

# INTRODUCTION TO QGIS

UNEP-WCMC

Monrovia, 12-16 February 2018



# AGENDA

1. Introduction to QGIS and its main characteristics
2. Comparison between QGIS and ArcGIS
3. Overview of Coordinate reference systems in QGIS
4. Introductory tutorial covering:

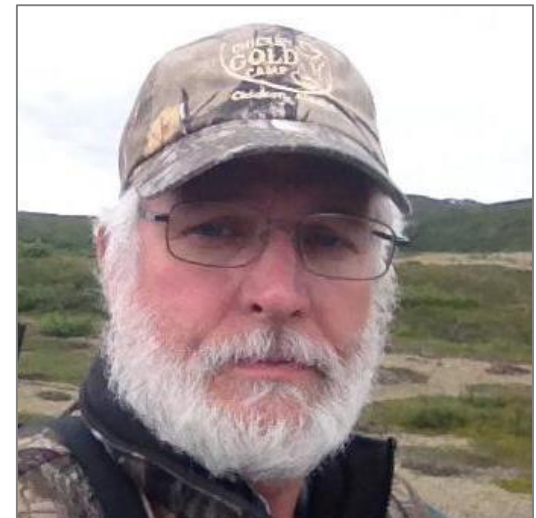
- Adding Vector and Raster layers
- Adding tabular information as a Delimited text Layer
- Symbolising vector data
- Symbolising raster data
- Installing plugins
- Querying data
- Joining Tables
- Introduction to the Processing Toolbox
- Map Layouts

# WHAT IS ?

A **free** and **open source** Geographic Information System (GIS) application that allow users to **create** spatial datasets, **manage** them, **analyse** them and **display** them on a map.

## A BRIEF HISTORY OF QGIS

- Quantum GIS project started in 2002
- Started as a simple data viewer, but has gradually grown
- Current stable version is 2.14



Gary Sherman  
Founder of QGIS Project

# Characteristics of QGIS

It is Open Source and free!

It is multi-platform – Can run in Windows, OSX, Unix and Linux.

It is extendable – many of its functionalities are provided by plugins and scripts.

A very active support community! (mailing lists, forums, etc.)

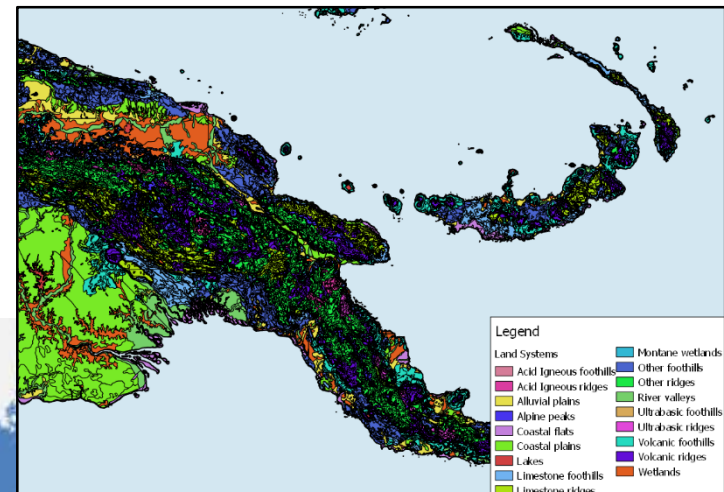
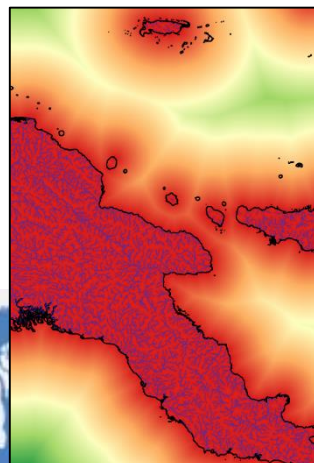
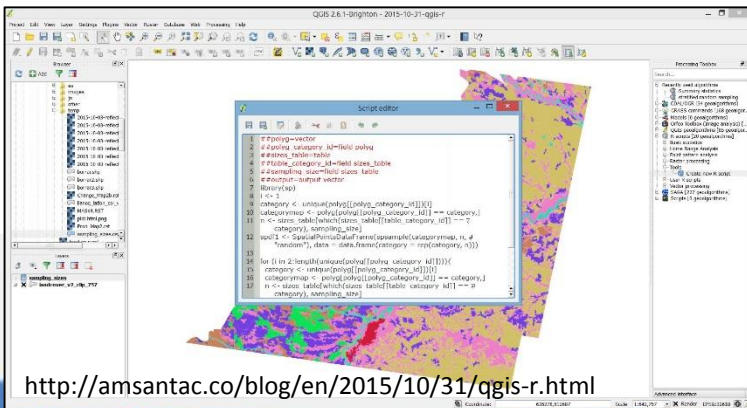
Visit [www.qgis.org](http://www.qgis.org) for user manuals, tutorial, joining support groups and much more.





# QGIS: what it can do

- ✓ View geographic information
- ✓ Edit geographic information
- ✓ Present geographic information (create maps and figures)
- ✓ Analyse geographic information
- ✓ Be extended in its functionality (through plugins and scripts)



# QGIS Vs. ARCGIS

QGIS is free

Open-source, source codes are open for everyone to modify to particular needs

Huge support on forums like stack exchange

Lots of supported data formats thanks to GDAL/OGR library

High functionality for vector and raster operations though plugins

Easy integration with other open source software such as GRASS or R

Commercial - Not freely available

Source codes not available for users

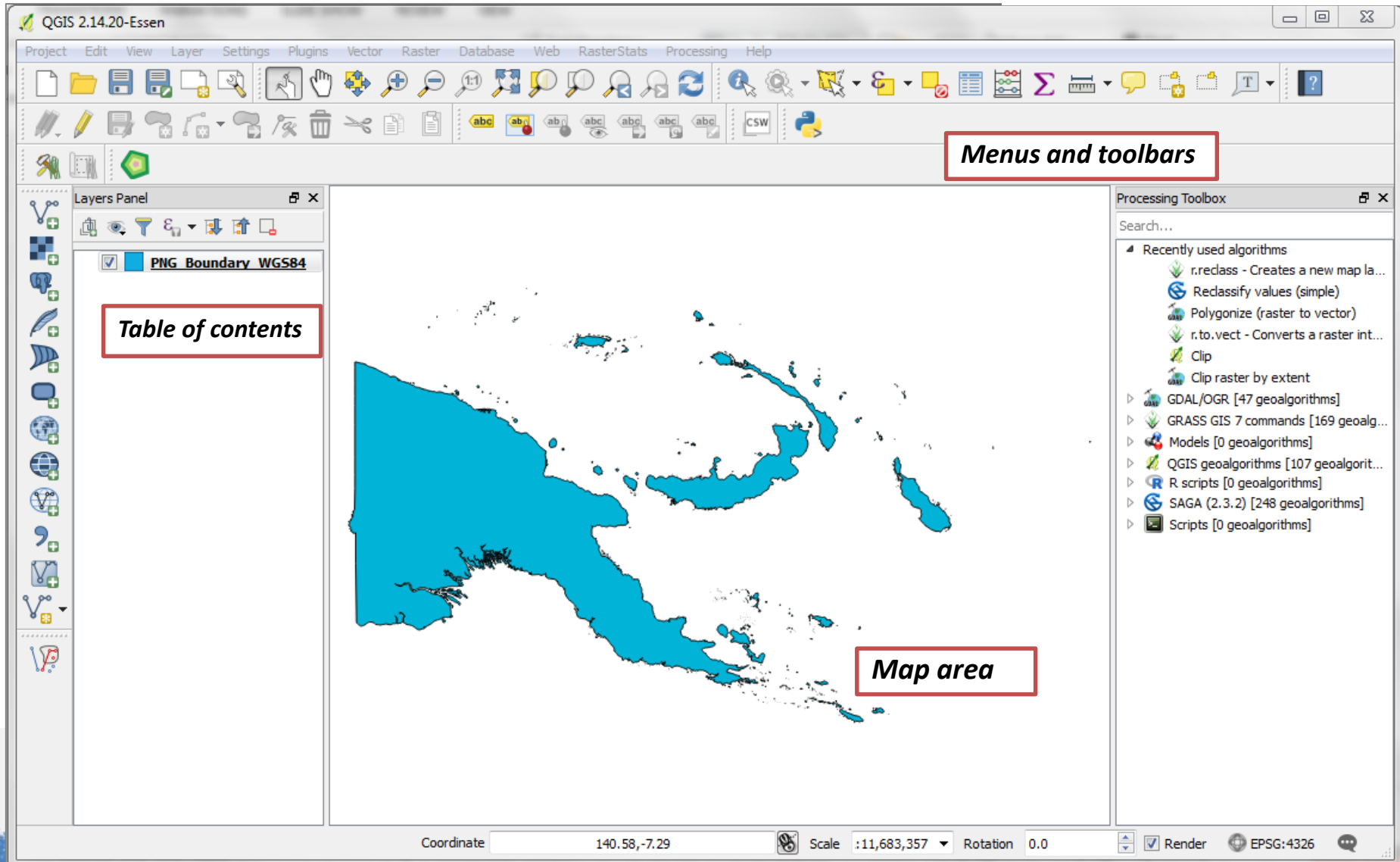
Huge support on ESRI forums

More restricted data formats, preference for ESRI created data formats such as shapefiles and grids

Higher functionality, especially spatial analysis, and more reliable results than QGIS for some of them

Designed as a single, stand-alone platform

# The QGIS interface



# Coordinate systems

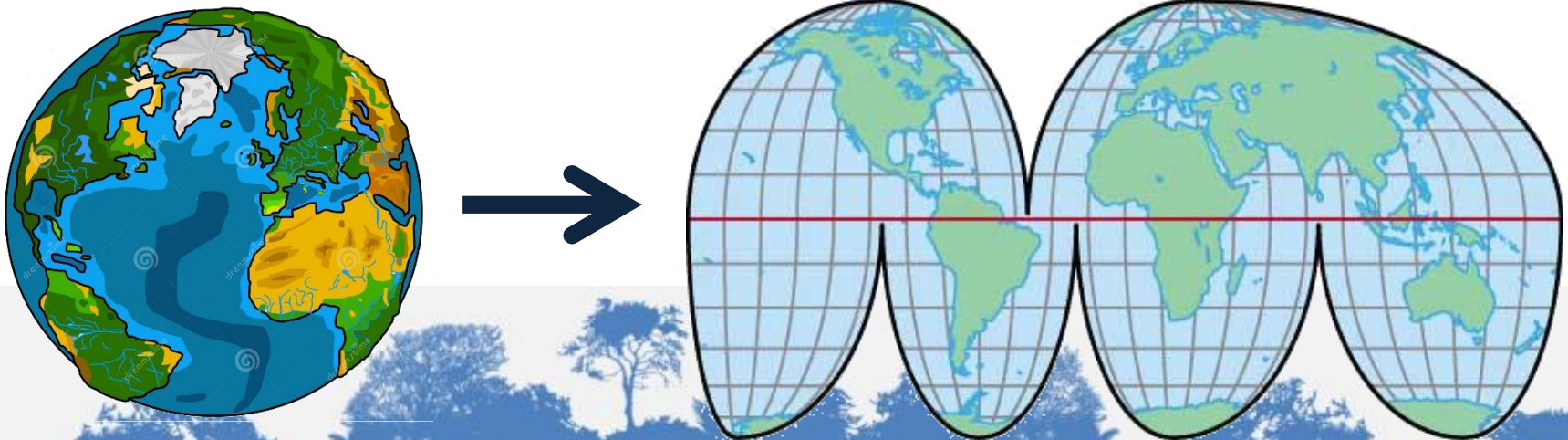
*Coordinate systems (both geographic and projected) provide a framework for defining real-world locations.*

## Geographic Coordinate Systems

- Defines locations on spherical model of the earth

## Projected Coordinate System

- Defines locations on flat model of the earth





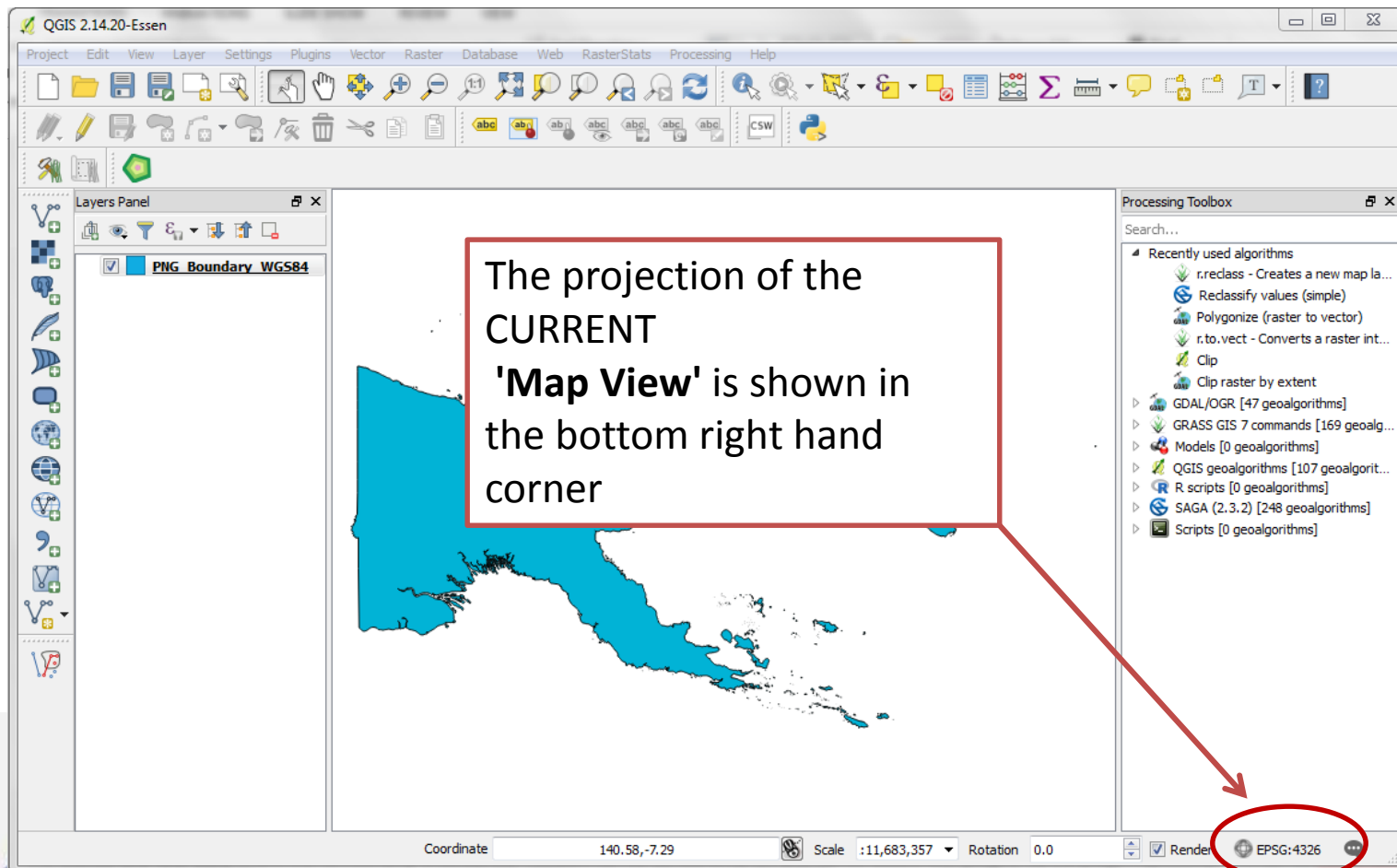
# EPSG Geodetic Parameter Registry

- QGIS uses EPSG codes to assign projections.
- Same projections you have always used!
- <http://www.epsg-registry.org/>

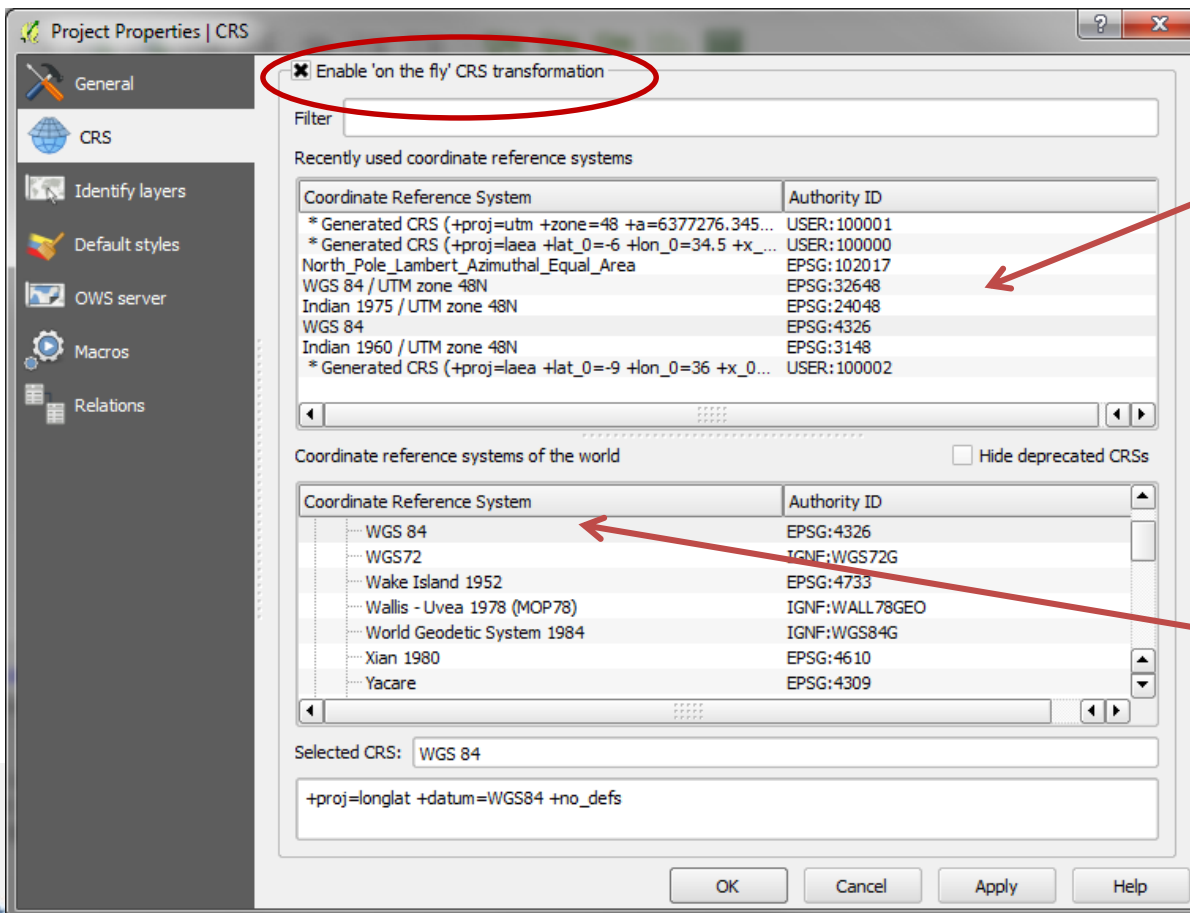
Report	Name	Code	Type	Status
<input type="checkbox"/>	NAD27 / Tennessee	EPSG::2204	ProjectedCRS	Valid
<input type="checkbox"/>	NAD83(HARN) / Tennessee	EPSG::2843	ProjectedCRS	Valid
<input type="checkbox"/>	NAD83(HARN) / Tennessee (ftUS)	EPSG::2915	ProjectedCRS	Valid
<input type="checkbox"/>	NAD83(NSRS2007) / Tennessee	EPSG::3661	ProjectedCRS	Valid
<input type="checkbox"/>	NAD83(NSRS2007) / Tennessee (ftUS)	EPSG::3662	ProjectedCRS	Valid
<input type="checkbox"/>	NAD83 / Tennessee	EPSG::32136	ProjectedCRS	Valid



# Changing the projection of the QGIS Map View (for the current project only)



# Changing the projection of the QGIS Map View (for the current project only)



Recently used projections are shown in the top box.

Other available projections are shown here

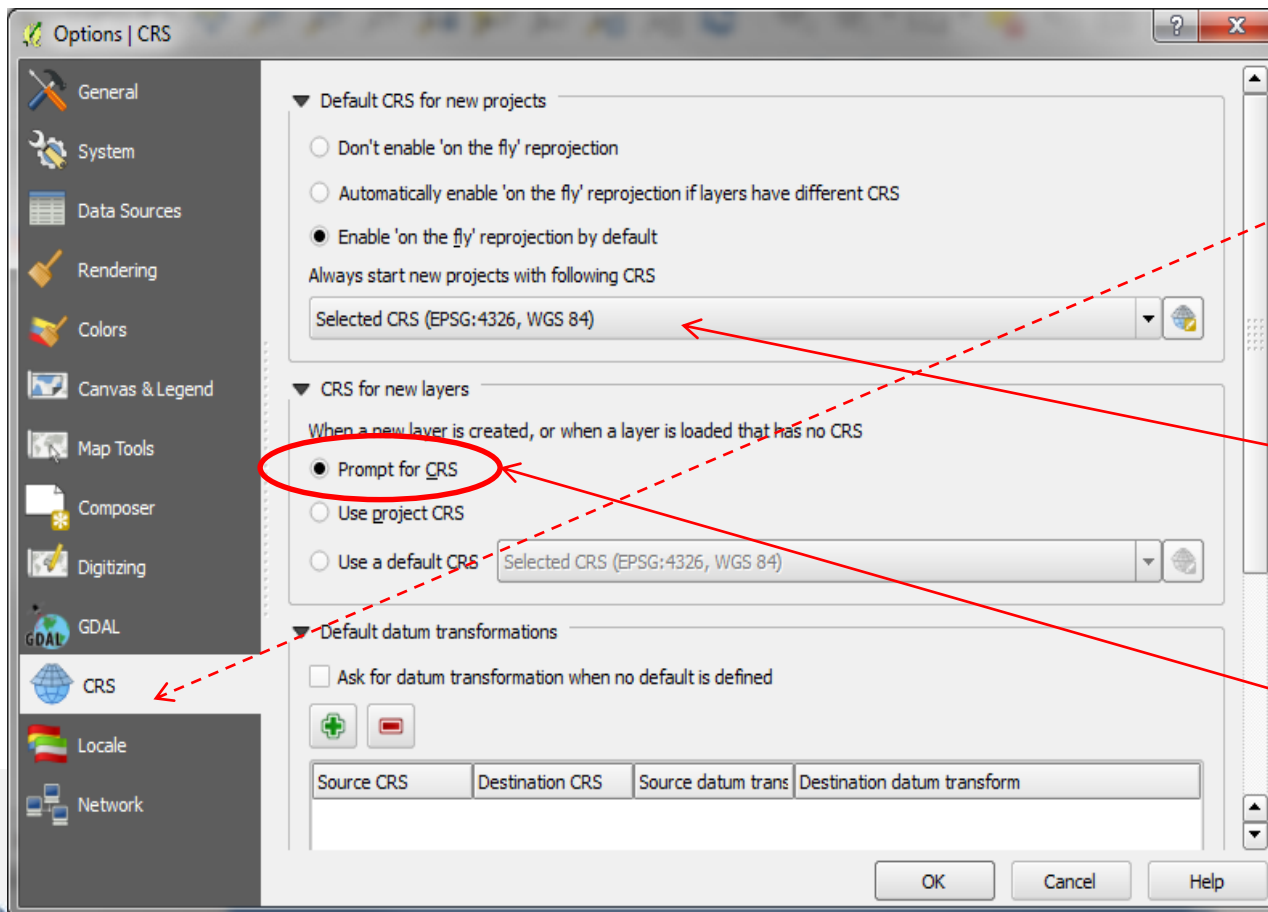
# Changing the projection of QGIS Map View

From the main menu  
click on  
**Setting>>Options**

Click on the **CRS**  
(Coordinate Reference  
System) tab

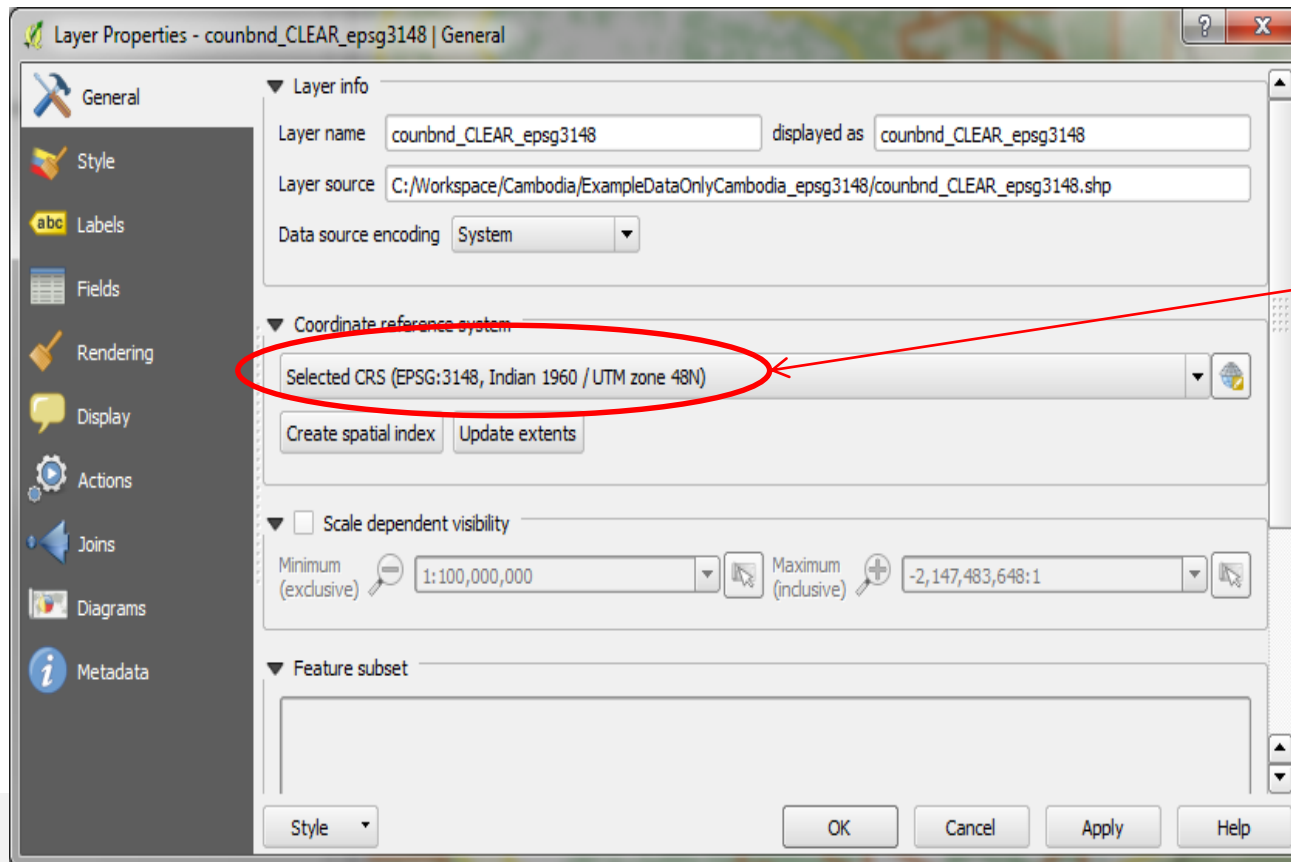
Set the projection here  
if you want QGIS to  
**always open with the  
MAP VIEW in a  
particular projection**

If a dataset has no  
projection defined you  
**ALWAYS** want QGIS to  
ask you what it is





# Looking at the projection of a dataset



Right click on the dataset and click **properties**

The **projection of the dataset** is given here

**WARNING!!!!**

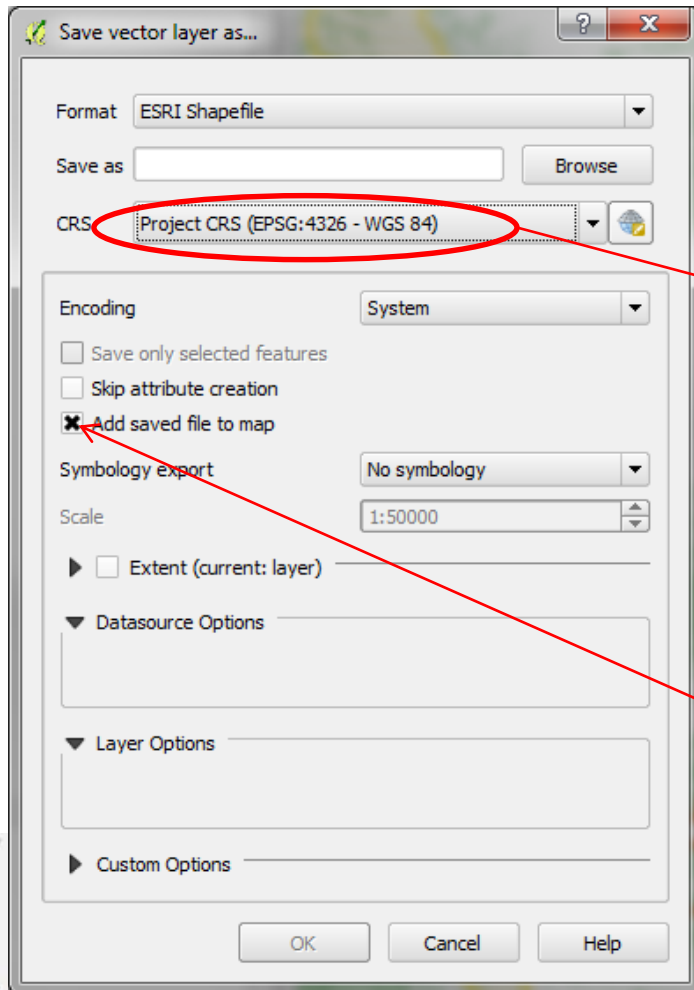
Specifying a different CRS here **does not re-project** the data.

# Re-projecting - Saving a dataset to another CRS

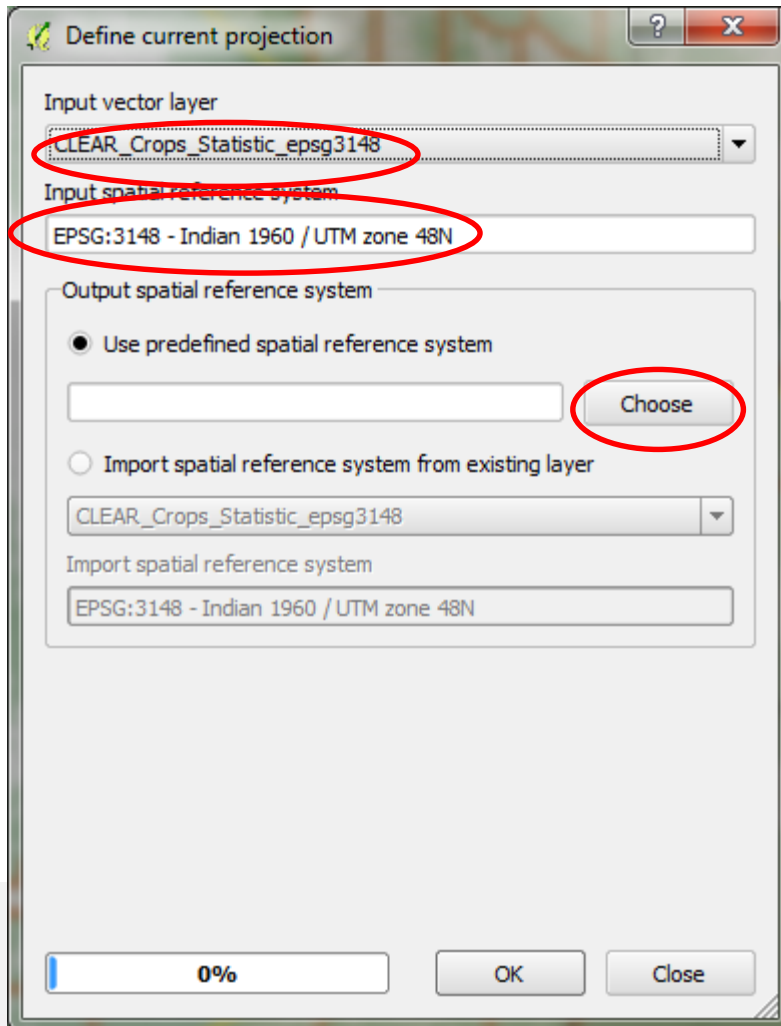
Right click on the dataset and click **Save As**

Change this from layer CRS to either **project CRS** (if you want to save as the projection of your Map View) or **Specify CRS** if you want to pick from the list of projections

**Tick add to map** if you want the projected dataset to be added to your QGIS project.



# Define current projection



From the main menu click on **Vector>>Data Management Tools>>Define Current Projection**

If a layer is missing a CRS and you want to tell QGIS what the projection is **and/or** if you have a layer that has the **WRONG** projection and you want to tell QGIS what the correct projection for this layer is.

## Other important or useful comments on projections in QGIS

- ✓ If the Map View is in a projected coordinate system you can set the scale of the canvas at the bottom of the screen
- ✓ Unlike ArcGIS you cannot do on-the-fly area calculations in QGIS. You have to physically project the data.
- ✓ If QGIS does not provide the coordinate reference system you need, you can define a custom CRS - under setting>>custom CRS







# Thank you!

