

Simple Interpretation

You will:

1. Create a “multiband image” by combining individual bands.
2. Load up a way point file
3. Identify the habitat at each location.
4. We will then digitise around each landcover area

We will concern ourselves with 7 basic land covers

- Forestry
- Improved Grassland
- Natural Vegetation

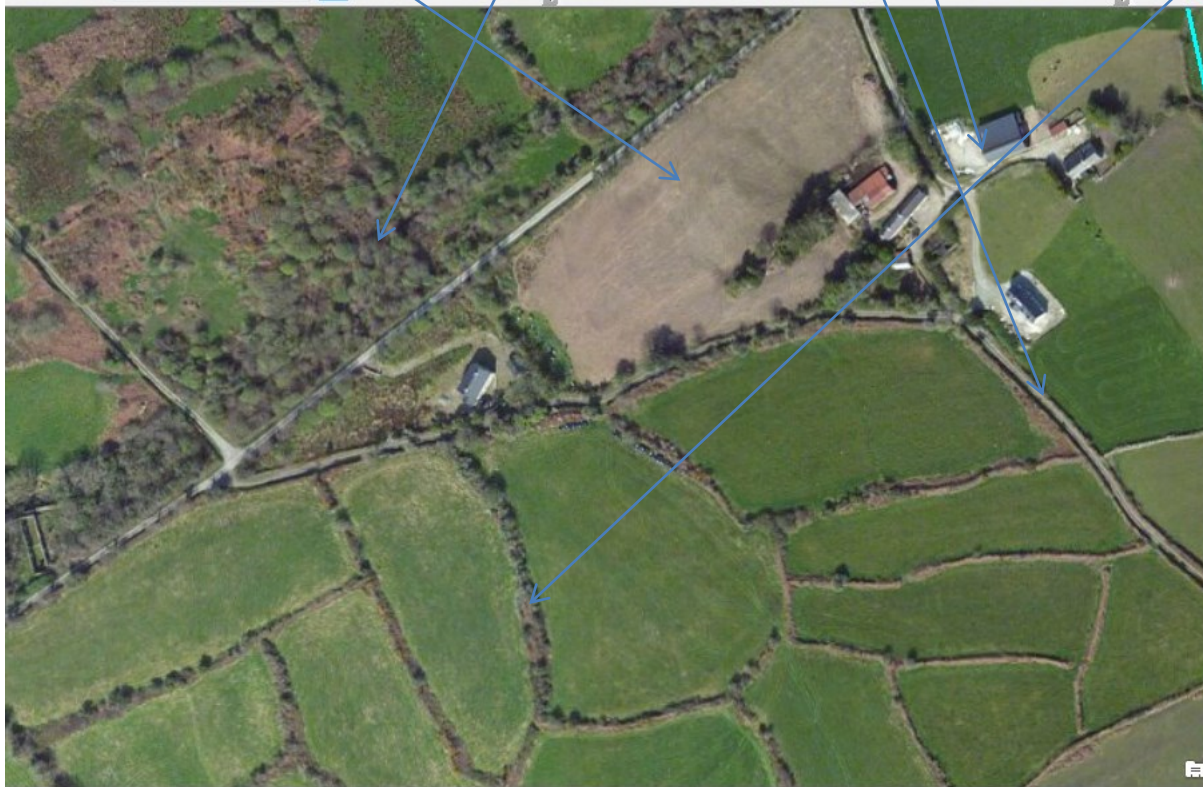


Built Land

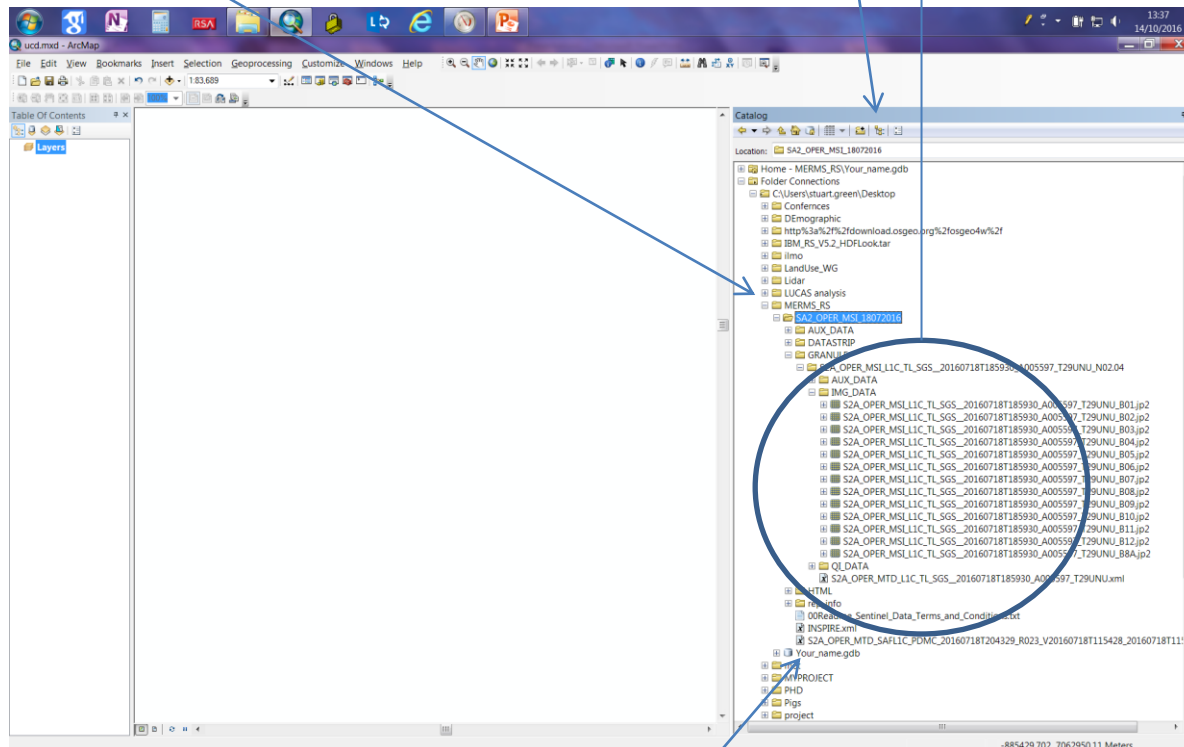
- Bare Soil

Woodland

Hedgerow

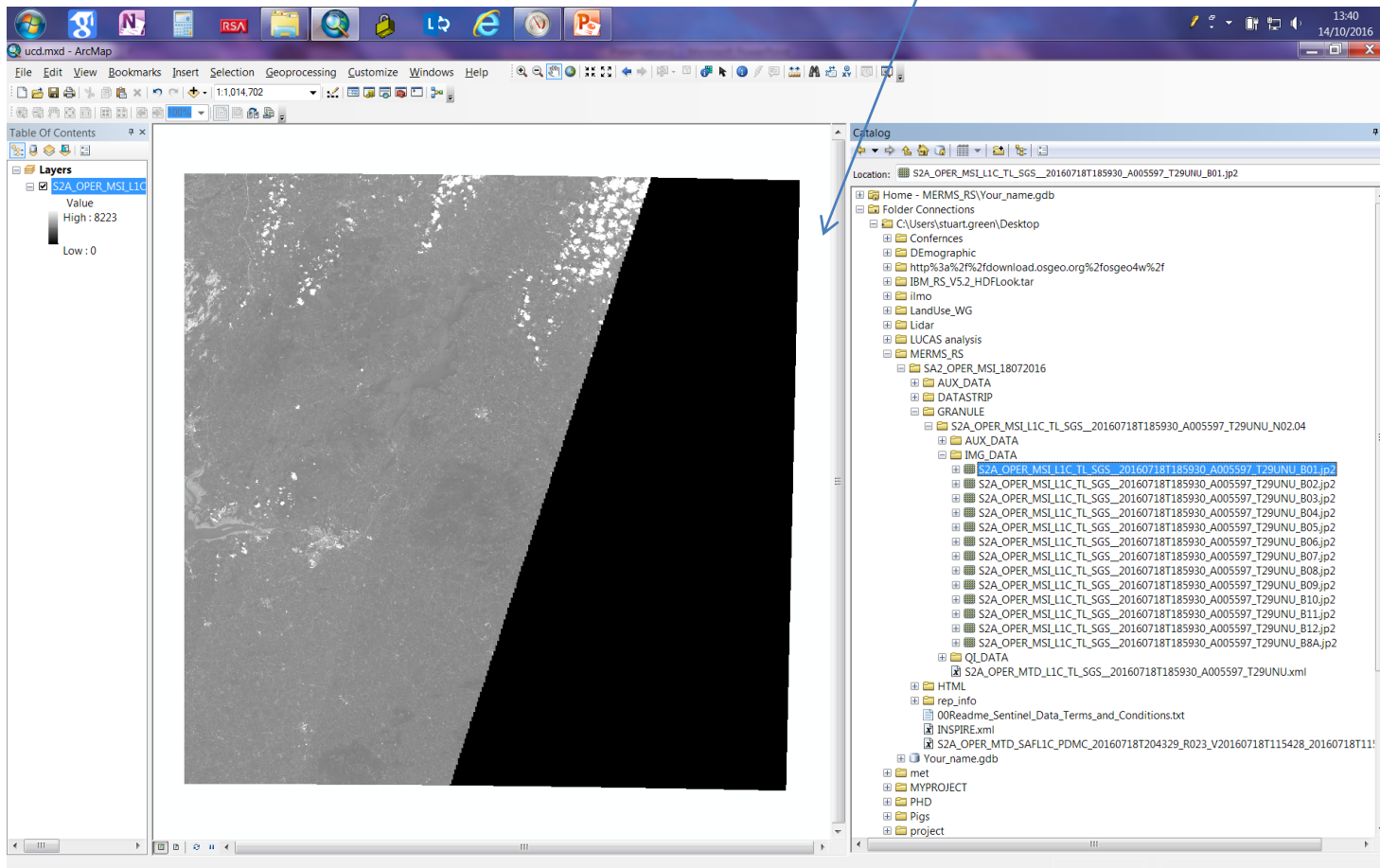


Start ArcGIS. Go to the Catalogue, find your directory on the desktop and click through until you reach the list of image bands

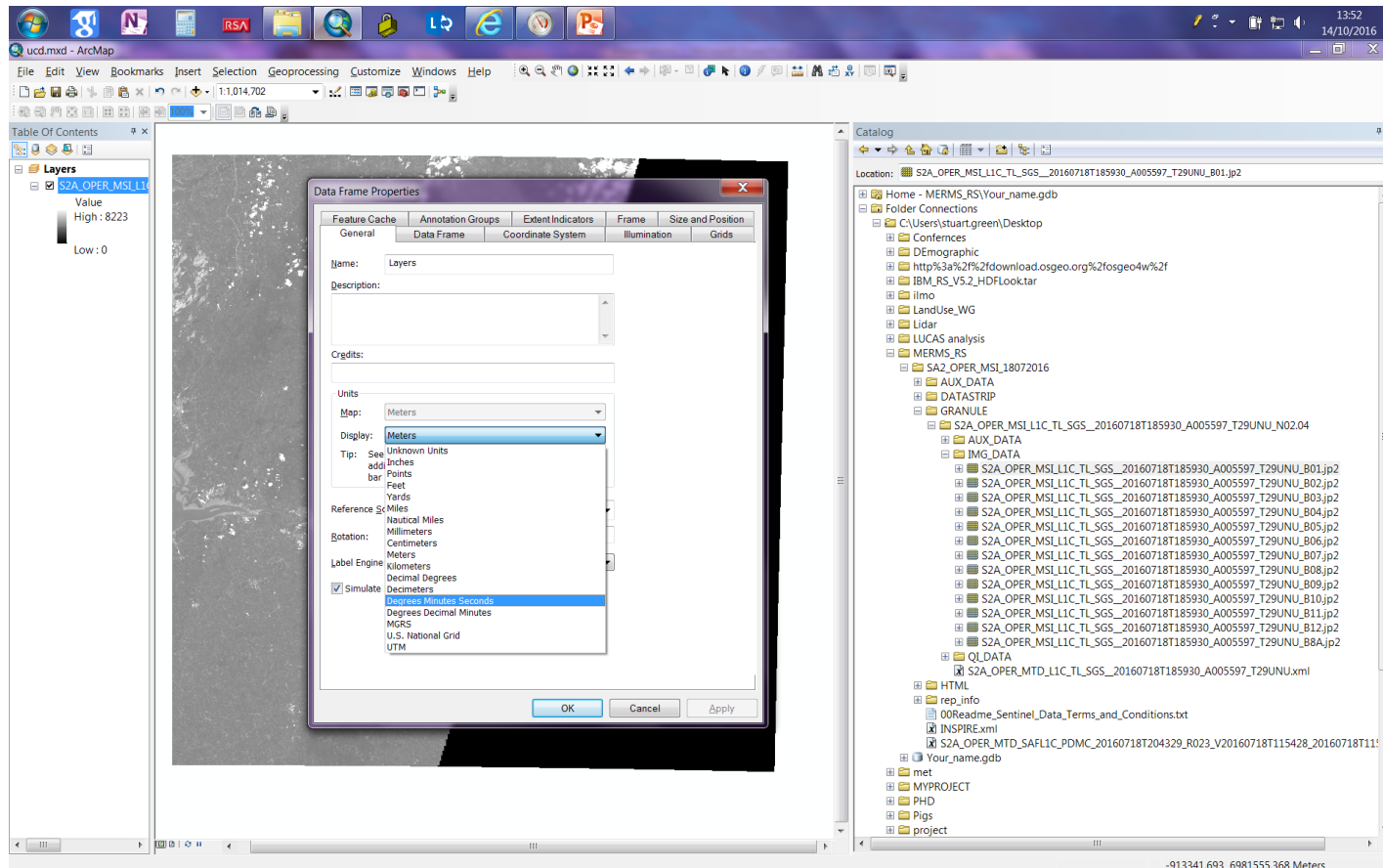


Note the Image Directory is NOT in your file geodatabase

Drag and Drop Band 1 into the Data Frame. Using Right-click/Properties-
What is the Spatial Reference of this band?
What is the spatial resolution?

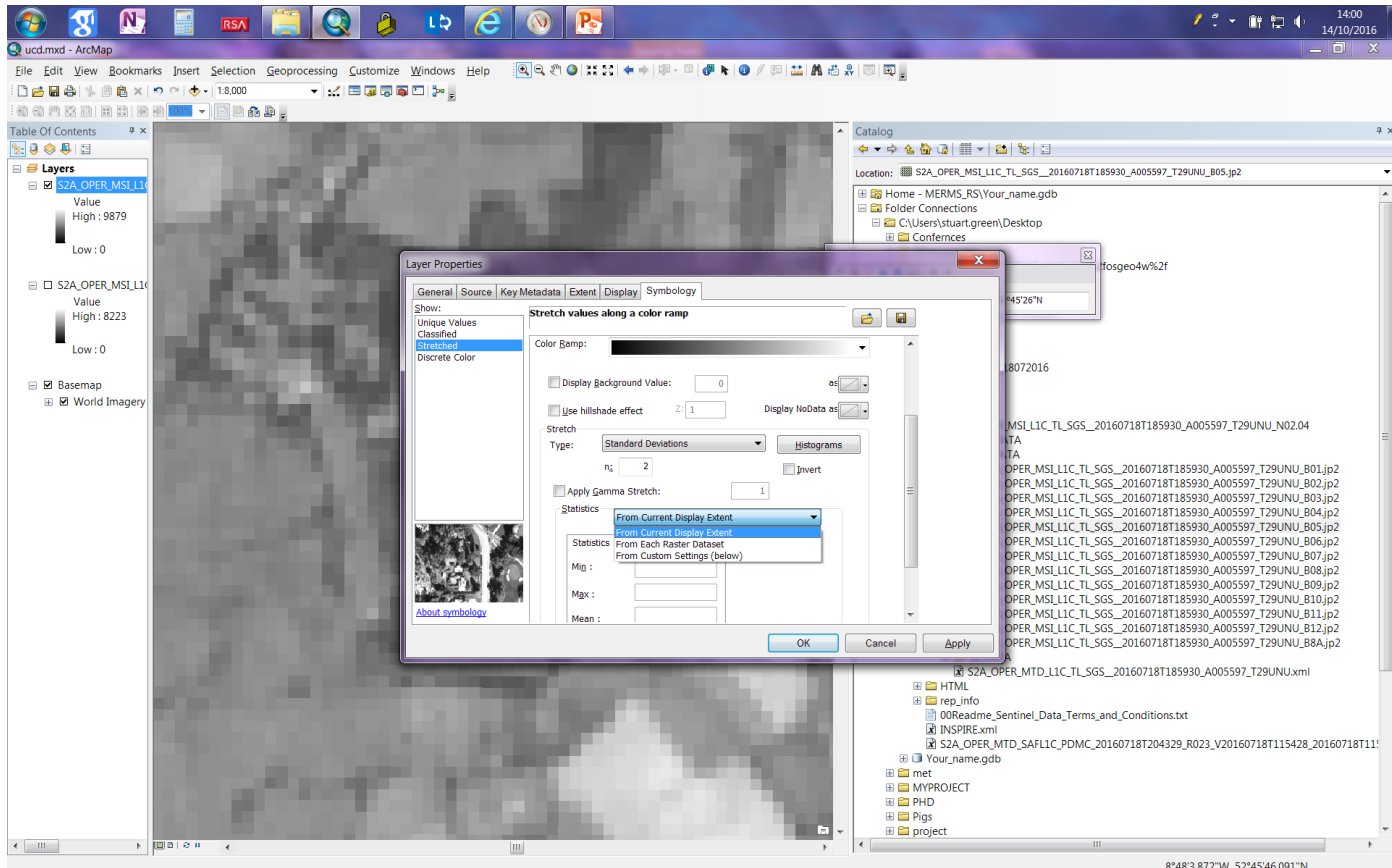


Right-Click/Data Frame Properties. On the General TAB change Units to Degrees



Load up bands 2,3,4,5,6,7

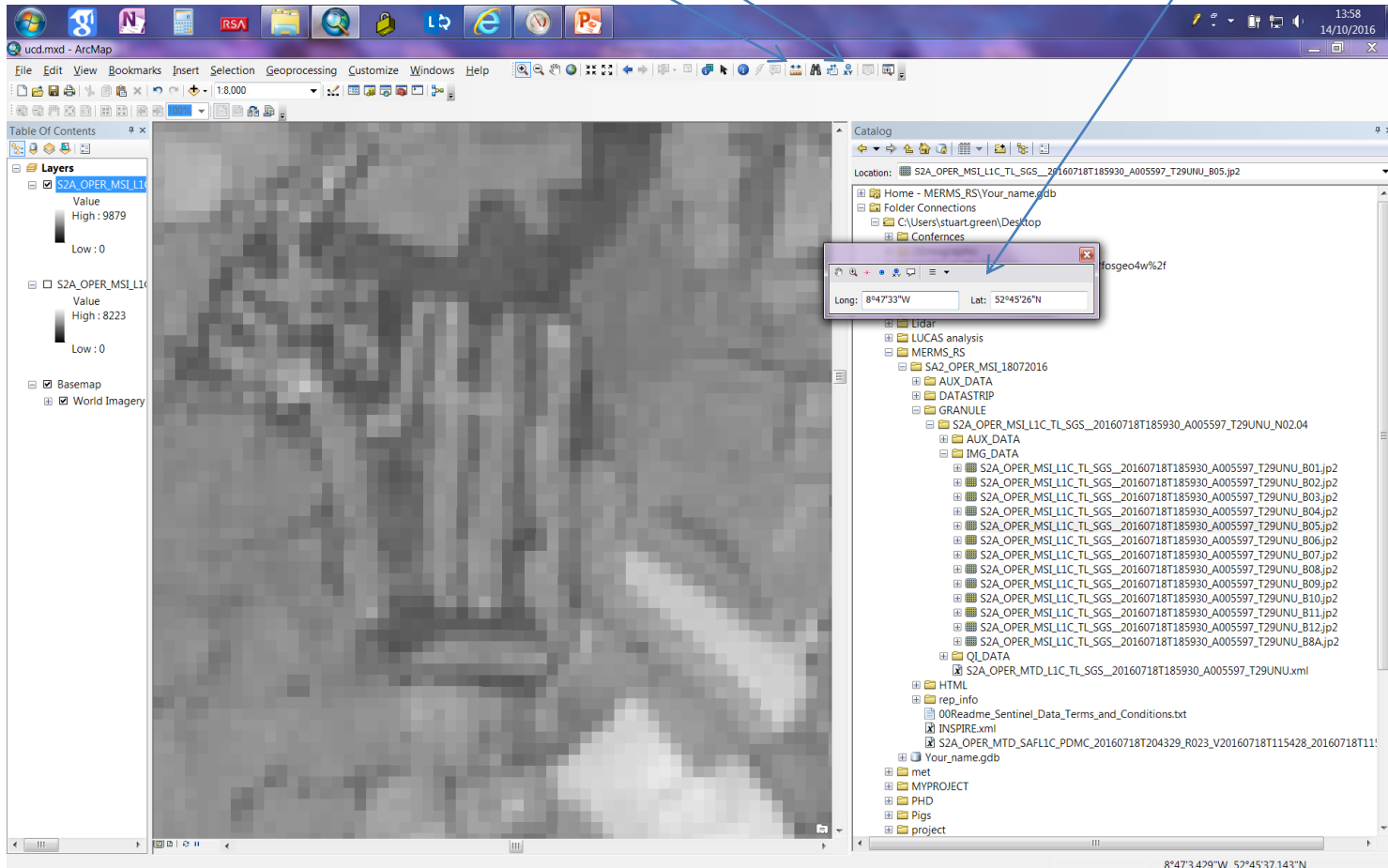
Each time rightclick on the file name in the TOC and change display properties – Symbology. SO that stretch is calculated form display extent- what effect does this have ? (try zooming in)



Using "Go TO XY" button. Navigate to these coordinates.

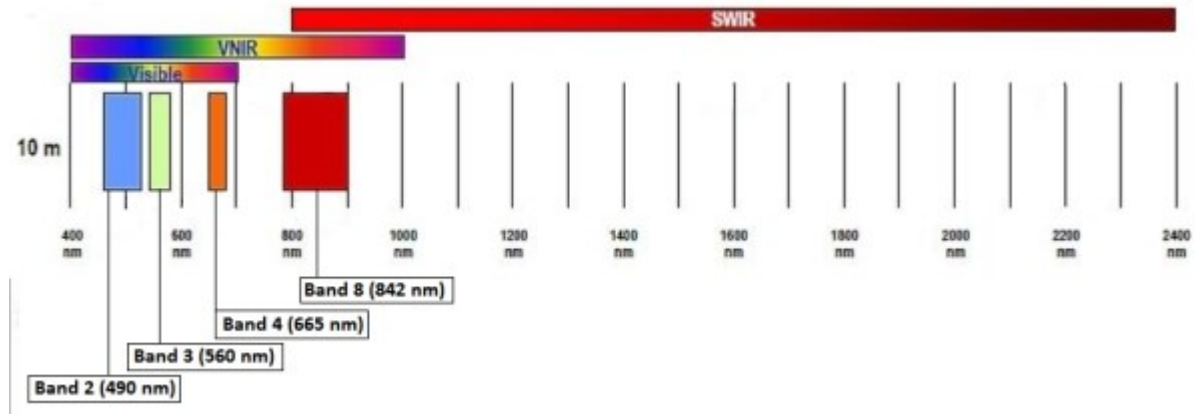
What do you think this object is?

]Use the measure Button to get an idea of the size

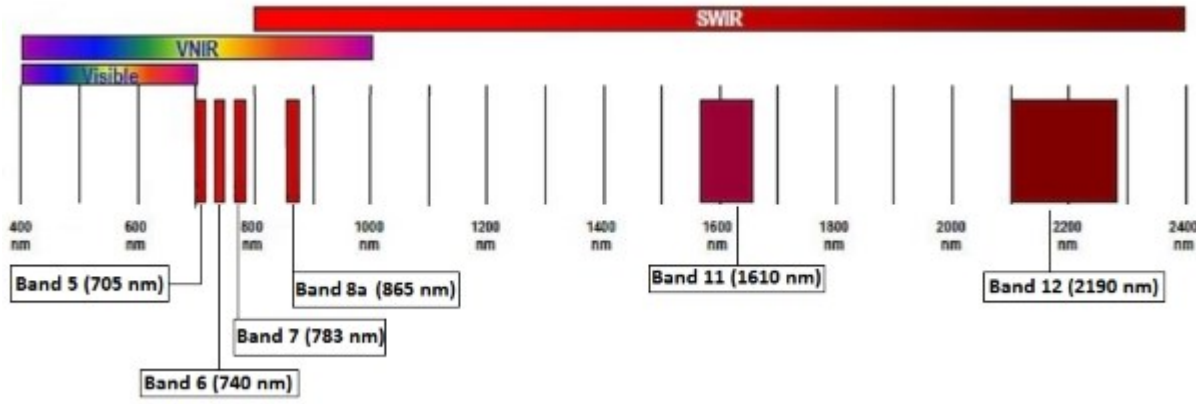


Sentinel Bands Come in 3 resolutions

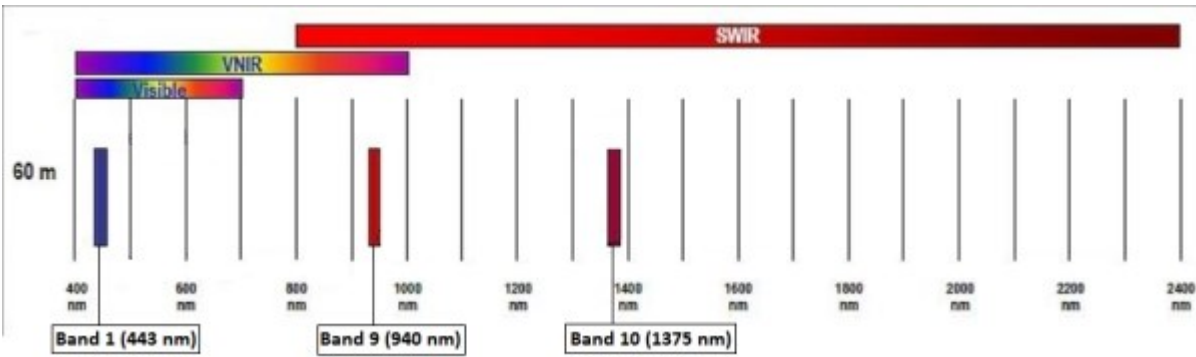
10m



20m

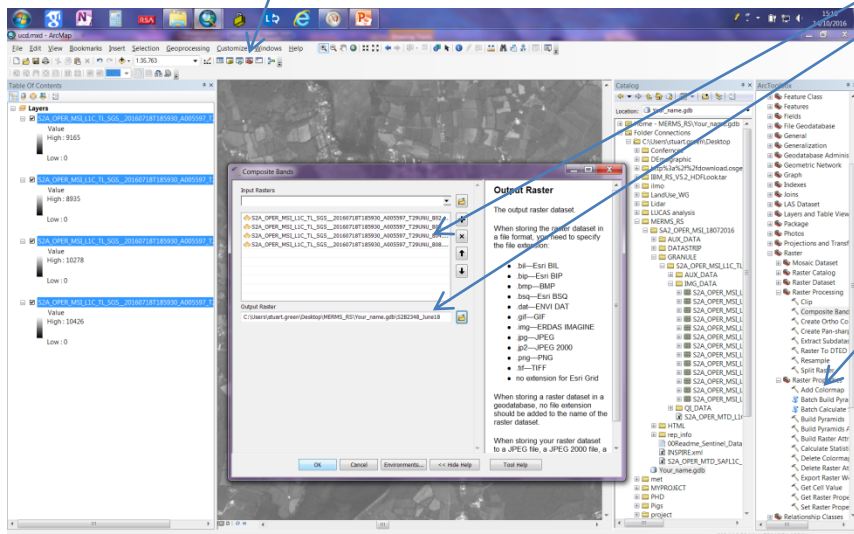


60m



We will create a multi-band image, of the 10m resolution data, Bands 2,3,4 and 8 (have these four only in TOC)

- Click TOOLBOX, then navigate to COMPOSITE BANDS
- Add all 4 Image bands in correct order
- Save in your FILEGEODATABASE



Display the Image as a:
True Colour, R3,G2,B1
False Colour Infra Red, R4,G3,B2

In each of these combinations what does
a Forest look like?

A Crop Field

A grass field

Create a three band image for vegetation analysis

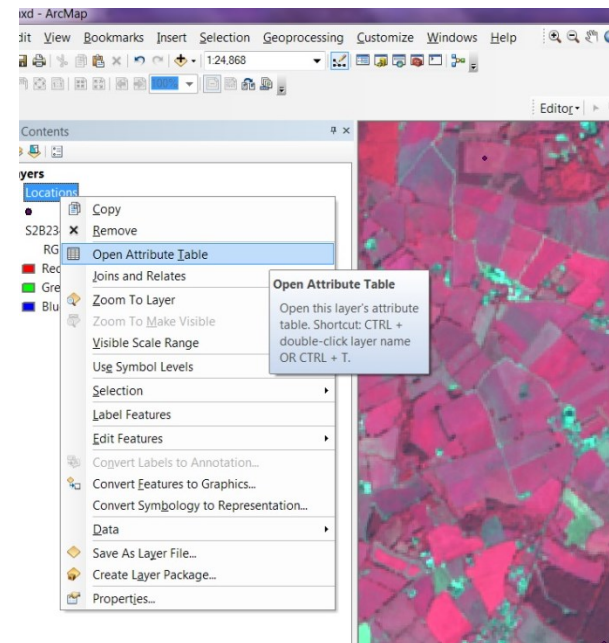
- **Natural Colors: 4 3 2**
- False color Infrared: 8 4 3**
- False color Urban: 12 11 4**
- Agriculture: 11 8 2**
- Atmospheric penetration: 12 11 8a**
- Healthy vegetation: 8 11 2**
- Land/Water: 8 11 4**
- Natural Colors with Atmospheric Removal: 12 8 3**
- Shortwave Infrared: 12 8 4**
- Vegetation Analysis: 11 8 4**

Part 2

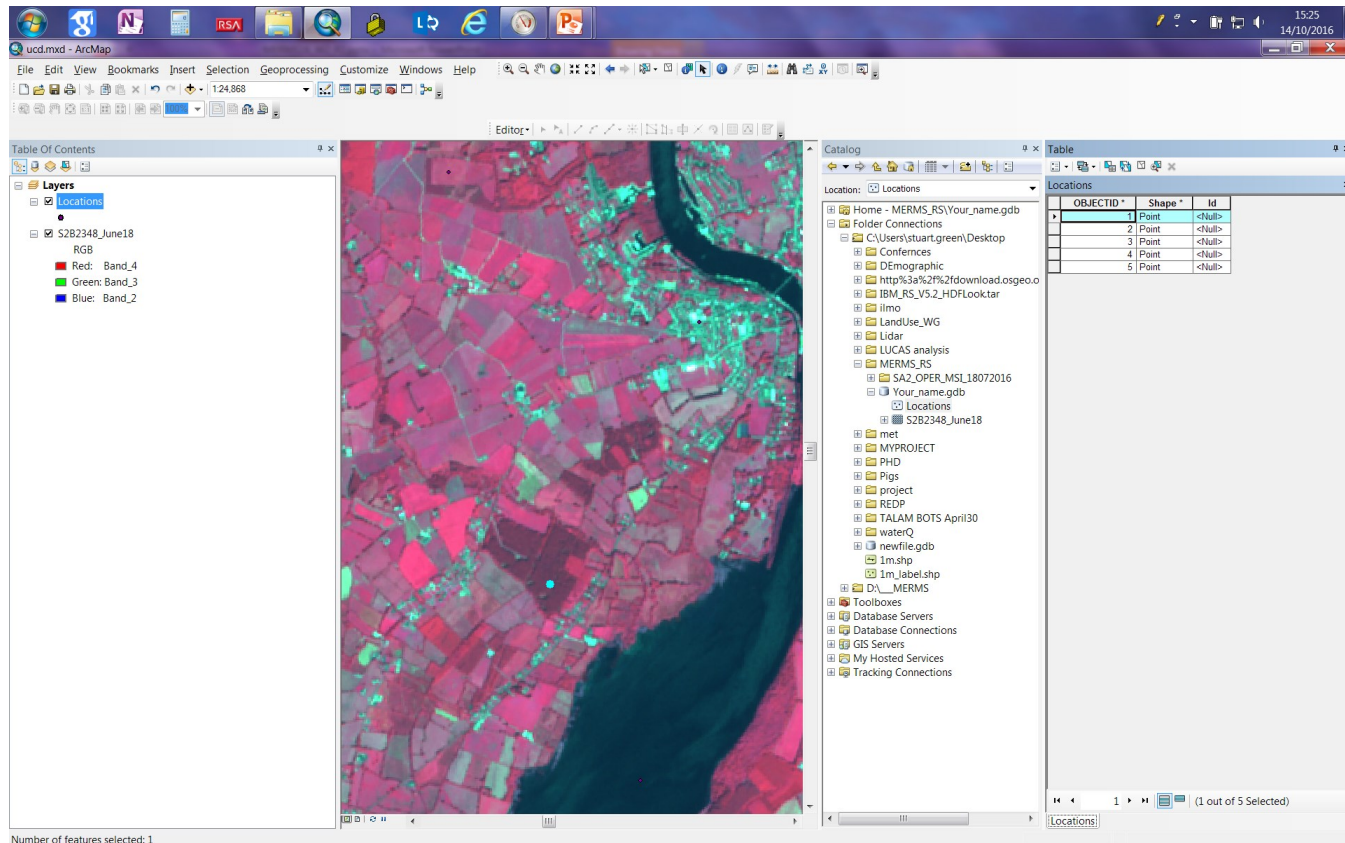
Using GIS and RS together

Drag the file “LOCATIONS.SHP” from your directory into the data frame

- This is a mapped “Shapefile” with 5 points mapped.
- Right click on loactions.shp in the TOC and click open *attribute table*



Click on each Point in turn in the attribute table and fill out the data in the next slide



If you right click on loactions.shp in the TOC and select Zoom to layer- you'll see all five points in the data frame

Write out your observation using a table like this – description is about how it looks on the screen, not in real life

Site Number	Landscover Type	Description	
1			
2			
3			
4			
5			

Alternatively, if you are comfortable with ARCMAP you can edit the sites.shp attribute table

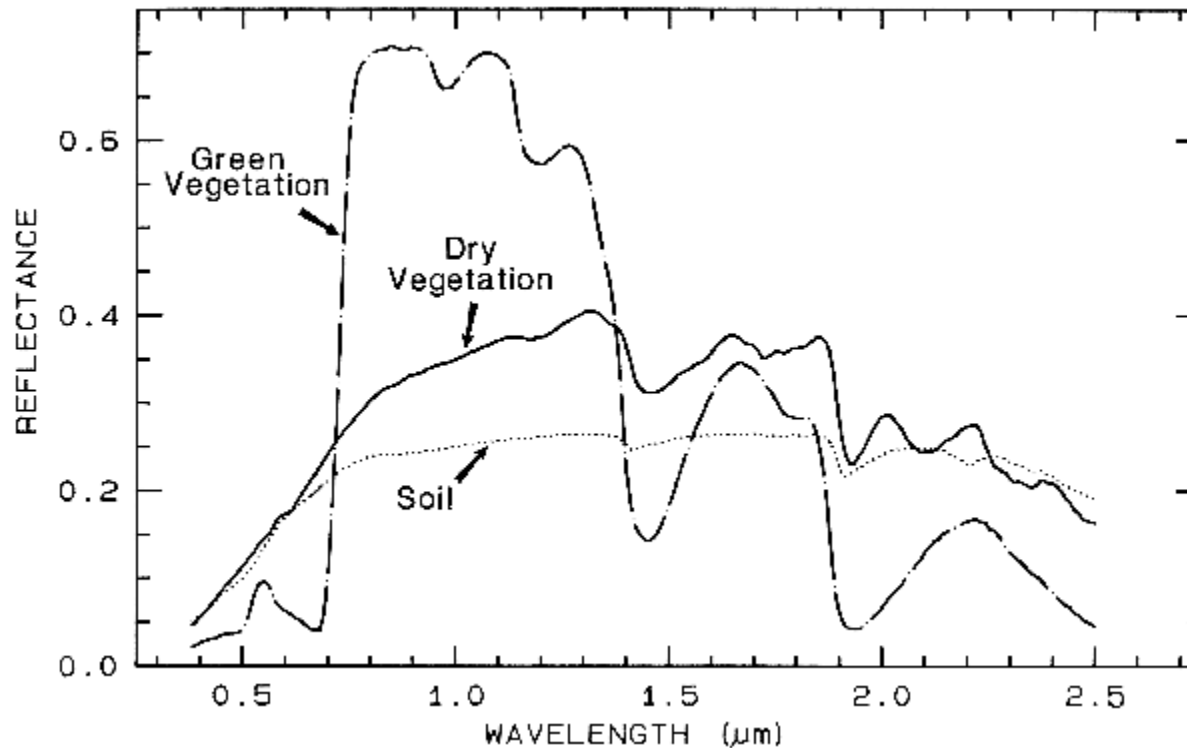
For Guidance Use Fosset

[http://www.heritagecouncil.ie/fileadmin/user_upload/Publications/Wildlife/Guide to Habitats.pdf](http://www.heritagecouncil.ie/fileadmin/user_upload/Publications/Wildlife/Guide%20to%20Habitats.pdf)

3/4

<http://speclab.cr.usgs.gov/PAPERS.refl-mrs/refl4.html>

- One trick you'll have to learn is how to distinguish between “dry vegetation” and bare soil

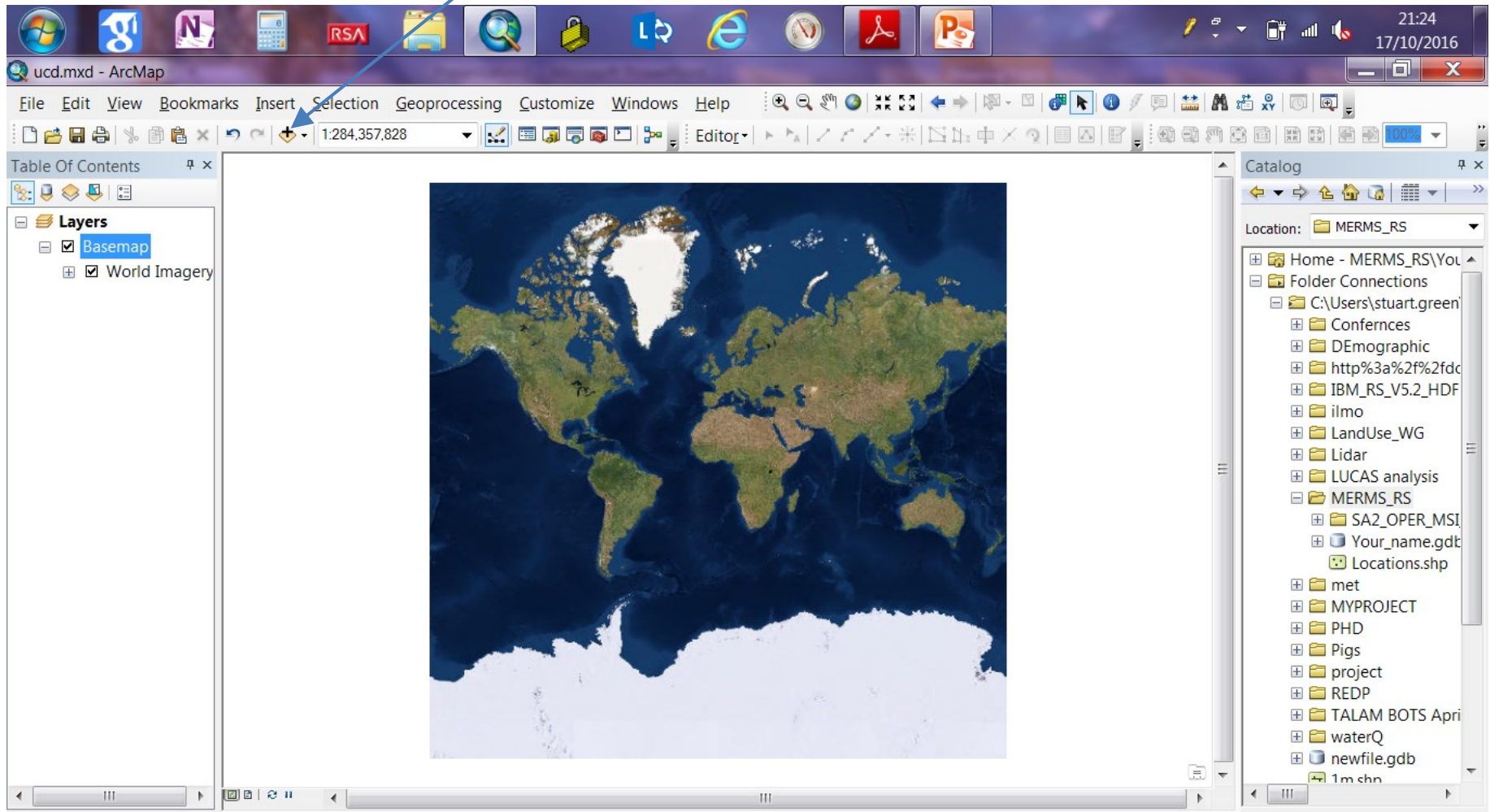


- <http://desktop.arcgis.com/en/arcmap/10.3/tools/data-management-toolbox/composite-bands.htm>

Digitising in ArcGIS

Part 3

1 Open Arc GIS- Click, “Add Data” , “Add BaseMap” “Imagery”



The 7 different land covers

- Forestry
- Improved Grassland
- Natural Vegetation

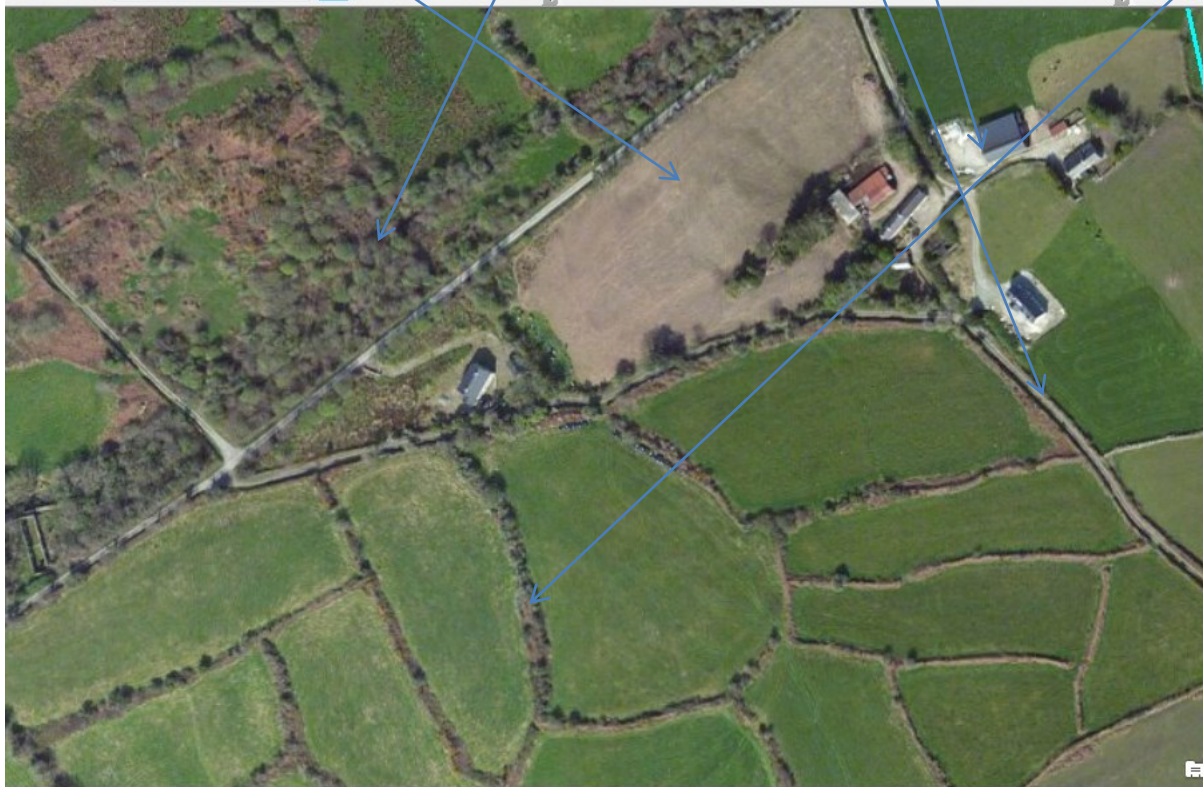


Built Land

- Bare Soil

Woodland

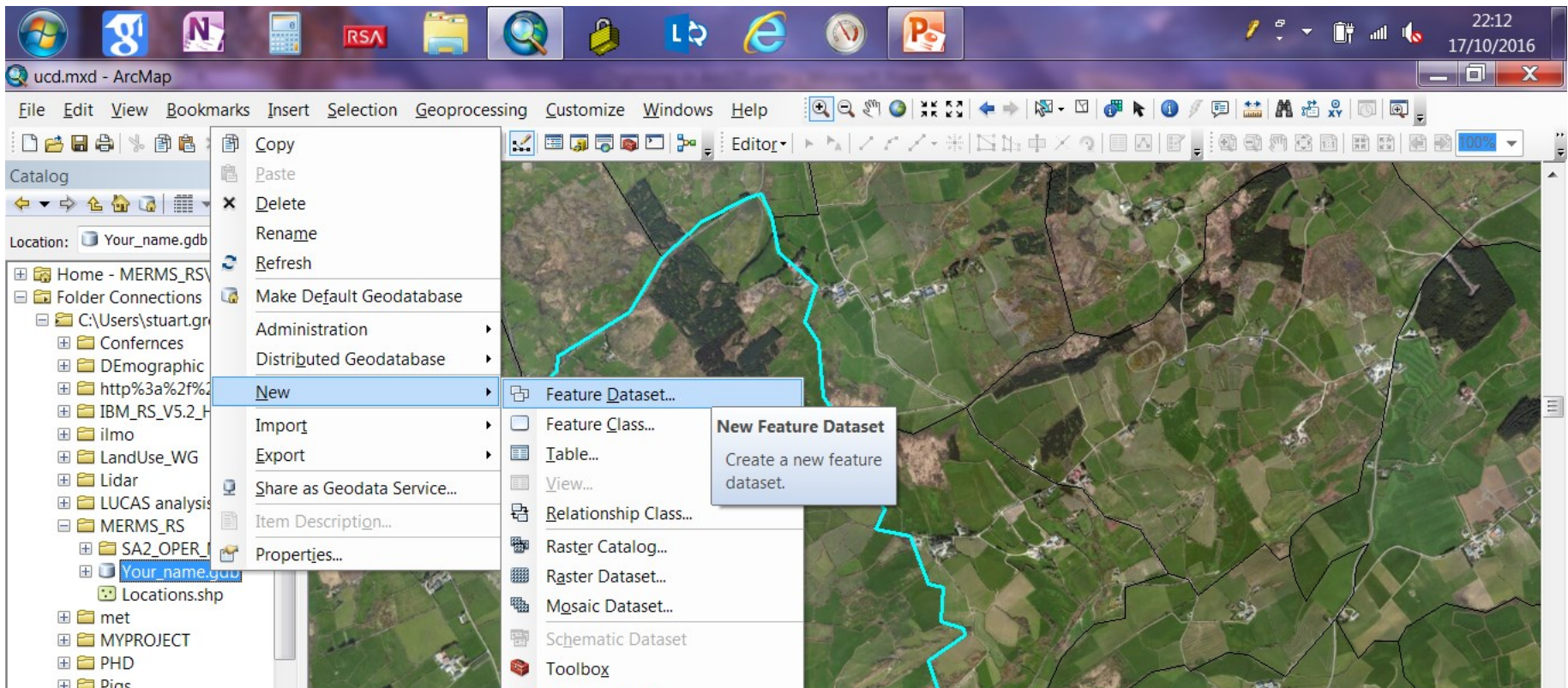
Hedgerow



We will digitise around each 5
locations to map the object

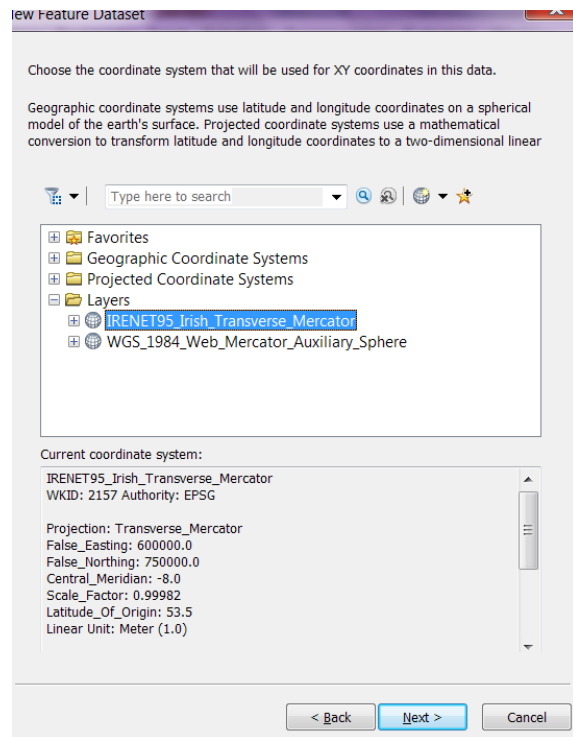
First we need to create an empty file (called a feature data set in ArcGIS- or Vector File generally)

- Right click on your Geodatabase in the catalogue and select new and “Feature Dataset...”



First Create simple name then click NEXT

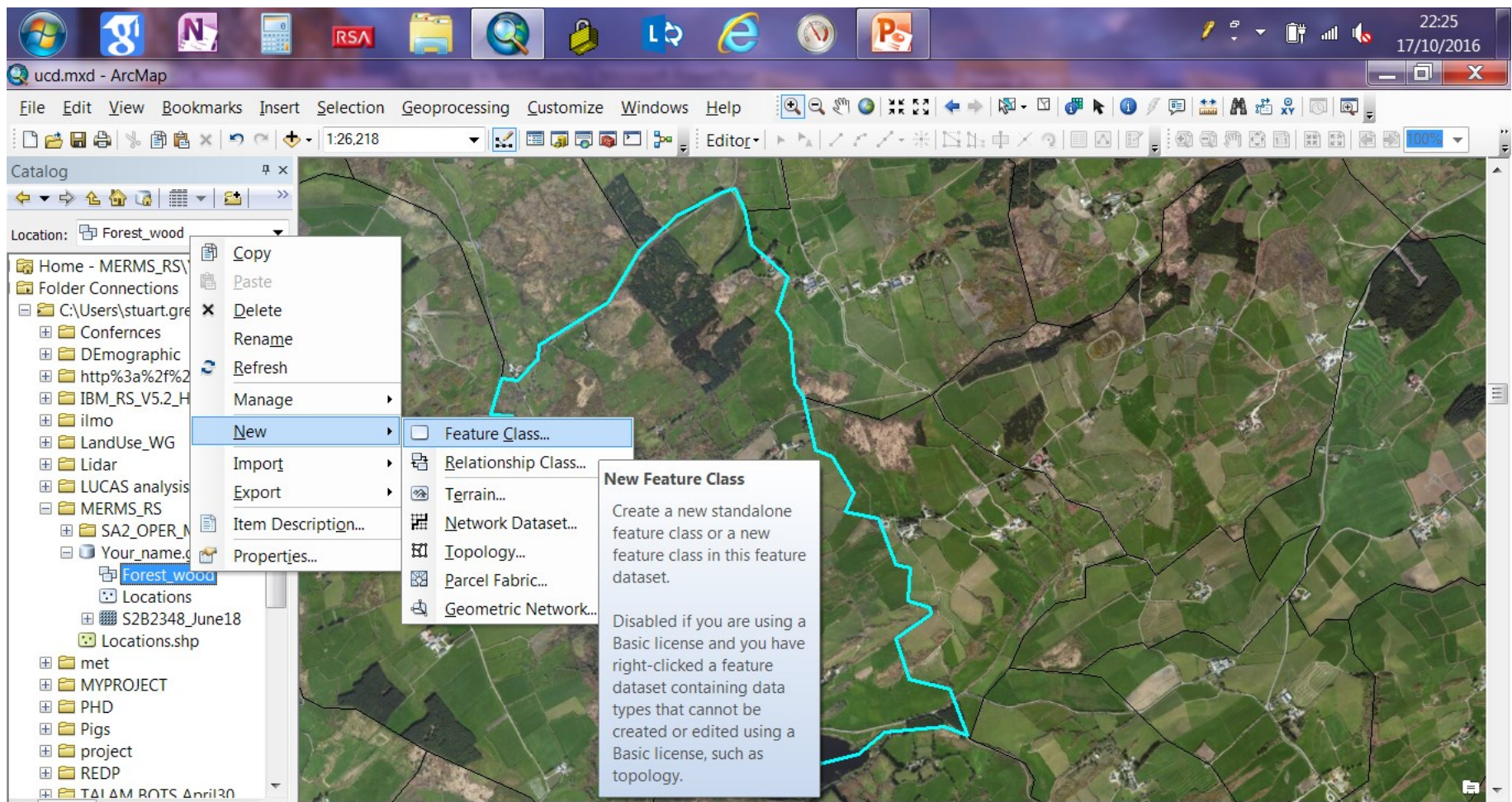
- Select IRENET95 as the coordinate system.



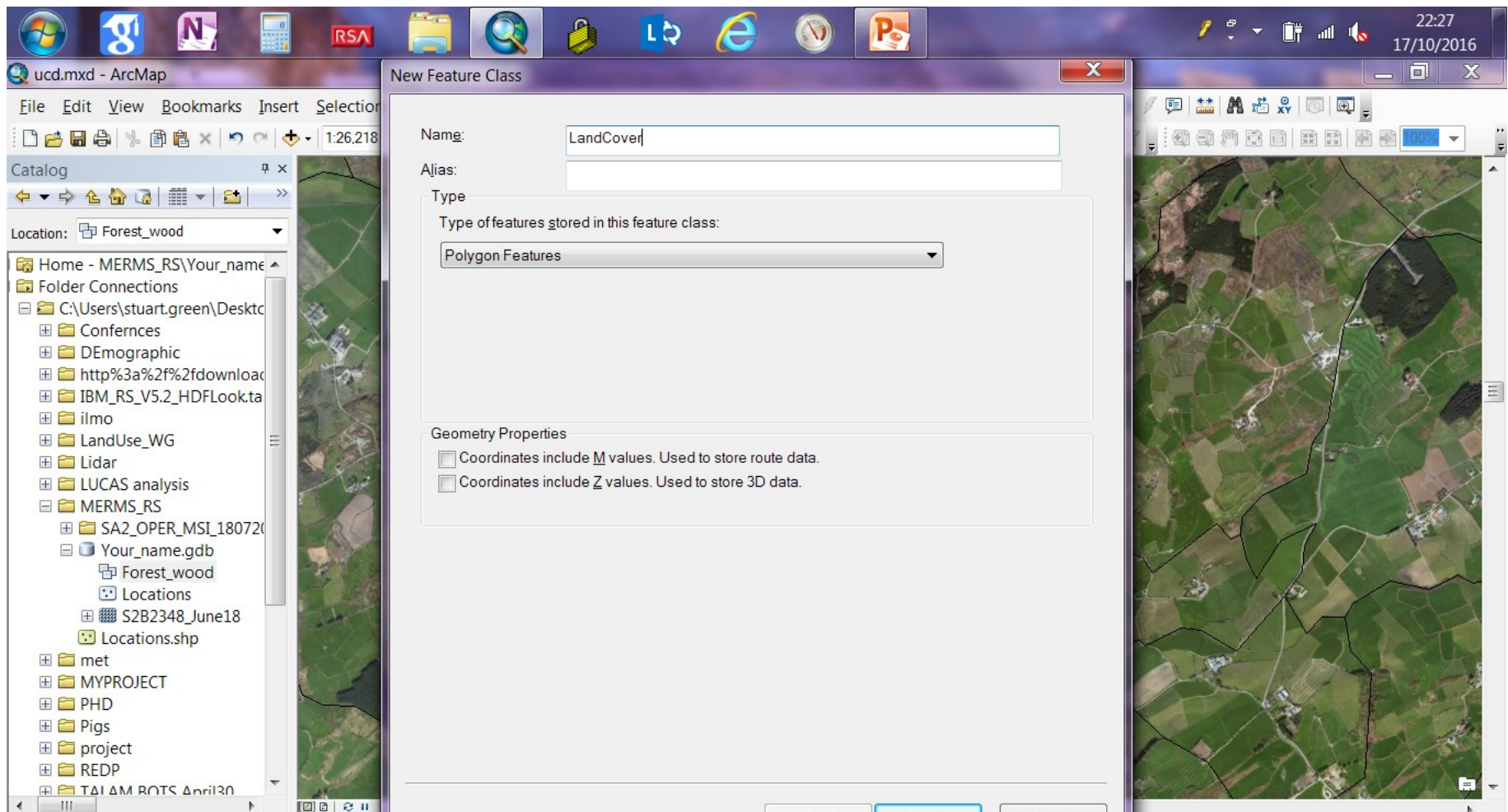
- Click NEXT
- Click next on the following panel without changing anything and click FINISH again keeping the defaults

Your new File appears in the File geo-database (I called mine Forest_wood)

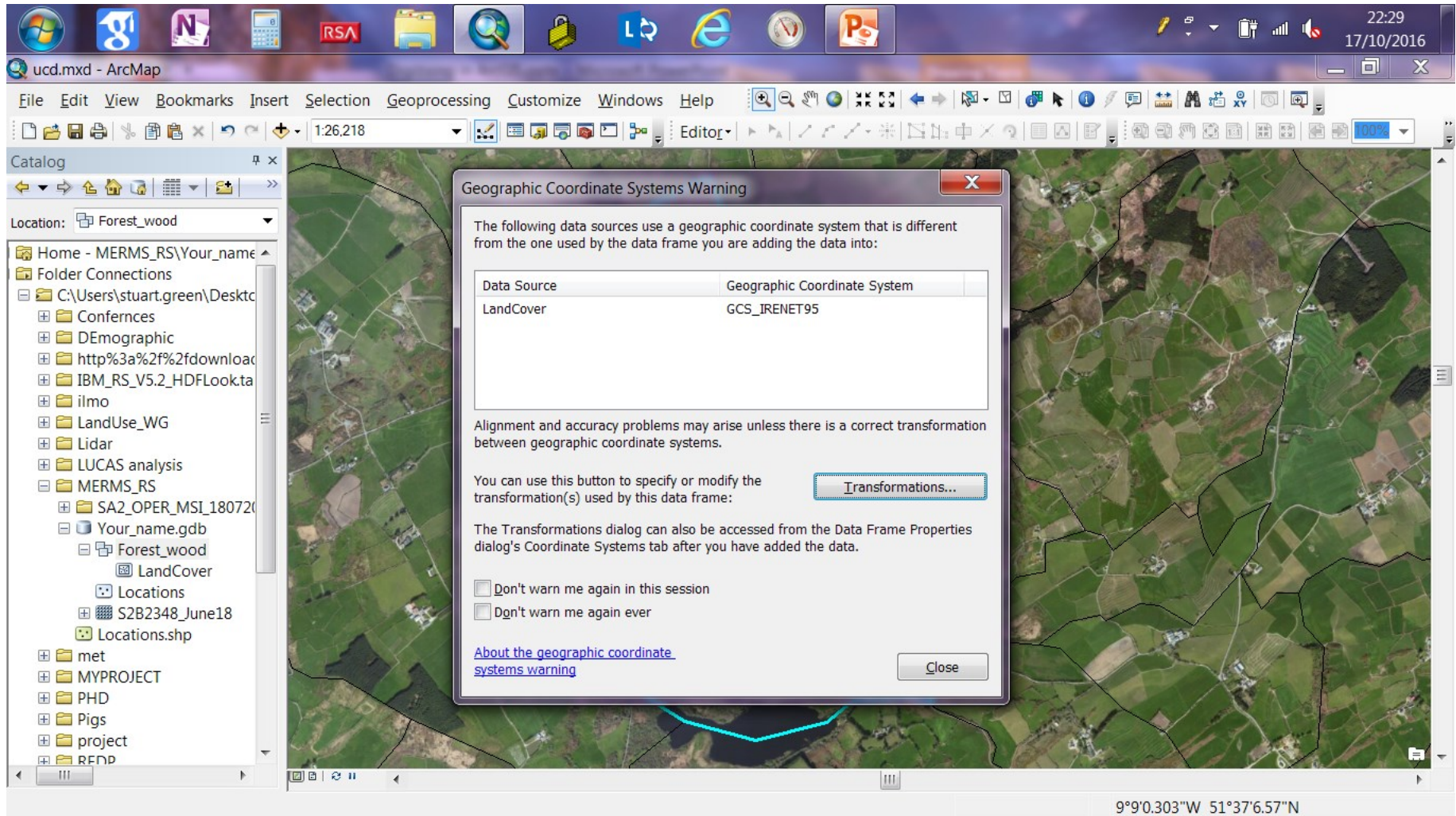
- Right click on it, select New then Feature Class



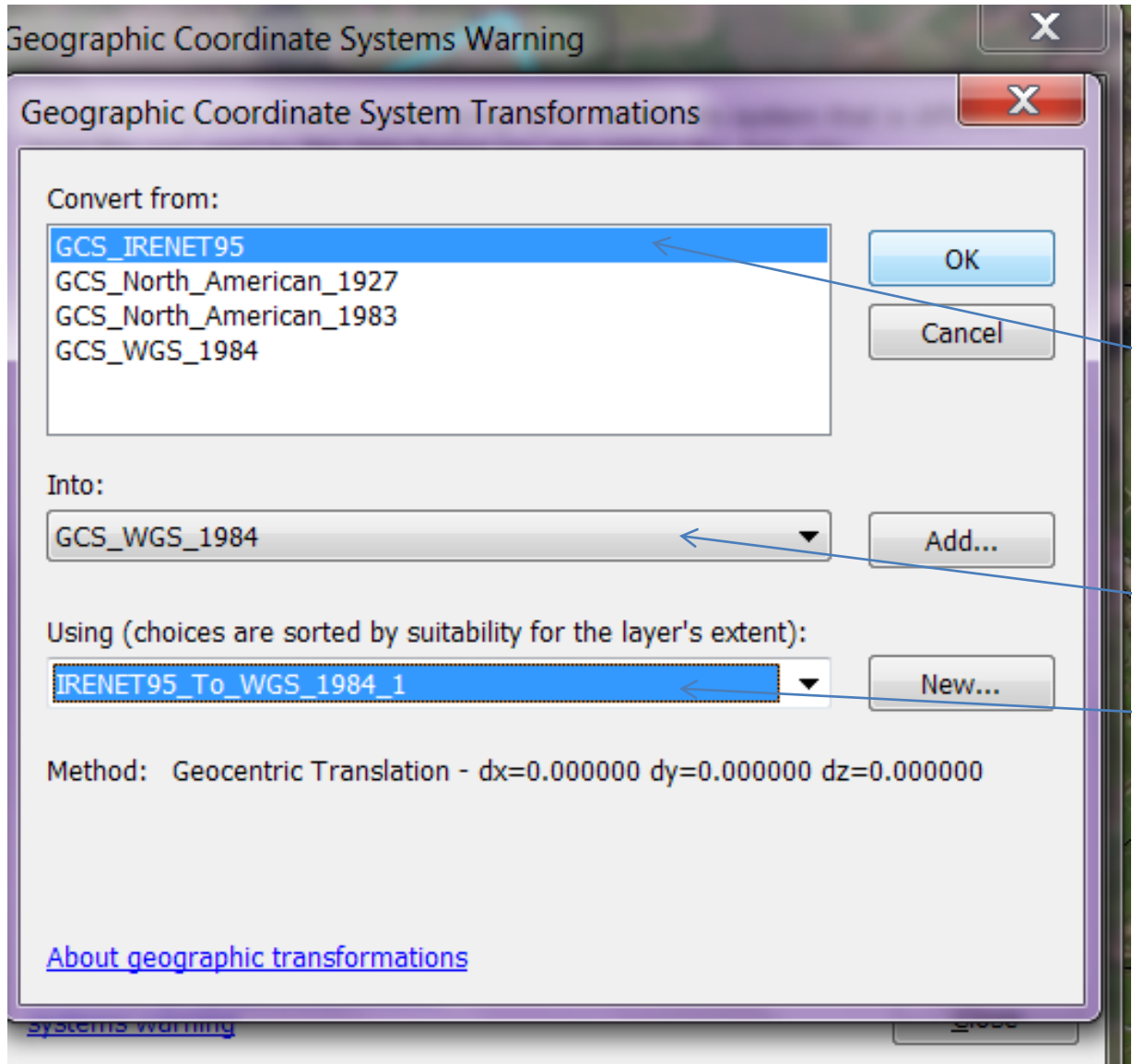
Change the Feature Class name to LandCover. Then just click Next until Finish keeping defaults.



We get a projection Error

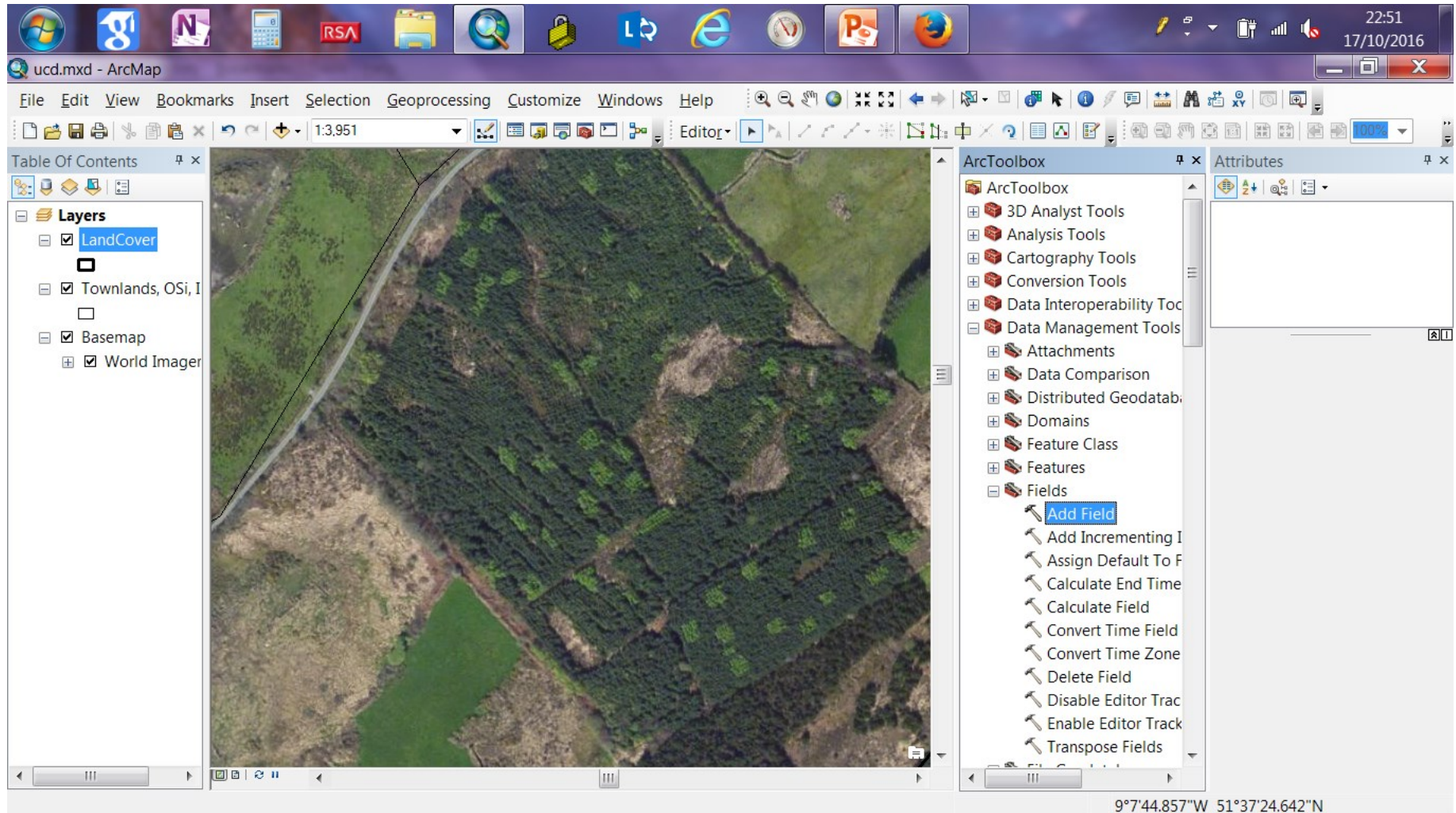


- Click Transformations

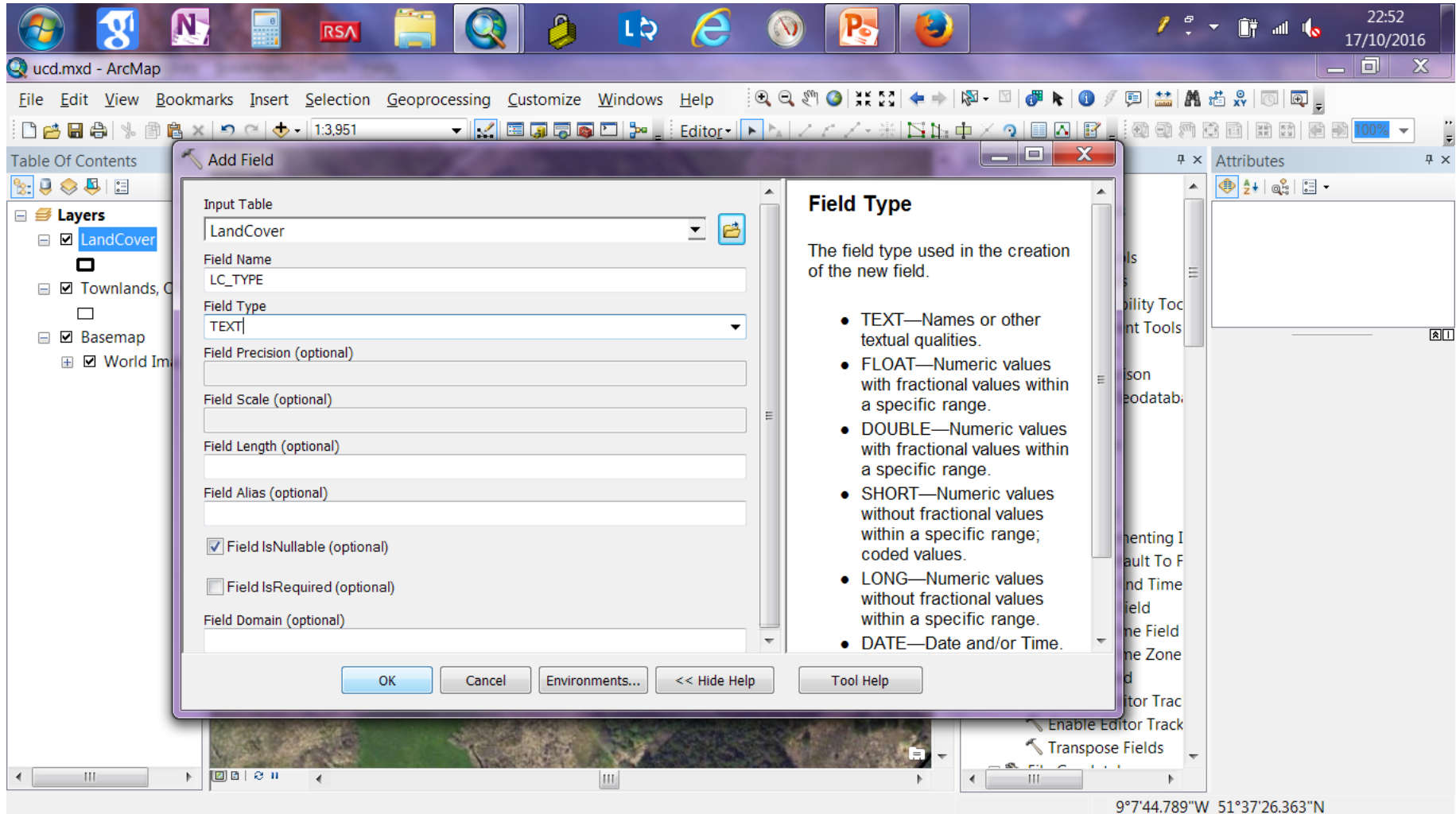


- We Transform FROM this
- To
- This
- Using this
- Click OK

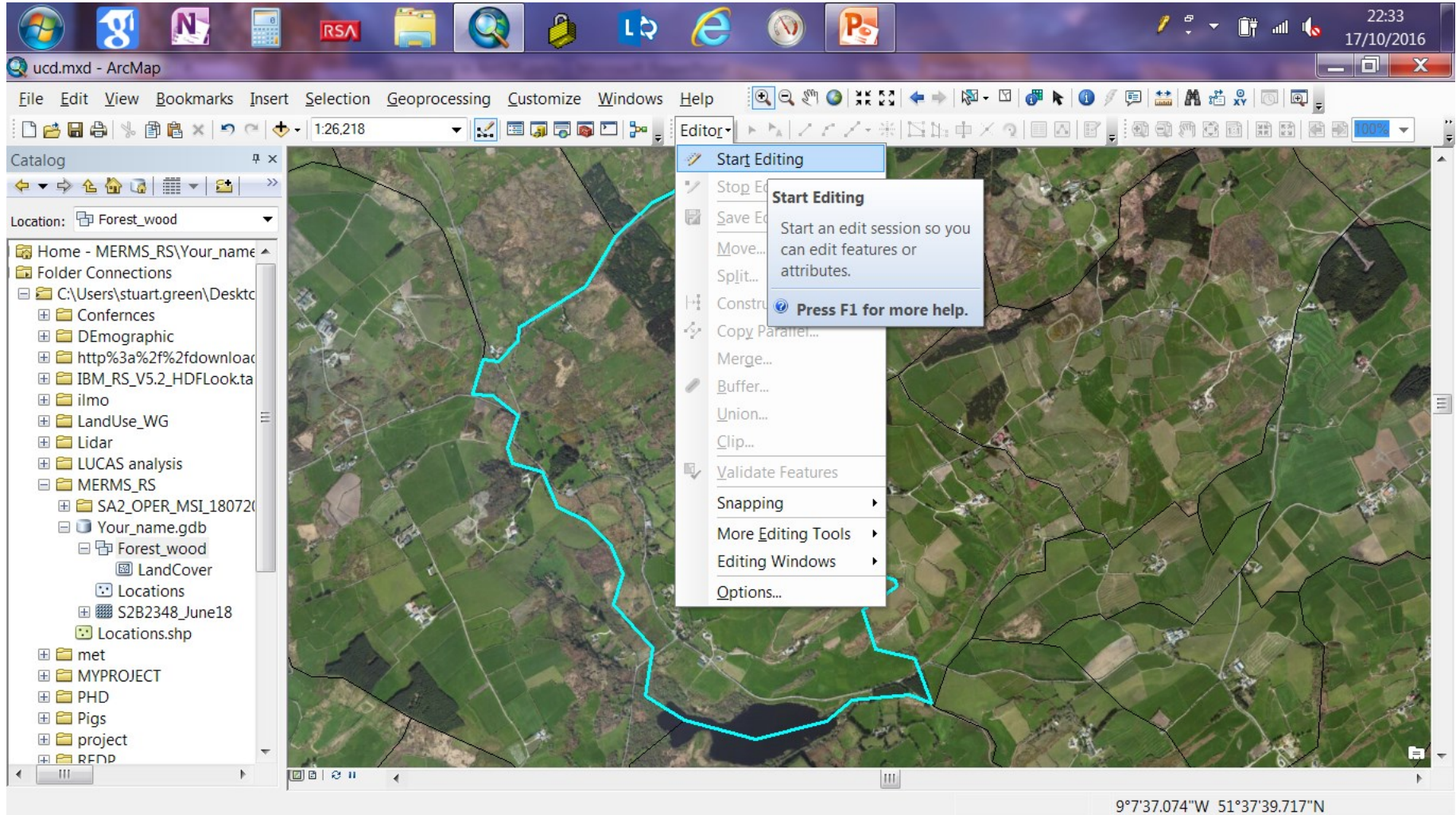
Add a FIELD to our Feature Layer



This is a column in the Attribute table we can use to label our polygons- fill out as below and click OK

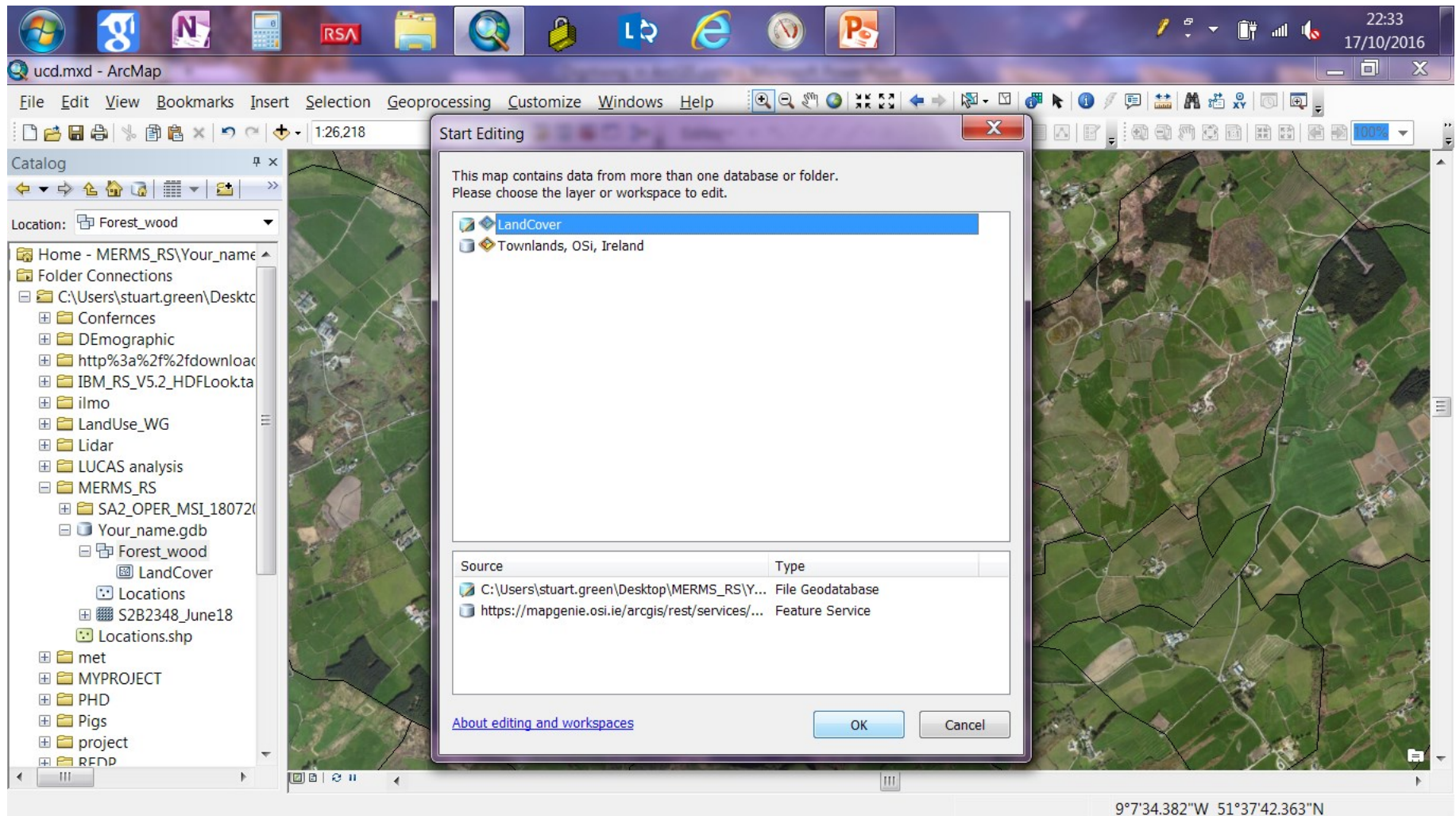


Finally we can start editing



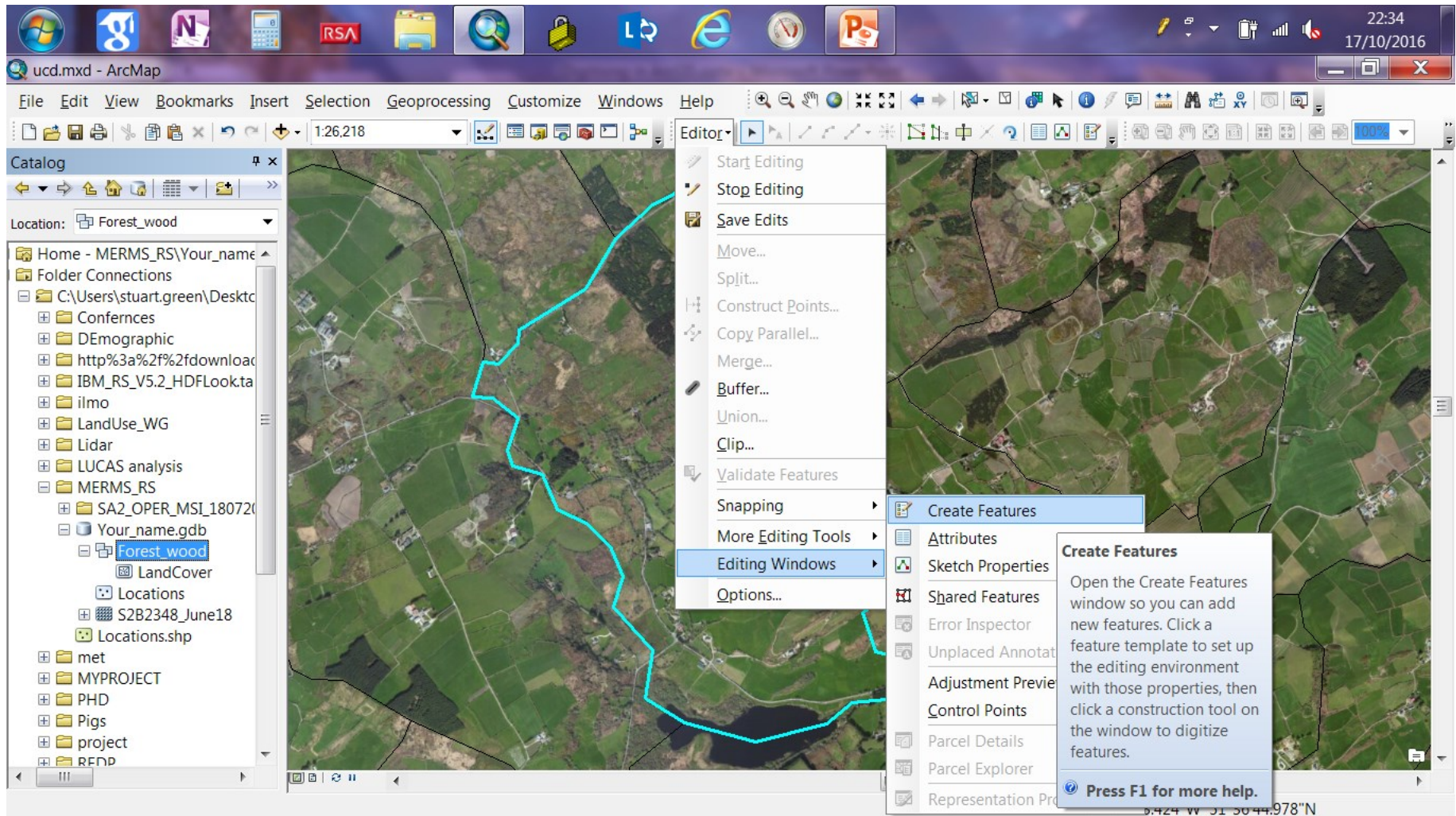
9°7'37.074"W 51°37'39.717"N

We are editing the LandCover Feature Class- OK



9°7'34.382"W 51°37'42.363"N

We want to create New Features



- Zoom to a location in the location shapefile
- Highlight Landcover in the Create Feature Window and then select POLYGON
- Your Mouse is now a crosshair. Click the first corner and then move to the next and click again
- When you have completed the area double click.

You have digitised your first Forest

The screenshot displays the ArcMap interface with the following components:

- Taskbar:** Shows various application icons including Google, Notepad, RSA, File Explorer, ArcGIS, and PowerPoint. The system clock indicates 22:39 on 17/10/2016.
- Application Title Bar:** Reads "ucd.mxd - ArcMap".
- Menu Bar:** Includes File, Edit, View, Bookmarks, Insert, Selection, Geoprocessing, Customize, Windows, and Help.
- Toolbars:** Standard ArcMap toolbars for navigation and editing are visible.
- Catalog Panel:** Shows the project location as "Forest_wood" and a tree view of folders and files, including "Your_name.gdb" and "LandCover".
- Main Map View:** A satellite image of a landscape with a cyan-colored polygon overlaid on a forested area, indicating a digitized feature.
- Create Features Panel:** Shows the "LandCover" workspace with a "LandCover" feature class selected.
- Construction Tools Panel:** Lists available tools: Polygon, Rectangle, and Circle.
- Status Bar:** At the bottom left, it displays "Number of features selected: 1".

Keep adding forest polygons

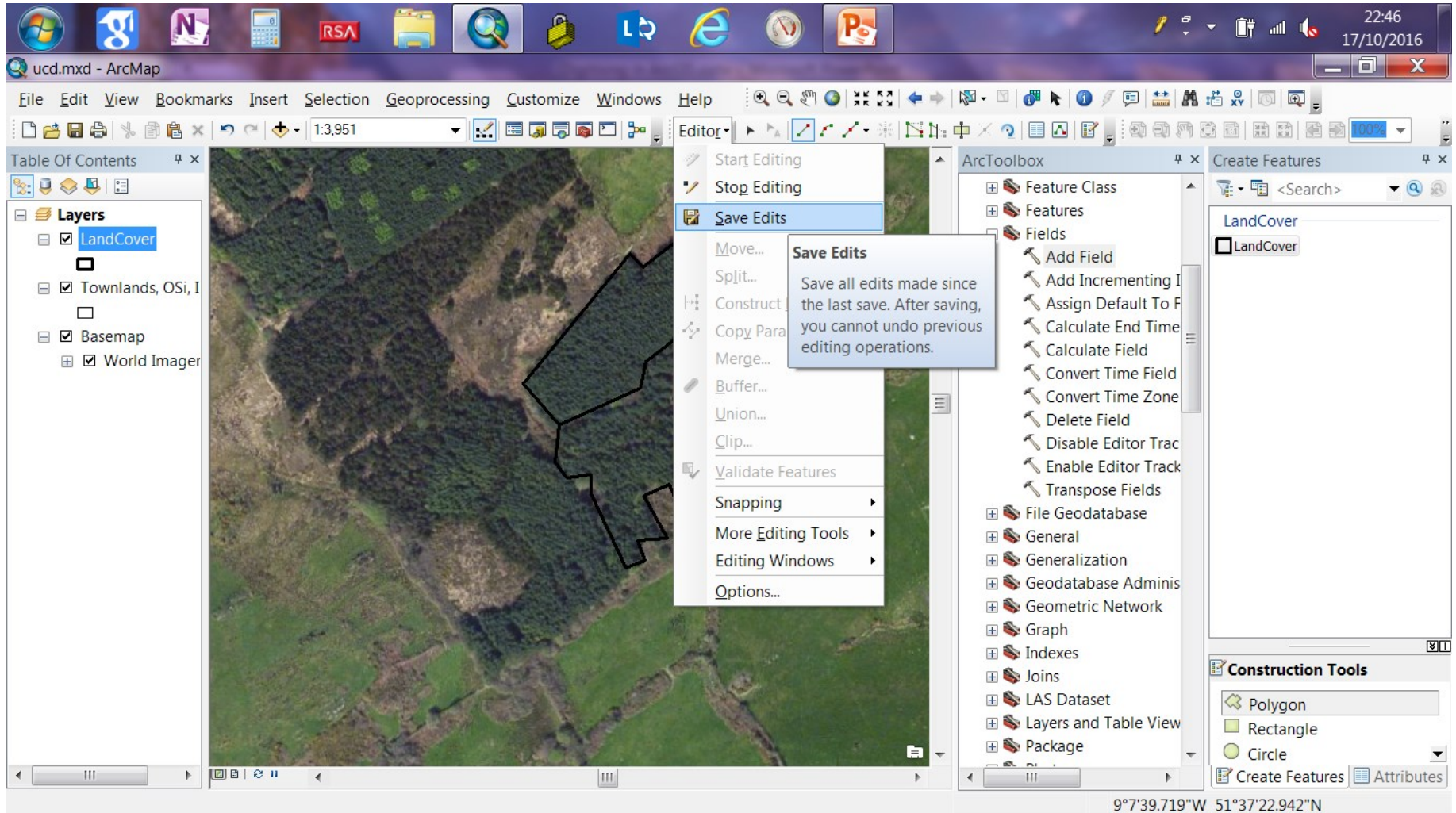
The screenshot displays the ArcMap interface with the following components:

- Top Bar:** Windows taskbar with various application icons and system tray showing the time 22:42 and date 17/10/2016.
- Menu Bar:** File, Edit, View, Bookmarks, Insert, Selection, Geoprocessing, Customize, Windows, Help.
- Tool Bar:** Standard GIS tools including pan, zoom, and edit tools.
- Catalog Pane (Left):** Shows the project location as 'LandCover'. The tree view includes folders like 'Home - MERMS_RS\Your_name', 'Folder Connections', and 'C:\Users\stuart.green\Desktop'. Under 'MERMS_RS', there is a 'Your_name.gdb' folder containing 'Forest_wood' and 'LandCover'.
- Main Map Area:** Displays an aerial photograph with a large, irregular polygon highlighted in light orange. A small 'x' icon is visible within the polygon, indicating it is selected for editing.
- Attributes Pane (Right):** Shows the selected feature's details:
 - Layer: LandCover
 - Feature Name: 588.197952
 - OBJECTID: 3
 - SHAPE_Length: 588.197952
 - SHAPE_Area: 11025.711914

Number of features selected: 1

9°7'56.891"W 51°37'15.848"N

Make sure you keep saving as you go along



Click Attributes to label your new polygons

The screenshot shows the ArcMap interface with a map of a forested area. A cyan polygon is drawn over a portion of the forest. The 'Attributes' window is open, displaying the following table:

Attributes	
OBJECTID	2
APE_Length	477.913932
APE_Area	9211.293035
LC_TYPE	<Null>

Below the table, the 'OBJECTID' field is expanded to show 'Object ID' and 'Null values not allowed'. The status bar at the bottom indicates 'Number of features selected: 1' and coordinates '9°7'28.665"W 51°37'25.481"N'. The 'Attributes' button in the bottom right corner is highlighted.

Number of features selected: 1

9°7'28.665"W 51°37'25.481"N

ENTER "F" for Forest

The screenshot displays the ArcMap interface with the following components:

- Table of Contents:** Shows a list of layers including LandCover, Townlands, OSi, I, Basemap, and World Imager.
- Map View:** A satellite-style map showing a forested area outlined in cyan. A small cyan 'x' is visible within the polygon.
- Attributes Table:** Displays the following data for the selected feature:

OBJECTID	2
SHAPE_Length	477.913932
SHAPE_Area	9211.293035
LC_TYPE	F
- LC_TYPE Field Properties:** Shows the field is of type Text (Length = 255) and allows null values.
- Status Bar:** Indicates "Number of features selected: 1" and coordinates "9°24.304'W 51°37'19.437"N".

When you have digitised all five areas

Click STOP EDITING

Try these links for more tips and guides

- <https://www.youtube.com/watch?v=HXVylmSm8zY>
- *web.gps.caltech.edu/gislab/HowTo/ESRI%20-%20Editing%20Data.pd*