LECTURE – 08

REPROJECTION OF DATASETS AND BASIC VECTOR ANALYSIS

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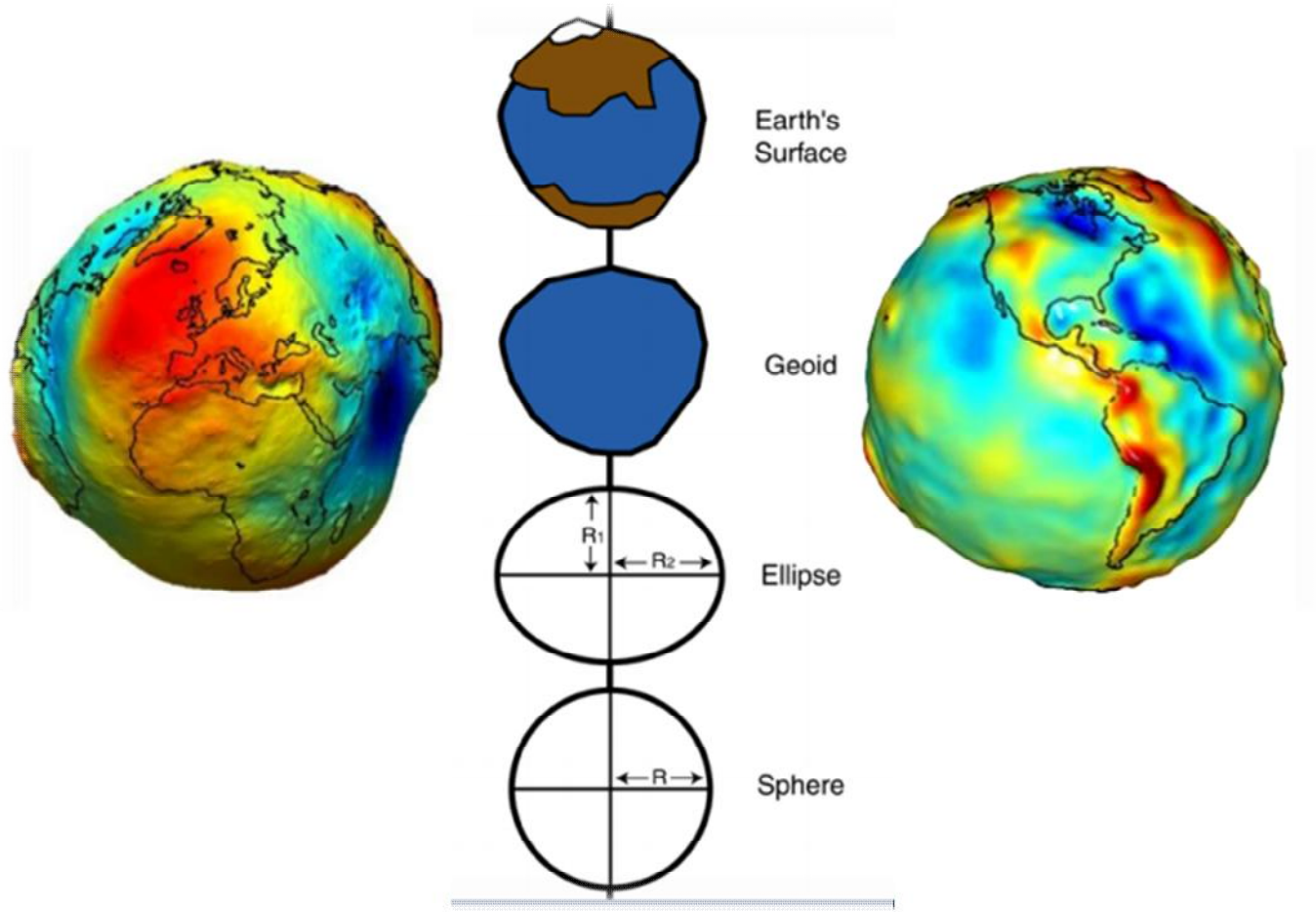
- On The Fly (OTF) Mode
- Saving a Dataset to Another CRS
- Calculating Areas for Vector Dataset
- Calculating Lengths for Vector Dataset
- Calculating Basic Statistics for Vector Dataset

Projections

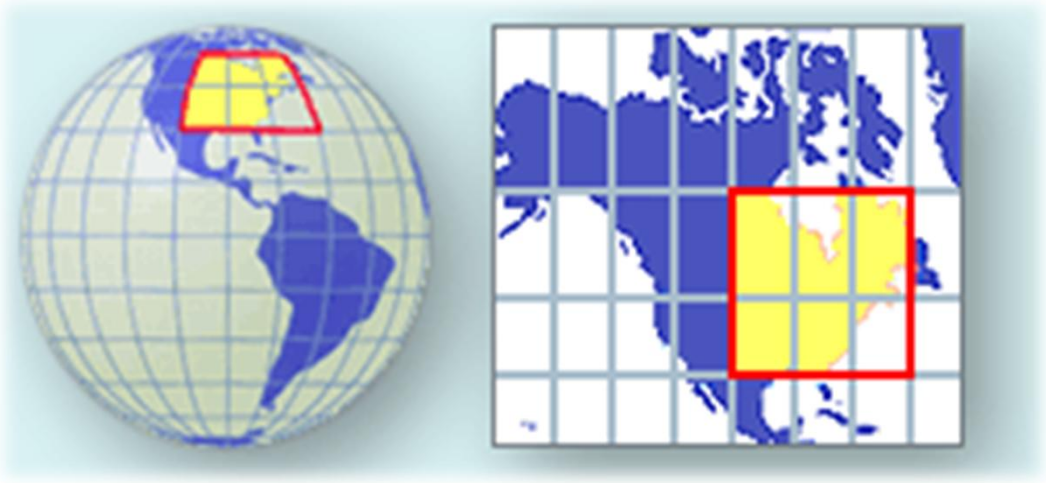
What is a Projection?



Projections

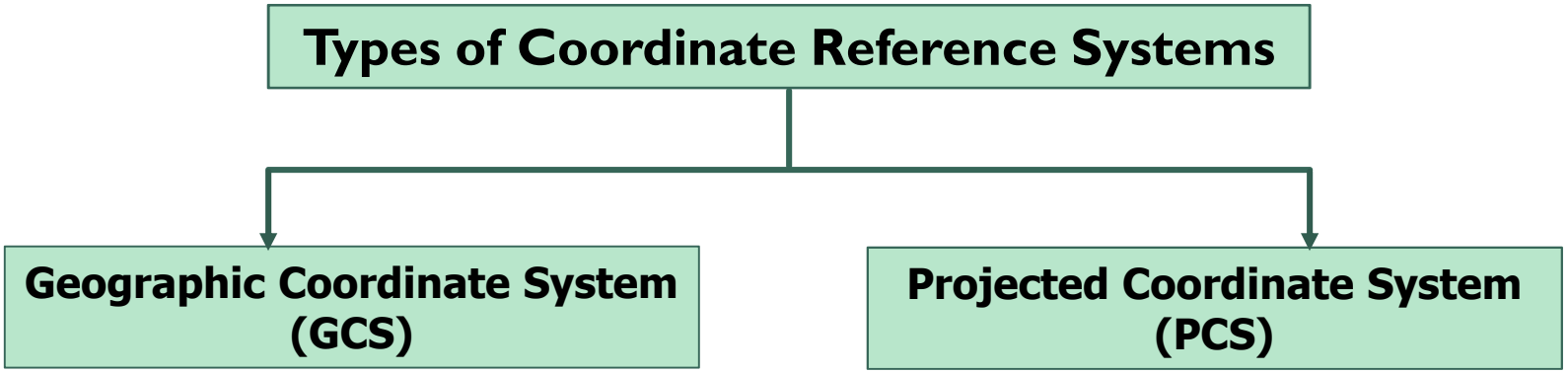
What is a Projection?

- A method by which the curved surface of the earth is portrayed on a flat surface.



- WGS-84 is one of the most commons CRS

Projections



- The earth as a sphere, with location in latitude and longitude, with units in degrees.
- WGS-84 is GCS.

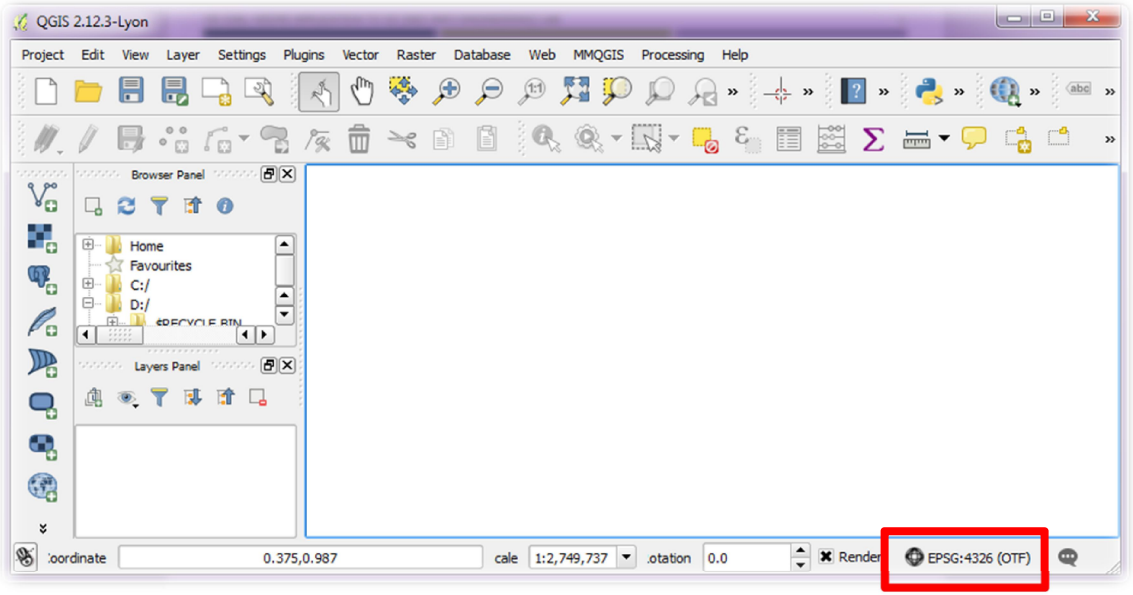
- The earth, or parts of it, flat, with location in constant units.

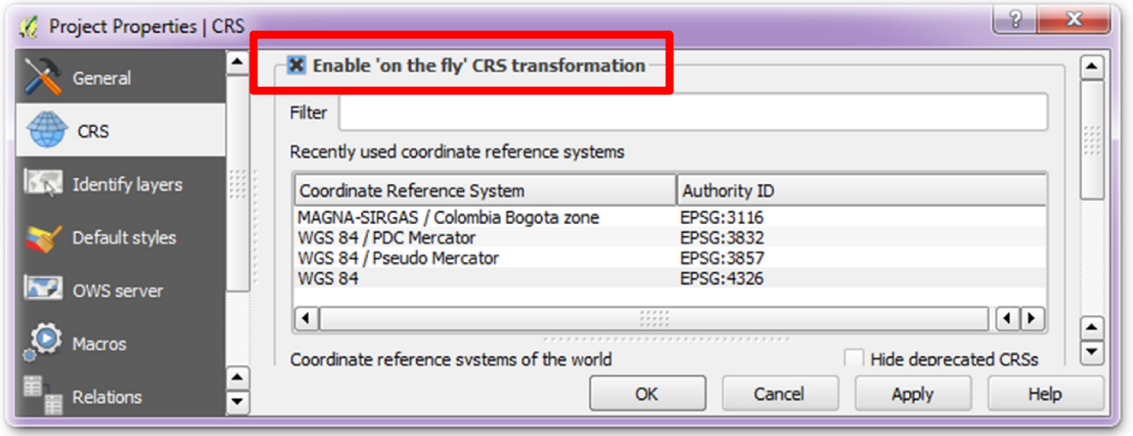
- **There is a common problem of distortion in GCS, that's why we need to convert GCS to PCS to solve distortion issue.**

On The Fly (OTF) Mode

- QGIS allows you to reproject data **"on the fly".**
- It means even if the data itself is in another CRS, QGIS can project it as if it were in a CRS of your choice.
  - To enable **"on the fly"** projection, click on the **CRS Status button** in the Status Bar along the bottom of the QGIS window: 
  - In the dialog that appears, check the box next to **Enable 'on the fly' CRS transformation**

On The Fly (OTF) Mode

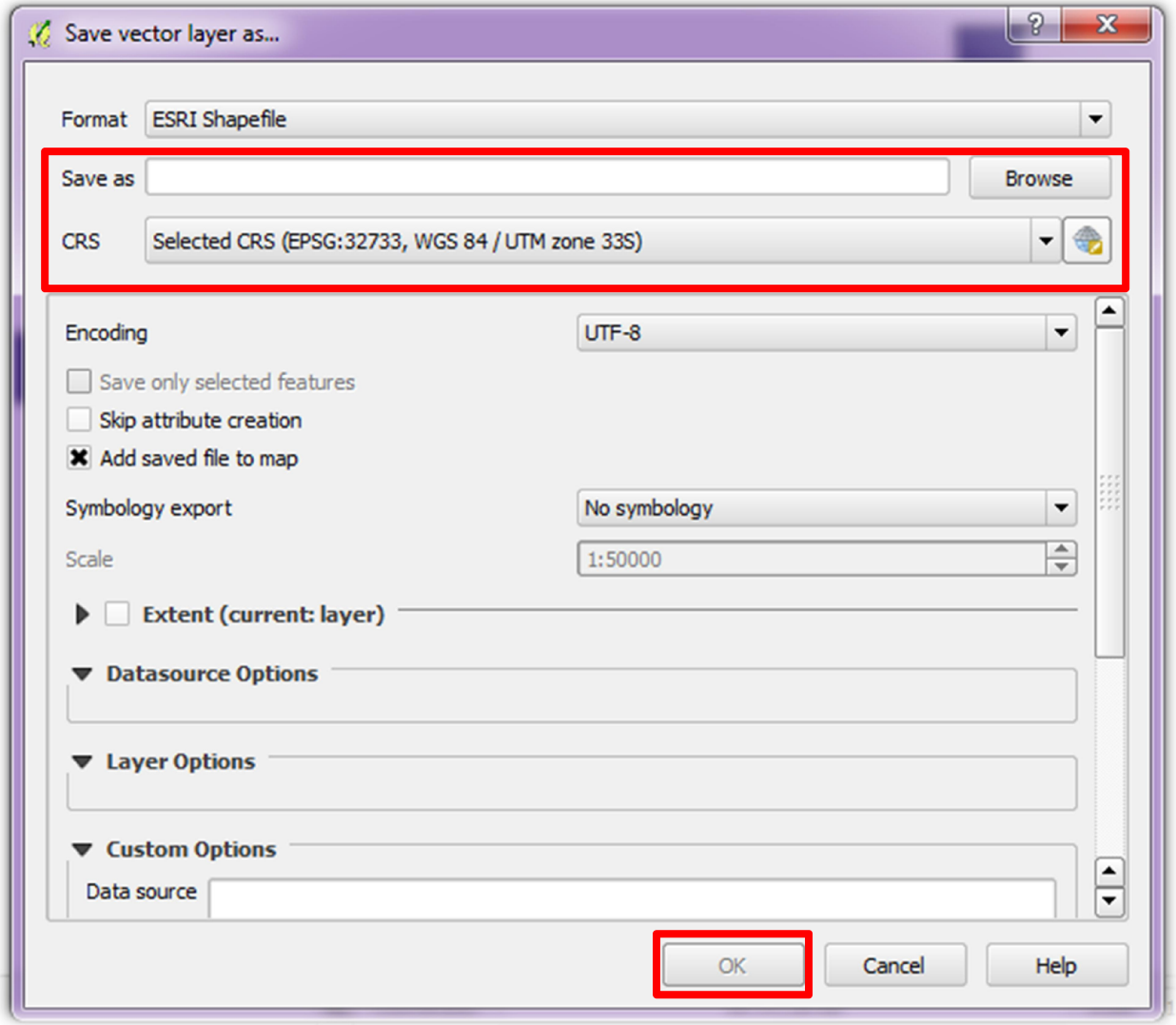




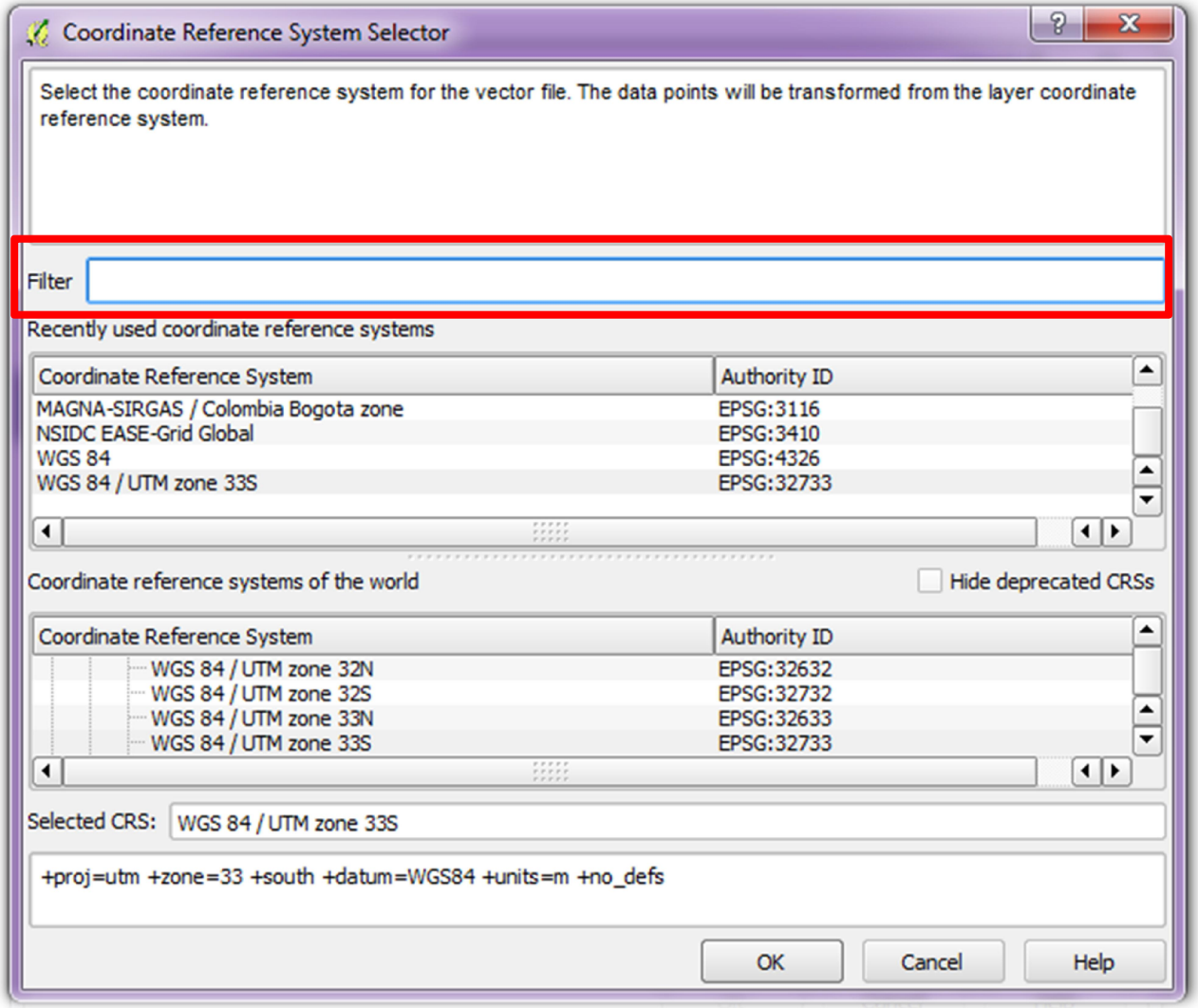
Saving a Dataset to Another CRS

- OTF only reprojects the layer as they appear on the map. It does not change the projection of the data.
- To change the projection of the data, it must be exported to a new file with a new CRS.
- For saving a dataset to another CRS:
  - Right click on the layer and click **Save As**
  - Give output layer name
  - Change the value of **CRS** by clicking the CRS name or **specify.**
  - Click **Ok.**

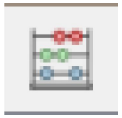
Saving a Dataset to Another CRS



Saving a Dataset to Another CRS

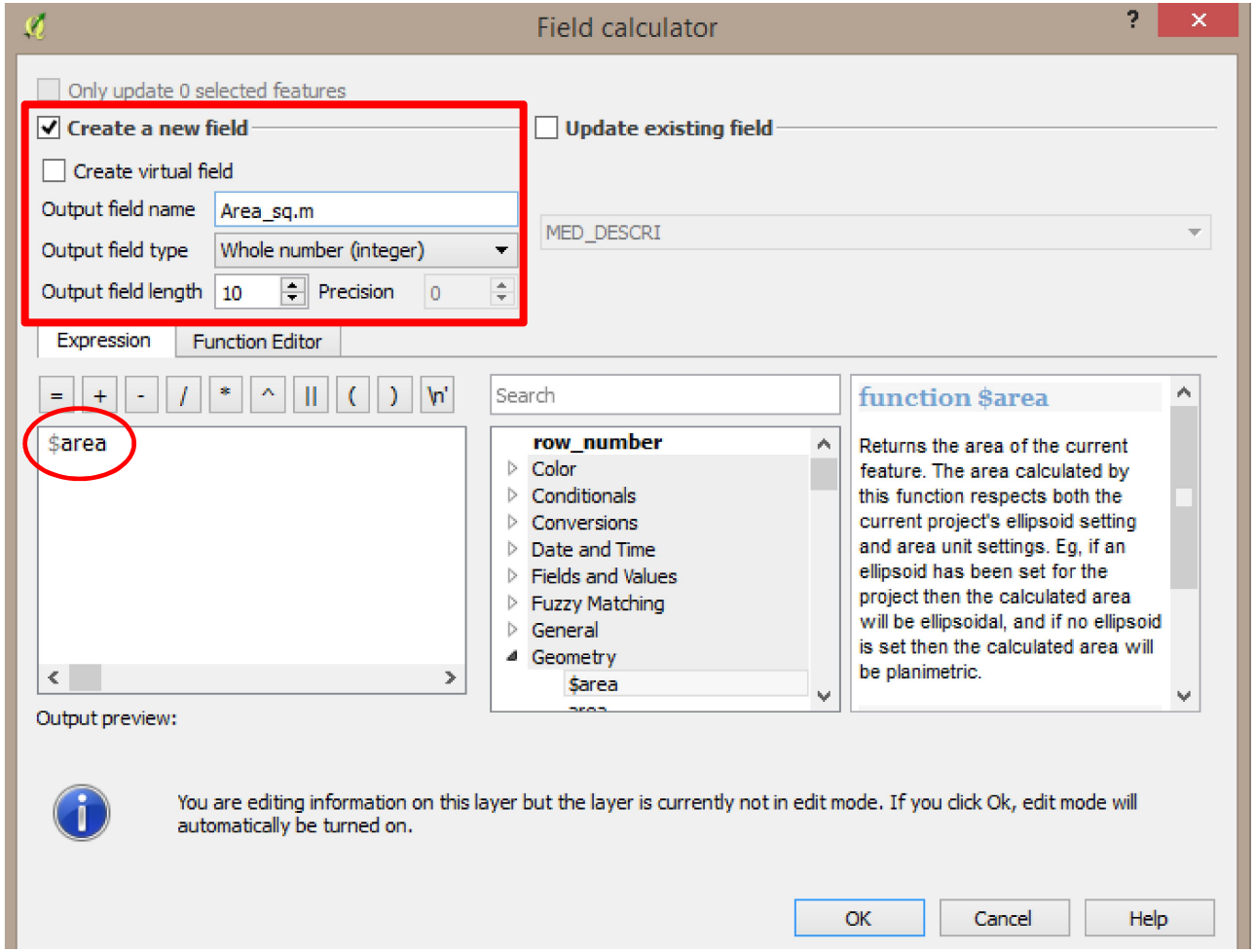


Calculating Areas for Vector Dataset

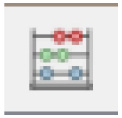
- **Stepwise Procedure is as follows:**
  - First Change projection of the vector dataset (containing polygon features) to projected coordinate system (e.g. units = m)
  - Open the attribute table
  - Click on Field Calculator icon 
  - Give details for output Field (Name, type, length)
  - Write the following expression: $area

Calculating Areas for Vector Dataset

Stepwise Procedure is as follows:

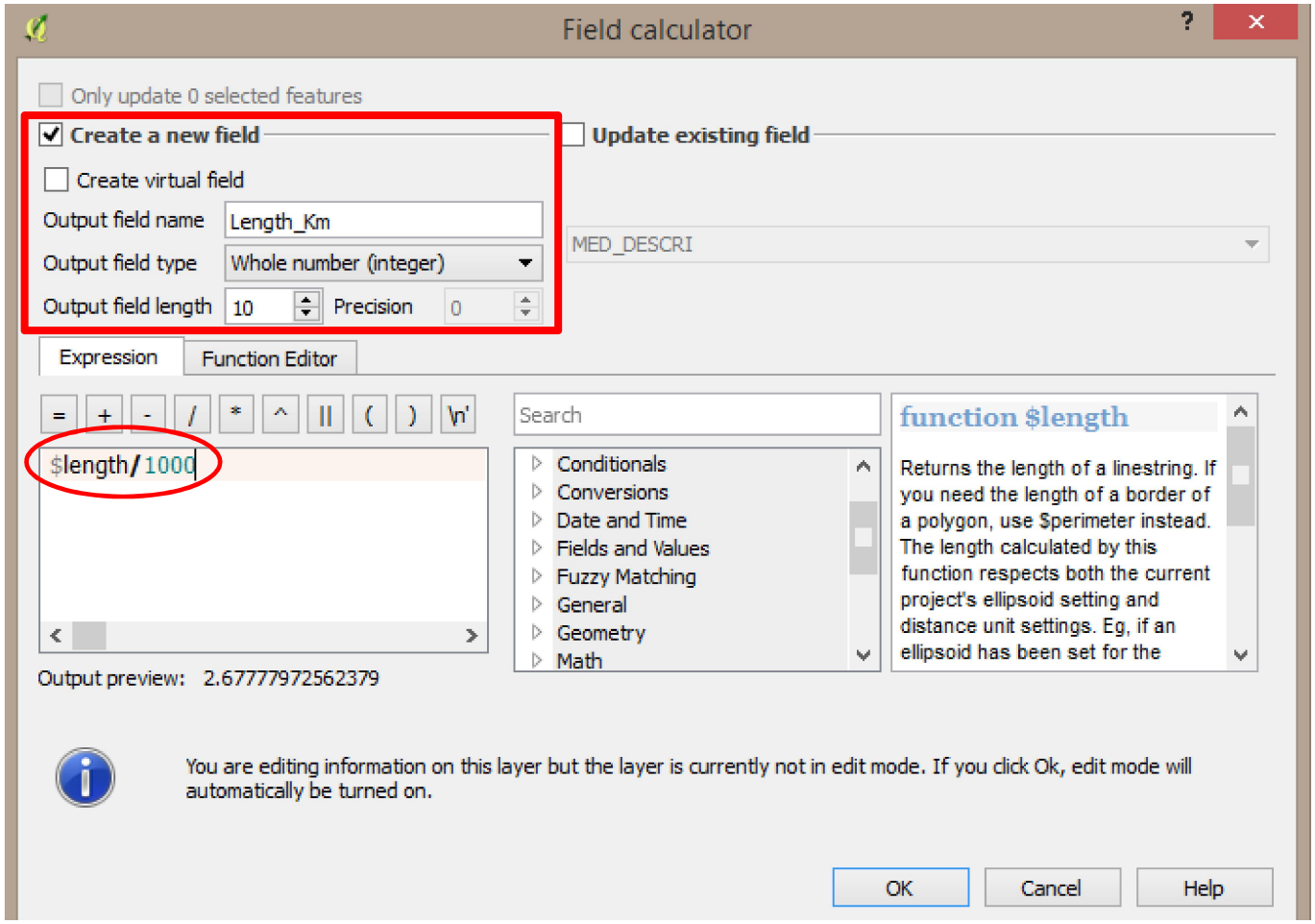


Calculating Lengths for Vector Dataset

- **Stepwise Procedure is as follows:**
  - First Change projection of the vector dataset (containing polygon features) to projected coordinate system (e.g. units = m)
  - Open the attribute table
  - Click on Field Calculator icon 
  - Give details for output Field (Name, type, length)
  - Write the following expression: $length

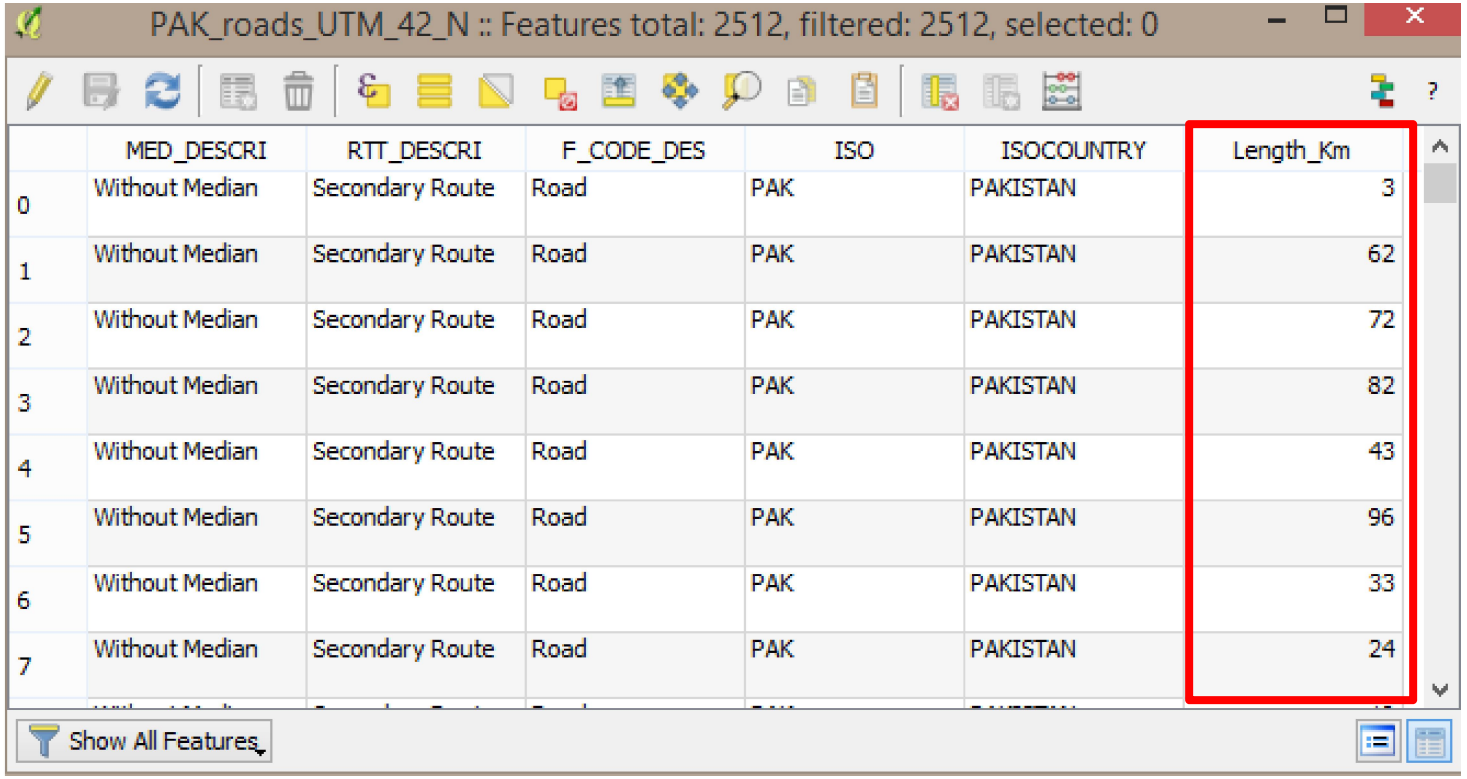
Calculating Lengths for Vector Dataset

Stepwise Procedure is as follows:



Calculating Areas for Vector Dataset

- A new field containing length values will be created

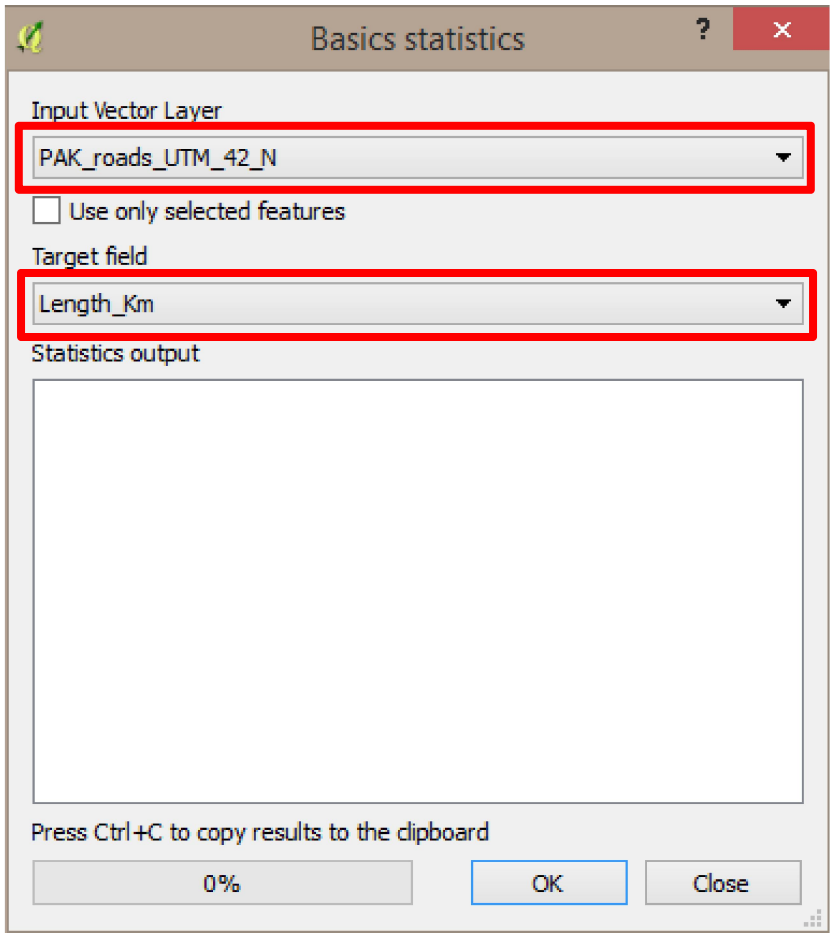


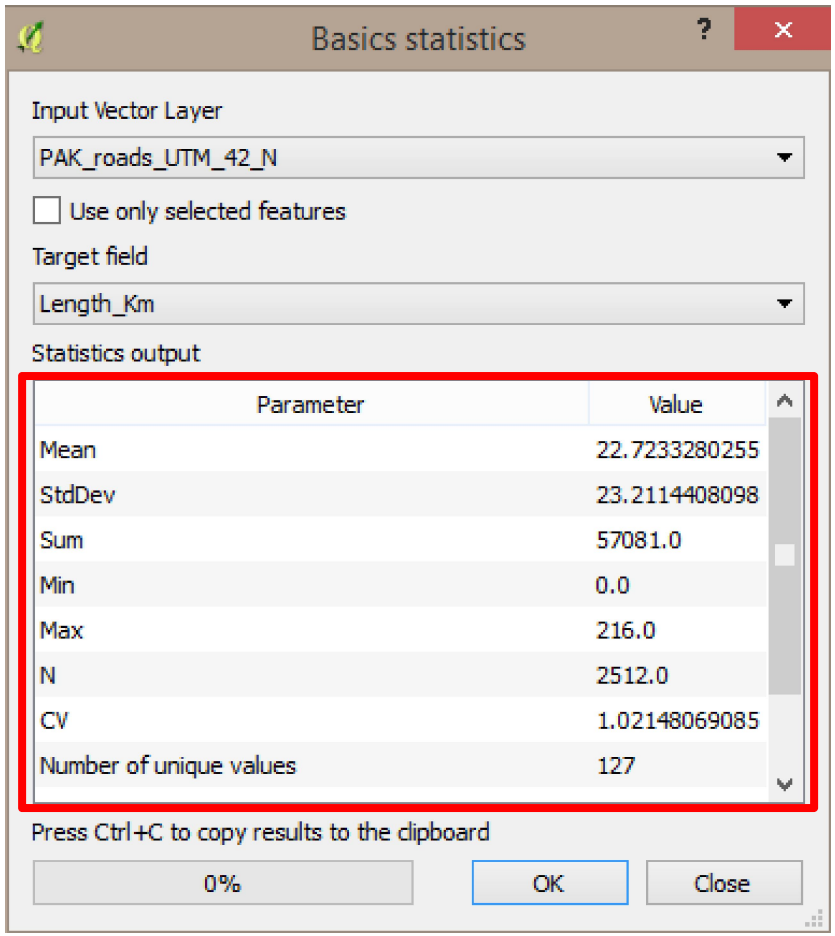
	MED_DESCRI	RTT_DESCRI	F_CODE_DES	ISO	ISOCOUNTRY	Length_Km
0	Without Median	Secondary Route	Road	PAK	PAKISTAN	3
1	Without Median	Secondary Route	Road	PAK	PAKISTAN	62
2	Without Median	Secondary Route	Road	PAK	PAKISTAN	72
3	Without Median	Secondary Route	Road	PAK	PAKISTAN	82
4	Without Median	Secondary Route	Road	PAK	PAKISTAN	43
5	Without Median	Secondary Route	Road	PAK	PAKISTAN	96
6	Without Median	Secondary Route	Road	PAK	PAKISTAN	33
7	Without Median	Secondary Route	Road	PAK	PAKISTAN	24

Calculating Basic Statistics for Vector Dataset

- After we have determined length for all the line features in a vector dataset, we can use Basic Statistics tools to calculate sum, max, min values, etc.
- **Command path is as follows:**
  - Vector > Analysis Tools > Basic Statistics
  - Select Input Vector Layer
  - Select Target field (this field should contain the length values)
  - Click Ok

Calculating Basic Statistics for Vector Dataset





References

- QGIS Training Manual