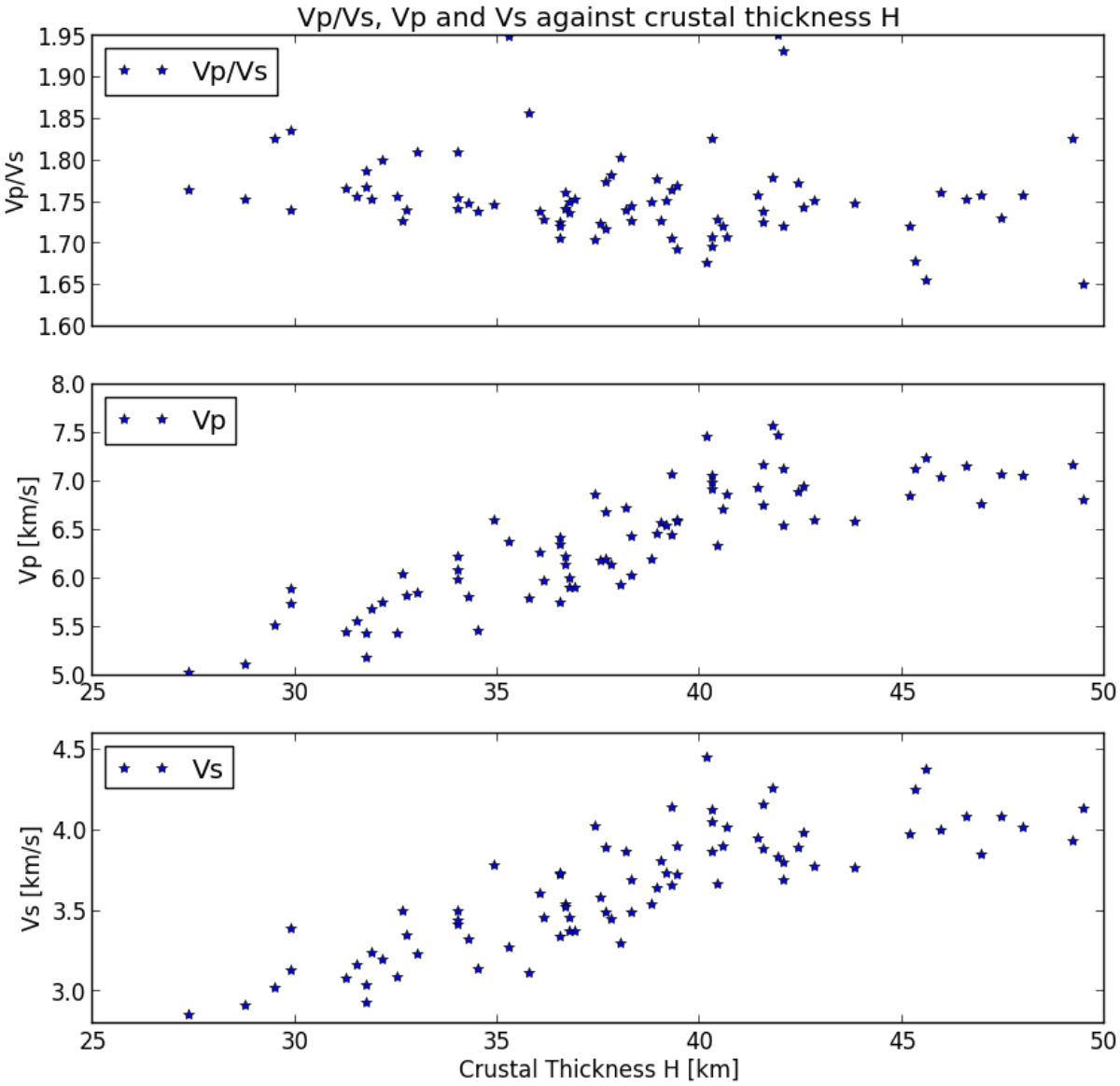
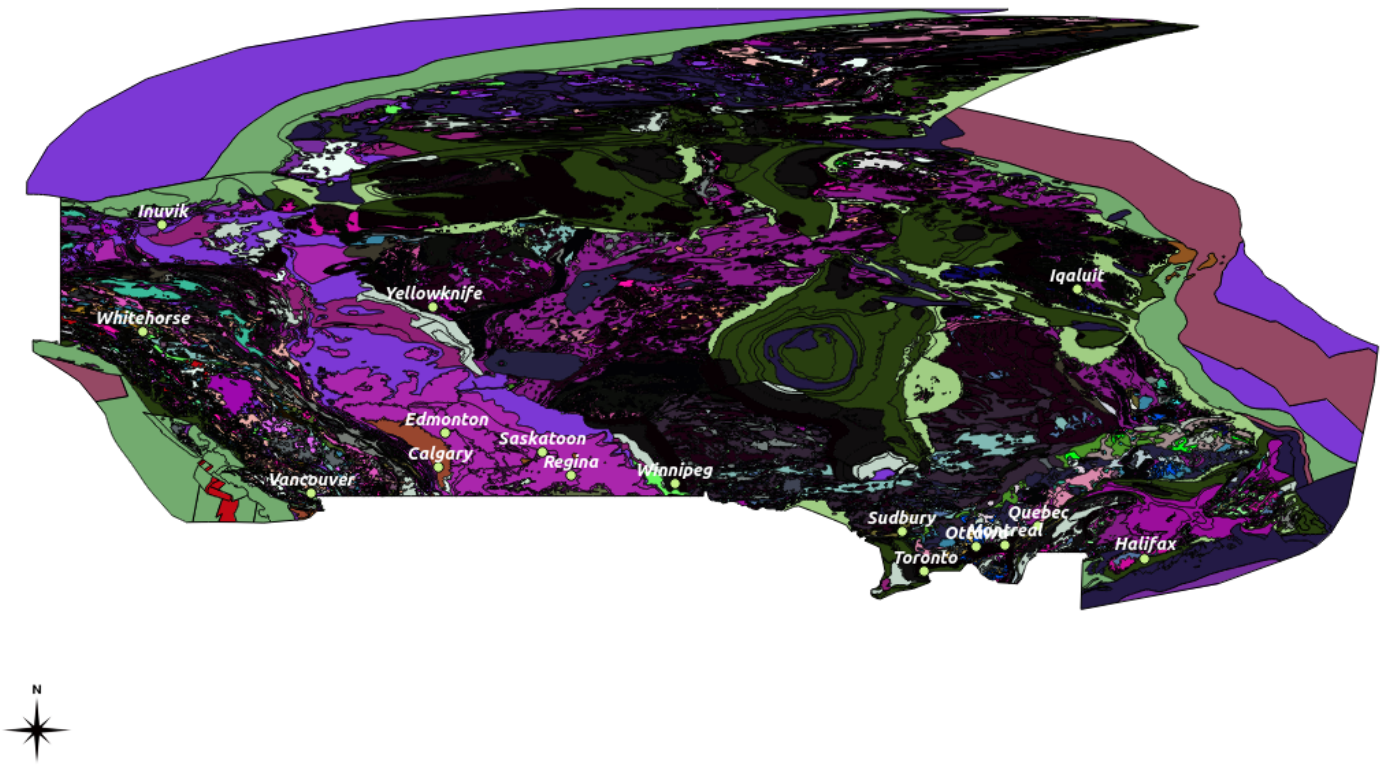
Select data visualization for Thesis work by Ben Postlethwaite.

Here are the results of plotting many station's calculated parameters against each other. There is clearly a linear trend with a tail off in the greater crustal thicknesses or a square root curve.

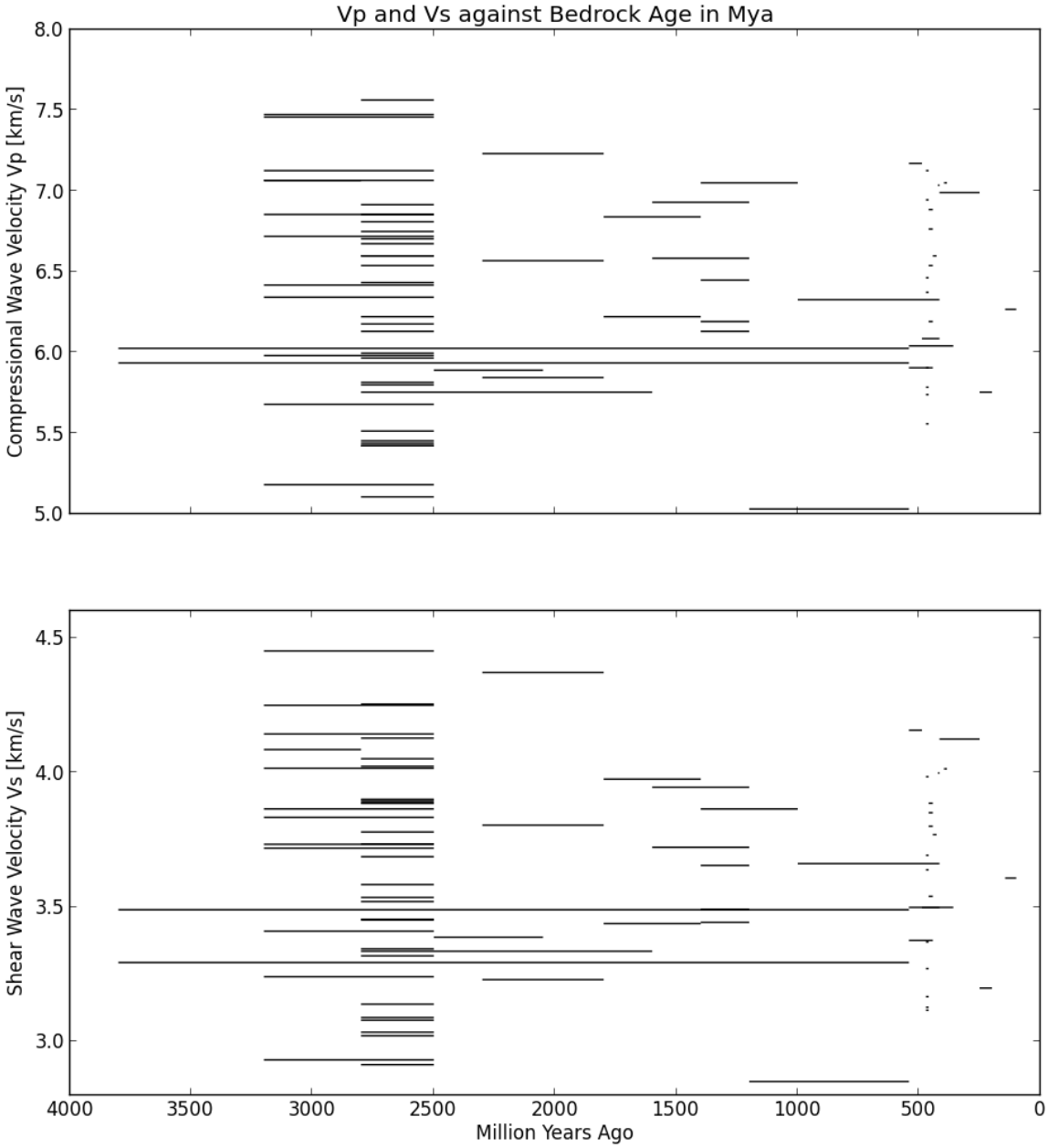


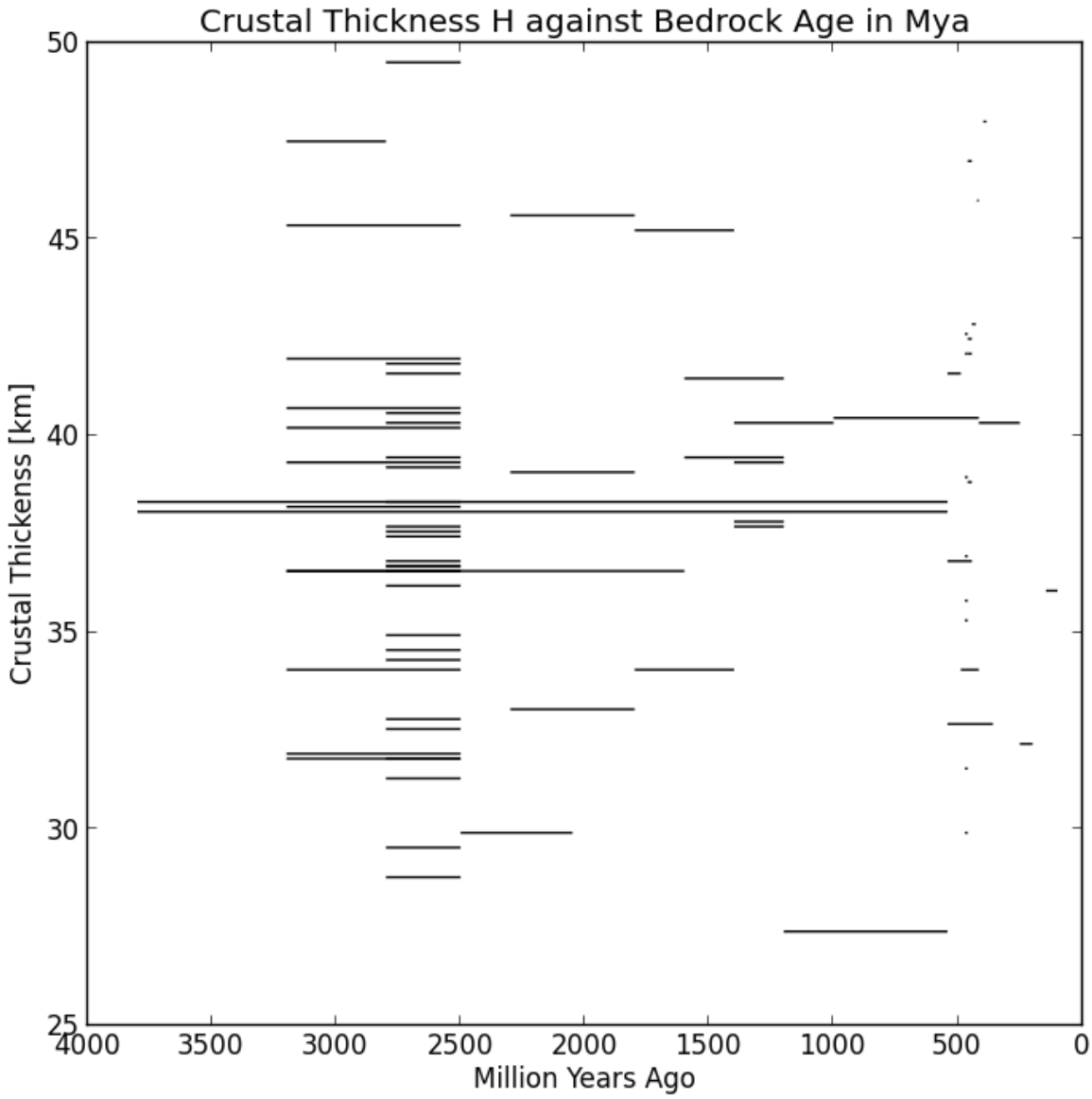
Up next are are my first efforts at plotting geological attributes against the parameters I have calculated. The first map below is the spatial representation of the bedrock data I am working with. The problem is not that the level of detail is inadequate, it is that bedrock data does not tell us much about crustal composition. I have finer resolution images I can harness as well as

surficial geology maps (though this does not solve the problem).



The figures below show the age of the bedrock units on the x axis and a seismic parameter on the y axis. The does not seem to be any visible correlation between age and any of the seismic parameters in the data I have access too. Again, it is my belief that this is due to the surficial nature of bedrock maps.

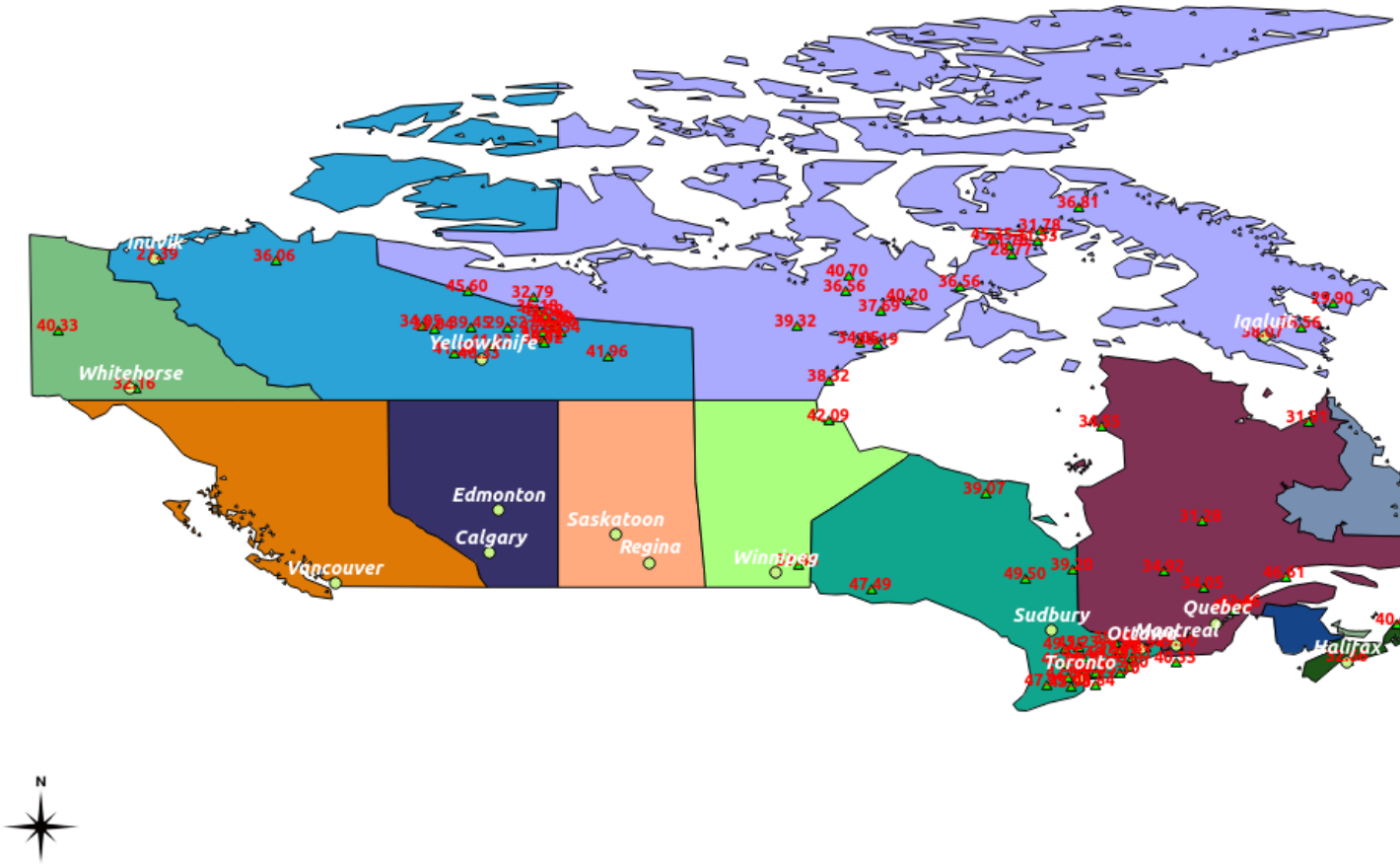

Vp and Vs against Bedrock Age in Mya
Compressional Wave Velocity Vp [km/s]
8.0
7.5
7.0
6.5
6.0
5.5
5.0
Shear Wave Velocity Vs [km/s]
4.5
4.0
3.5
3.0
4000
3500
3000
2500
2000
1500
1000
500
0
Million Years Ago



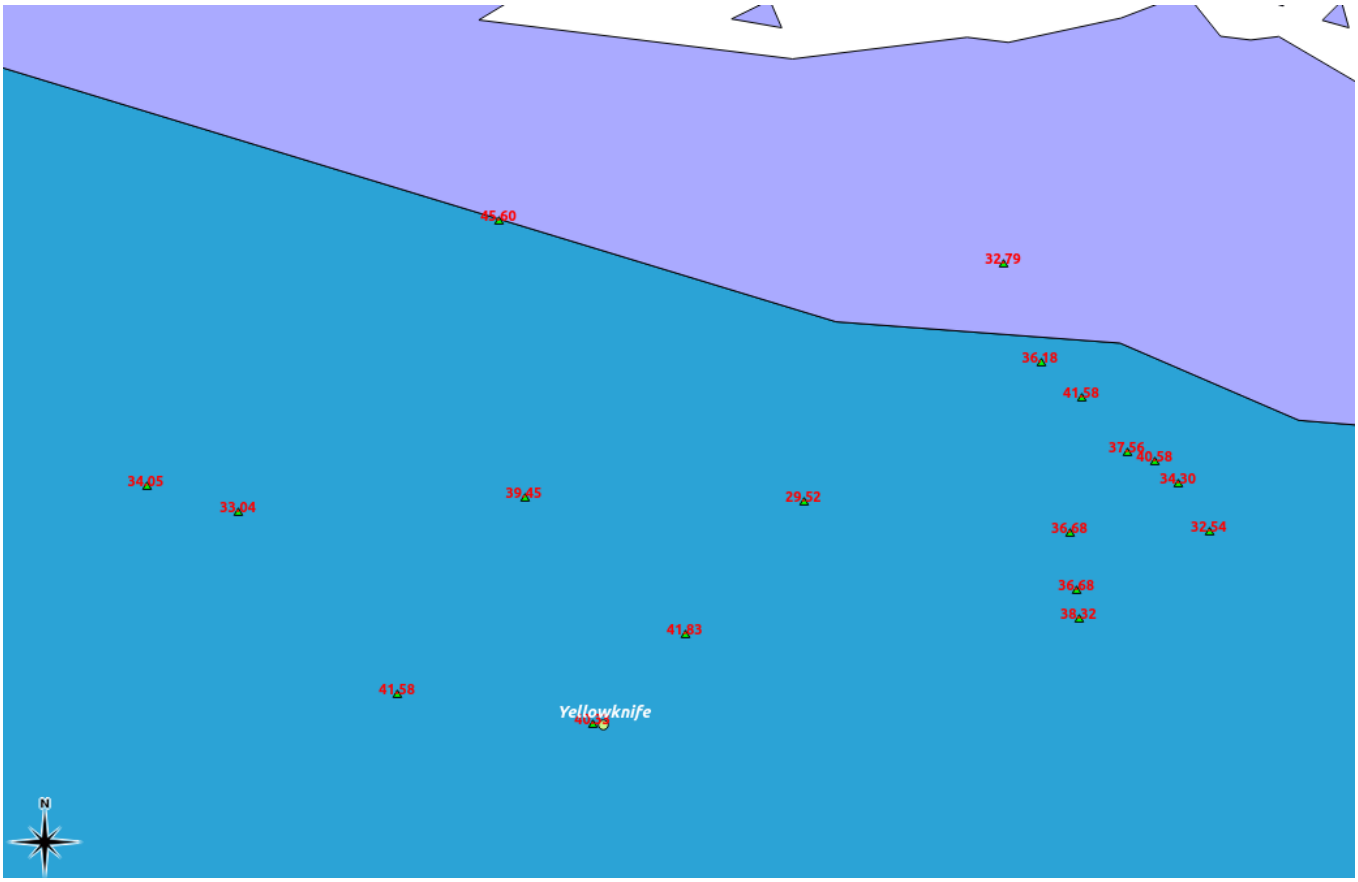
Since my estimates of H look believable and I also believe that the GSC data is fairly accurate and the literature suggests there SHOULD be a link between crustal thickness and age, the fact that we don't see such a link in the figure above suggests that as the ages given by the GSC data are for bedrock, this is unrepresentative of the crustal composition as a whole. Unless my data is wrong of course.

I have incorporated another batch of stations (more are on their way) and here are the calculated results plotted on a political map for clarity.

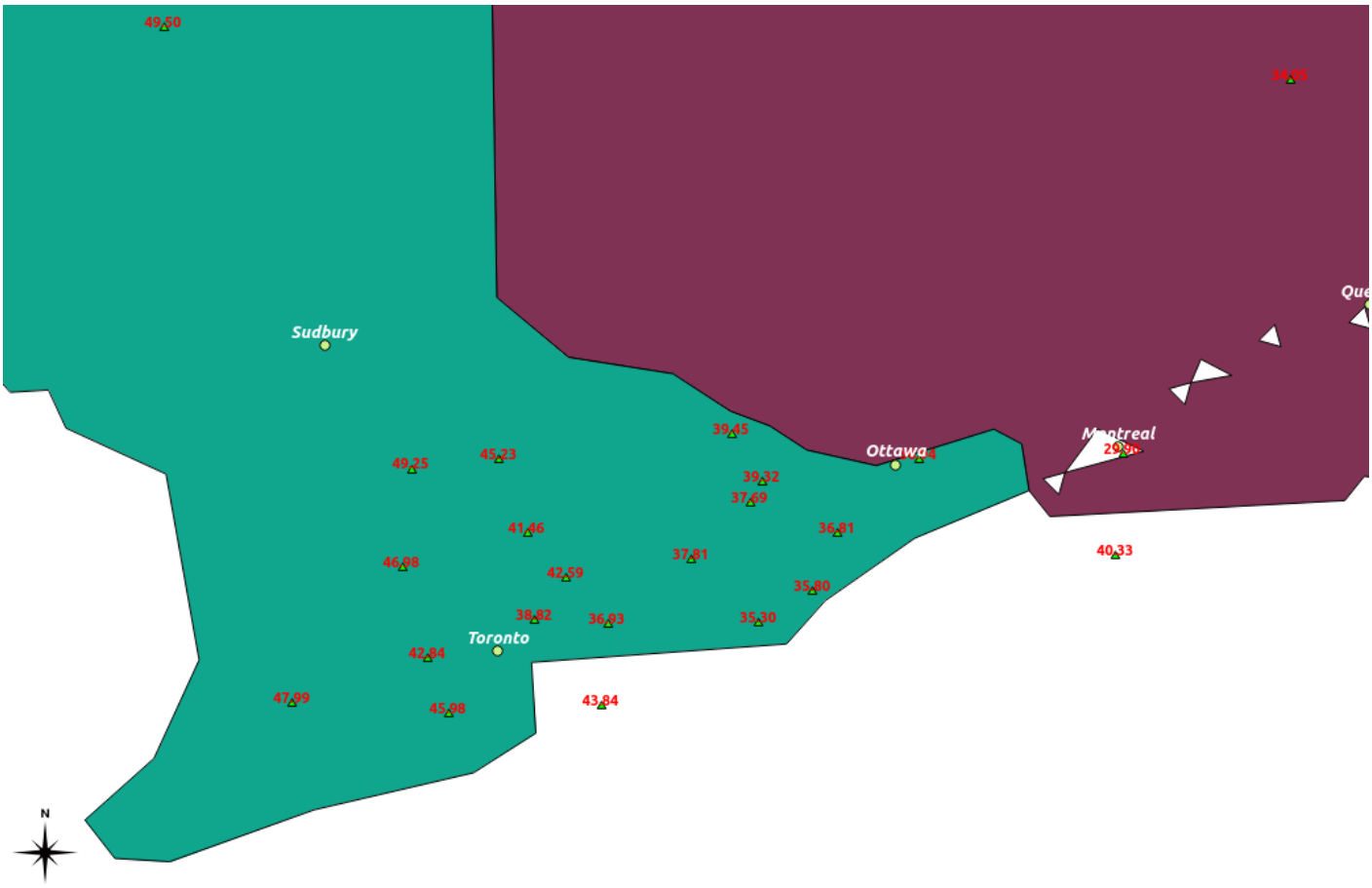
Canada Crustal Thickness Map



Zoom in of the Slave region



Zoom in of the Ontario region:



I can see an encouraging level of consistency in the values as they are distributed in space. It really would be nice to have USarray style coverage. One could start to create 2D crustal depth maps.

If the level of detail is poor it is because these are all draft figures and I am still acquainting myself with Python's plotting capabilities and the GIS software's many features. The quality of the plots will improve over time.