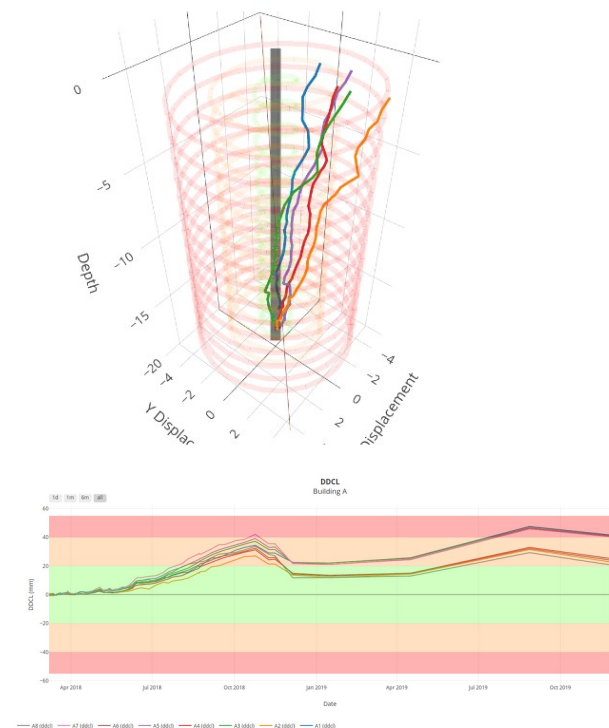
Map view was built on the principal of the quick peek on a live map. Sensors are placed exactly where there are in the field, so users are able to get an idea of the whole project in a single view, get an idea about what is happening in each sensor, get some quick access to the diagrams,

etc. From the Project map section the user can view the Displacement Vectors of the overall movement of the points as well as the deformation contours. The user can also view the features above in time series animation. Plan View is a feature that allows GIS implementation on the system. The user can have view of geojson files, drawings, raster images and various tile servers on the project.



## Charts

Charts view focuses on more detailed data visualization. The user here can view charts of the surveying points and the geotechnical sensors as well as the data table of each.



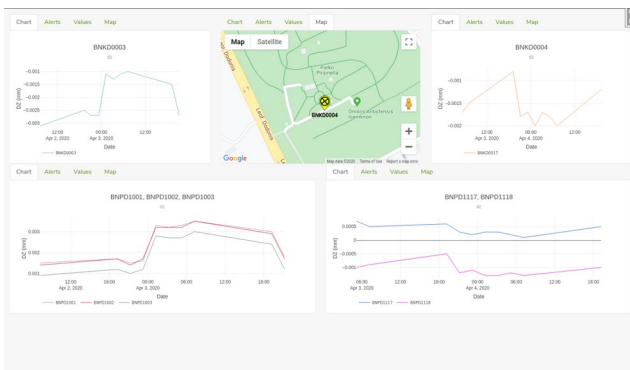
## Alerts

Terraweb supports real time Alerting. This happens in the Alerts section. Specified users can receive real time alerts via e-mail or SMS for measurements that have exceeded reference/alert or alarm limits. The alerts happen in two steps. Step 1 is when the project moderators receive the alertReportst, decide whether it is an actual alert or just a false measurement, and if it is an actual alert (step 2) they redirect to the users interested. This happens in order to avoid unnessecary alerting and panicing.

Alerts					
From this page you can view and manage sensor alerts.					
Alert Rules Refresh Alerts Auto update					
Date from: 02/23/2018 Date to: 03/24/2020 Alerts per page: 100 Sort by: Date Sort type: Descending Page: 2					
Type	Sensor	Field	Date	Value	Limit
REFERENCE	T188 Surveying Points	DY	2019-09-27 13:51:00 about 6 months ago	-0.0206	0.015
REFERENCE	T188 Surveying Points	DOCL	2019-09-27 13:51:00 about 6 months ago	0.0194	0.015
REFERENCE	T188 Surveying Points	DY	2019-09-27 13:51:00 about 6 months ago	-0.0234	0.015
REFERENCE	A4 Surveying Points	DX	2019-09-27 13:51:00 about 6 months ago	0.0216	0.015
REFERENCE	A4 Surveying Points	DZ	2019-09-27 13:51:00 about 6 months ago	-0.0216	0.015
ALARM	A5 Surveying Points	DOCL	2019-09-27 13:51:00 about 6 months ago	0.0561	0.035
ALERT	A5 Surveying Points	DX	2019-09-27 13:51:00 about 6 months ago	0.0313	0.025
ALARM	A5 Surveying Points	DY	2019-09-27 13:51:00 about 6 months ago	-0.0404	0.035
REFERENCE	A5 Surveying Points	DZ	2019-09-27 13:51:00 about 6 months ago	-0.0179	0.015
ALARM	A6 Surveying Points	DOCL	2019-09-27 13:51:00 about 6 months ago	0.0352	0.035
REFERENCE	A6 Surveying Points	DX	2019-09-27 13:51:00 about 6 months ago	0.0203	0.015
ALERT	A6 Surveying Points	DY	2019-09-27 13:51:00 about 6 months ago	-0.0303	0.025

## Custom View Monitor

In the Custom View section the user has access in Real time data. The viewing charts can be specified and set accordingly in order to host the desired visualization of the data.



## Editor

Editor is the section where privileged users can import or export data manually, view the data, calculate, project or edit them.

Survey Data											Filter					
State	ID	Point Name	Active	Date & Time	X	Y	Z	XTH	DCL	DX	DY	DZ				
✓	2	1	A1	✓	2018-03-07 11:10:00	2380884812	4380740.5651	481.1058	63.9485	16.95	1	✓	2018-03-07 07:00:00	0.0002	-0.0009	0
✓	3	2	A2	✓	2018-03-07 11:10:00	2380885319	4380740.5441	475.3555	63.9352	16.9511	2	✓	2018-03-07 07:00:00	-0.0001	-0.0009	0
✓	4	3	A3	✓	2018-03-07 11:10:00	2380881828	4380732.7915	485.7607	55.5625	16.9591	3	✓	2018-03-07 07:00:00	-0.0001	-0.0015	0
✓	5	4	A4	✓	2018-03-07 11:10:00	2380881388	4380732.9729	476.2089	55.7056	16.9473	4	✓	2018-03-07 07:00:00	-0.0005	-0.0001	0
✓	6	5	A5	✓	2018-03-07 11:10:00	2380847521	4380727.7906	480.8251	48.8977	16.9182	5	✓	2018-03-07 07:00:00	-0.0009	-0.0004	0
✓	7	6	A6	✓	2018-03-07 11:10:00	2380847568	4380727.9389	476.1095	49.0392	16.9549	6	✓	2018-03-07 07:00:00	-0.0007	-0.0001	0
✓	8	7	A7	✓	2018-03-07 11:10:00	2380840360	4380720.1626	481.0273	38.3553	16.9748	7	✓	2018-03-07 07:00:00	-0.0009	-0.0006	0
✓	9	8	A8	✓	2018-03-07 11:10:00	2380840842	4380720.2441	475.1861	38.3552	16.9521	8	✓	2018-03-07 07:00:00	-0.0007	-0.0001	0
✓	10	9	A9	✓	2018-03-07 11:10:00	2380840861	4380740.5652	481.1057	63.9394	16.9591	9	✓	2018-03-07 07:00:00	-0.0005	-0.0006	0
✓	11	10	A10	✓	2018-03-07 11:10:00	2380840861	4380740.5652	481.1057	63.9394	16.9591	10	✓	2018-03-07 07:00:00	-0.0005	-0.0006	0
✓	12	11	A11	✓	2018-03-07 11:10:00	2380840861	4380740.5652	481.1057	63.9394	16.9591	11	✓	2018-03-07 07:00:00	-0.0005	-0.0006	0
✓	13	12	A12	✓	2018-03-07 11:10:00	2380840861	4380740.5652	481.1057	63.9394	16.9591	12	✓	2018-03-07 07:00:00	-0.0005	-0.0006	0
✓	14	13	A13	✓	2018-03-07 11:10:00	2380840861	4380740.5652	481.1057	63.9394	16.9591	13	✓	2018-03-07 07:00:00	-0.0005	-0.0006	0
✓	15	14	A14	✓	2018-03-07 11:10:00	2380840861	4380740.5652	481.1057	63.9394	16.9591	14	✓	2018-03-07 07:00:00	-0.0005	-0.0006	0
✓	16	15	A15	✓	2018-03-07 11:10:00	2380840861	4380740.5652	481.1057	63.9394	16.9591	15	✓	2018-03-07 07:00:00	-0.0007	0	0
✓	17	16	A16	✓	2018-03-07 11:10:00	2380840861	4380740.5652	481.1057	63.9394	16.9591	16	✓	2018-03-07 07:00:00	-0.0005	-0.0006	0
✓	18	17	A17	✓	2018-03-07 11:10:00	2380840861	4380740.5652	481.1057	63.9394	16.9591	17	✓	2018-03-07 07:00:00	-0.0005	-0.0006	0
✓	19	18	A18	✓	2018-03-07 11:10:00	2380840861	4380740.5652	481.1057	63.9394	16.9591	18	✓	2018-03-07 07:00:00	-0.0005	-0.0006	0
✓	20	19	A19	✓	2018-03-07 11:10:00	2380840861	4380740.5652	481.1057	63.9394	16.9591	19	✓	2018-03-07 07:00:00	-0.0005	-0.0006	0
✓	21	20	A20	✓	2018-03-12 12:45:00	2380840861	4380740.5647	481.1041	63.9586	16.95	1	✓	2018-03-07 07:00:00	-0.0001	-0.0013	0
✓	22	21	A21	✓	2018-03-12 12:45:00	2380840861	4380740.5643	475.3463	63.9459	16.959	2	✓	2018-03-07 07:00:00	-0.0001	-0.0007	0
✓	23	22	A22	✓	2018-03-12 12:45:00	2380831925	4380732.7923	480.7679	55.5651	16.9587	3	✓	2018-03-07 07:00:00	-0.0001	-0.0007	0
Fetched 29/3 from 29/3 results																
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