

Exercise 1-1: Using GPS track data to create a field boundary

Learning objectives:

- Add QGIS plugins
- Create a point vector file from a text file
- Convert GPS tracking points to a field boundary

Data folder: Dataset1

Track_example

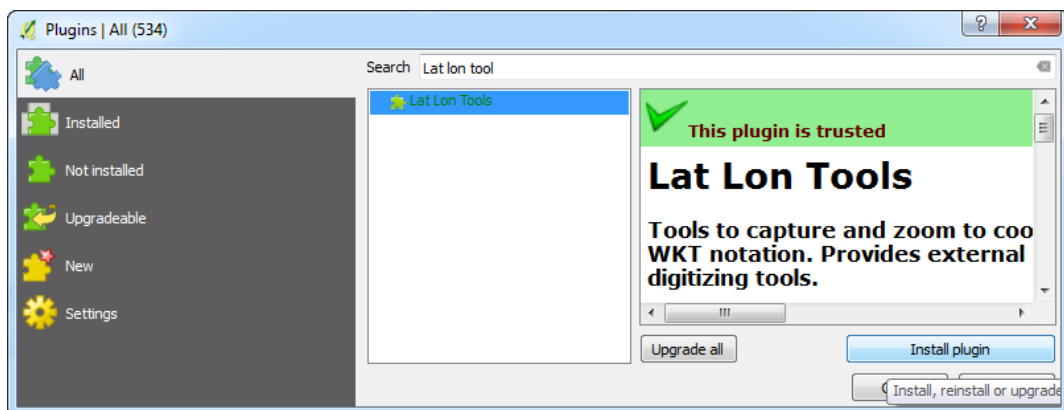
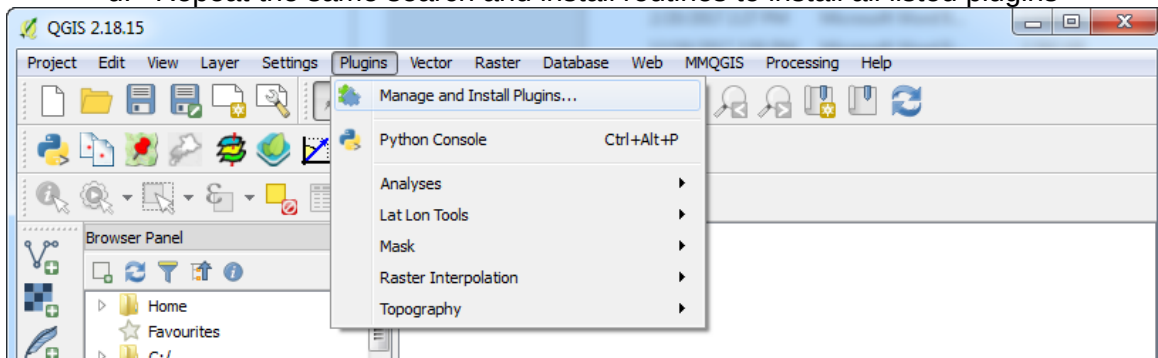
Part 0: Add QGIS plugins

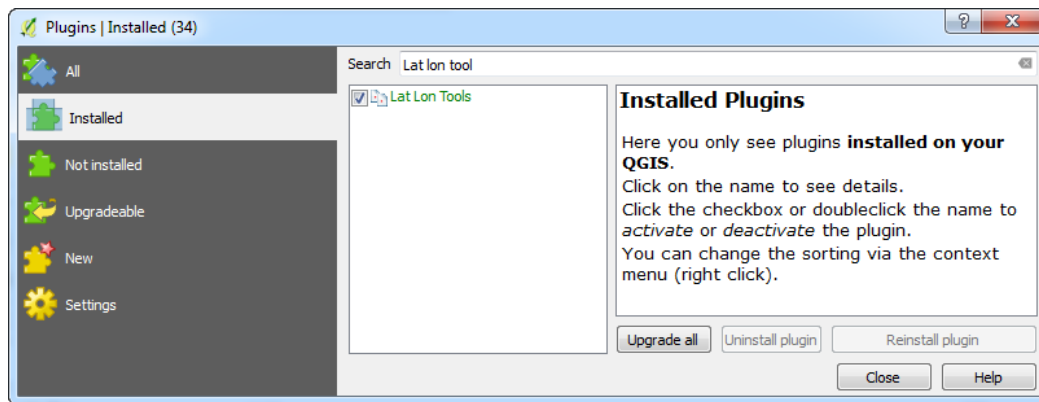
1. Essential QGIS plugins for this tutorials

- Points2One
- Lat Lon Tools
- Point sampling tool
- Feature Grid Creator
- OpenLayers Plugins

2. Launch QGIS

- a. On Menu bar, go to Plugins > Manage and Install Plugins ...
- b. Under All, enter Lat Lon tool in Search
- c. Click on the found plugin and then click Install plugin
- d. Repeat the same search and install routines to install all listed plugins

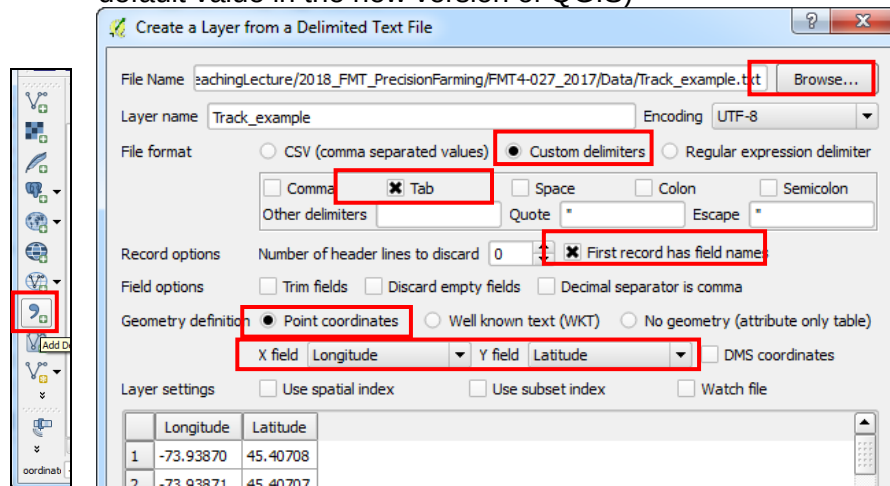




Part 1: Import GPS data in QGIS

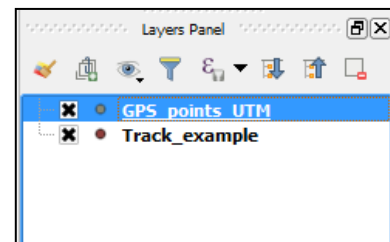
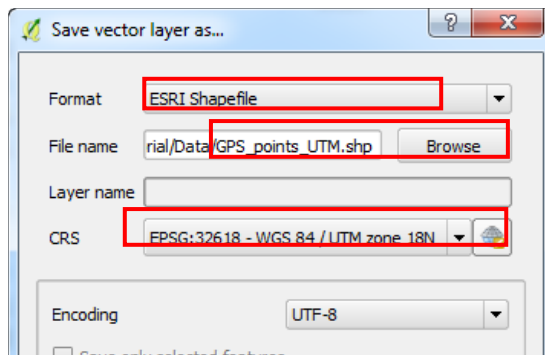
1. Import GPS track data

- Click Add Delimited Text Layer and click Browse
- Select the track file and click Open
- Click OK to close the window of Create a Layer from a Delimited Text file
- Coordinate Reference System Selector = WGS 84 – EPSG 4326 (this is set to be default value in the new version of QGIS)



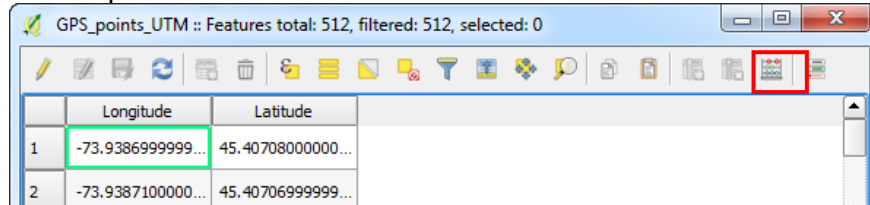
Track_example viewed in WGS84

- In the Layers Panel, right click **Track_example** and choose Save As ...
 - Click Browse to save the vector layer as **GPS_Points_UTM**
 - CRS = EPSG:32618 – WGS 84 / UTM zone 18N
 - Click OK



Part 2: Create a field boundary (polygon) based on GPS points

1. Create a sequential identification number for each GPS point
 - a. In the Layer Panel, right click **GPS_points_UTM** and choose Open Attribute Table
 - b. Click Open field calculator

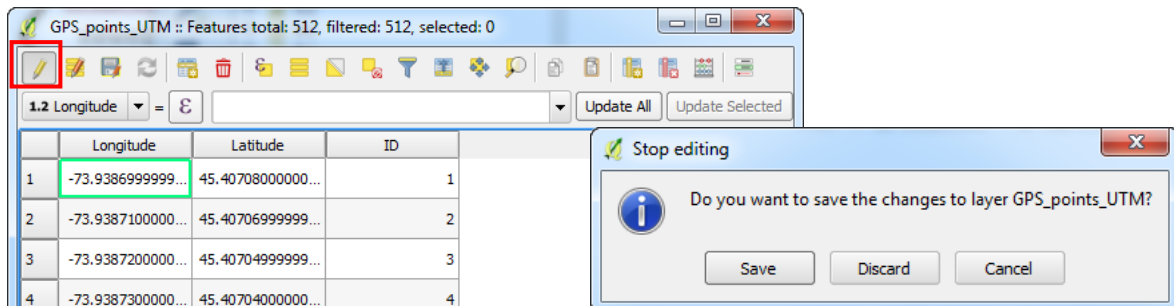
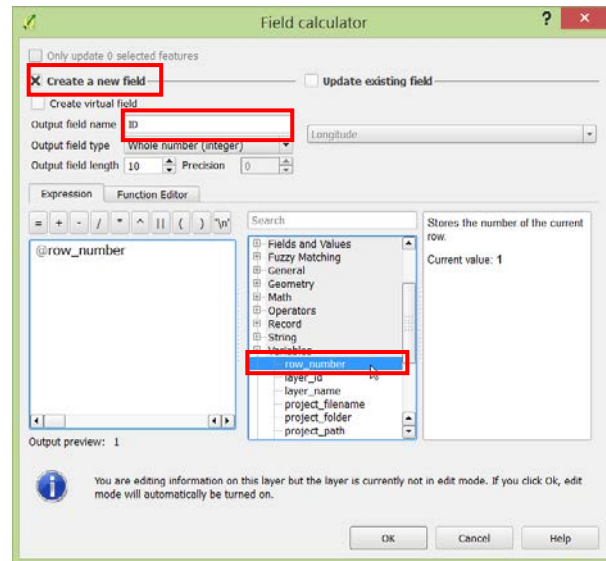


- c. Check Create a new field
 - Output field name = ID
 - Double click Variables > row_number

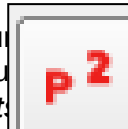
In Expression, @row_number Automatically appeared

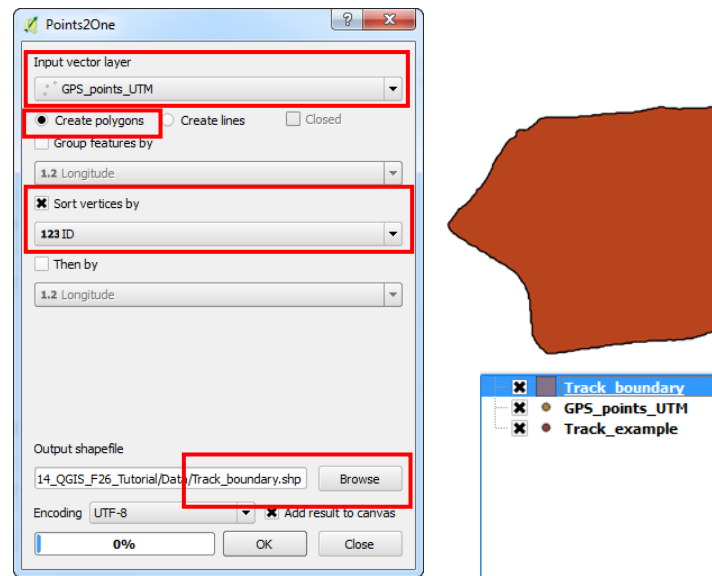
- Click OK
- Click Toggle editing mode to stop editing
- Click Save

- d. Close the attribute table



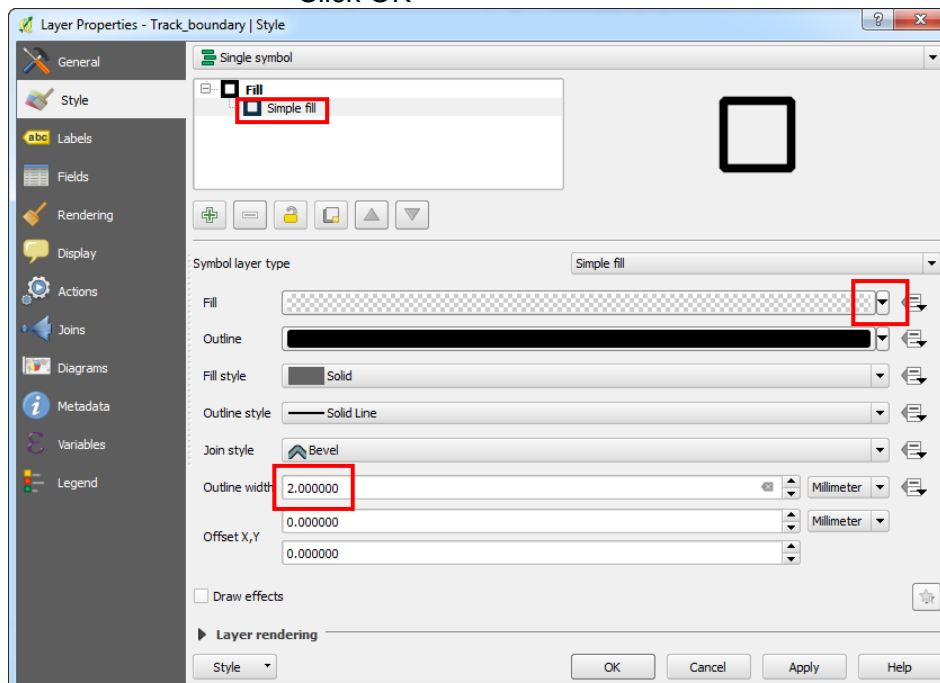
2. Use Points2One plugin to create a boundary
 - a. In Toolbar, click Points2One plugin
 - Input vector layer = **GPS_points_UTM**
 - Check Create polygons
 - Check Sort vertices by = ID
 - Output shapefile = **Track_boundary.shp**
 - Check Add result to canvas
- Click OK and click Close





3. Modify polygon style

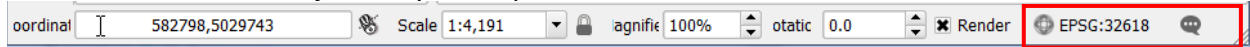
- In the Layer Panel, right click **Track_boundary** and choose Properties
- In Properties > Style, click Simple fill
 - Fill = Transparent fill
 - Outline width = 2
 - Click OK



Part 3: View data in projected coordinate system

1. View data in projected coordinate system and use Google Maps as the background image

a. Click Project Properties | CRS on Status Bar

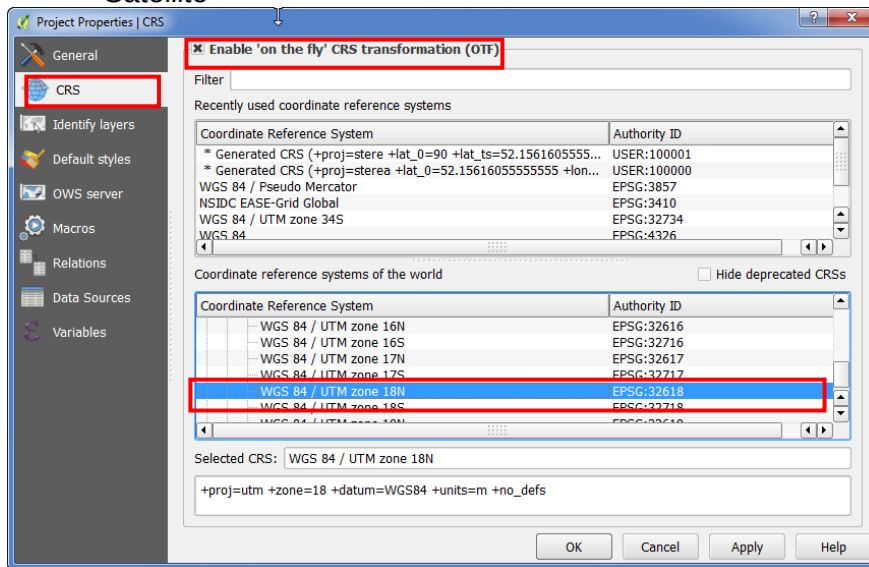


b. In CRS, check **Enable 'on the fly' CRS transformation (OTF)**

c. Select WGS84 / UTM zone 18 N from the list

d. Click Apply and OK

e. Go to Menu bar, click Web > Openlayers plugin > Google Maps > Google Satellite



*Track_bound
ary viewed
in IITM*

(The map containing Google Map image cannot not be used in the layout! Just screenshot this map)

Part 3: Calculate the area and perimeter of the field boundary

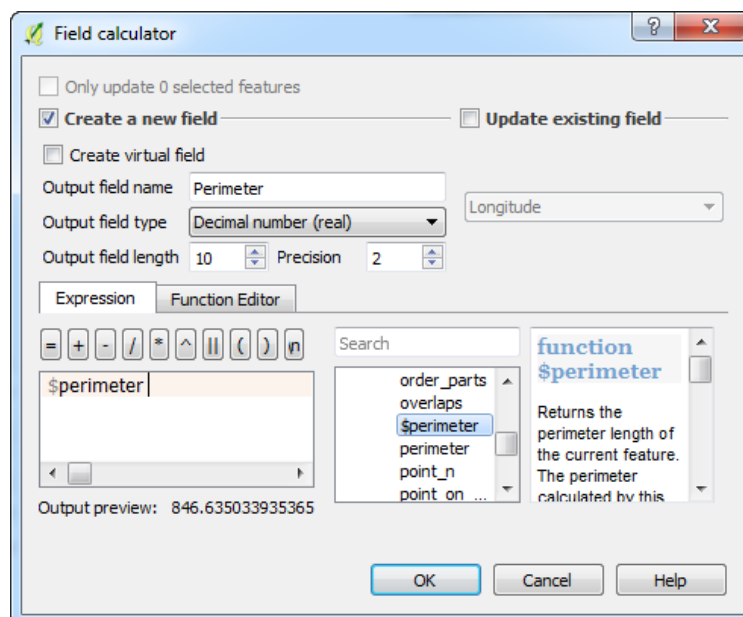
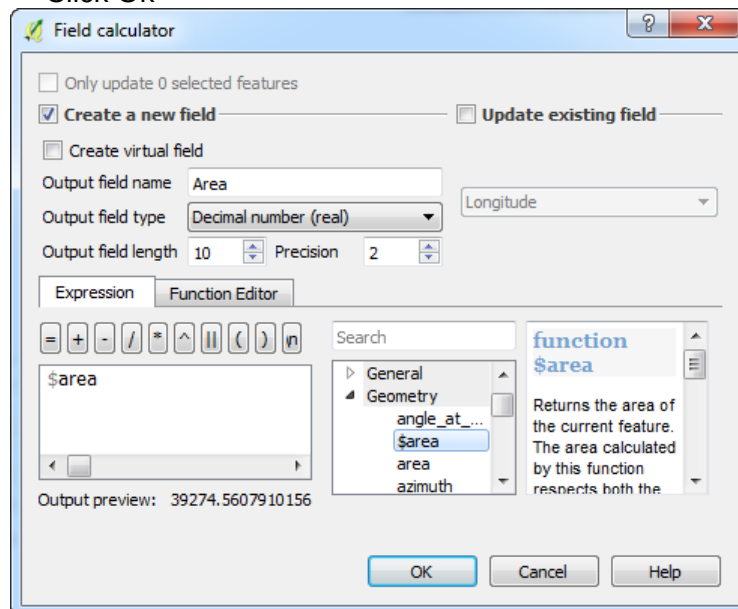
1. Calculate the area and the perimeter of the boundary

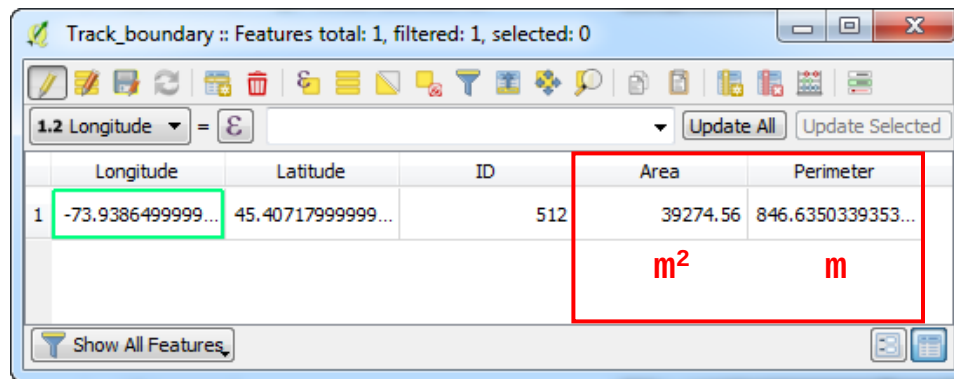
a. Go to Layers Panel, right click **Track_boundary** > Open Attribute Table

b. Click Open Field Calculator

- Check Create a new field
- Output field name = Area
- Output field type = Decimal number (real)

- Output field length = 10; precision = 2
 - Under Search, double click Geometry > \$area
 - Click Ok
- c. Again, click Open Field Calculator
- Check Create a new field
 - Output field name = Perimeter
 - Output field type = Decimal number (real)
 - Output field length = 10; precision = 2
 - Under Search, double click Geometry > \$perimeter
 - Click Ok





Track_boundary :: Features total: 1, filtered: 1, selected: 0

1.2 Longitude = € [Update All] [Update Selected]

	Longitude	Latitude	ID	Area	Perimeter
1	-73.9386499999...	45.40717999999...	512	39274.56 m²	846.6350339353... m

Show All Features

2. Go to Project > Save as ...
File name = **set1.qgs**

