Alberta NDWI 2020

The main scripts dealing with NDWI processing are:

-bitBucket.py – downloads Modis hdf files using command line in Pycharm.

Hdf file is placed into …/hdf folder

The next in line is hdf2ndwi.py, which process hdf file for H11V03 tile, and H12V03 respectively. Both of them create current NDWI file and place it into ARCHIVE folder. The script produces merges all historic NDWI files including the last NDWI into a .VRT format and places into the 'main' folder. These two scripts are the same but just pointing to different folders.

Then we deploy NDWI_2_anomaly.py . The script reads .VRT file and produces StdandardDeviat , mean, and anomaly taking in account all historic NDWI files. . it also produces RGB for 3 last NDWI files.

NDWI Anomaly

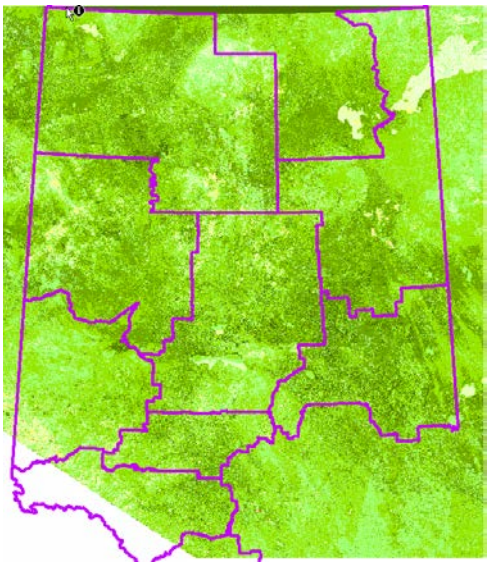


Fig 1. April 4 _April 12 Anomaly

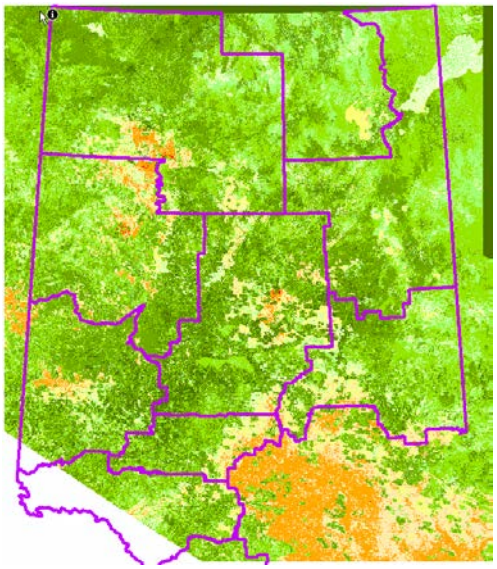
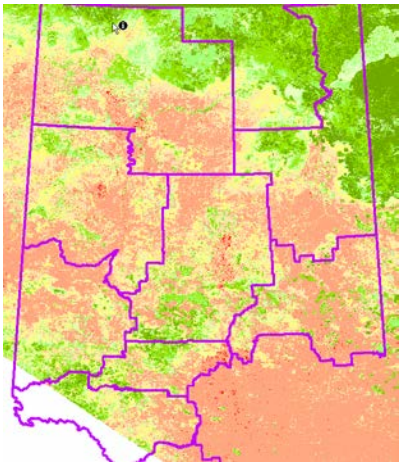
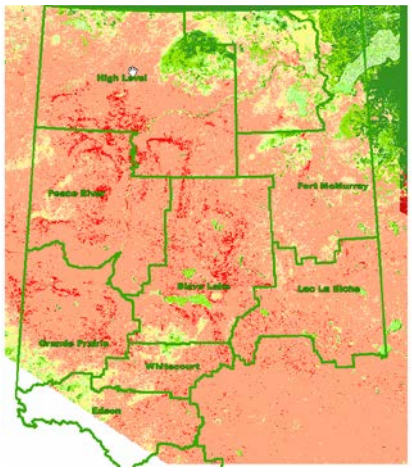


Fig 2. April 14 – April 22 Anomaly





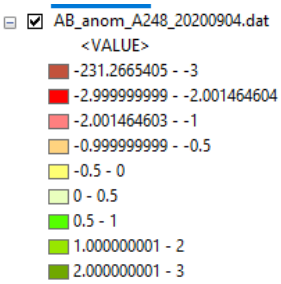
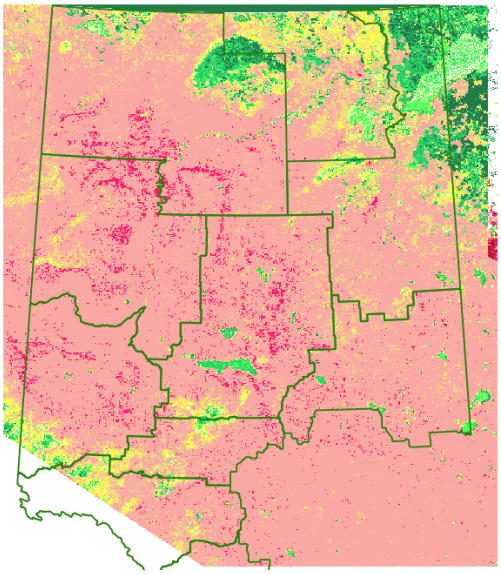


Fig 3. April 22 – April 28 Anomaly Fig 4. April 28 – May 4 NDWI Anomaly



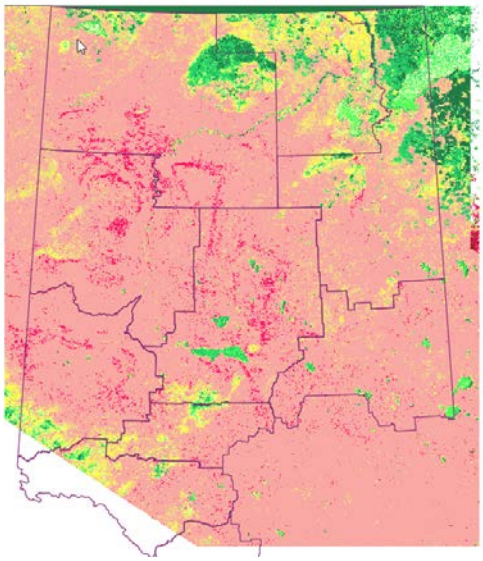
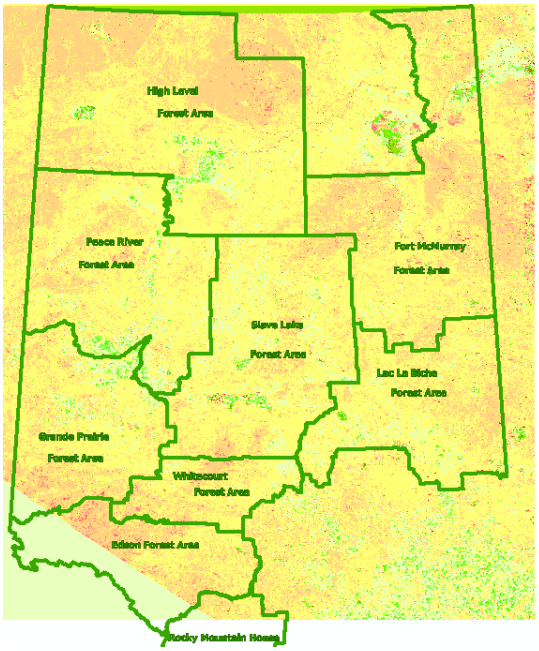
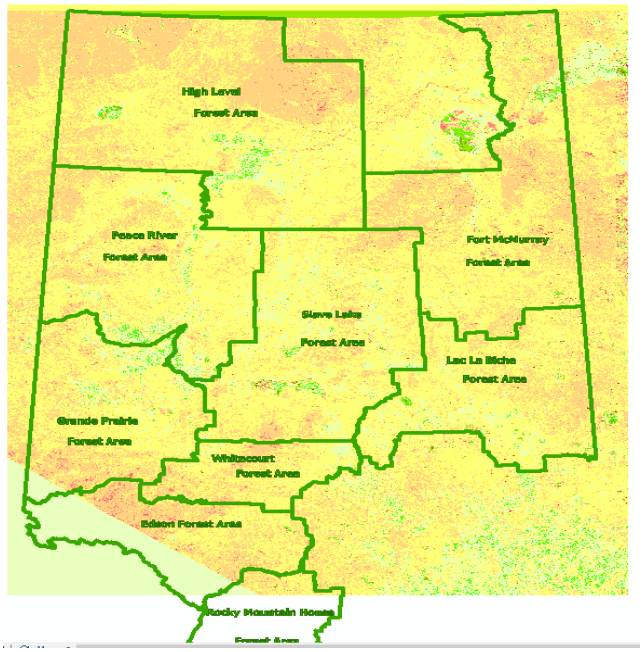


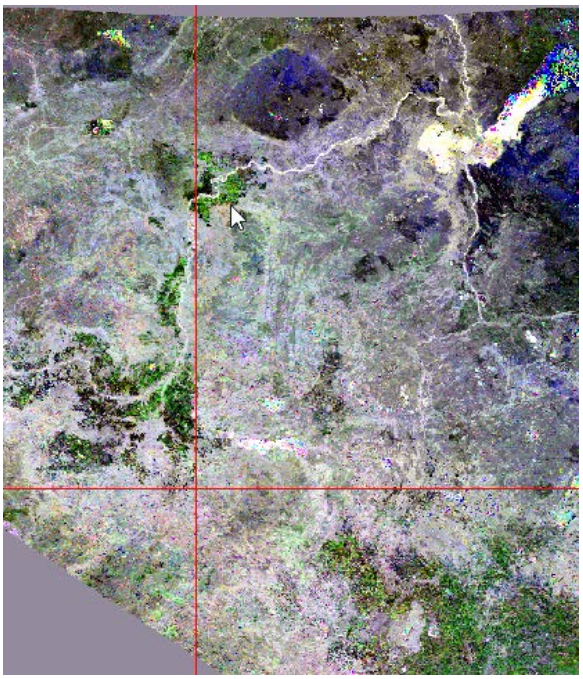
Fig 5. April 28 – May 5 May 10



August 16



September 4



RGB 28 June

Band comb: 231. The most recent ndwi comes to green gun while 2 is Red and blue is 3rd recent band.

Agriculture zones becom green which indicates growing crops and the soil that had been black until recently accumulated some green plants with water content in the leaves.

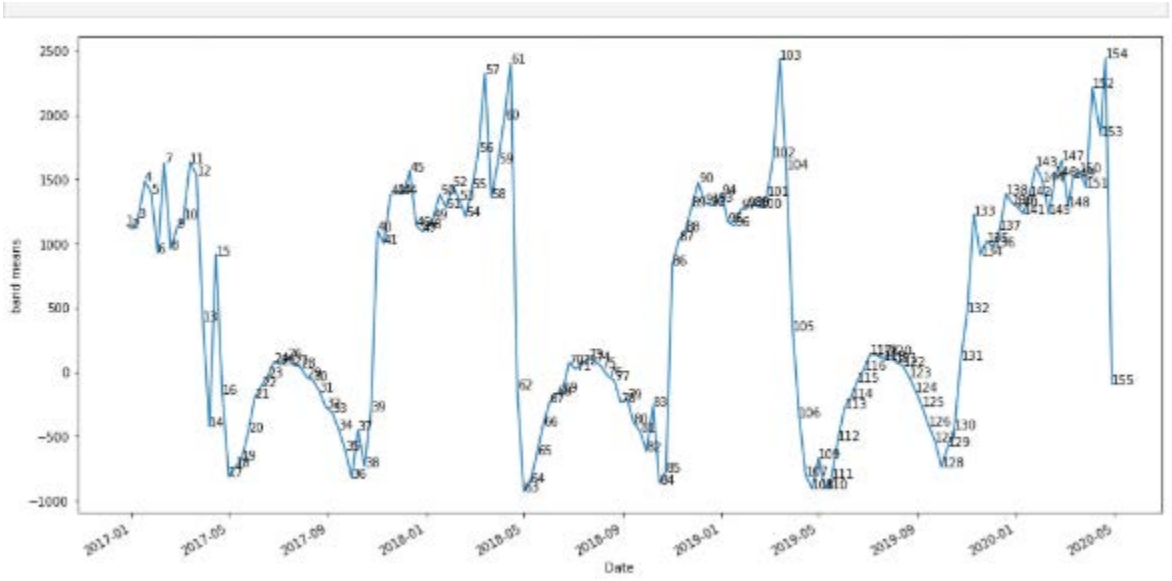


Fig 5. Tile NDWI average on time scale. So, far we have 155 images.

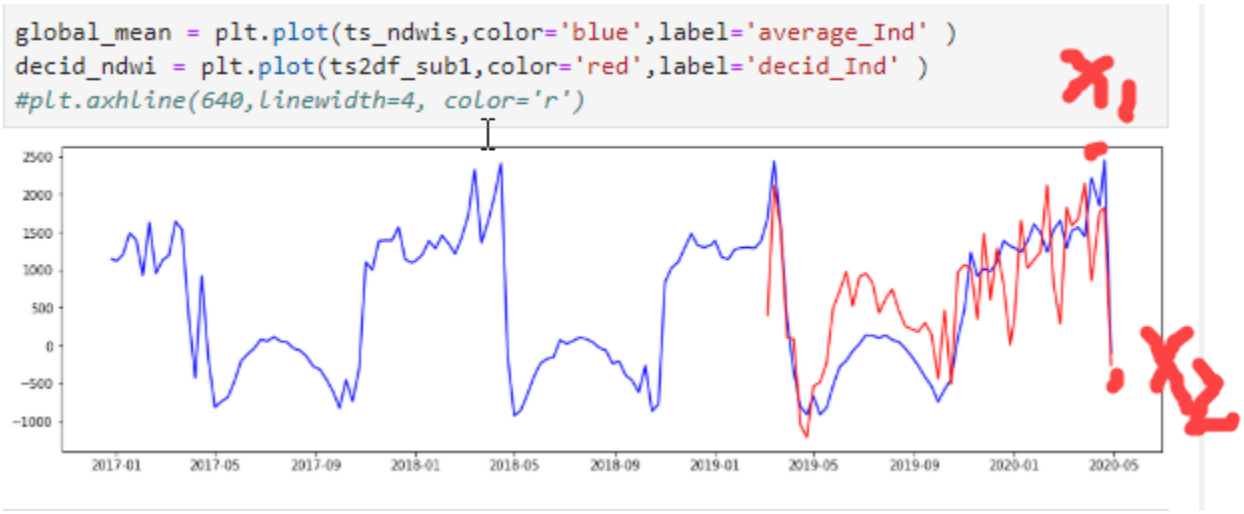
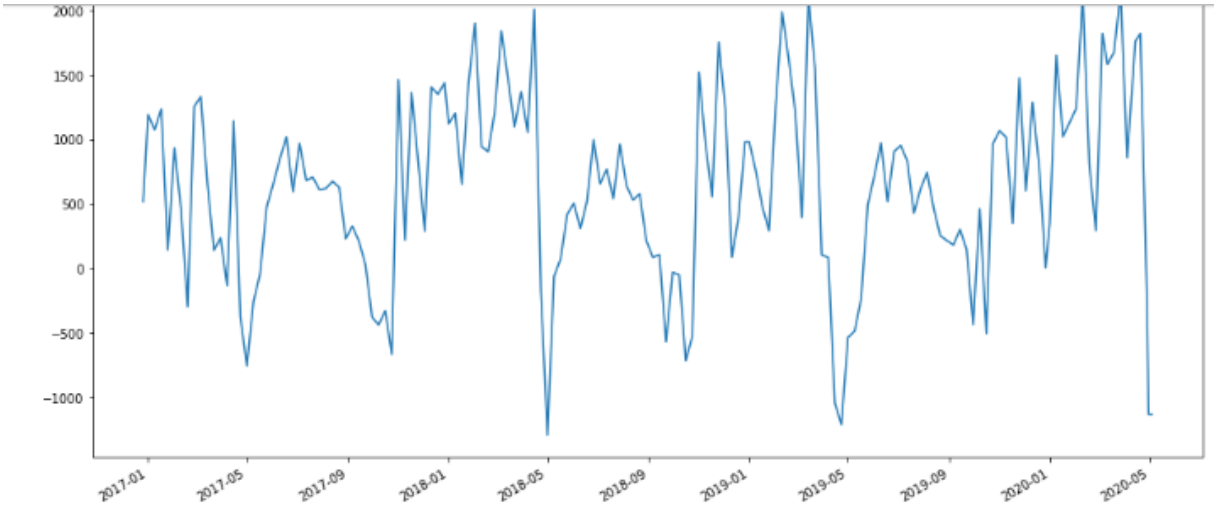


Fig 6. Red line is a NDWI profile for a deciduous stand in Grande Prairie. Blue line is an average NDWI value across the Modis tile.

Snow melting phase began at point 154 (x1) dating April 14 – 22 where NDWI experienced sudden sharp plunge. The snow drives NDWI values high. Today's image (155 graph 5) x2 and its location on graph 5 shows that most of the snow is gone. According to X axis on the graph , this plunge is taking place slightly later (after May 1st.) than in previous years.

The next image will bring NDWI to the bottom and it will mean snow is gone. Practically, snow is gone and our next incoming image will confirm it. Note, current image represent facts occurring in previous 8 day period.




```
]: #time series for deciduous stand in GP
   ts_conif = timeSeries(rasterstack,tindex,con_sub)
```

```
]: onifer stand
   ts_conif.plot(figsize=(16,8))  # _= is a trick to suppress more output.

   t is still snow melting and at the same time grass still 100% cured. In Edmonton is getting green
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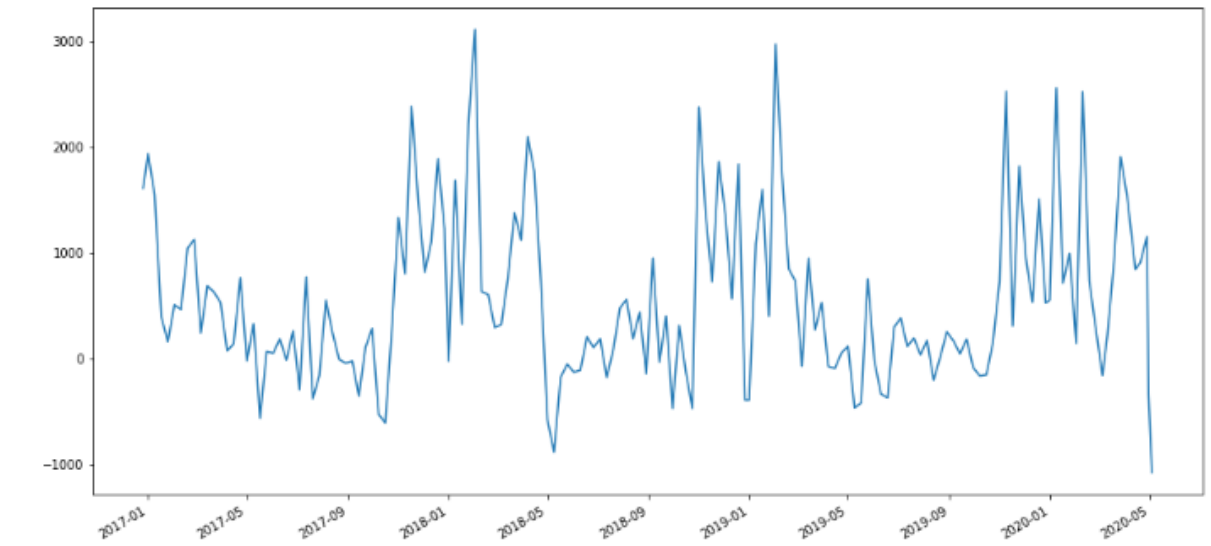
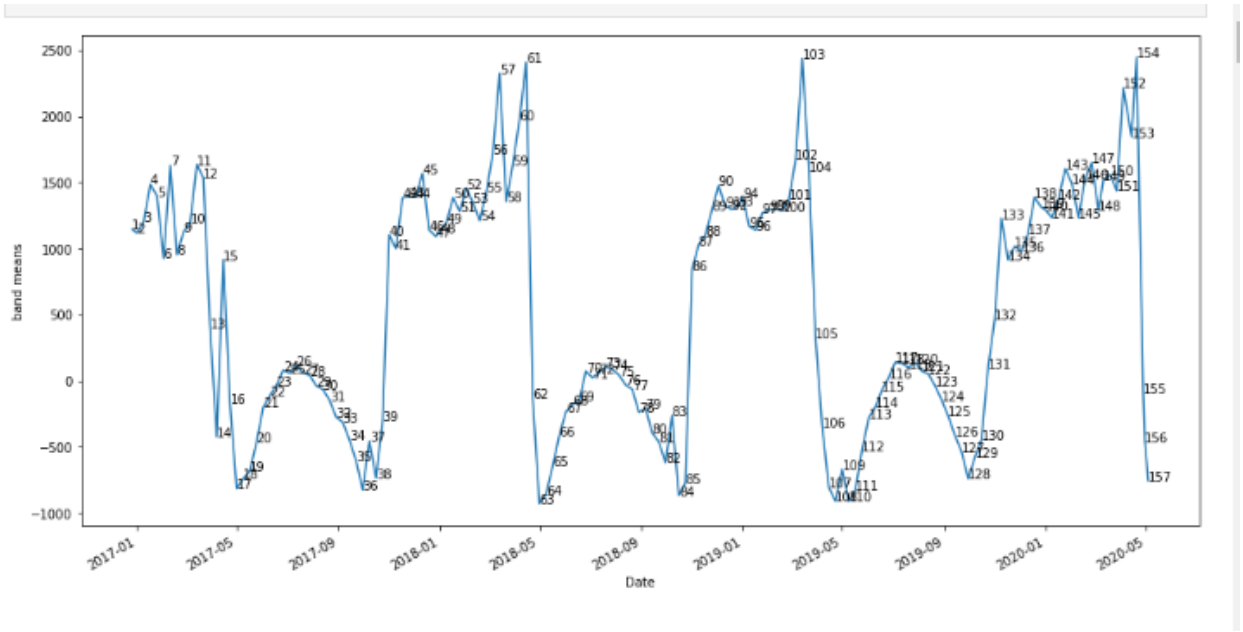


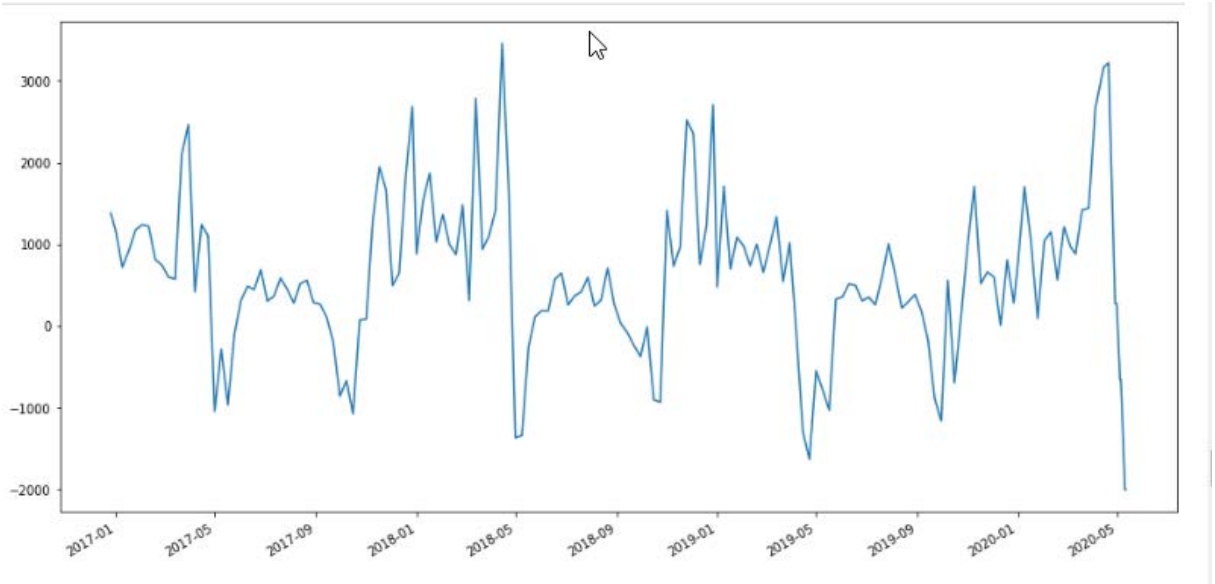
Upper graph is deciduious stand and lower is confirerous stand. On May 4(means April 26- May 3rd)



May 4 . still did not reach the bottom.

Validate NDWI we may use firenet website with cameras across the province.

At the same time down in Peace River



Snow melt is over , the end of curve is at the bottom in range -2000.