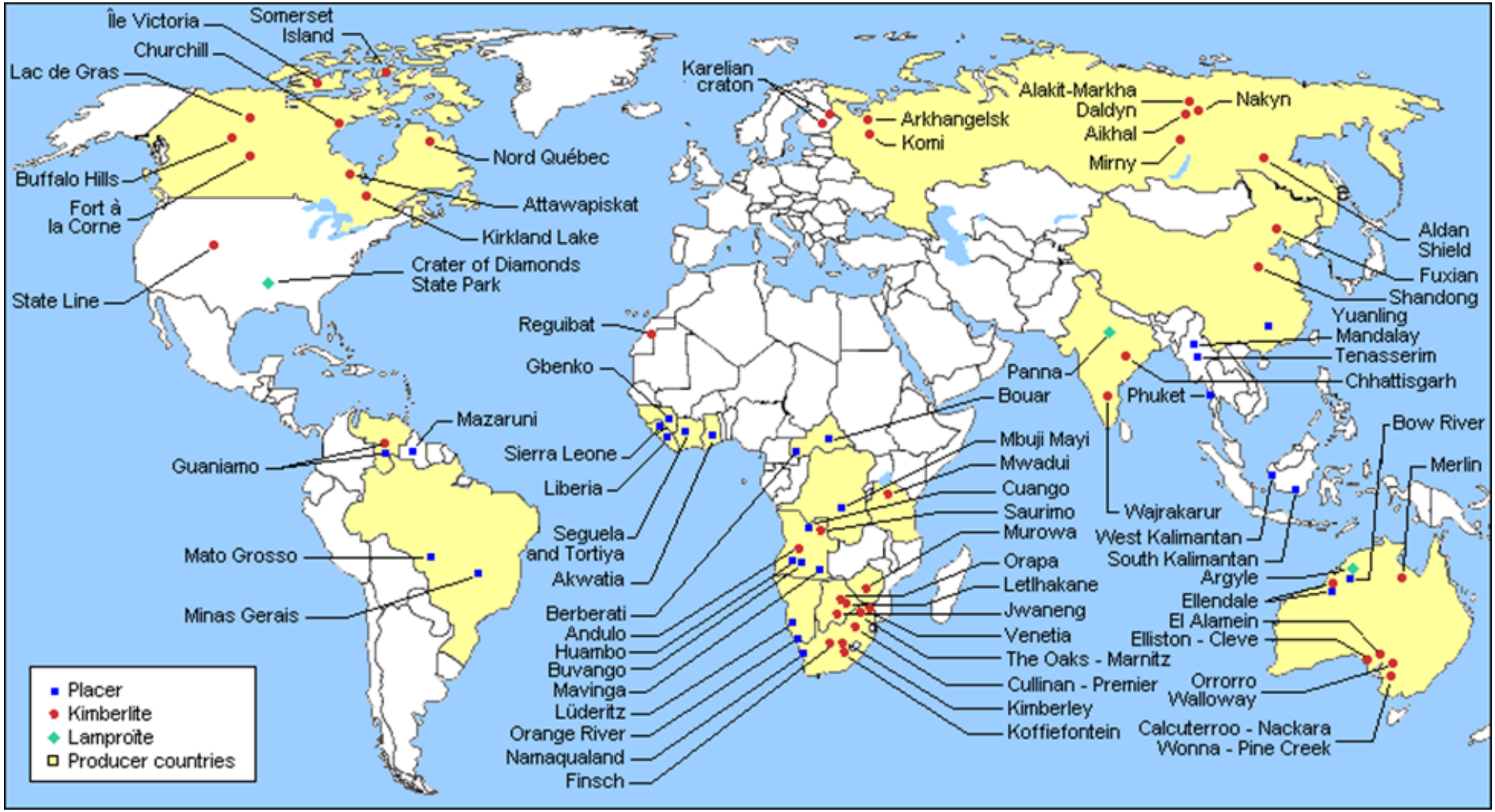
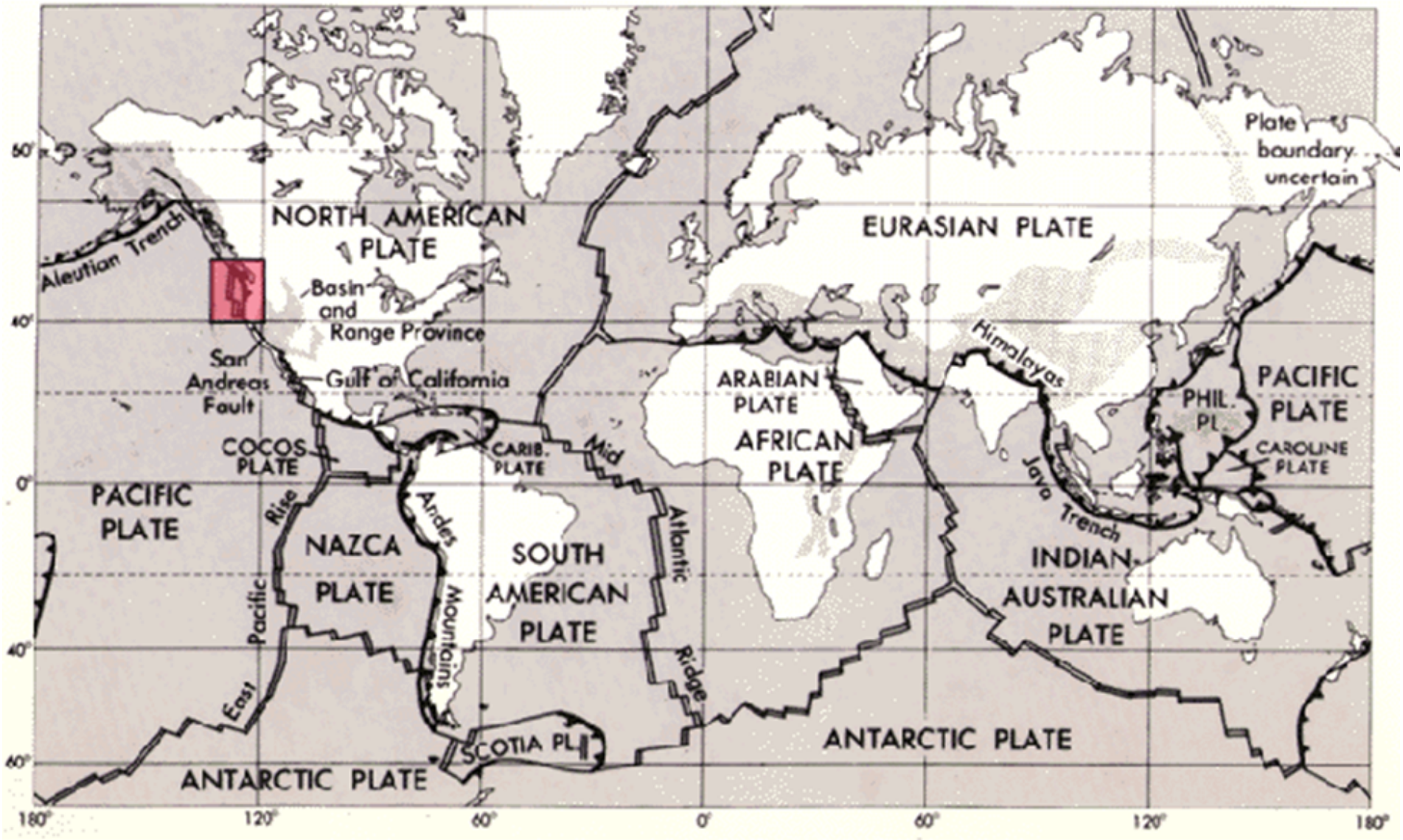
Distribution of Diamond Deposits



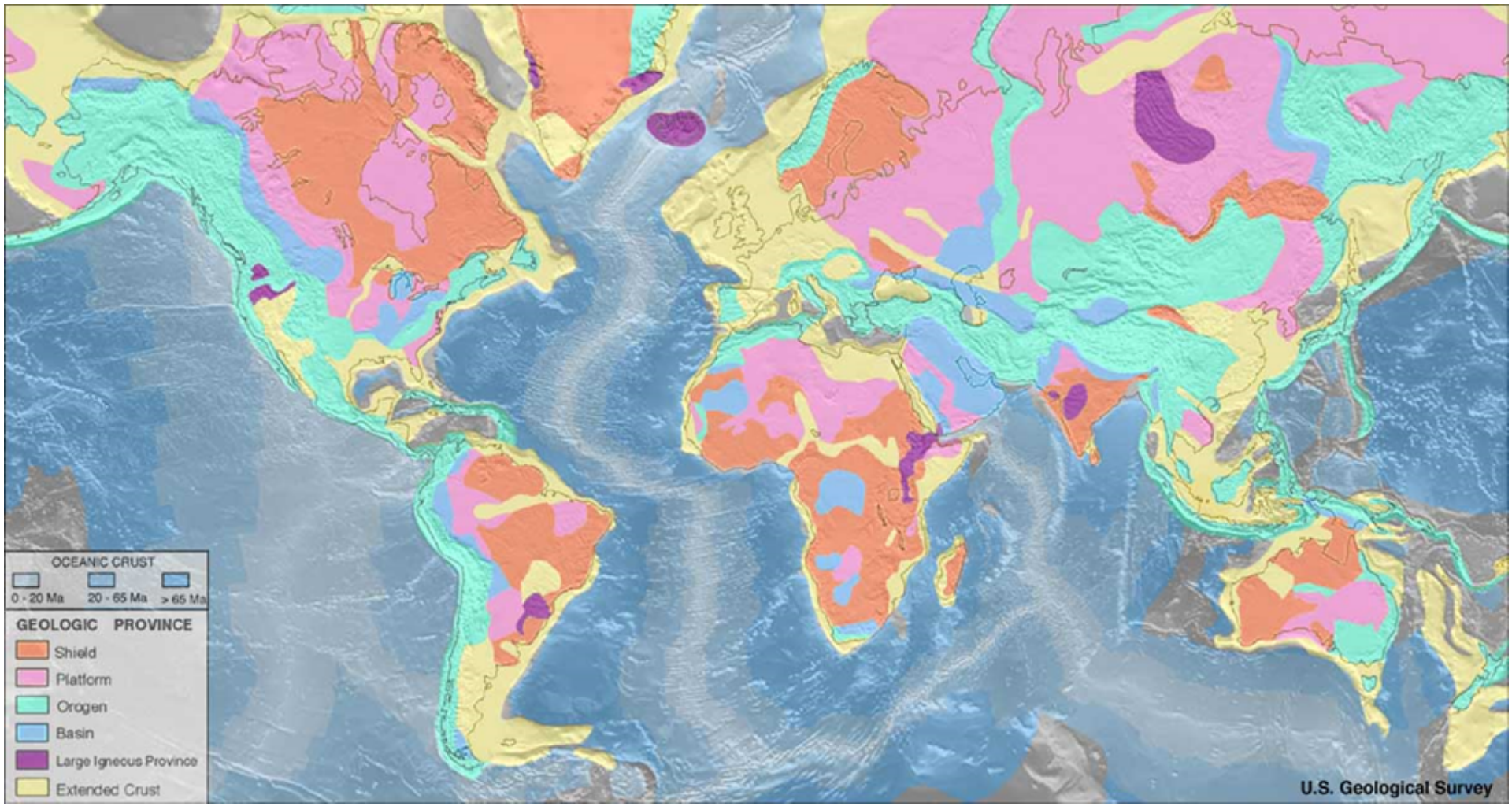
https://u.osu.edu/commodity2750/exploration/

Plate Tectonic Map



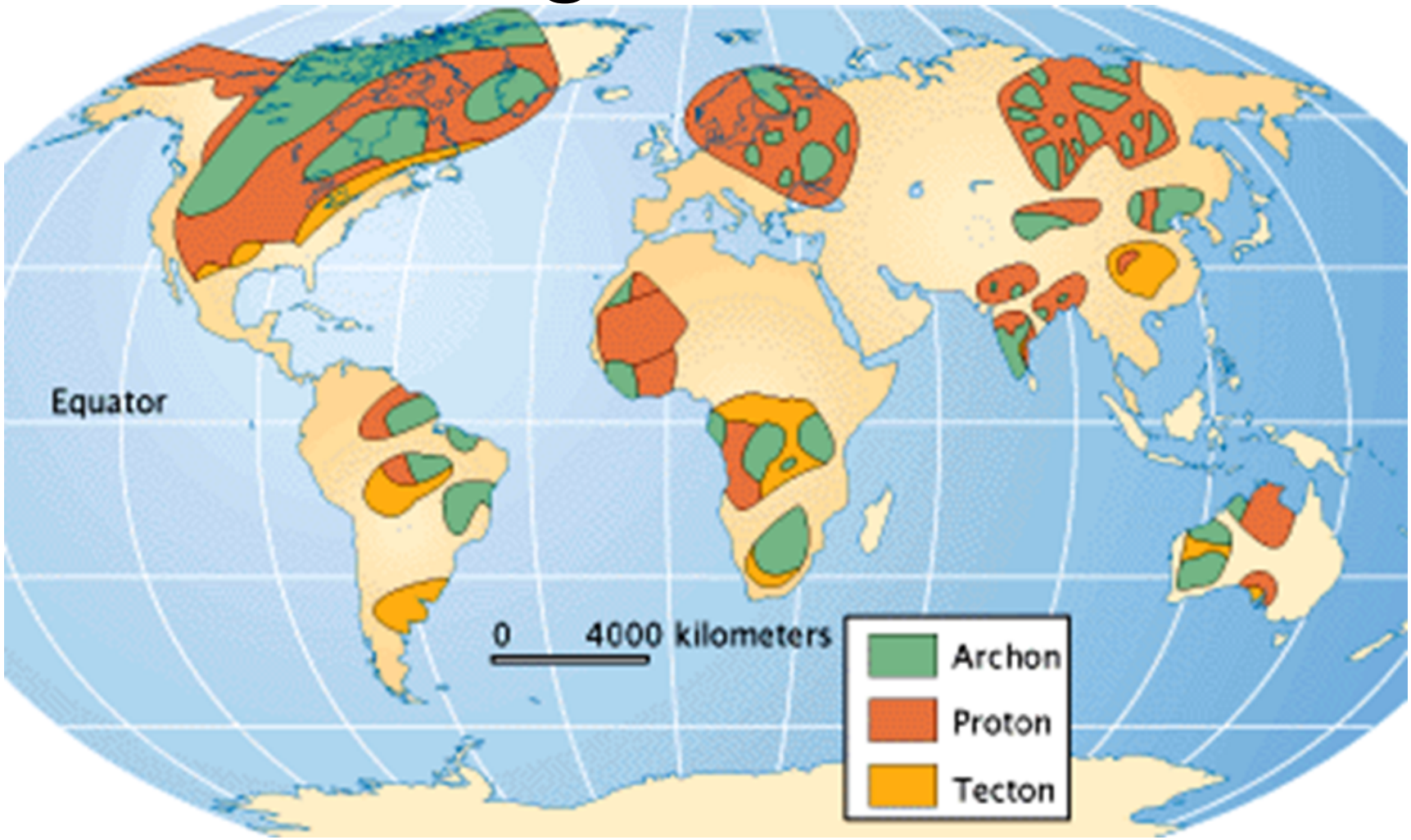
https://pubs.usgs.gov/gip/volc/tectonics.html

Geologic Provinces



https://pubs.usgs.gov/gip/99/pdf/gip99_ppt.pdf

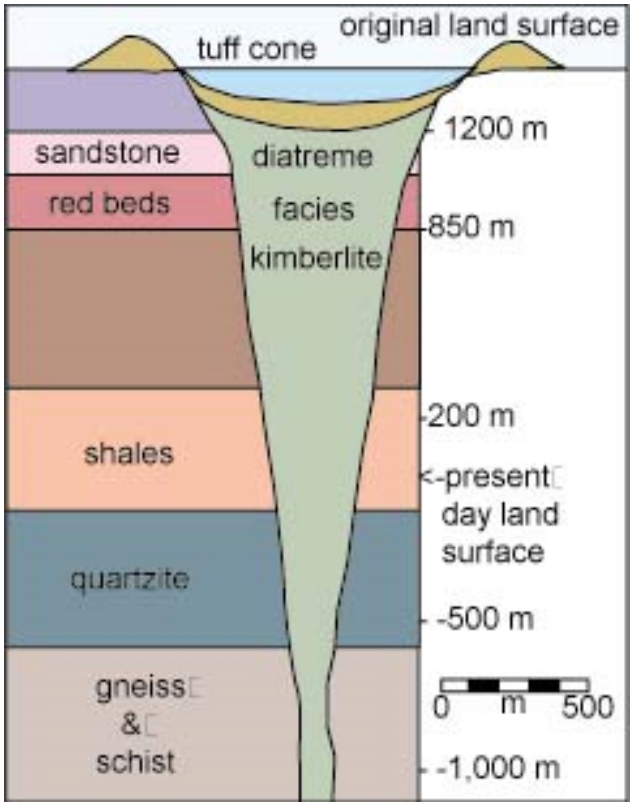
Age of Rocks



Cratons are the old, stable parts of continents. The map shows area of archon, rocks older than 2,500 million years and proton, areas where the rocks are 1,600 to 2,500 million years old.

From https://msu.edu/~jenki133/diamonds/world.html

It’s a Volcano!



From http://volcano.oregonstate.edu/diamonds

Indicator Minerals

"(Photo: concentrated heavies from gravel sometimes contain garnet (orange), pyroxene (green), ilmenites (black),magnification X 200.)"

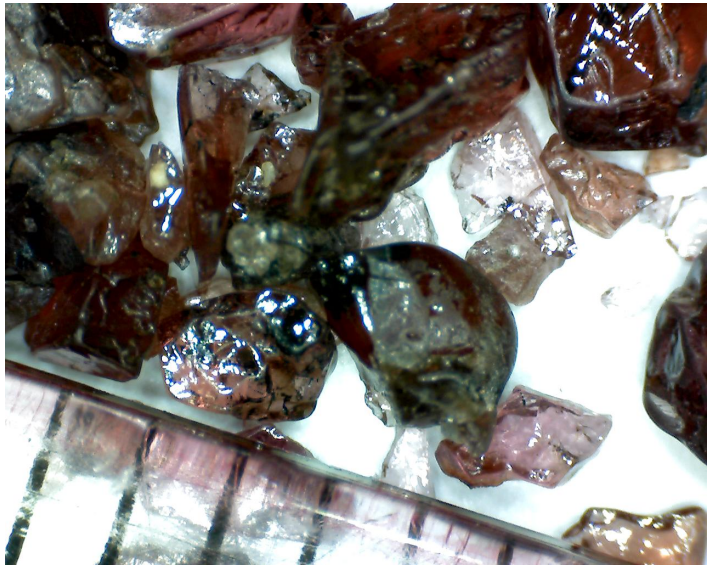
"Picking kimberlitic indicators and diamond indicators is based on colour. Colour results from Fe, Mn, Cr content. Pyrope - pinkish red, crimson to purple; Chrome-Pyrope greenish violet to purplish. Almandine; deep red to brown-black. Grossular; colourless, pink, yellow-green depending on Fe and Mn present.(Deer,1993) Picking based on colour takes experience and a good eye for variations in colour. It is a difficult, subjective and inexact process. DIMs are .25 to 2 or 3 millimeters, so you need good eyes and a good microscope."

http://www.landandminerals.com/diamond_indicators.html

Mineral Properties

- Color

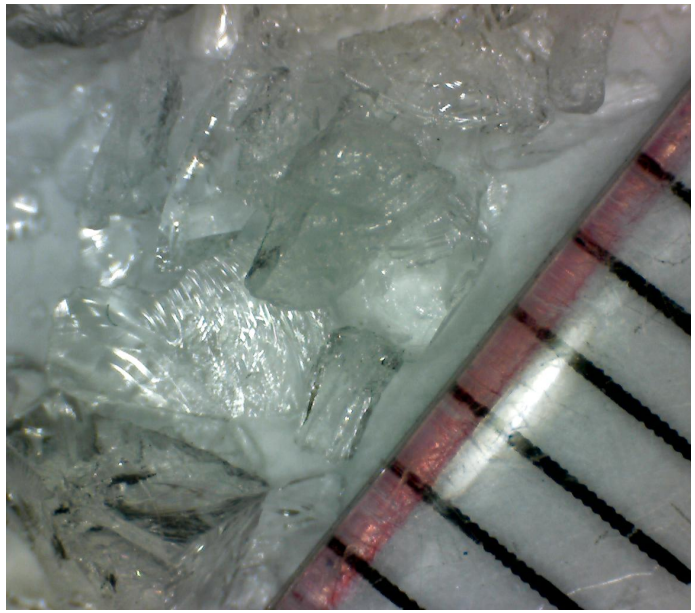
Red, green, black, …



Colorless

- Luster

Glassy



Metallic

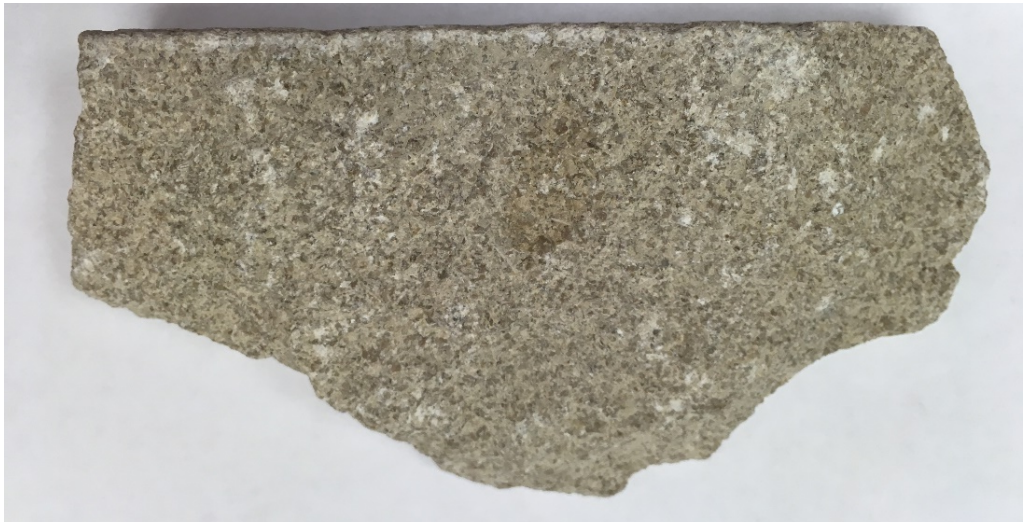
Mineral Properties

- Cleavage

- Fracture

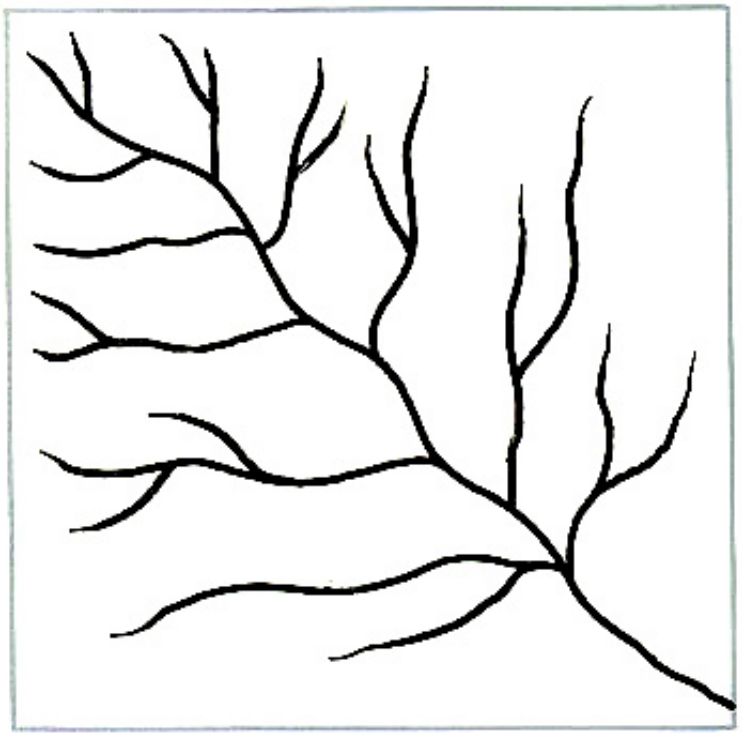
Rock Fragments

basalt



limestone

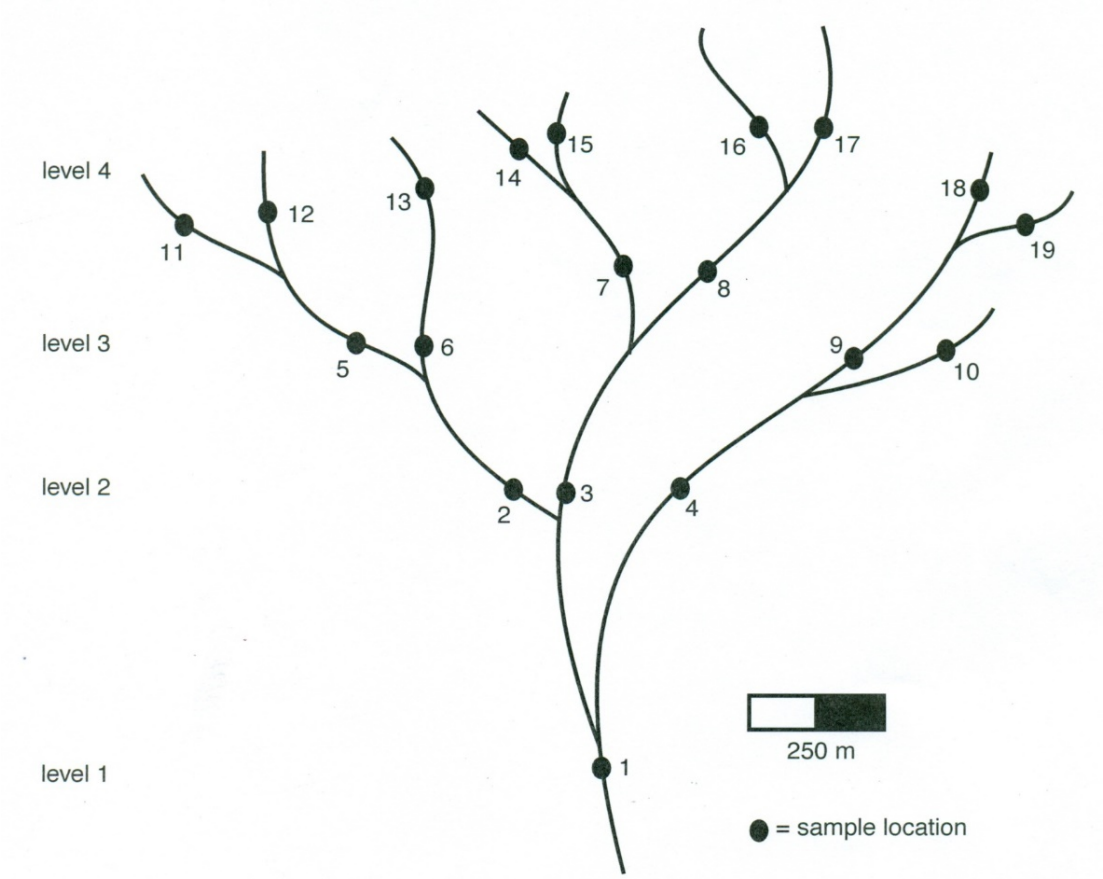
Reading the Map



http://golearngeo.wordpress.com/new-post/?page=stats&view=post&post=200&blog=12122768

http://resweb.llu.edu/rford/courses/essc500/fluvial/fluvial.html

Your River Map & Guidelines

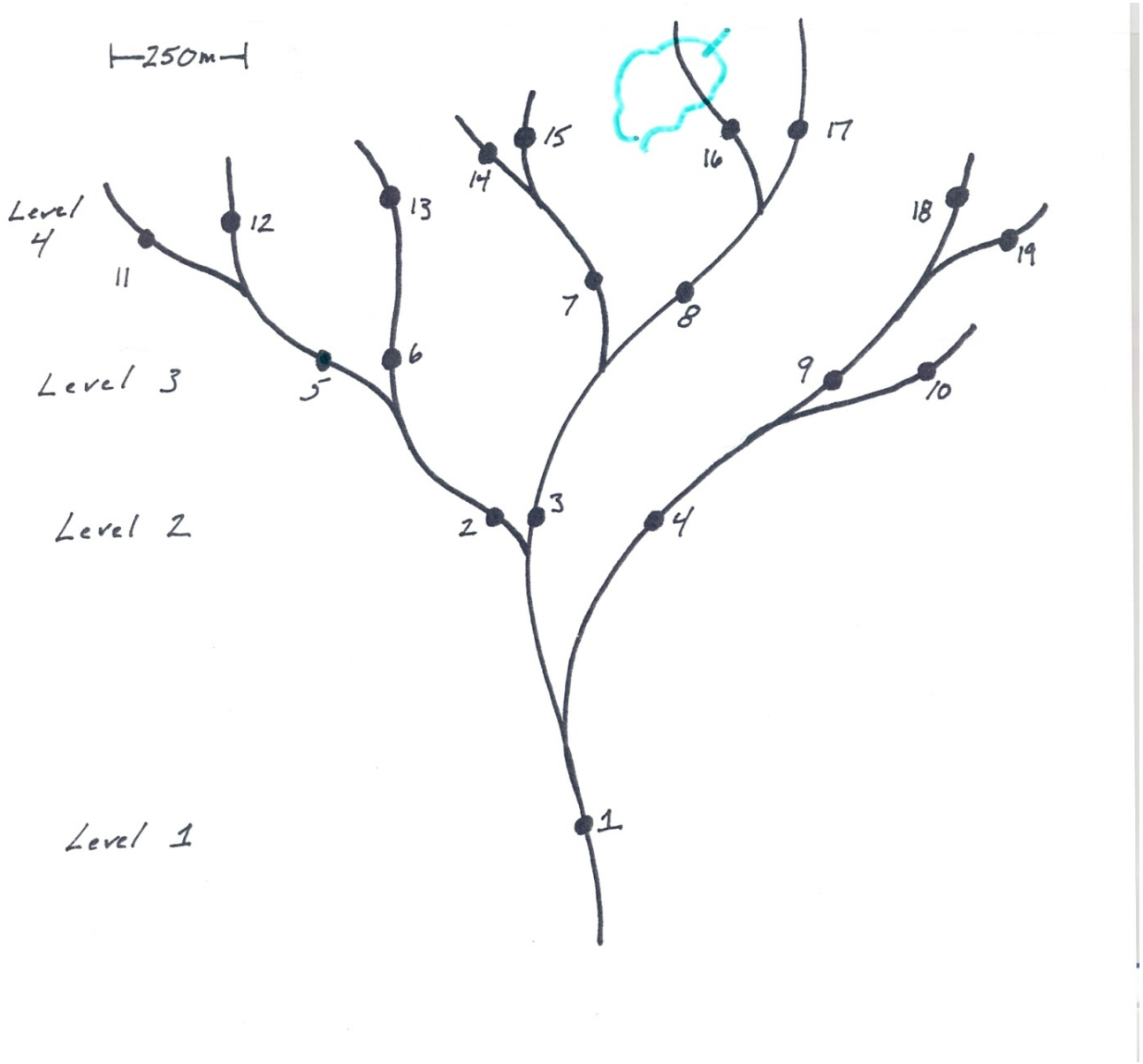


Careful, the next few pages have all the answers.

Rocks and Minerals at Locations

Sample/ Loc	Diamond	**Diopside**	**Garnet**	**Ilmenite**	K-feldspar	**Olivine**	**Phlogopite**	Quartz	Basalt	Limestone
1		1			1			1	5	2
2					3			4	3	
3				1	1	1			3	4
4									3	7
5					7			3		
6					5			5		
7					2			3	3	2
8		1	1	1		1	1			5
9										10
10										10
11					4			6		
12					8			2		
13					5			5		
14					9			1		
15					3			7		
16	1	2	3			1	2			1
17										10
18										10
19										10

Location of Diamond Deposit



Extension 2

Search for “Ekati” in Canada in Google Earth.

64 42’ 44” N
110 35’03” W

http://www.allaboutgemstones.com/diamond_mines_canada.html

Extension 3
How much diamond do you need in your lifetime?

- Consider that an average American uses 0.4 g. of diamond per year. Assuming an average life expectancy of 78 years, each American needs about __ g. of diamonds in their lifetime. If a penny weights about 2.5 g., placing __ pennies in your hand is equivalent to the amount of diamonds they will consume in a lifetime.
- How much volume is this? Guess.

Extension 3

31 gm of synthetic diamond