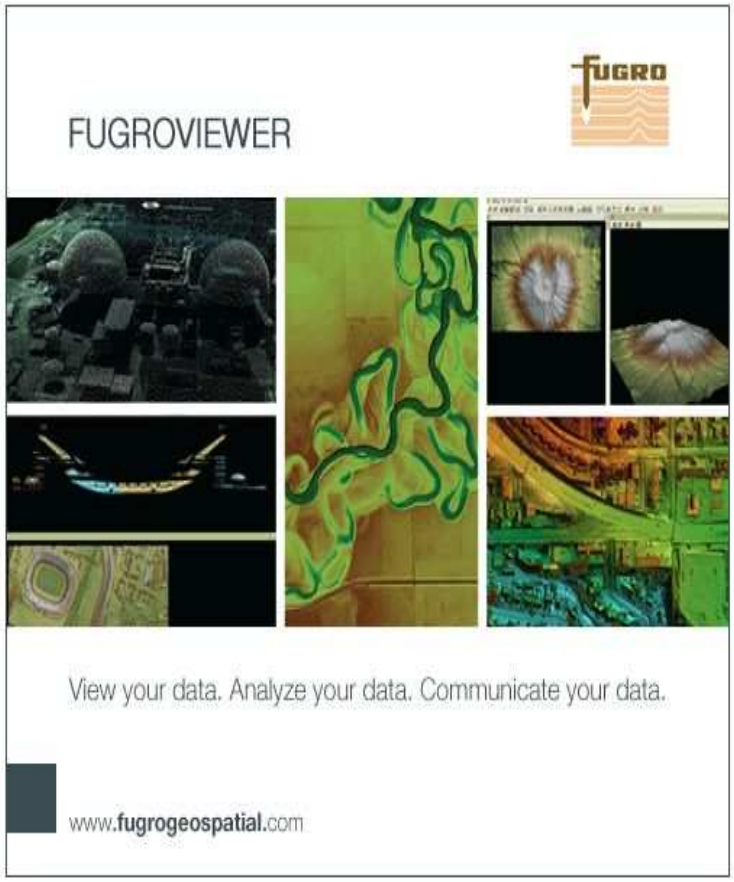
FUGRO VIEWER

FugroViewer

File Settings Help



Start

10:09 PM
11/8/2015

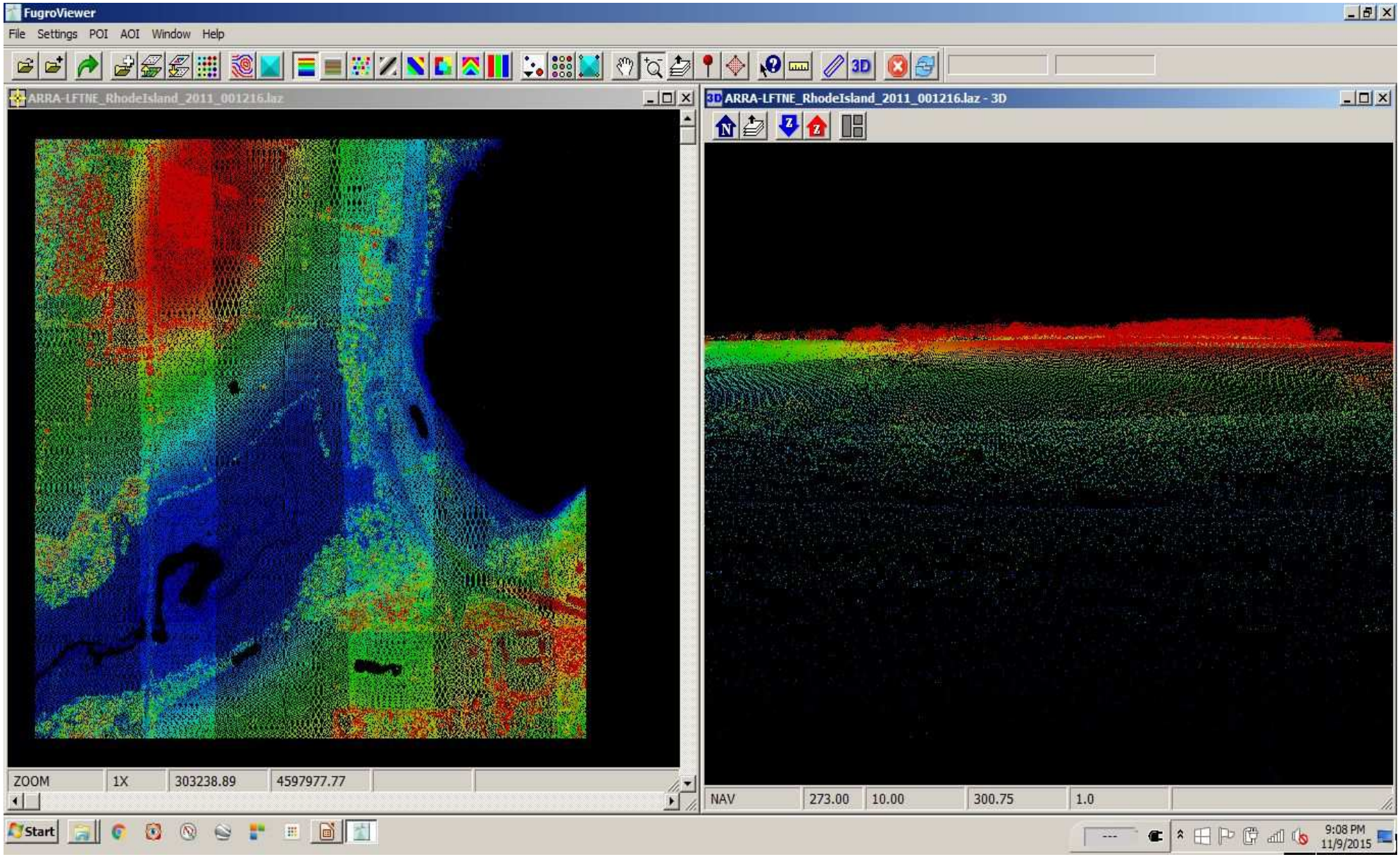
Why?

- Some viewers provide limited functionality.
  - List an elevation
  - Measure a distance
  - Create points or polygons
- All viewers provide experience.
  - Pan and zoom in 3d
  - Load and visualize
  - Learn some different algorithms used to handle so many points

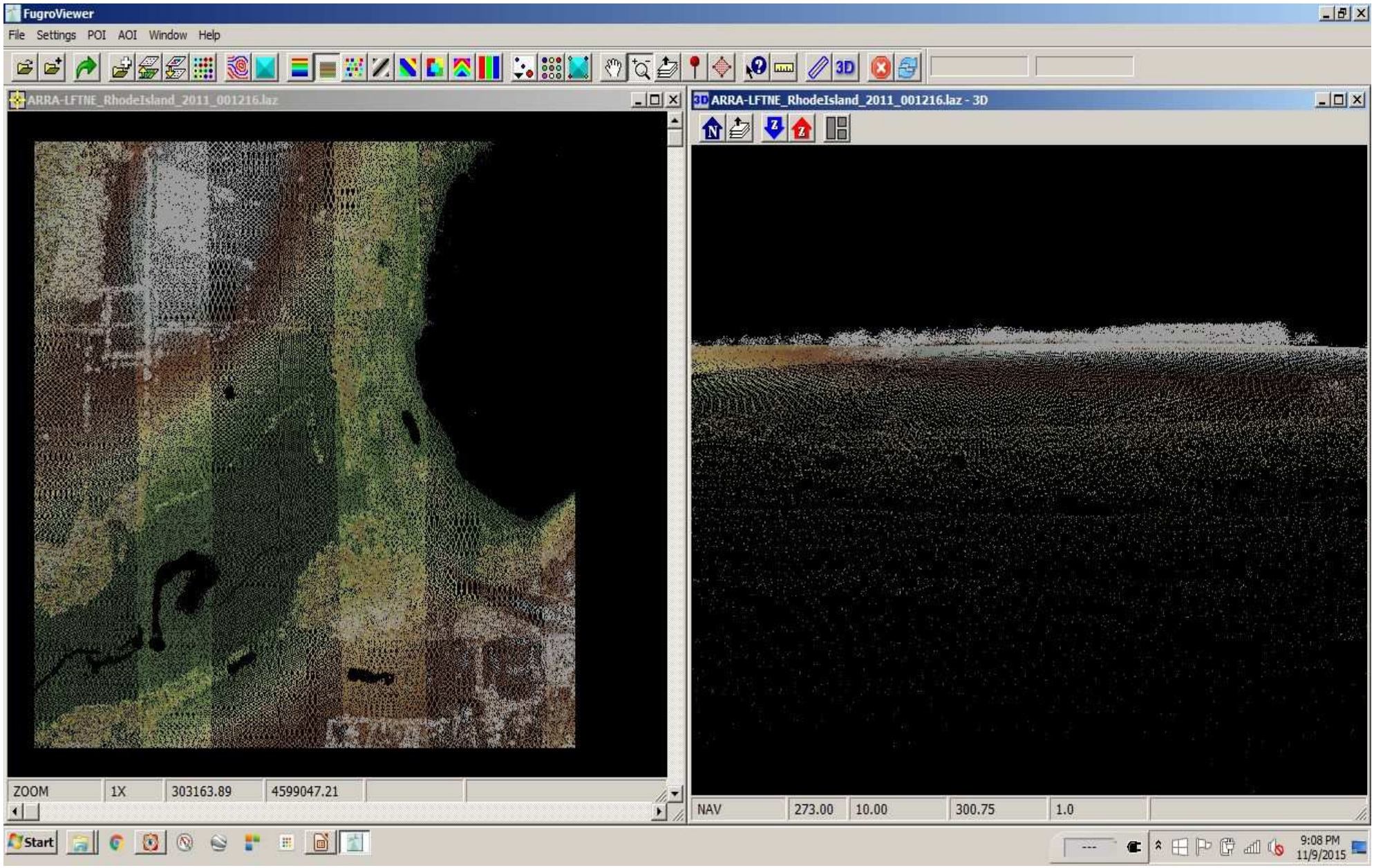
FUGRO VIEWER

- We will start with some RI Data – UTM – Meters (or metres, it's all metric to me)
- We can see LiDAR in many ways:
  - By Elevation – Blue to red
  - By Elevation – Earth tones
  - By Classification – Like a description
  - By Intensity – Reflectivity
  - By Source – Flight path
  - By File – Works better with two or more...
  - By Return Number – This is special.
  - By RGB Color – Works better with colorized cloud.

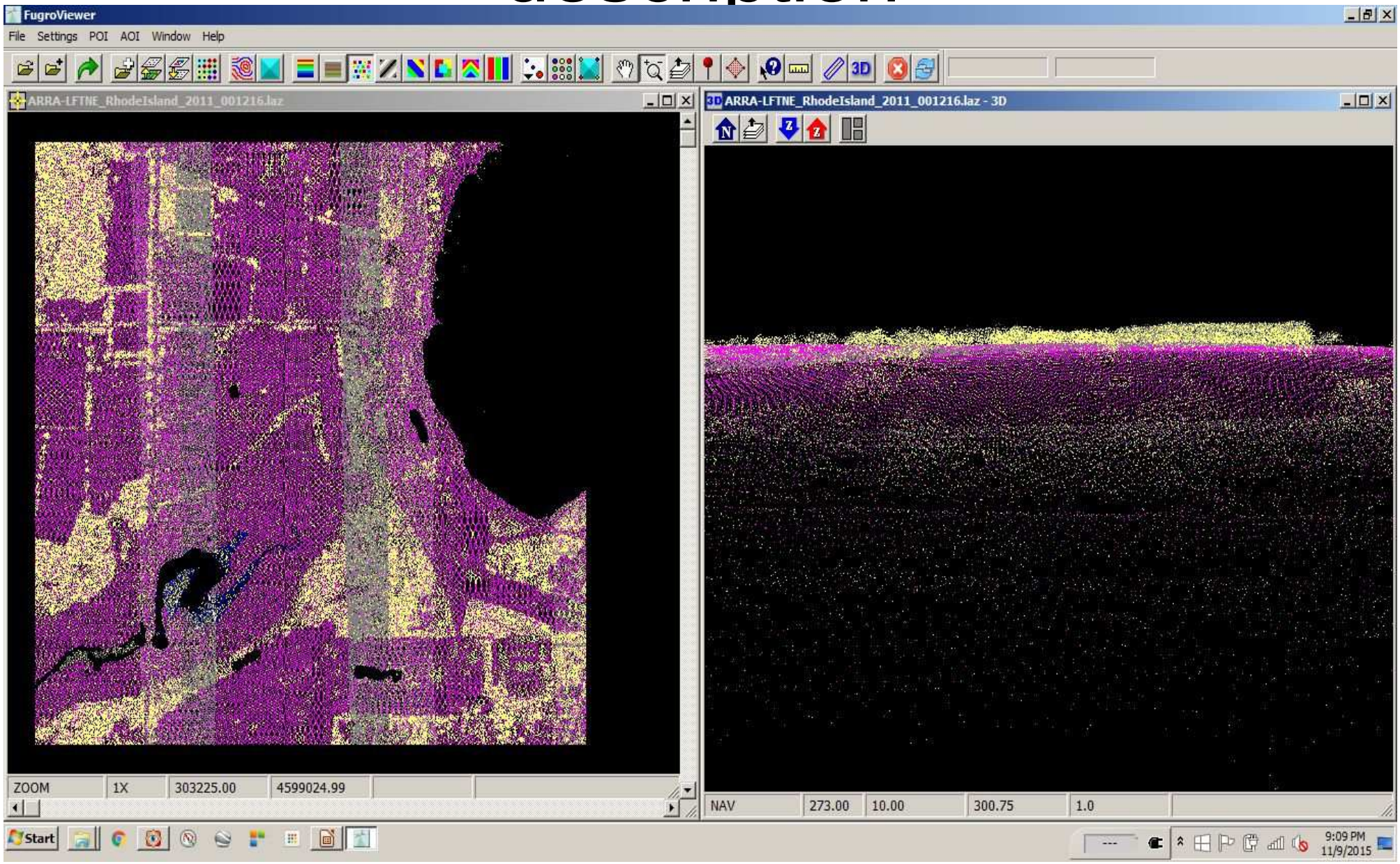
By Elevation – Blue to red



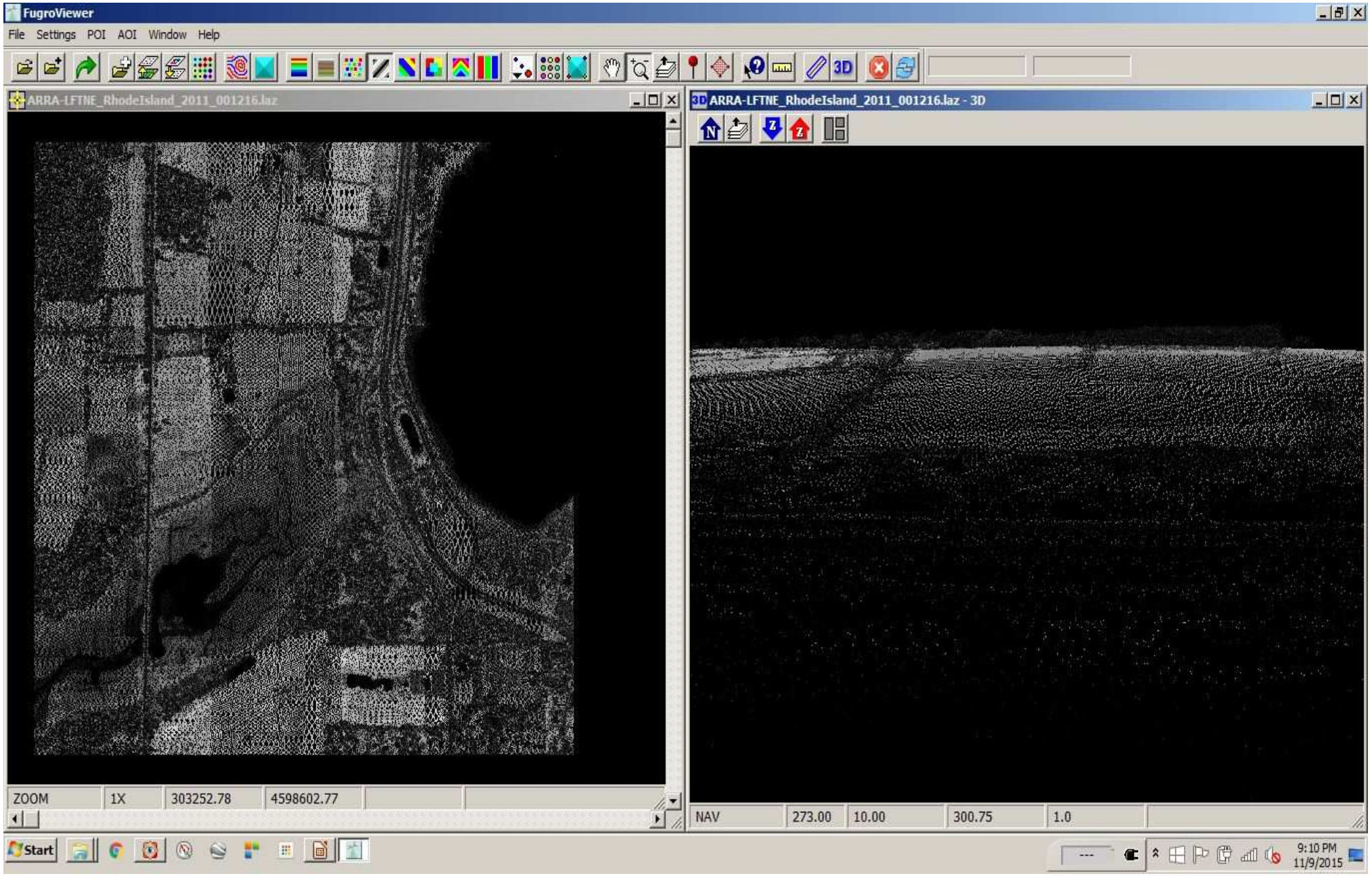
By Elevation – Earth tones



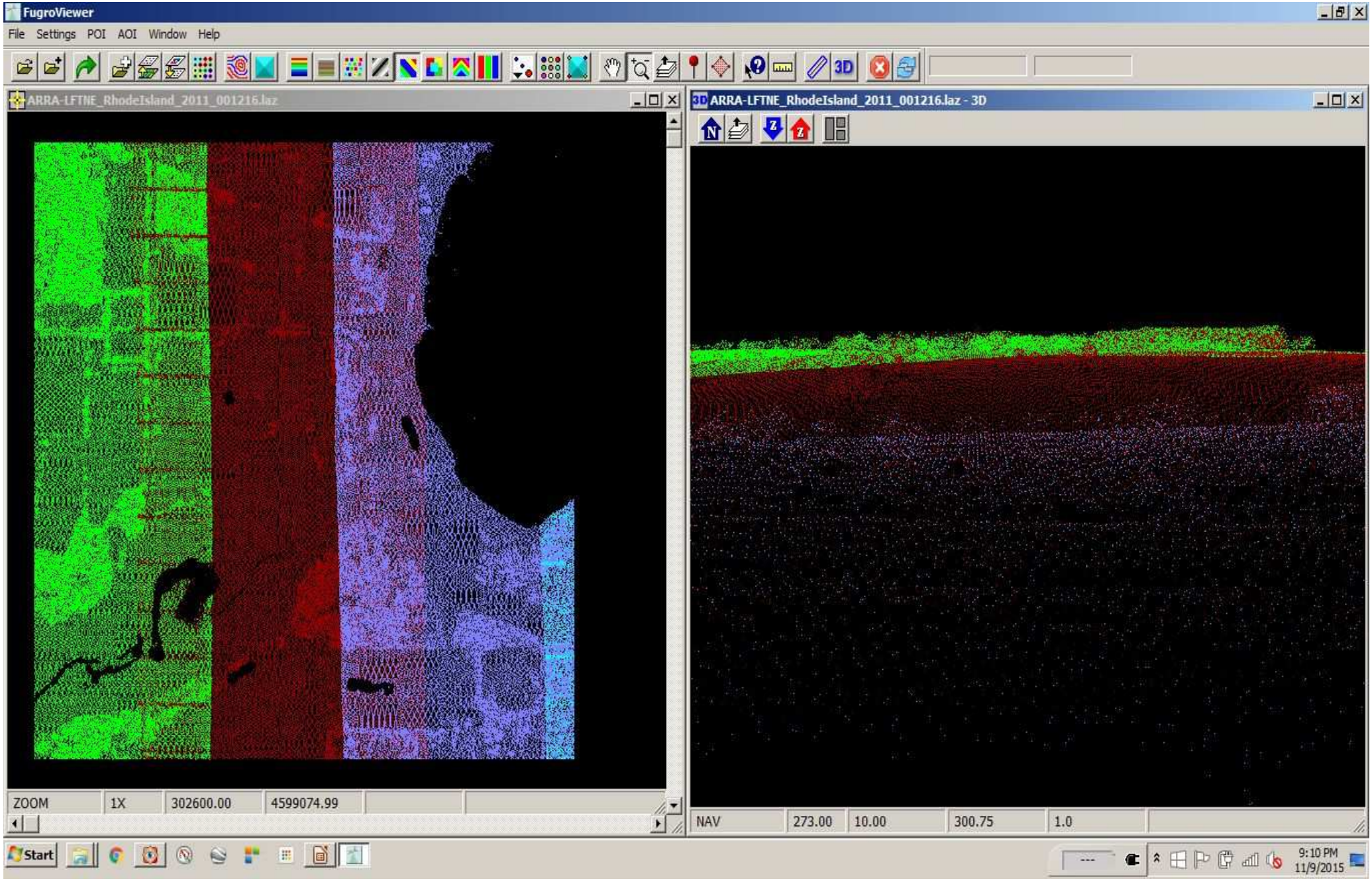
By Classification – Like a description



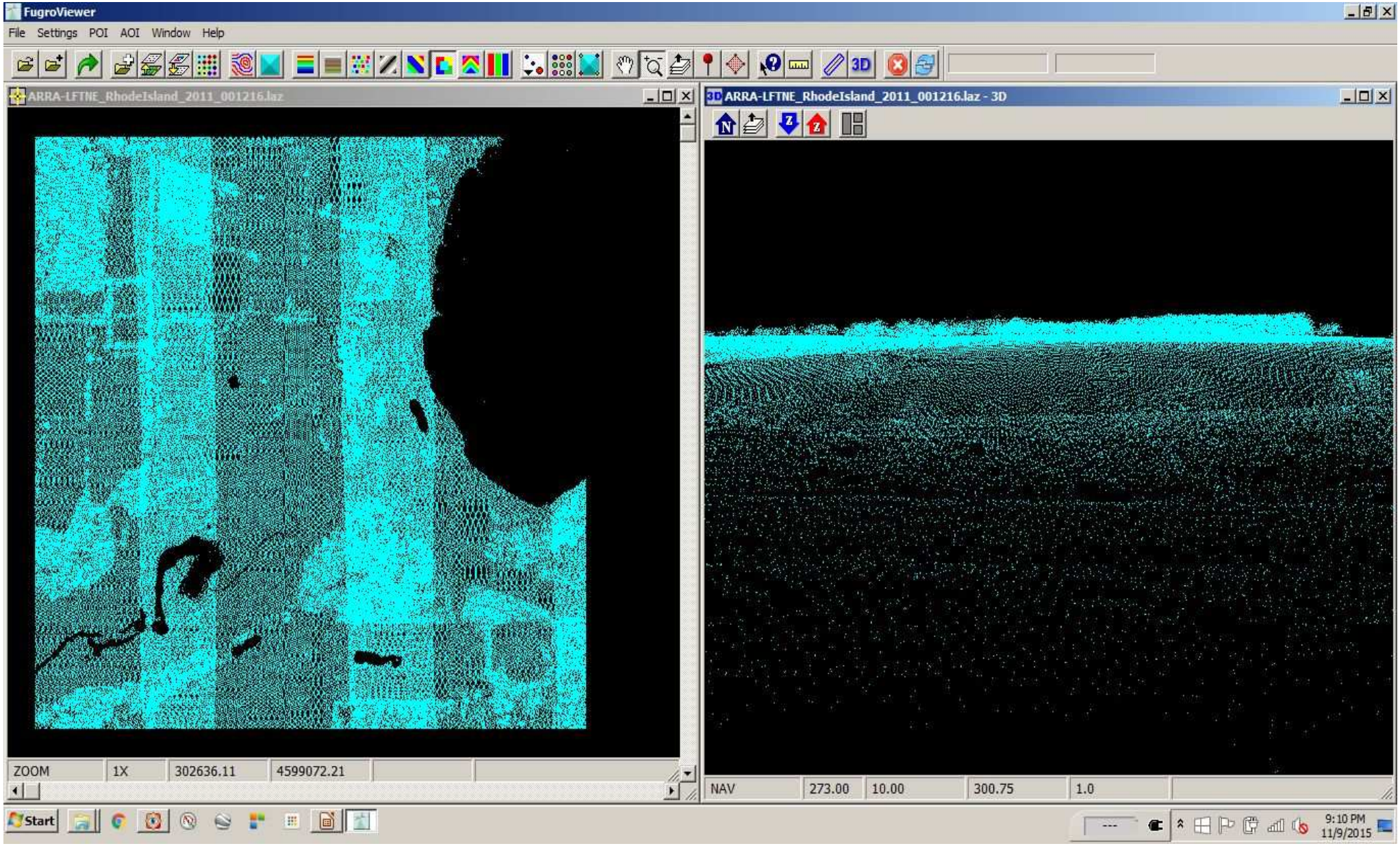
By Intensity – Reflectivity



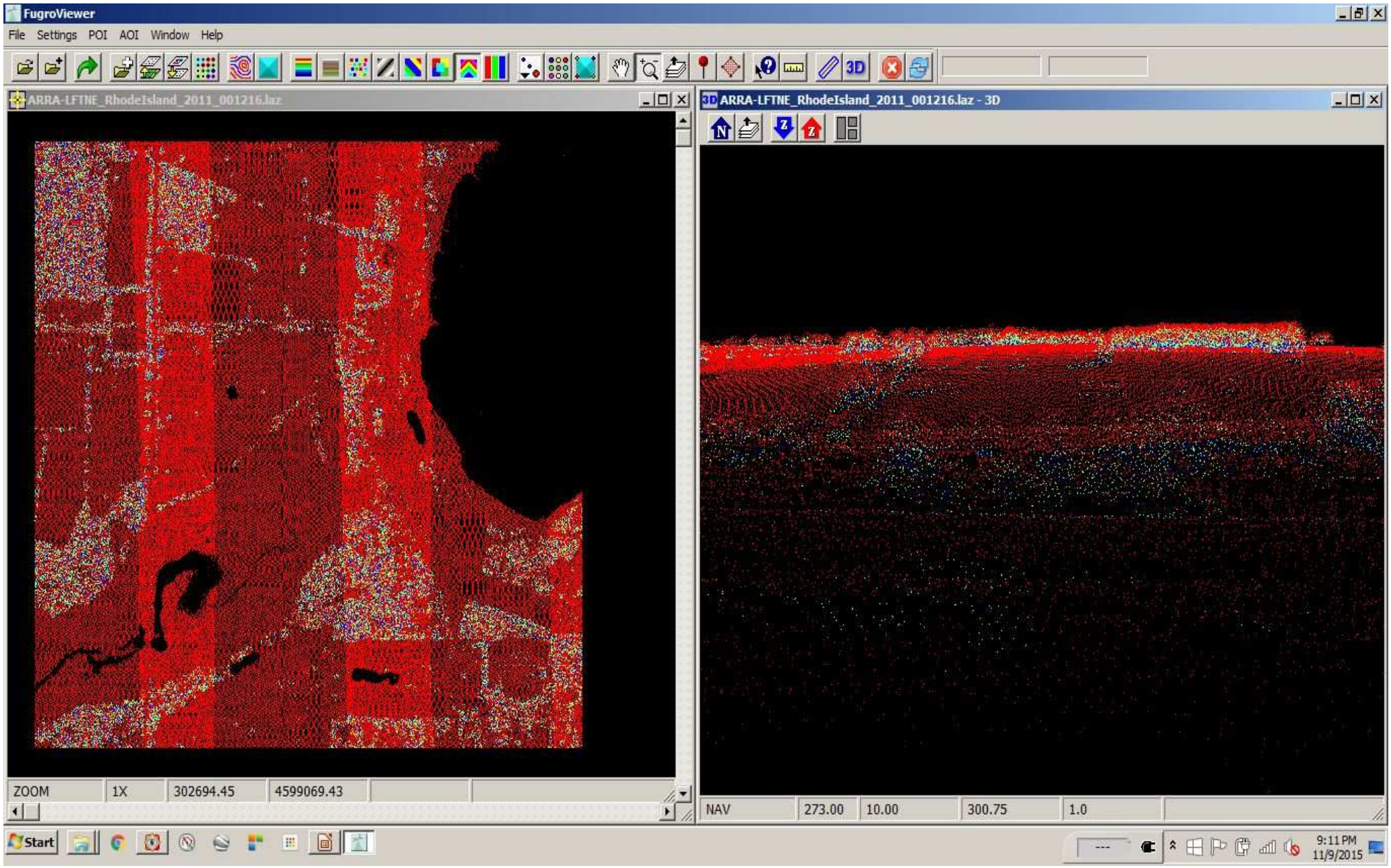
By Source – Flight path



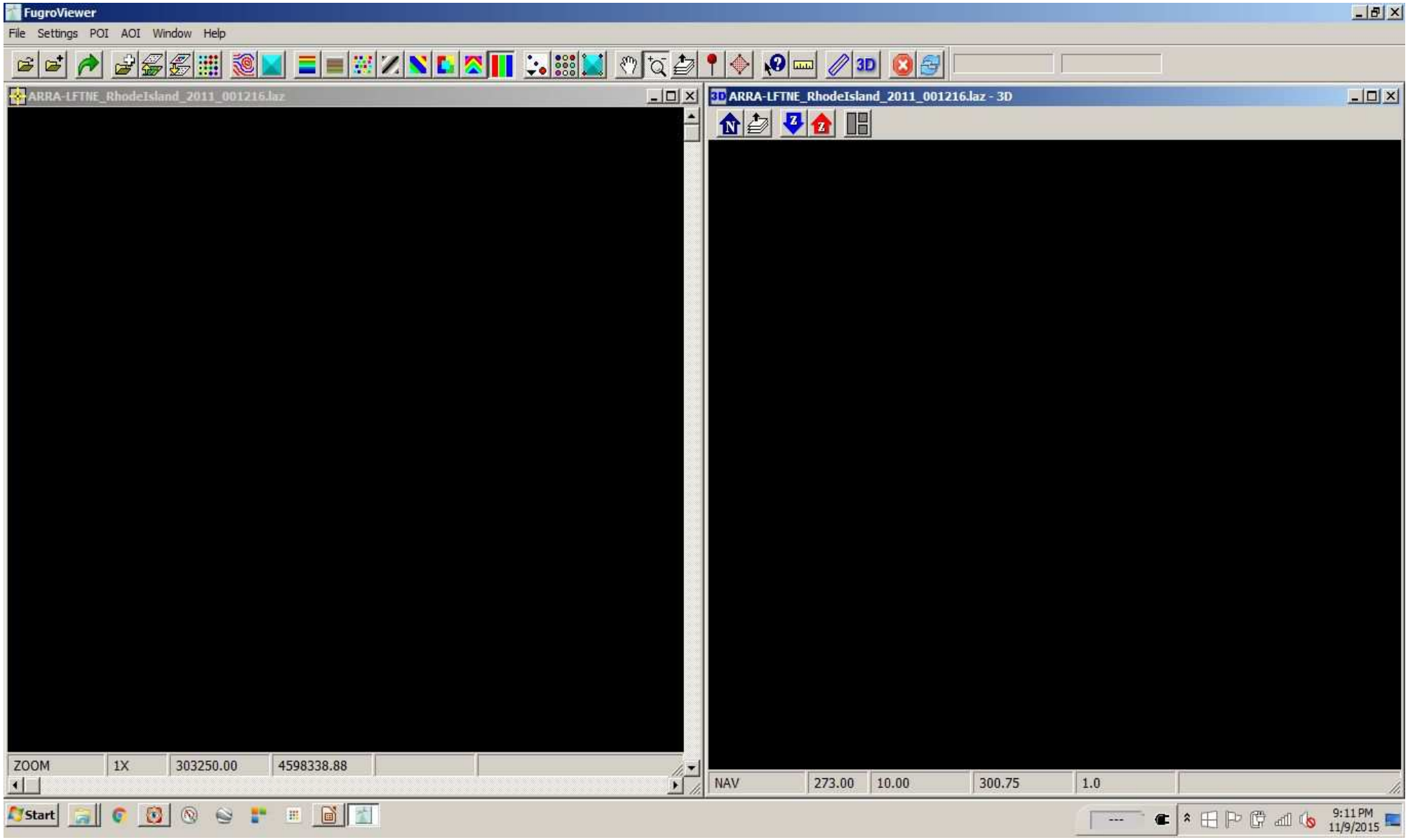
By File – Works better with two or more...



By Return Number – This is special.



By RGB Color – Works better with colorized cloud.



FUGRO VIEWER

- Let's see all those in motion.
- (Play video)

OCTREE & OTHER STUFF

- An octree is a tree data structure in which each internal node has exactly eight children. Octrees are most often used to partition a three dimensional space by recursively subdividing it into eight octants.
- The cloud is broken into chunks for the purpose of processing and loading. We different forms with many softwares. It is good in that it can process the data but bad because we can see it. Some programs leave remnants behind, so unload a few points to avoid those telltale signs.

What else do you have?

- How about a color shaded tin?
- (Play video)

What else do you have?

- How about some contours?
- (Play Video)

THOSE CONTOURS LOOK ODD

- This data has a vertical accuracy of 15 cm (0.5') with a submeter spacing (<3.3').
- Ever have a bad point that messes up a TIN? Now you have a ton of points all +/- 0.5' messing with your contours.

THOSE CONTOURS LOOK ODD

- The road may be bumpy, but I don't recall it being that bumpy…
- While engineers want the 'perfect' contours, many geologists prefer the 'dirty' contours.
- Go ahead, ask me about Pennsylvania and the charcoal

I am so glad you asked

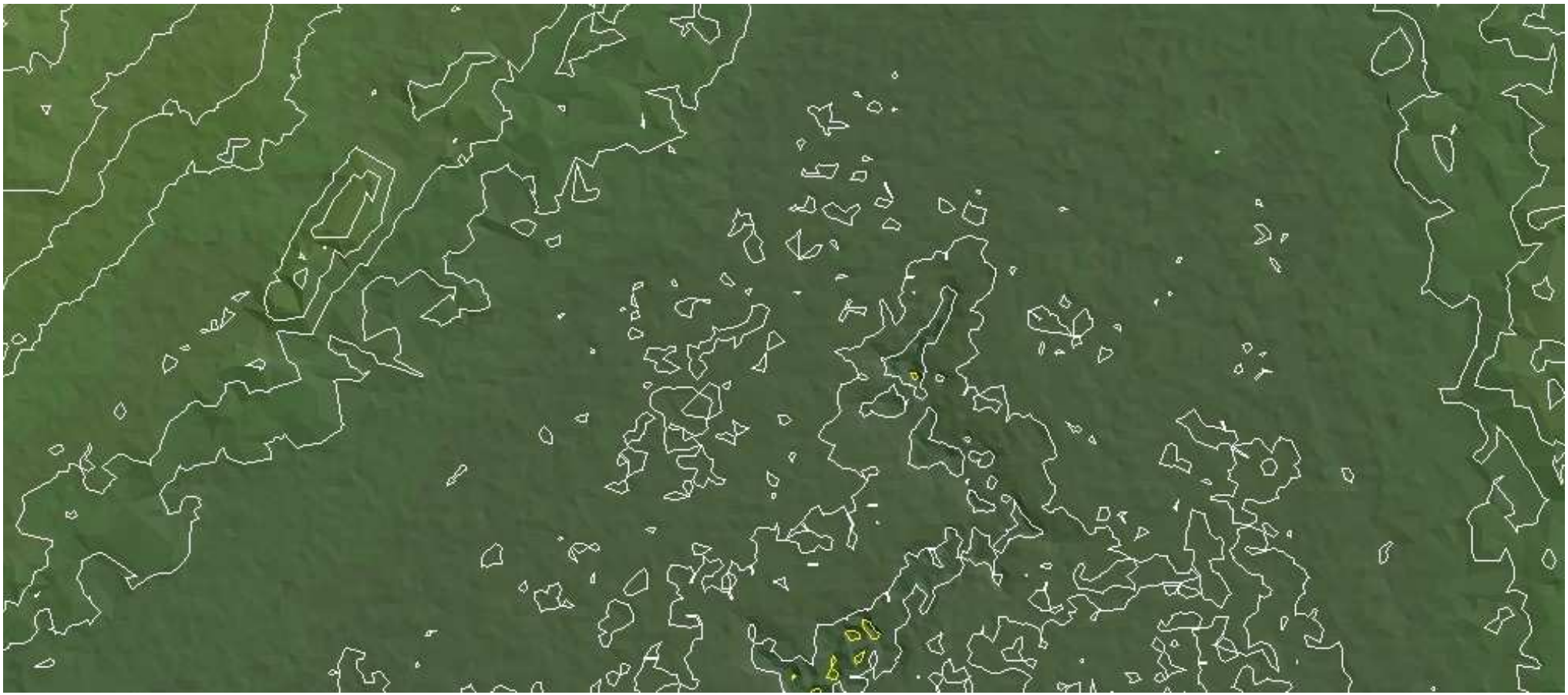
- The coaling process
- To make charcoal, split billets of wood 4-5 feet long were stacked in a large mound on a flat surface 30-40 feet in diameter and as high as 20 feet. Each mound or “hearth” held 25-50 cords of wood. As the mound was built, a triangular chimney was created in the middle of the mound. The entire pile would then be covered with a layer of loose top soil about 1 foot thick. A small opening would be left for the chimney. “Firing the pit” was the phrase used for igniting the mound. This was often done in the evening to allow for one last good nights sleep for the collier. For the next few days and nights, the collier would get little sleep as the smoldering mound would need constant watch. If the fire grew to hot, it would consume the entire pit and burn all the fuel. If it burned too slowly the quality would be insufficient.

How do you find an old “hearth”?

- My cousin Helen Delano works for PA DCNR – Bureau of Topographic and Geologic Survey. She helps handle the aerial LiDAR data in PA.
- Her husband Noel Potter is a Prefessor Emeritus of Geology at Dickinson.
- This combination makes for some fascinating conversations in our corner of family reunions.
- Helen gets requests to produce sleek, smooth contours for the engineers. Noel has found many geologic objects with the “dirty” contours like several giant “hearths” in the woods.

THOSE CONTOURS LOOK ODD

- Flat areas are very messy. This is part of a salt marsh and that +/- 0.5' really shows up.

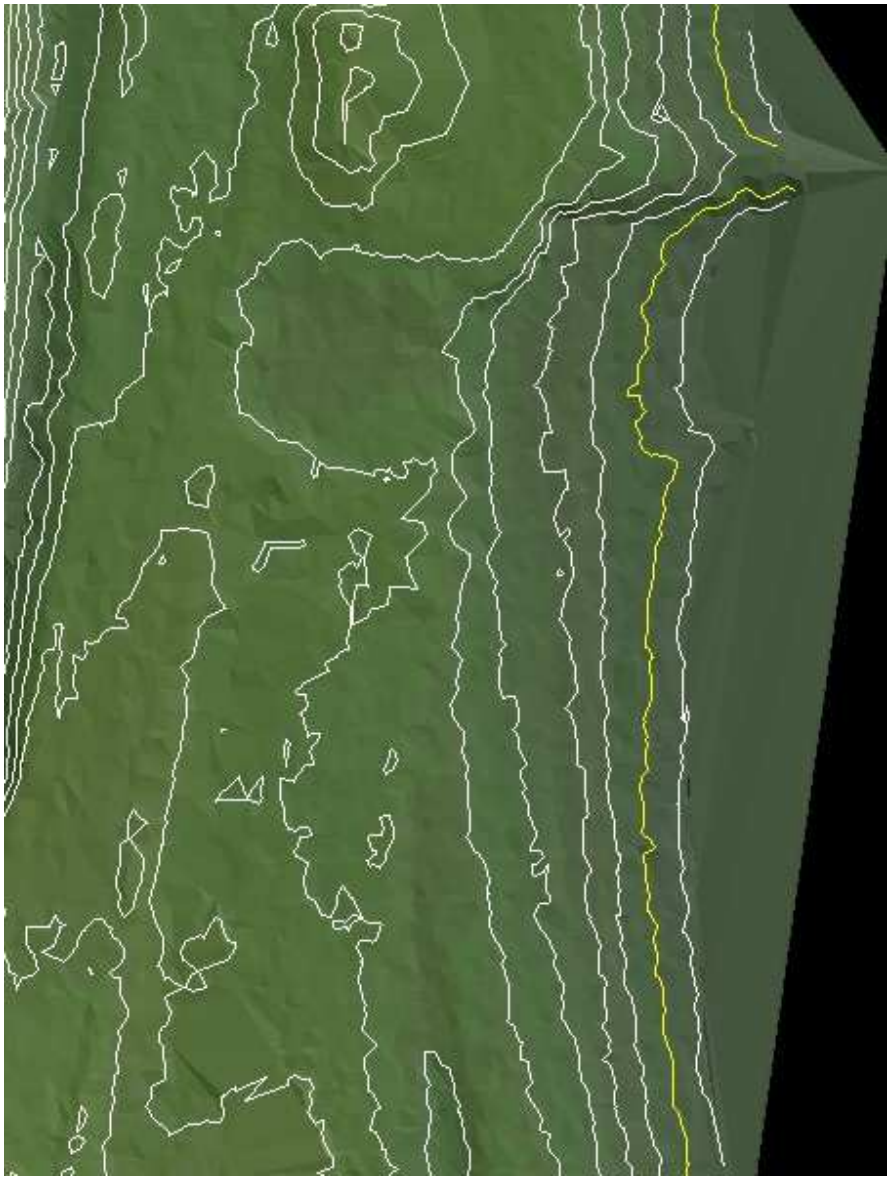


THOSE CONTOURS LOOK ODD

- Seeing the different slopes helps one to realize that steep slopes come out better than flat ones.

THIS SHORE IS GOOD

- This shoreline is very smooth compared to others we have contoured. If you are using a real program, you can extract a breakline and then clean the edge of the surface.



SOLUTIONS

- Other programs that create surfaces have similar issues. There are some solutions:
  - Reduce the vertices of the contours
  - Remove all contours less than a defined length
  - Import the surface
    - Add breaklines
    - Reduce the surface
    - Recontour
- Accept that this is very good for the cost of the aerial LiDAR data (free download).

BRING IN AN IMAGE

- (Play video)

SOME OTHER STUFF

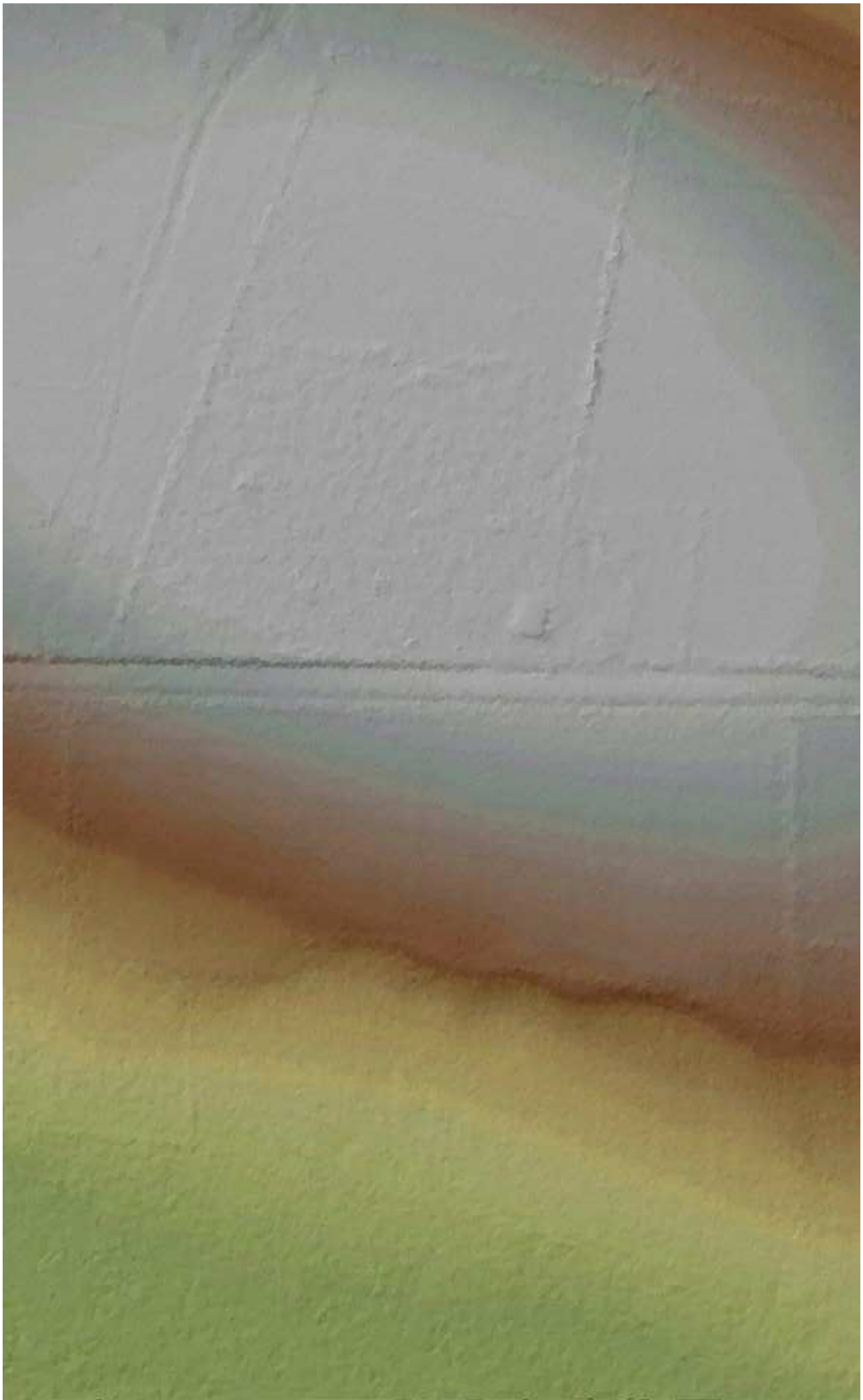
- (Play Video)

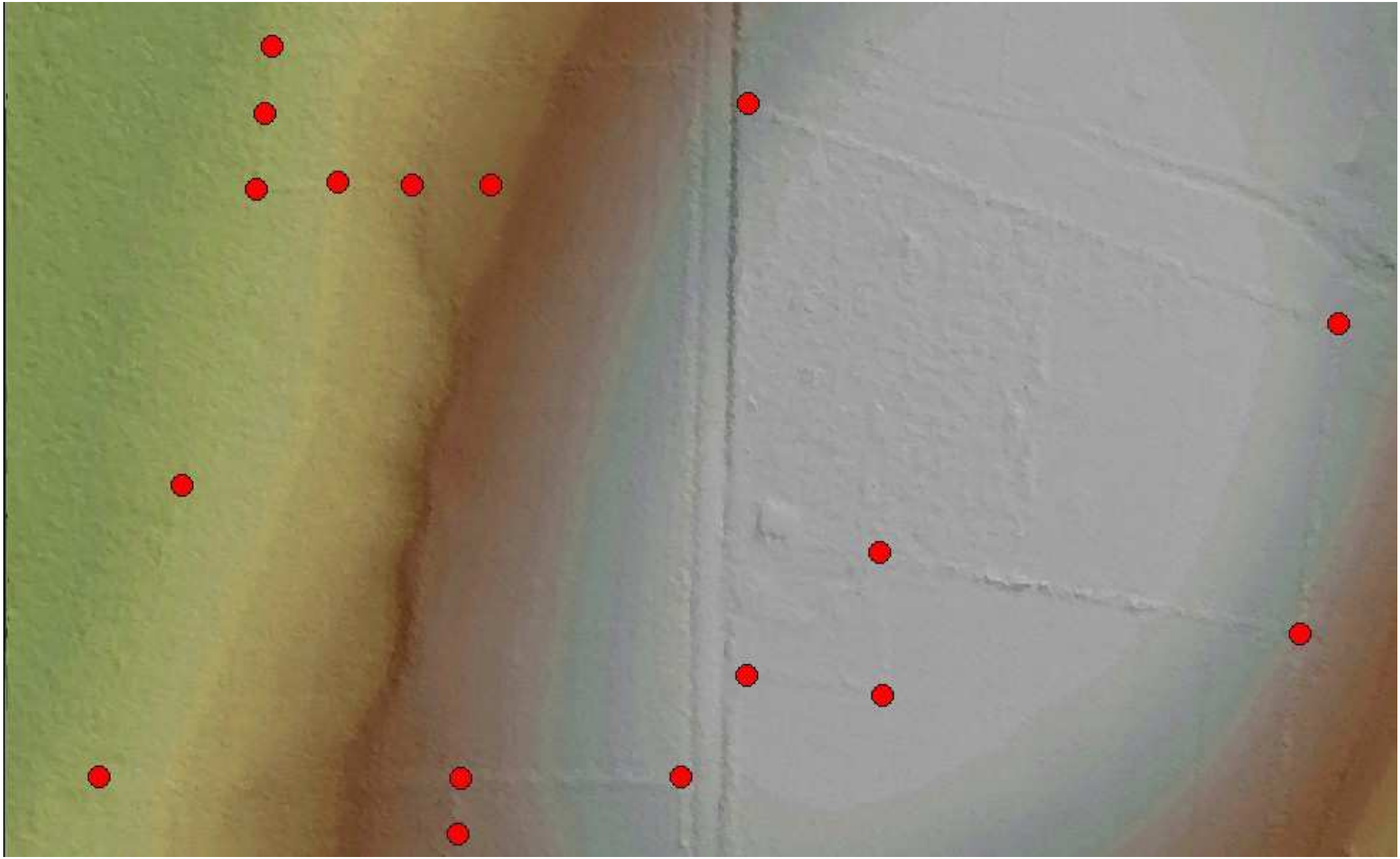
SO NOW WHAT?

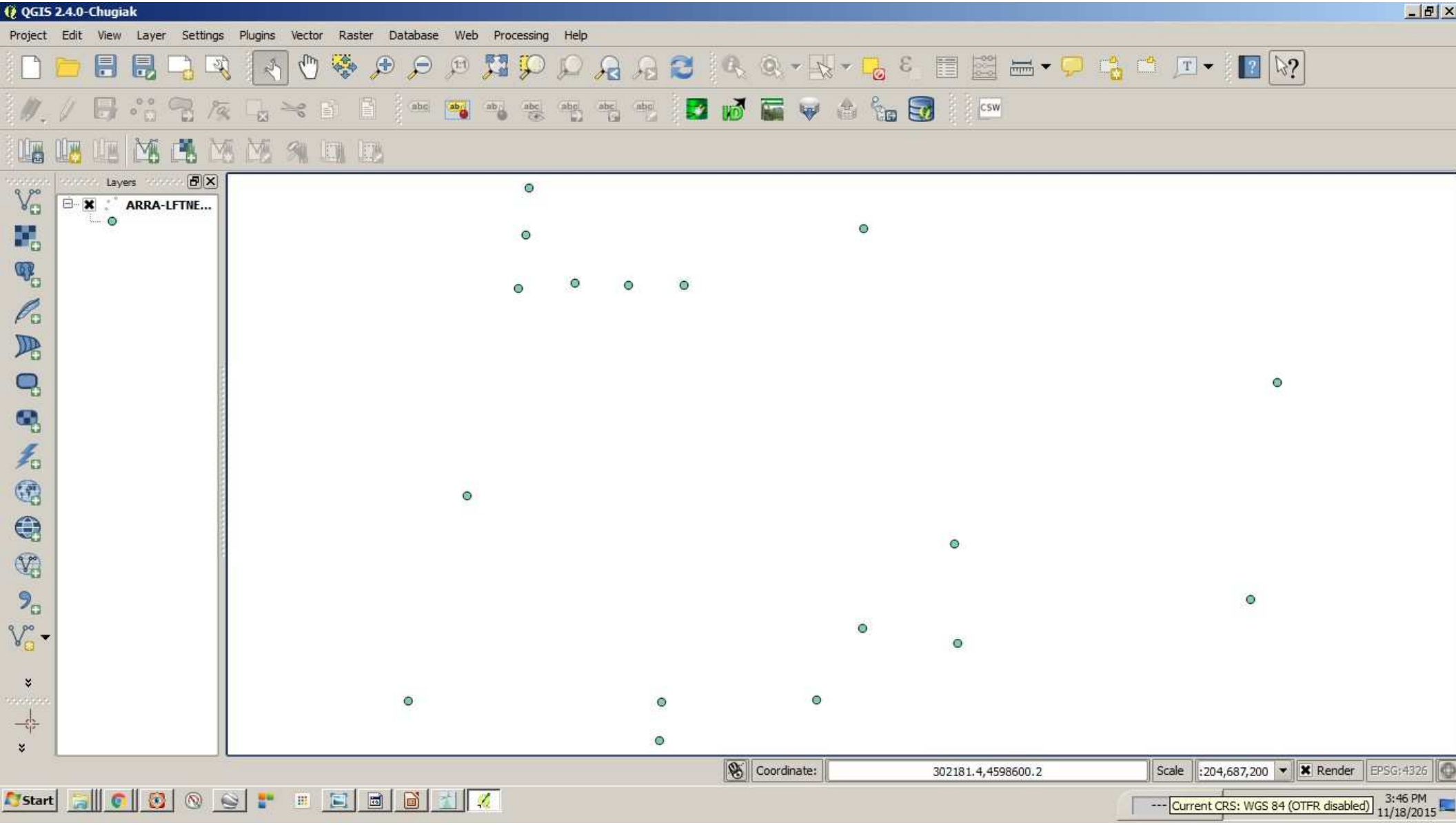
- That was great, but I need to do some real work.
- Yeah... this is a viewer so it might not help.
- You can export some stuff...
  - POI and AOI (markers and polylines) can be exported to SHP files.
  - You can export the cloud as an XYZ or SHP file.
- At least you get some practice with it.

WALLS, DITCHES, ROADS

- I survey on an Outwash Plain. There are few stones there so I rarely have the luxury of using a stone wall for a boundary. We look for ditches, ridges, paths, old roads and stone walls in the deep dark woods where aerial imagery fails to help.
- These items will show up in a surface model from the aerial LiDAR.
- Then we can use POI and AOI to capture them, import them into CAD and really use them.
- I have found this technique to be very beneficial for the compilation of old deeds and the planning of original surveys of ancient boundaries.






QGIS 2.4.0-Chugiak
Project Edit View Layer Settings Plugins Vector Raster Database Web Processing Help
Layers
ARRA-LFTNE...
Coordinate: 302181.4,4598600.2
Scale :204,687,200
Render
EPSG:4326
Start
Current CRS: WGS 84 (OTFR disabled)
3:46 PM
11/18/2015

SHP File...

- It could be worse. At least you can get an approximate location of these walls. If your traverse is on SPCS or you use a GPS for recon (sure it is hit or miss in the woods) you can have some coordinates to aim towards.
- Then when the description is too ambiguous or just plain wrong, you can take it to the monument. (It being the field crew and the monument hopefully being that landmark you can see in the LiDAR)

ONE LAST RUN

- SPCS
- COLOR
- SLIGHT FLAW IN 3D VIEWER?
  - Sorry for the spoiler, enjoy the video
- (Play Video)