

App Note: Viewing ORB Data on Google Earth Pro™.

Data measured by the ORB can be viewed can be forwarded to the Senquip Portal or directly to a user platform. In some instances, users may want to import ORB data into geographic information system (GIS) applications. A common way in which to import data is through the use of a text file such as a comma separated values (CSV) file. The Senquip Portal allows users to download selectable ranges of data in CSV file format for easy upload into GIS applications. This application note describes how to upload ORB data from the Senquip Portal to Google Earth Pro™.

Collecting the Data

The ORB-X1 can measure data from most industrial sensors and can send that data to the Senquip Portal via Wi-Fi or GSM. Of particular importance in GIS applications is the collection of position data. The ORB-X1 has a built in GPS that allows position, height, speed and other data to be collected. To enable the GPS, specify the measurement interval in the GPS settings panel on the Senquip Portal or on the ORB webserver.

GPS

Name	<input type="text" value="GPS"/>
Interval	<input type="text" value="1"/>
Max Time	<input type="text" value="180"/> Seconds
Position	
Position Alert	<input type="checkbox"/> Enabled
Radius	<input type="text" value="20"/> Meters
Hysteresis	<input type="text" value="10"/> Meters
Expected Latitude	<input type="text" value="-32.93197"/> Degrees
Expected Longitude	<input type="text" value="151.77882"/> Degrees
Speed	
Speed Alert	<input checked="" type="checkbox"/> Enabled
Threshold	<input type="text" value="110"/> km/h
Hysteresis	<input type="text" value="1"/> km/h

In the example above, since the interval is specified as 1, the GPS will be samples on every measurement cycle of the ORB. The *Max Time* parameter sets how long the GPS will attempt to acquire a satellite fix before returning to sleep. In this case, the GPS will attempt to acquire satellites for 180 seconds before returning to sleep. The *Max Time* parameter is provided to save power in cases where the ORB is battery or solar powered and the ORB is mounted in a position where satellites are not visible.

Note that position and speed alerts can be enabled. In this example, a speed alert has been enabled when the ORB travels faster than 110km/h.

Once enabled, the ORB will produce GPS data and will display it on the Senquip Portal and store it in the Senquip cloud.

Position

GPS Info

Satelites:	9
HDOP:	1.1
Fix:	2
Heading:	91.1°
Altitude:	391 m

26-Sep-19 14:54:55

Creating the CSV File

Data stored by the Senquip Portal can be downloaded as a CSV file.

Firstly, go to then *Raw Data* tab on the Senquip Portal, enter a date range for the data of interest and press *Load Data*.

Measured data for the time period selected will be shown in a table and the ability to choose the next, previous or a specific page is provided. Press the Export to CSV button to save your data to a CSV file on your local computer. The file will be saved with file name "RawData-ORB-xxxxxxx.csv" where the xxx represents the ORB device id. The file is typically saved in your downloads folder.

Export to CSV

Device Timestamp	Device Date/Time	Server Timestamp	Speed	GPS Latitude	GPS Longitude	Analog 1	Analog 2	Ambient	Humidity	Atmospheric Pressure	Supply Voltage	Battery Voltage	System Voltage
1568869412.9	19/09/2019, 3:03:32 pm AEST	1568869412	4.7	-27.3691	153.17761	0	0	32.39	36.38	102.16	12.17	0	4.3
1568869432.9	19/09/2019, 3:03:52 pm AEST	1568869432	6.8	-27.36912	153.17773	0	0	32.39	36.36	102.15	12.17	0	4.3
1568869452.9	19/09/2019, 3:04:12 pm AEST	1568869452	3.3	-27.36918	153.1774	0	0	32.38	36.39	102.16	12.19	0	4.3

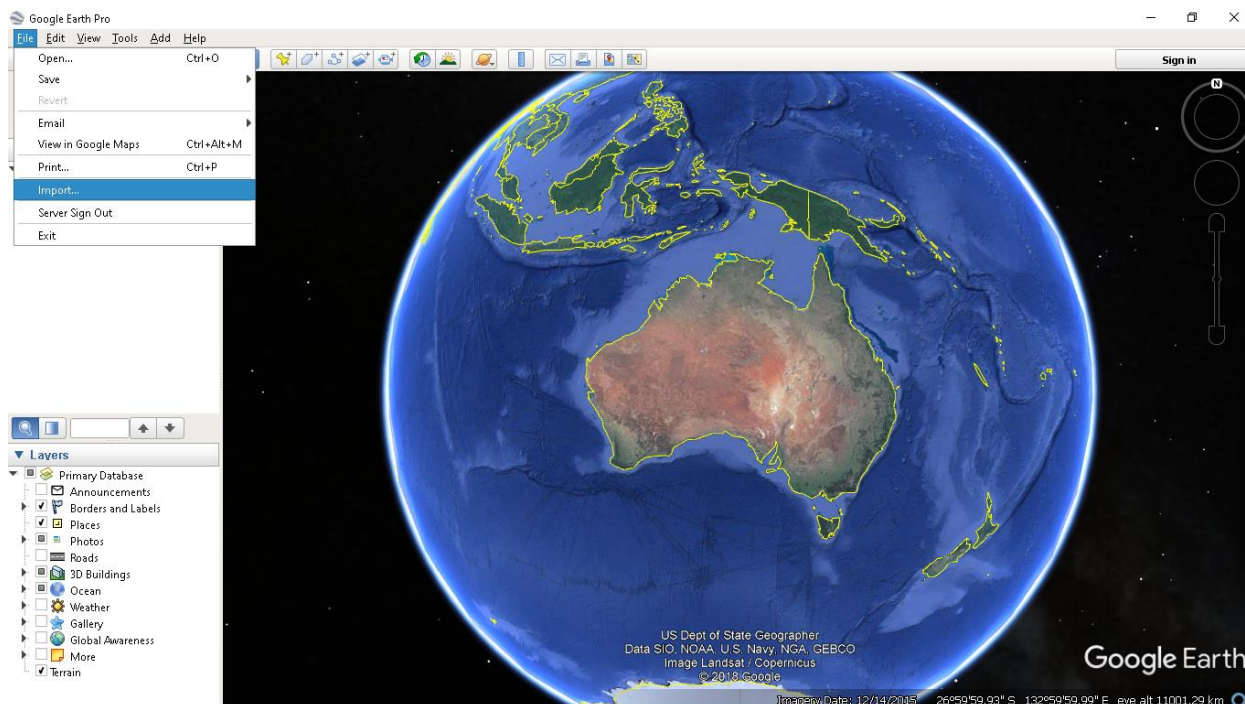
The CSV file can be opened, viewed and manipulated in any spreadsheet program and in many GIS applications.

RawData-ORB-SU99ALHW1.csv - Microsoft Excel

Device Time: Device Da	Server Tin	Speed	GPS Latitu	GPS Longi	Analog 1	Analog 2	Ambient	Humidity	Atmosphe	Supply Vo	Battery Vc	System Vc	Serial 1	GSM RSSI
1568870693	19/09/201 1.57E+09	15.7	-27.3723	153.1809	0	0	32.29	36.31	102.15	12.17	0	4.3	CWGS,A5	-63
1568870713	19/09/201 1.57E+09	16.4	-27.3727	153.1818	0	0	32.33	36.26	102.17	12.17	0	4.31	CWGS,A5	-69
1568870733	19/09/201 1.57E+09	9.6	-27.3733	153.1817	0	0	32.28	36.25	102.17	12.15	0	4.3	CWGS,A5	-57
1568870753	19/09/201 1.57E+09	11.6	-27.3739	153.1814	0	0	32.29	36.21	102.16	12.19	0	4.3	CWGS,A5	-57

Uploading to Google Earth Pro

Open Google Earth Pro™ and select *File > Import* and choose your downloaded CSV file.



The Google Earth Pro™ Data import Wizard will open and you will see the ORB data at the bottom of the page. The settings on the first page are correct by default and can be left unchanged. Press *Next*.

Specify Delimiter
This step allows you to specify the field delimiter in your text file

Field Type

Delimited Fixed width

Delimited

Select the delimiter that separates each field. If there can be more than one delimiter between two fields (such as spaces), check the "treat consecutive delimiters as one" option. You can also provide your own custom delimiter by checking the "other" option

Space Treat consecutive delimiters as one

Tab

Comma

Other

Fixed Width

Column width

Text Encoding

Supported encodings

This is a preview of the data in your dataset.

	Device Timestamp	Device Date/Time	Server Timestamp	Speed	GPS Latitude	GPS Longitude	
1	1567381021.7	02/09/2019, 9:3...	1567381019	0	-32.75	152.06969	33.1
2	1567381081.7	02/09/2019, 9:3...	1567381079	3.3	-32.75	152.06972	33.2

Next > Cancel

In the Latitude field, choose GPS Latitude and in the Longitude field, choose GPS Longitude. Press Next.

Data Import Wizard

Select Latitude/Longitude Fields

This dataset does not contain latitude/longitude information, but street addresses

Latitude field:

Longitude field:

This is a preview of the data in your dataset.

	Device Timestamp	Device Date/Time	Server Timestamp	Speed	GPS Latitude	GPS Longitude	
1	1567381021.7	02/09/2019, 9:3...	1567381019	0	-32.75	152.06969	33.1
2	1567381081.7	02/09/2019, 9:3...	1567381079	3.3	-32.75	152.06972	33.2
3	1567381141.7	02/09/2019, 9:3...	1567381139	74.6	-32.7519	152.0686	33.2
4	1567381201.7	02/09/2019, 9:4	1567381199	0	-32.75362	152.07133	33.3

< Back Next > Finish Cancel

This page allows you to change the format of data other than Latitude and Longitude. We will not change anything. Press *Finish*.

Specify Field Types (optional)
This step allows you to specify the type of each field in your dataset.
This is optional.

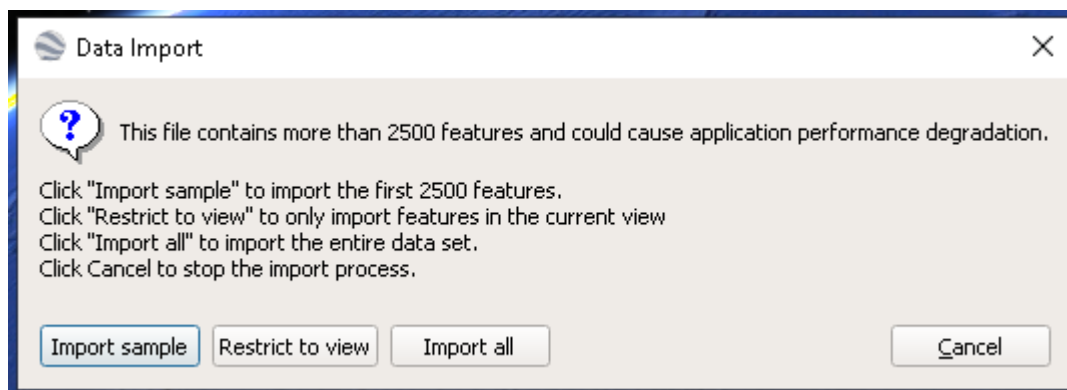
Field	Type
Device Timestamp	floating point
Device Date/Time	string
Server Timestamp	integer
Speed	floating point
GPS Latitude	floating point
GPS Longitude	floating point
Ambient	floating point
Humidity	floating point
Atmospheric Pressure	floating point
Supply Voltage	floating point
Battery Voltage	integer

This is a preview of the data in your dataset.

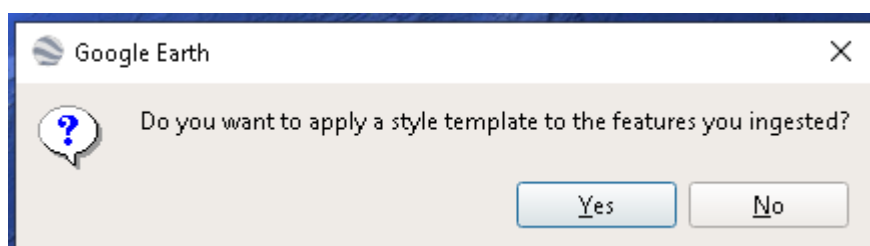
	Device Timestamp	Device Date/Time	Server Timestamp	Speed	GPS Latitude	GPS Longitude	
2	1567381081.7	02/09/2019, 9:3...	1567381079	3.3	-32.75	152.06972	33.2
3	1567381141.7	02/09/2019, 9:3...	1567381139	74.6	-32.7519	152.0686	33.2
4	1567381201.7	02/09/2019, 9:4...	1567381199	0	-32.75362	152.07133	33.3
5	1567381261.7	02/09/2019, 9:4	1567381260	0	-32.75362	152.07133	33.4

< Back Finish Cancel

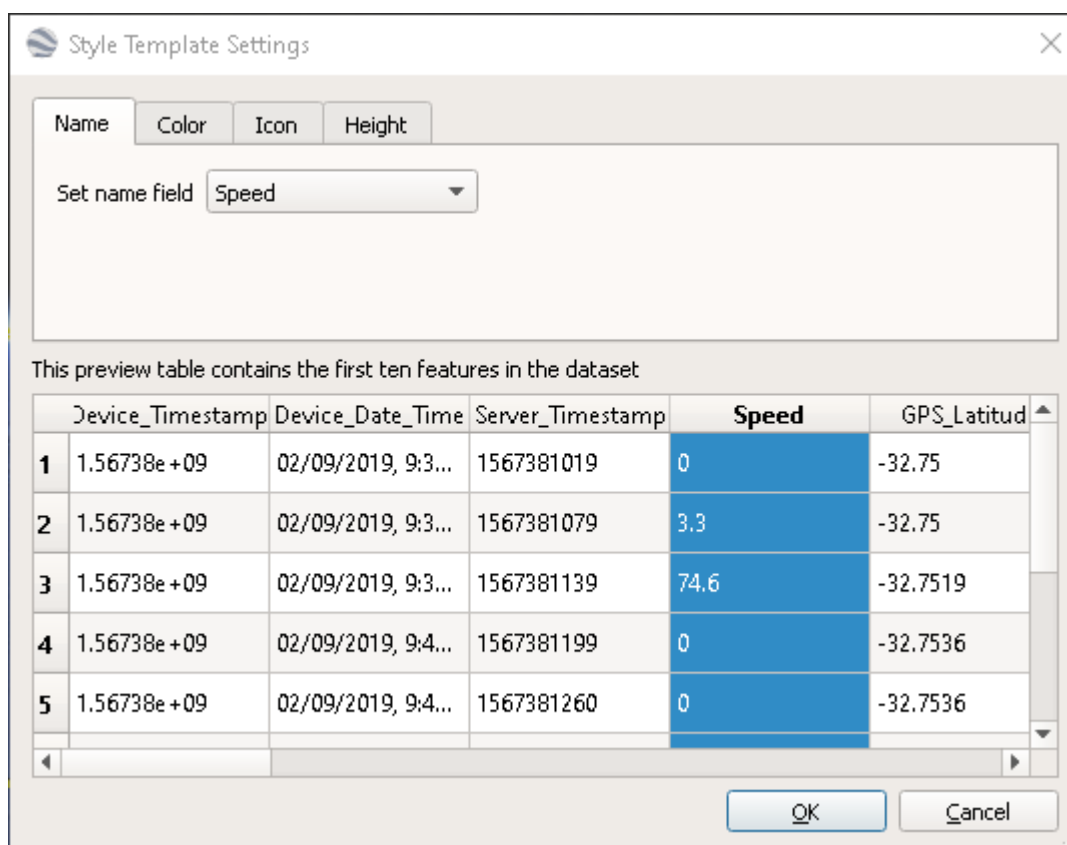
Depending on the size of the CSV file as determined by the range of dates chosen and the update rate of the GPS peripheral on the ORB, you may get a warning advising that the file size is large. We are going to choose "Import All" but you may choose to go back and restrict the data range of your import file, only import a sample of the data or restrict the uploaded data to points that are on the map area currently shown.



You may get asked if you want to apply a style template. Style templates allow mapping of specific fields in your imported data to display features such as icons and colours. We are going to select Yes and are going to map speed to a colour range. As you become more advanced in the use of Google Earth Pro, you may want to save template files to allow quick import and meaningful display of data.



To map the speed against a colour range, select speed in the *Set name field*.



In the *Color* tab, select the *Set color from field* option and select speed as the *Select color field*. We are going to choose green as the *Palette start color* and red as the *end color*. There are other options that allow further formatting but we will select *OK* to continue. Save your template file. The Data Import Wizard will close and you will see an image of the earth. You have completed the data import process.

Style Template Settings

Name Color Icon Height

Set color from field
 Use single color
 Use random colors

Select color field: Speed

Palette start color: ■ end color: ■

Number of buckets: 3 create sub-folders for each bucket

Bucket options

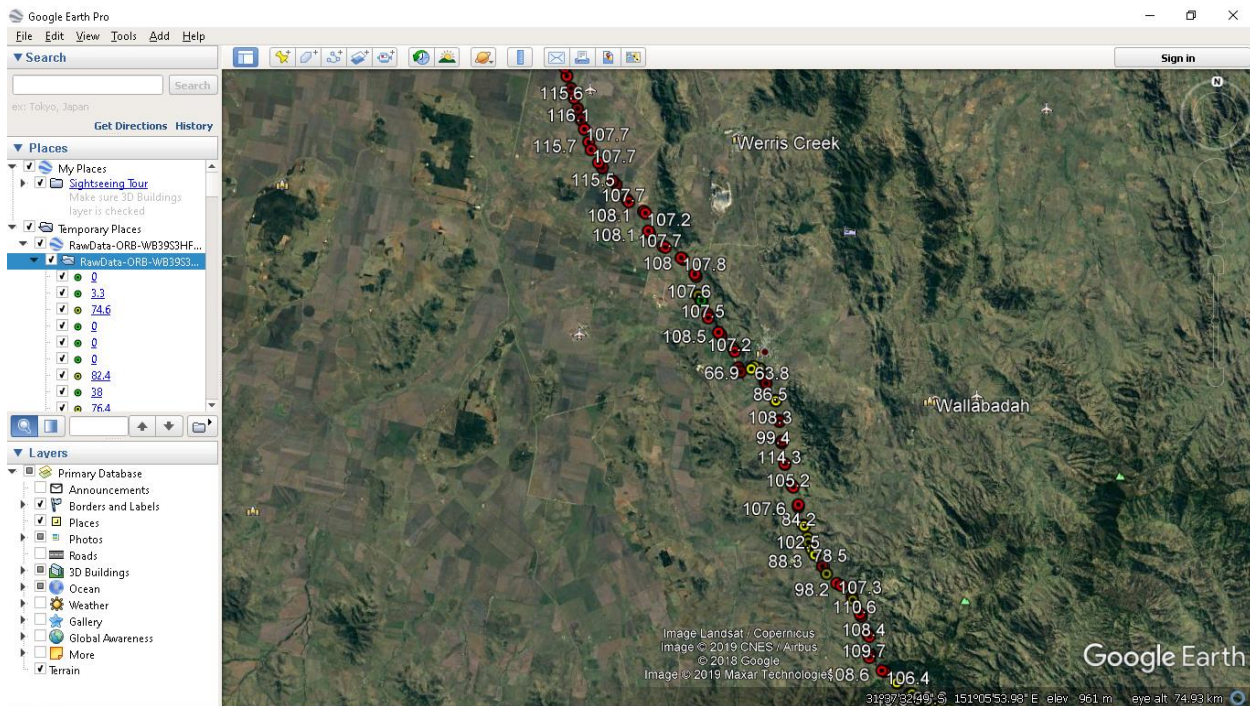
This preview table contains the first ten features in the dataset

	Device_Timestamp	Device_Date_Time	Server_Timestamp	Speed	GPS_Latitud
1	1.56738e+09	02/09/2019, 9:3...	1567381019	0	-32.75
2	1.56738e+09	02/09/2019, 9:3...	1567381079	3.3	-32.75
3	1.56738e+09	02/09/2019, 9:3...	1567381139	74.6	-32.7519
4	1.56738e+09	02/09/2019, 9:4...	1567381199	0	-32.7536
5	1.56738e+09	02/09/2019, 9:4...	1567381260	0	-32.7536

OK Cancel

Viewing the Data

Your data has now been imported into Google Earth Pro™ and will be showing as an option under *Temporary Places* on the left hand side of your page under the name of your dataset, in this case “RawData-ORB-WB39S3HF1”. To enable the data to be shown on the map, tick the box next to your dataset. Use the zoom, orientation and other tools on the top right of your screen to browse the data.



By clicking on an individual icon on the map, all the data associated with that point in time is shown.



Conclusion

The Senquip Portal allows for data measured by the ORB to be downloaded as a CSV file and imported into Google Earth Pro™. Similarly, CSV files can be loaded into other common GIS applications, meaning that it is simple to integrate ORB data into your favourite application for further processing and visualisation.