Remote sensing, Fall 2015: project and image data

The overall goal (in the absence of other ideas) is to classify or threshold a selected area, generate clean and meaningful polygon vectors for selected features, and perhaps present these with the satellite image, and/or DEM layers. The class features might be basic land cover that you can identify without extensive local ground knowledge.

Week 1 (Nov 16-20): data extraction, creation and preliminary examination
Week 2 (Nov 23-27): channel creation / classification, cleaning / sieving
Week 3 (Nov 30-Dec4): vectors/analysis/write-up (dec 4 finish)

Week one: Dataset extraction

Datasets will be created, in most cases from Landsat TM (1984-2011) or OLI (2013-2015), aim at a window approximately to fill a screen but not much more = ~1600 x 1200 pixels

1.Image search and selection

Use Earth Explorer: http://earthexplorer.usgs.gov

Change max cloud cover to 10%

Collection, Select the **Landsat Archive** Landsat 4-5 TM for 1982-2011 or Landsat 8 OLI
Remember that Landsat 7 data are only good for 1999-2002
Unlike the environmental change exercise, you want the **Level 1 GeoTIFF product**
Note: Landsat 8 scenes are directly downloadable; this may be true for some Landsat 5 scenes, and if they are not, they take up to 72 hours to be delivered

2.Scene download

Select the optimal scene(s) from Landsat archive
Highlight the scene selected – (note that some say 'downloadable' in the top left corner) – ideally you want one of these; those not downloadable can still be acquired but they take a day or two

This brings up a new window asking for a user name and password
The class group username is: **geog432**
The password is**:**   **class2015**

If this is really the scene you want, then continue as below …. Be sure to check for cloud cover
Select 'download' button for 'Level 1 product' (the last listed option)
This downloads a tar.gz file, select your folder and save … it will take a bit longer …
Select the files and EXTRACT
This will produce 7 .tif files (Landsat5) or 11 (Landsat8)

3. Creating a multi-channel .pix file

The previously documented translate/transfer process (below) has been made redundant thanks to the keen eye of Matthew ...

All you need to do is drag the metadata file into the TOC, select the MS option and before you can wave your wand and say **PIXIFY**, its done - all the TIFs are in combo, and the rasters listed.

The method selects only layers with the same pixel resolution - 6 for TM and 8 for OLI. (No thermal/PAN). I think it's not yet permanent, so use 'save as' to cement the PIX file. The file layers are also nicely identified by their EM spectrum location.   **We/I owe him an ale or two ...**

The old way for **Muggles**:

Open the first .tif in Focus   *convert this to a   .pix   file   by:*
a. File-> Utility   choose :   **translate**
The source file is your .tif, the destination file is a new .pix file (you pick the name)
Click on: Select all   add   transfer -> close

Now select File -> utility and choose **transfer**
For source file, pick the next band .tif file (Band 2)
For destination, pick the .pix file created in the previous step
select the new band, add and transfer
Repeat this process for the other .tif files - it will add them all to the SAME pix file
When done, view your favourite band combo as RGB composite

Make sure you have recorded your **image dates**

4. Subset/clip your area of interest

Subset your area of interest by: clipping/subsetting
Tools-> subsetting / clipping

Choose a new file name that will describe your selected area
Tick the bands you need (likely all)
Select current view as option for subsetting

But first .. delete the not-needed anymore **.tif** files. You perhaps might hold on to the scene.pix and gz files in case of accidental deletions!

Note: if you are working with > 1 scene, you need to do steps 1-3 independently for each scene, and when it comes to step 4, subset one first and then clip the rest to match the first.