

# Remote sensing, Fall 2018: 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 15):** data extraction, creation and preliminary examination  
**Week 2 (Nov 22):** channel creation / classification, cleaning / sieving  
**Week 3 (Nov 29):** vectors/analysis/write-up (Dec 4 finish - extensions possible)

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## Week one: Dataset extraction

Datasets will be created, in most cases from Landsat TM (1984-2011) or OLI (2013-2017), aim at a window approximately to fill a screen but not much more e.g. 1600 x 1200 pixels

### 1. Image search and selection

Use Linux desktop, you don't need the Virtual Machine to search for data, only Geomatica 2017

Earth Explorer: <http://earthexplorer.usgs.gov> or <https://remotepixel.ca> or <https://glovis.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** but you could / should first view the LandsatLook product to be sure it's good - you don't even need to download it, just open it to view for clouds or other issues

### 2. Scene download

Select the optimal scene(s) from Landsat archive

This brings up a new window asking for a user name and password

The class group username is: **geog432**

The password is: **class2018**

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

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 may take 5-10 minutes ...

Select the files and EXTRACT - or double-click will initiate extraction

This will produce 7 .tif files (Landsat5) or 11 (Landsat8)

### 3. Creating a multi-channel .pix file

All you need to do in most cases is drag the metadata file into the TOC, and select the MS option, or just open the metadata (ends in .... mtl.txt) 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). It's not yet permanent, only onscreen so we need to create the PIX file:

File-> Utility-> Import to PCIDSK

Name it suitably in destination file and navigate to suitable folder)

Take the other parameter defaults and IMPORT

The file layers are nicely identified by their EM spectrum location.

The old way you might have to use if the .mtl file is absent or does not link:

Open the first .tif (band 1) 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 - don't try to capture too large an area

*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 **use current view** as option under Define Clip Region / Definition method dropdown

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 - use select a file definition method option if its possible the current view has changed (use the first clip to define subsequent clips)