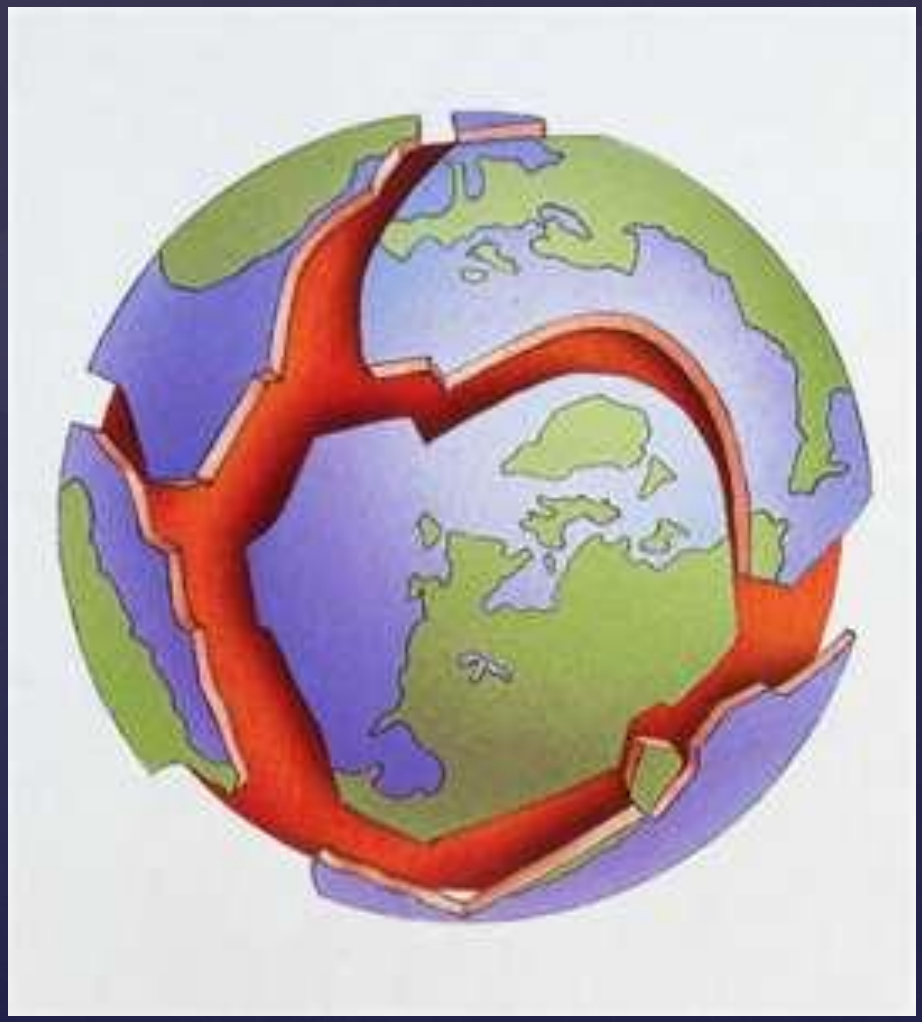
The Geological Society

PLATE TECTONICS

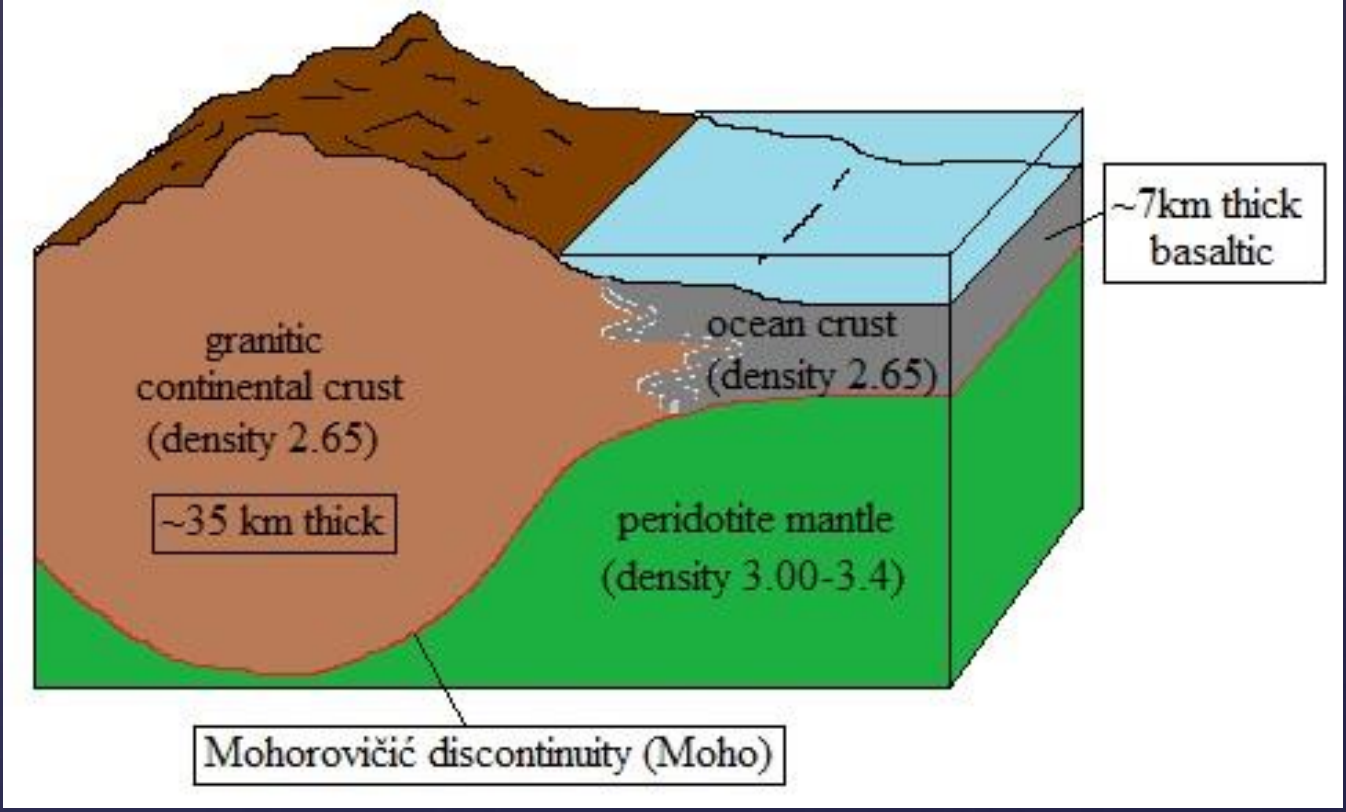
New in spring 2013



For Key Stage 4

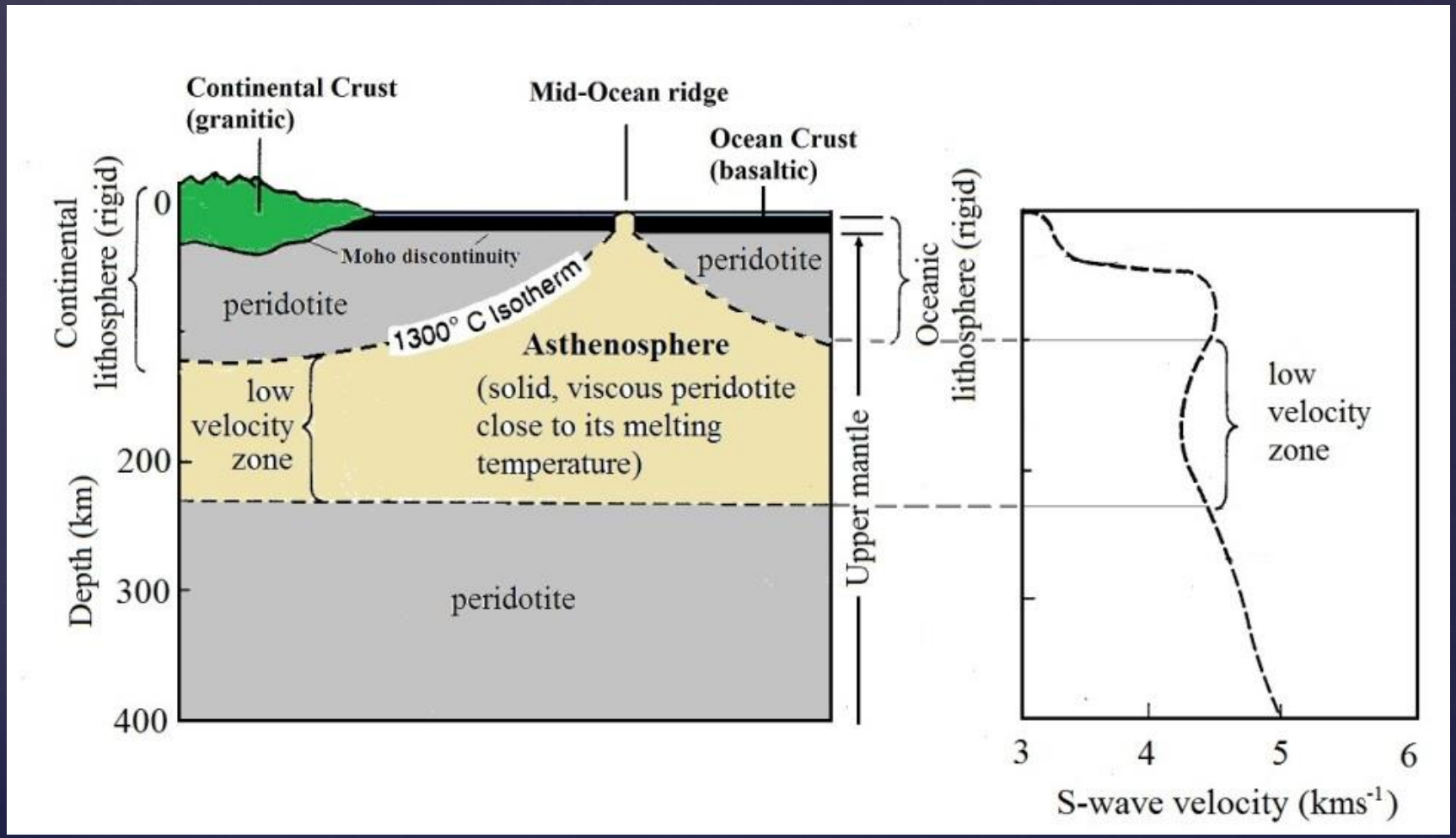
Pete Loader

What is a plate?



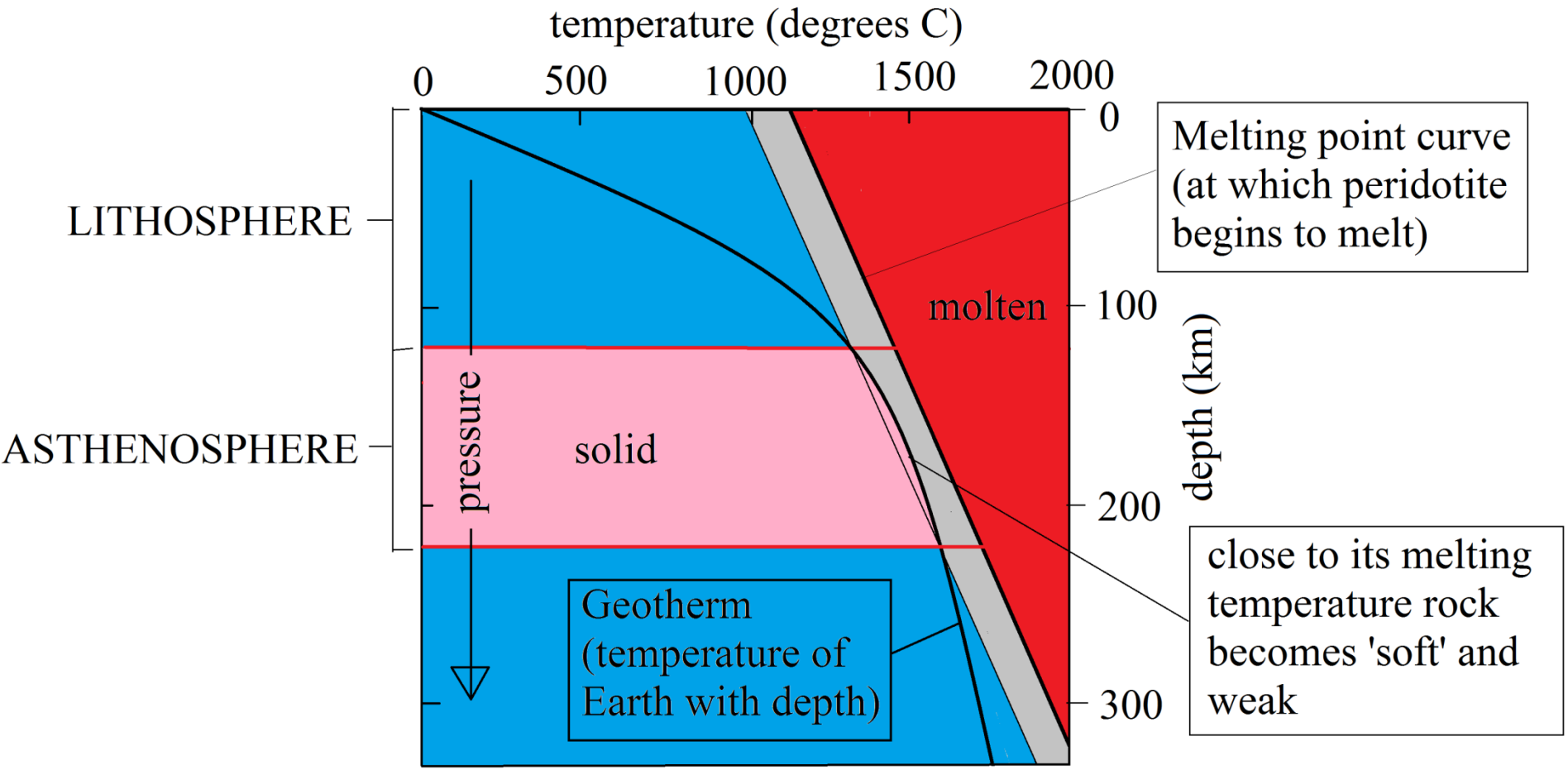
Chemical layering of the crust and upper mantle

Lithosphere v Asthenosphere

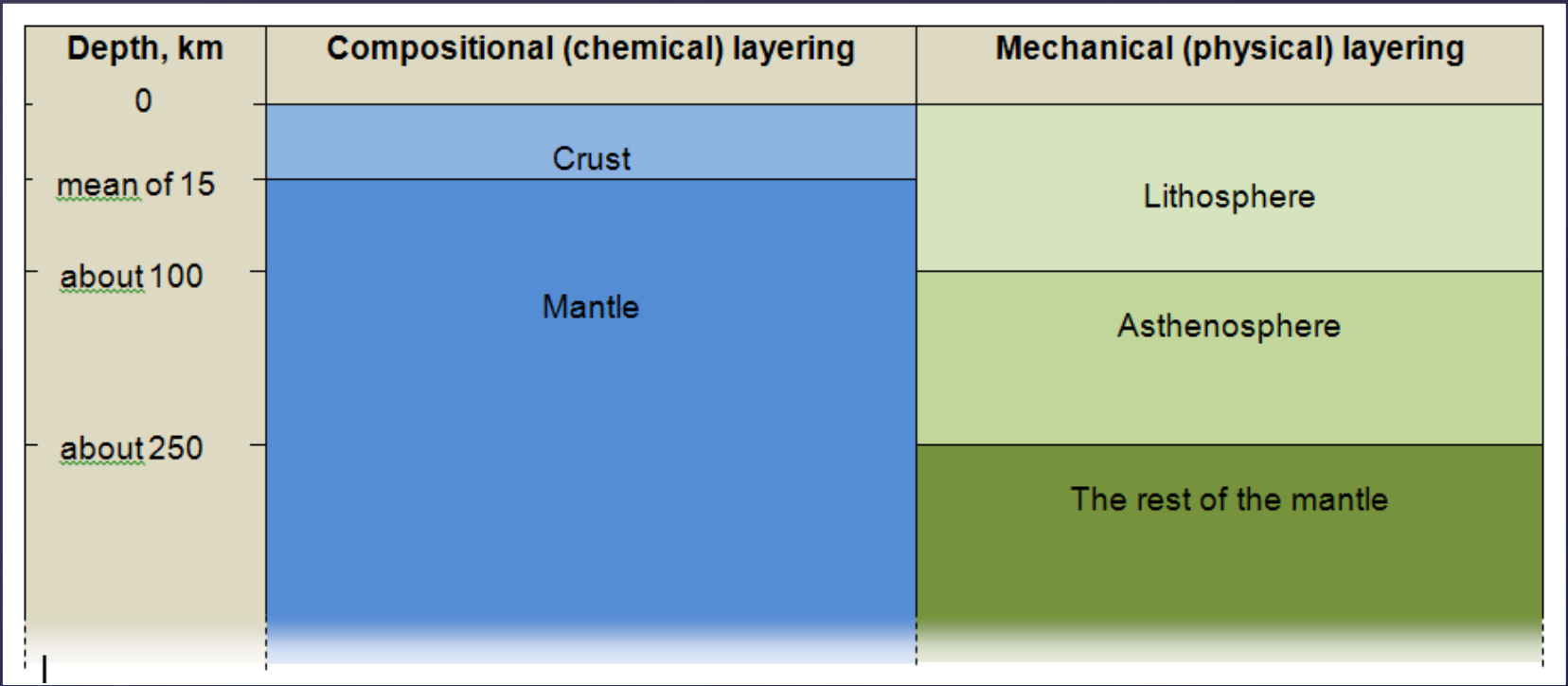


Lithosphere v Asthenosphere

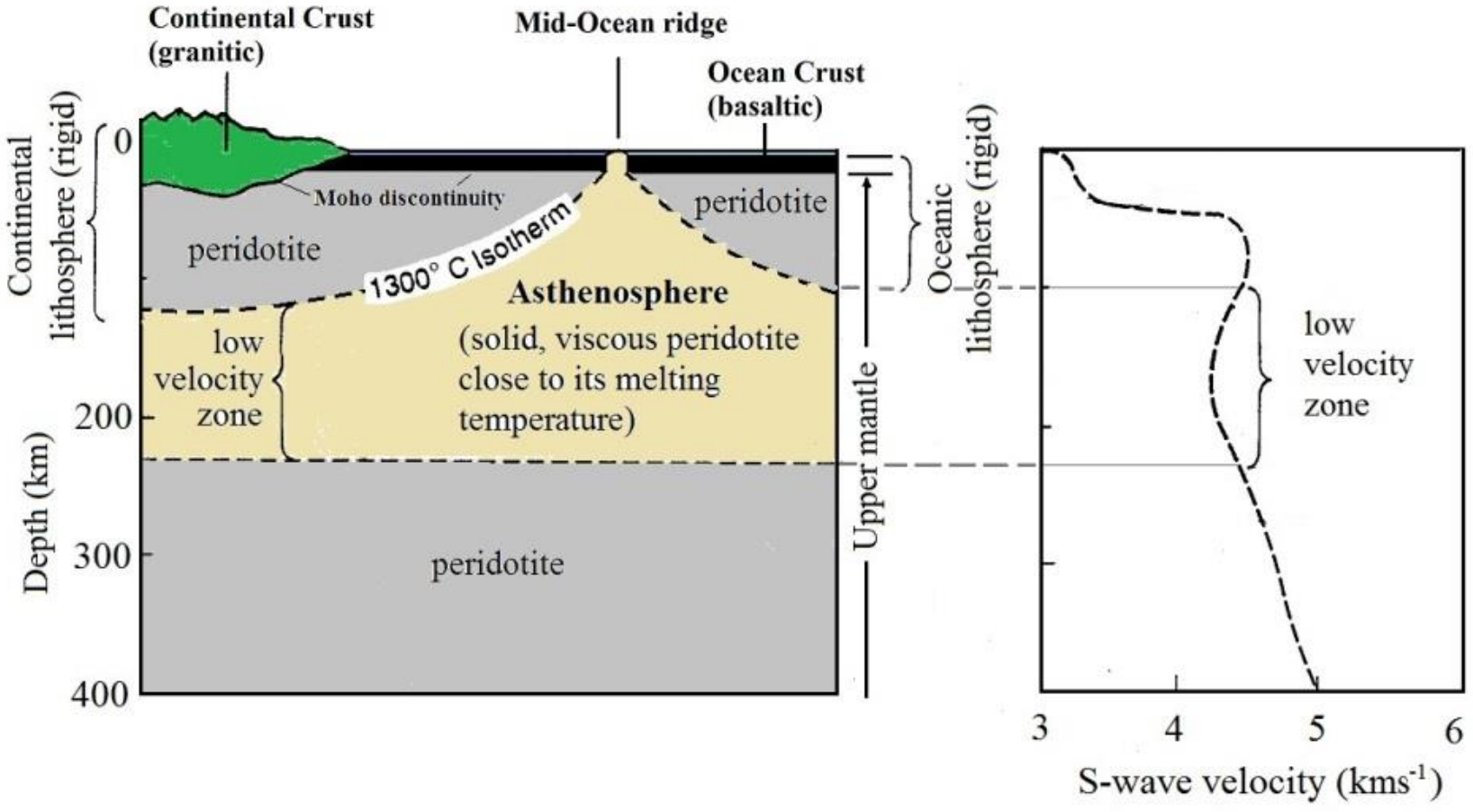
Mechanical layering of the crust and upper mantle

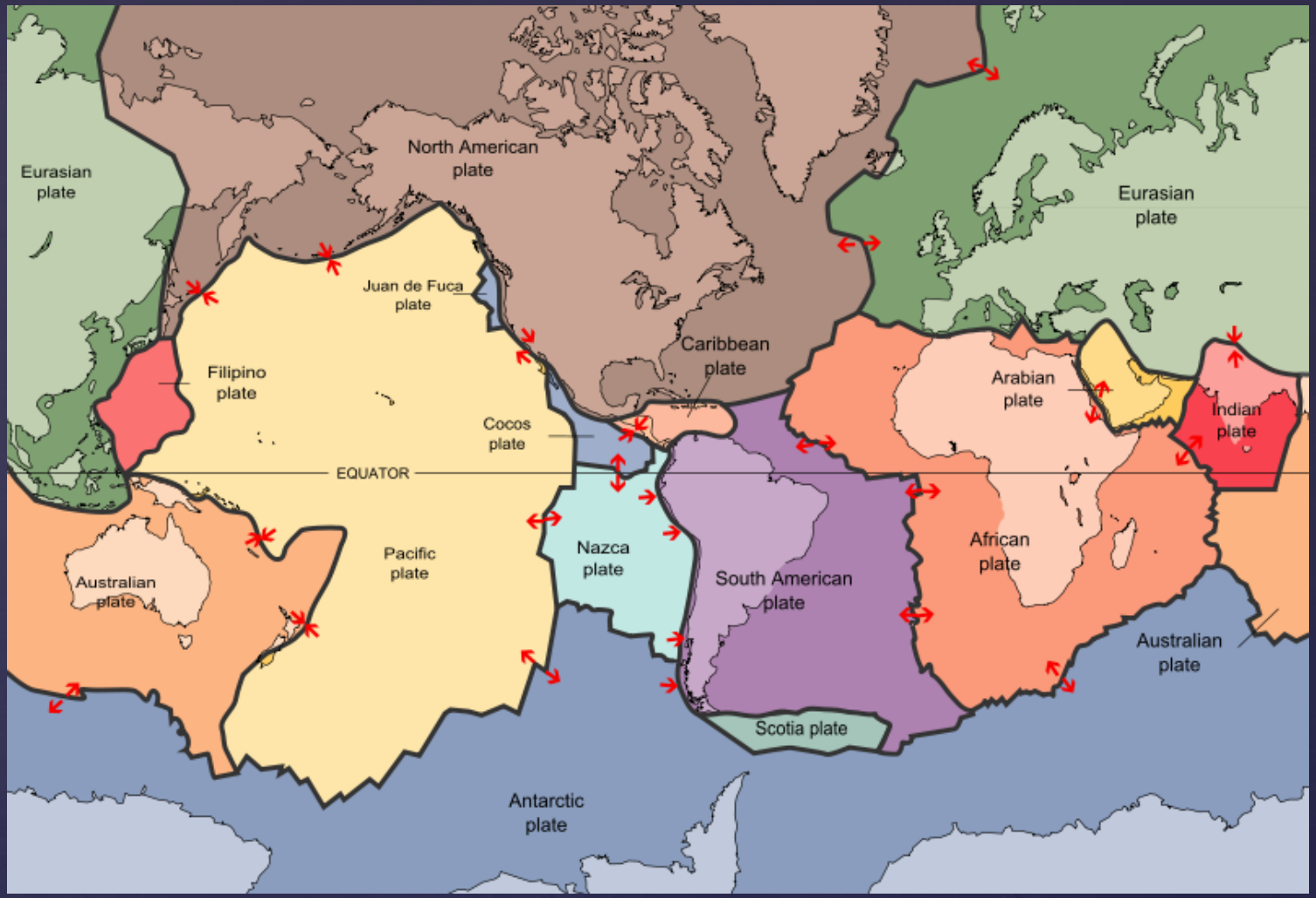


The lithosphere, asthenosphere and below:



Note. The crust has a mean thickness of 35 km beneath continents and 6 km beneath oceans giving an overall mean of about 15 km.


Continental Crust
(granitic)
Mid-Ocean ridge
Ocean Crust
(basaltic)
Continental lithosphere (rigid)
0
Moho discontinuity
peridotite
peridotite
1300° C Isotherm
Asthenosphere
(solid, viscous peridotite close to its melting temperature)
low velocity zone
200
Depth (km)
300
peridotite
400
Upper mantle
Oceanic lithosphere (rigid)
low velocity zone
3
4
5
6
S-wave velocity (kms-1)



Major Tectonic Plates

http://en.wikipedia.org/wiki/Portal:Atlas/Maps/World

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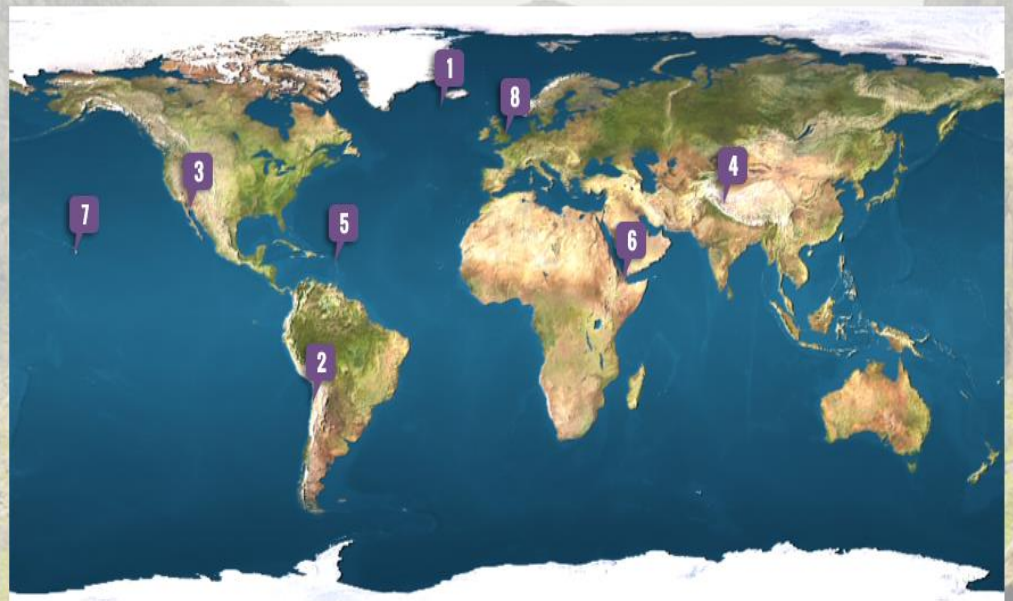
PLATE TECTONICS

PIONEERS OF PLATE TECTONICS | WHAT IS A PLATE? | PLATE MARGINS | PLATE TECTONICS OF THE UK



SHOW OR HIDE THE FOLLOWING FEATURES ON THE MAP USING THE CHECKBOXES BELOW

VOLCANO DISTRIBUTION

EARTHQUAKE DISTRIBUTION

TECTONIC PLATES

PLATE BOUNDARY TYPES
Divergent (constructive or pulling apart)
Conservative (sideways or transform)
Convergent (destructive or collision)
Direction of plate movement

HELP WITH

TEST YOUR KNOWLEDGE

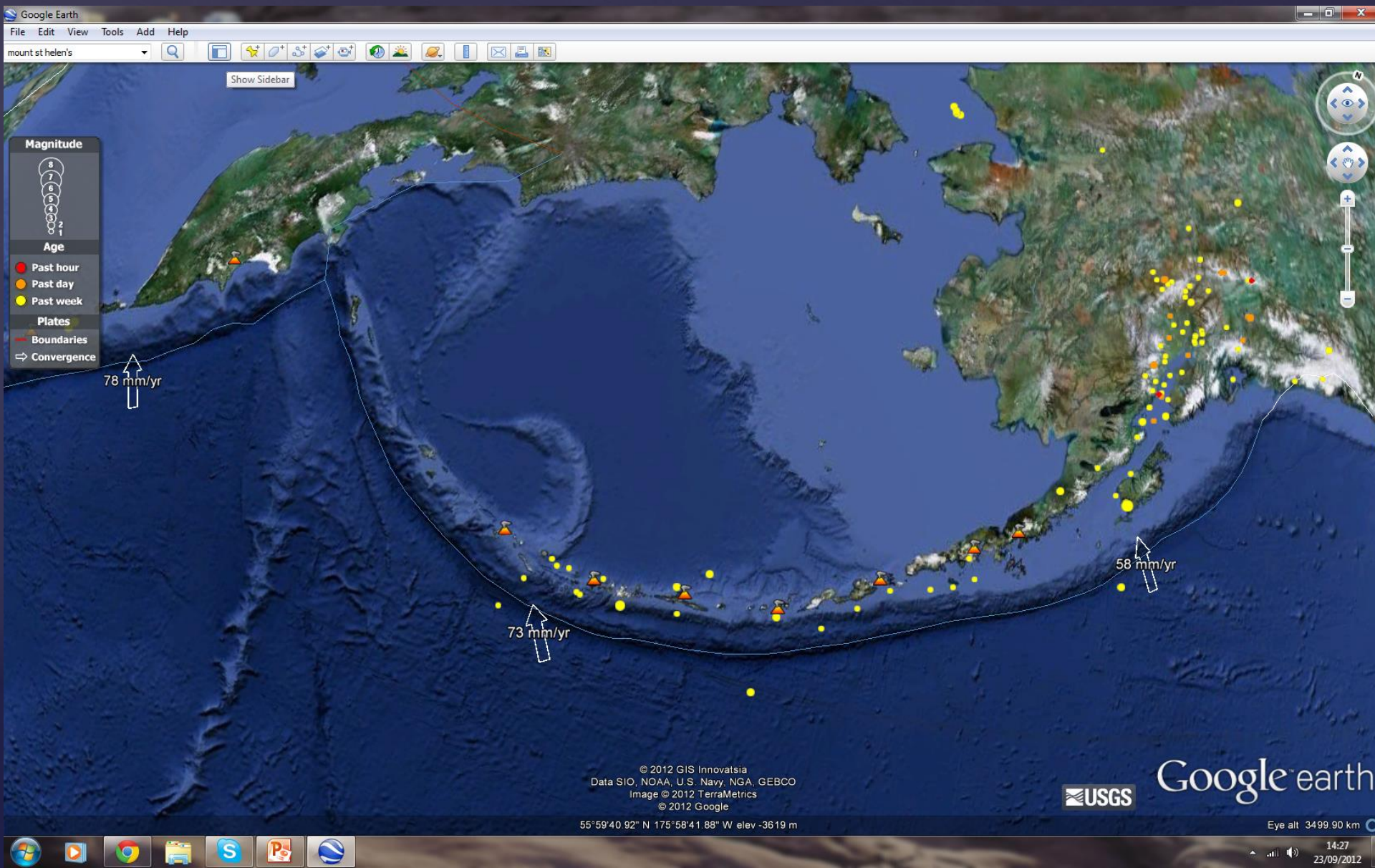
Google Tectonics

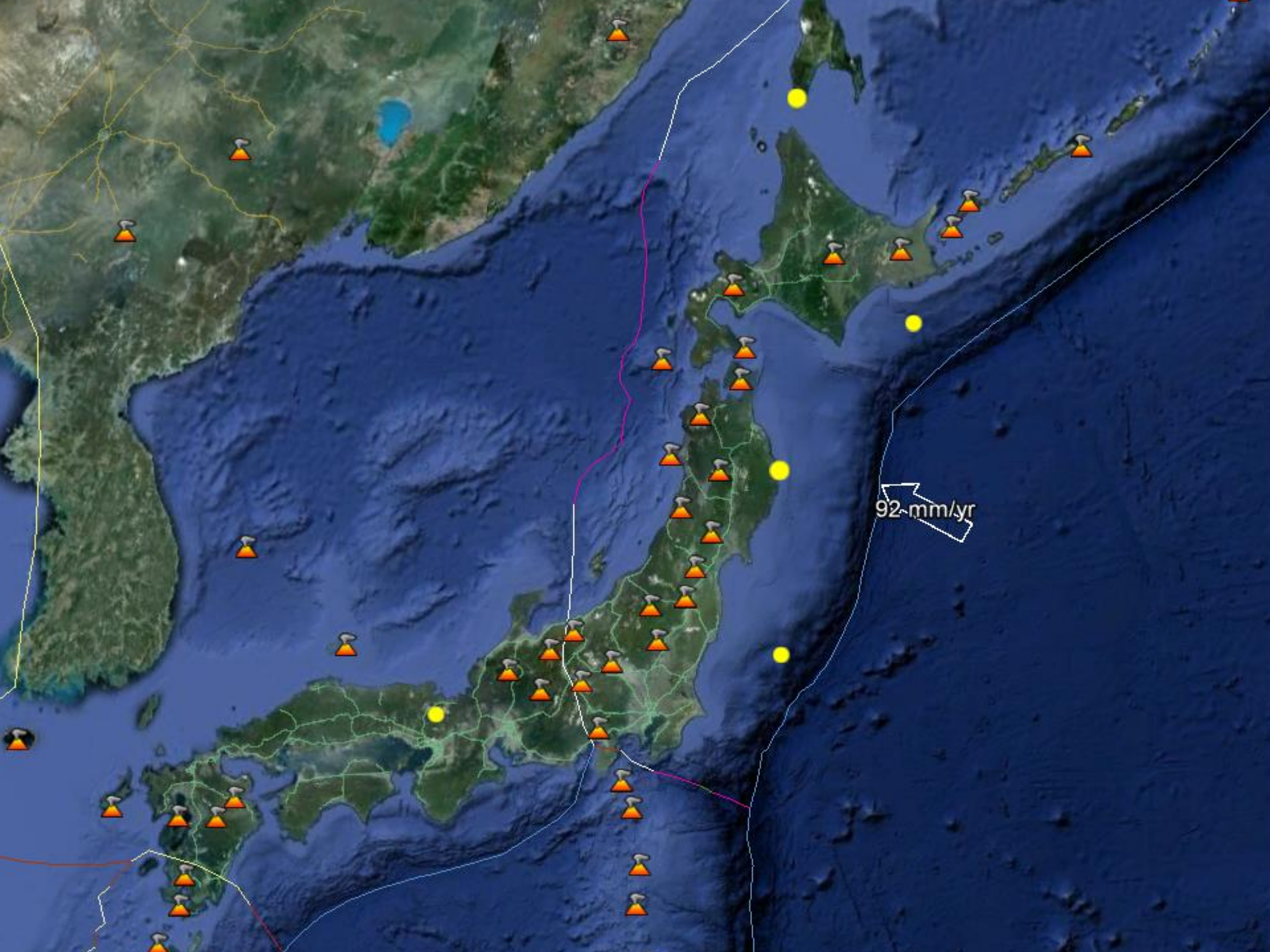
Using real time data in the classroom

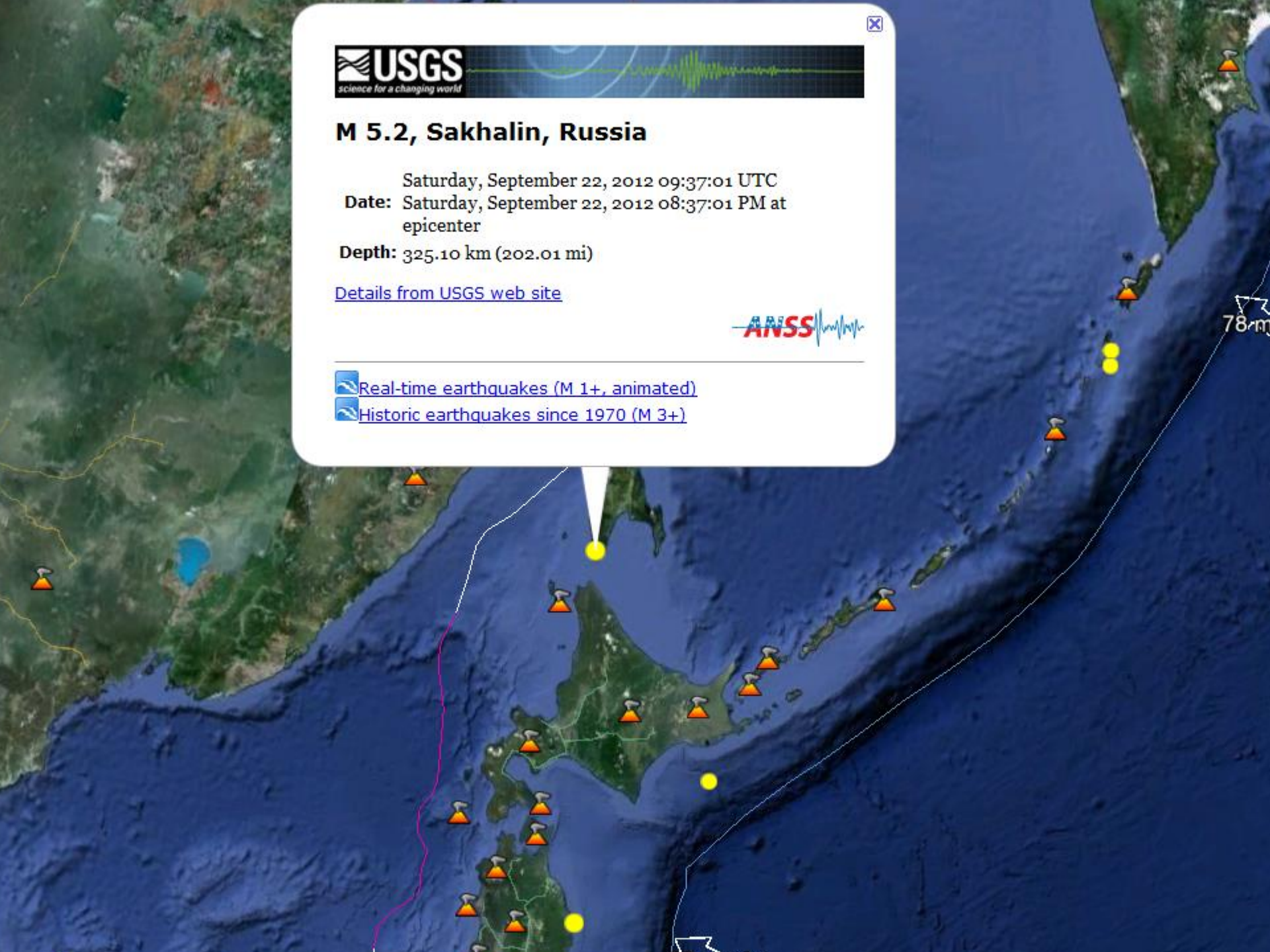
Geoscience Education Academy 25th –28th July Geological Society

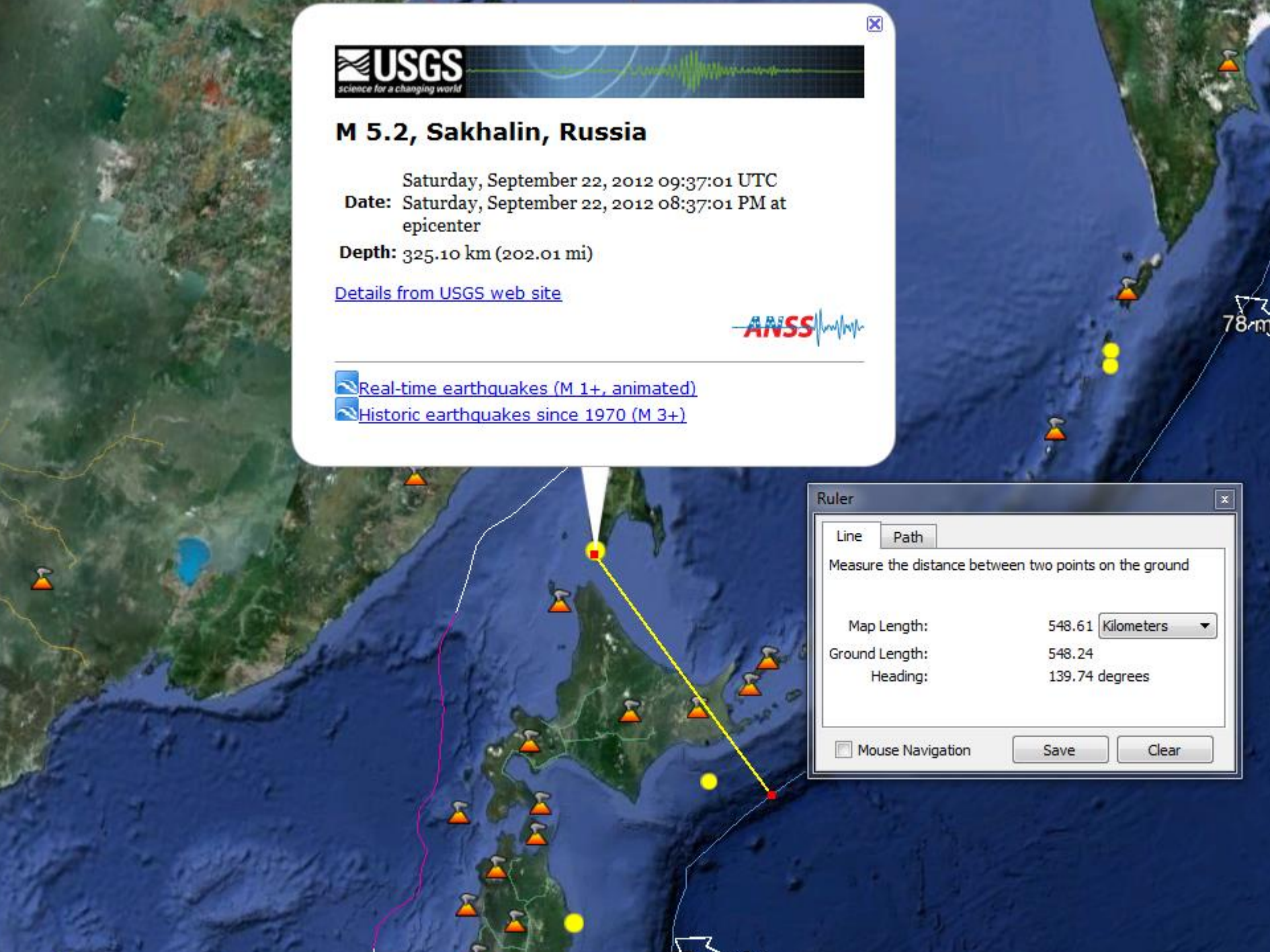
Pete Loader

Google Tectonics:
Volcanoes, Earthquakes, Plate Margins on Google Earth




92 mm/yr


USGS
science for a changing world
M 5.2, Sakhalin, Russia
Saturday, September 22, 2012 09:37:01 UTC
Date: Saturday, September 22, 2012 08:37:01 PM at epicenter
Depth: 325.10 km (202.01 mi)
Details from USGS web site
ANSS
Real-time earthquakes (M 1+, animated)
Historic earthquakes since 1970 (M 3+)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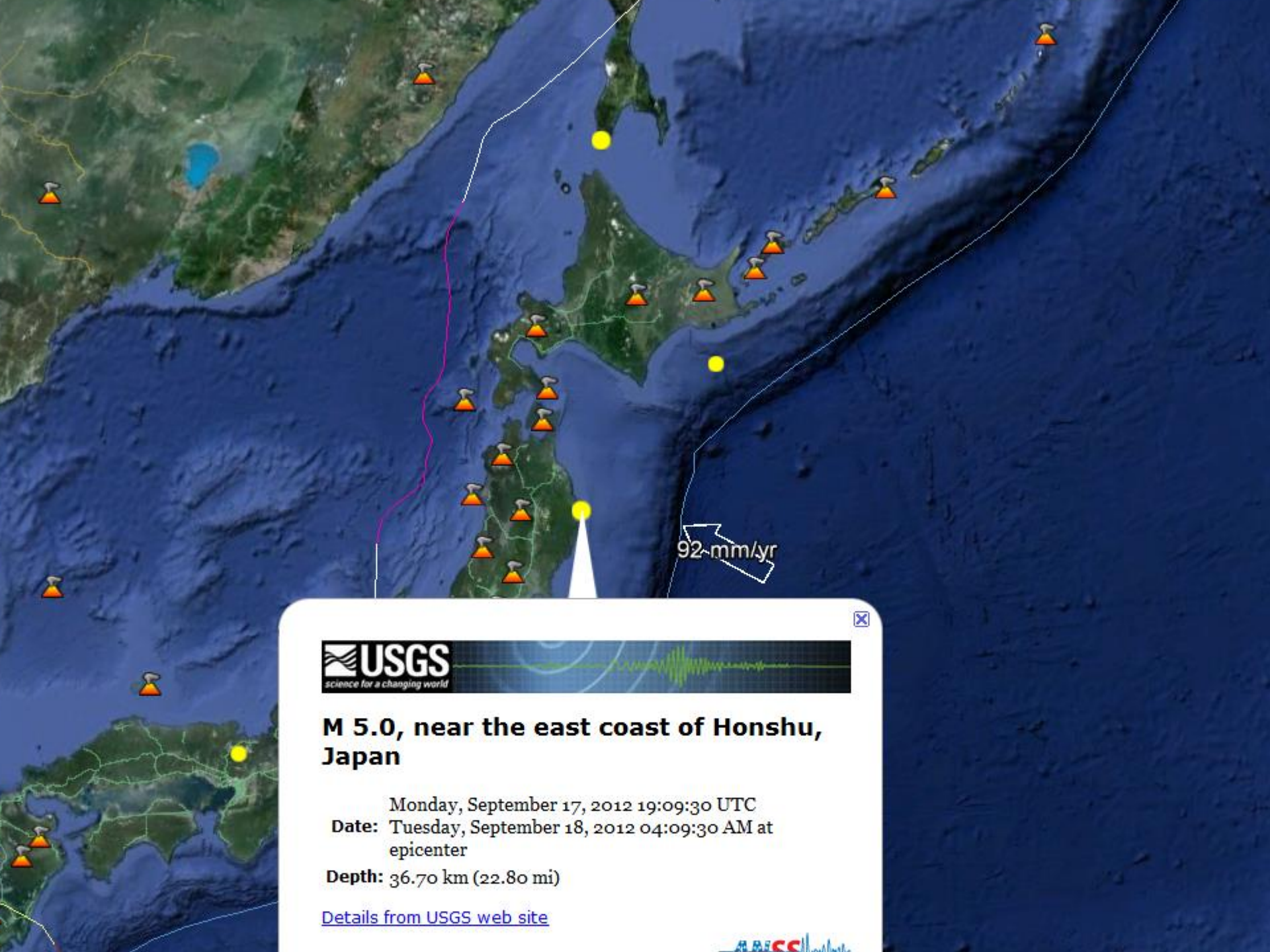
Depth: 325.10 km (202.01 mi)
Details from USGS web site
ANSS
Real-time earthquakes (M 1+, animated)
Historic earthquakes since 1970 (M 3+)
Ruler
Line
Path
Measure the distance between two points on the ground
Map Length: 548.61 Kilometers
Ground Length: 548.24
Heading: 139.74 degrees
Mouse Navigation
Save
Clear



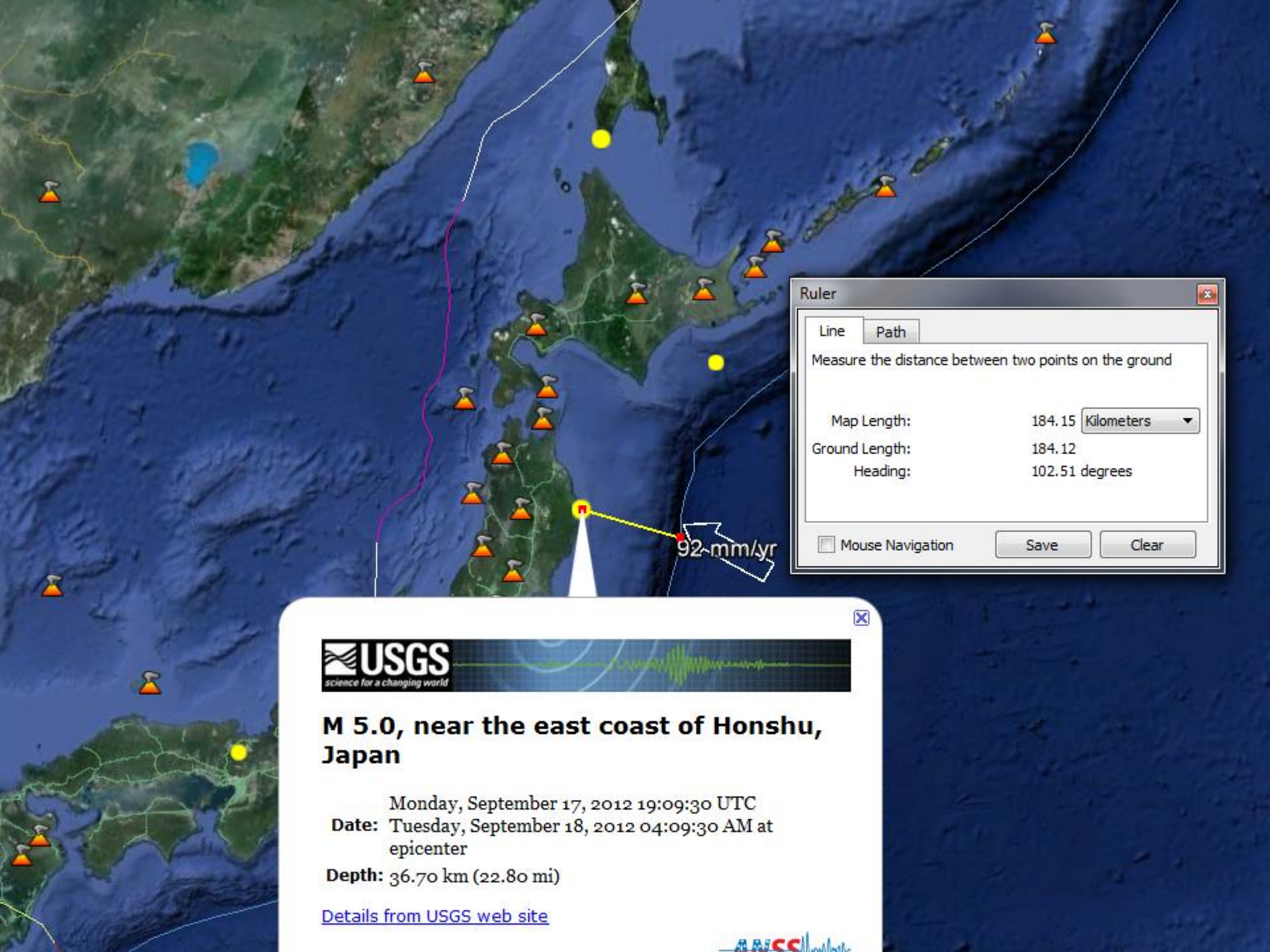
USGS
science for a changing world

M 5.0, near the east coast of Honshu, Japan

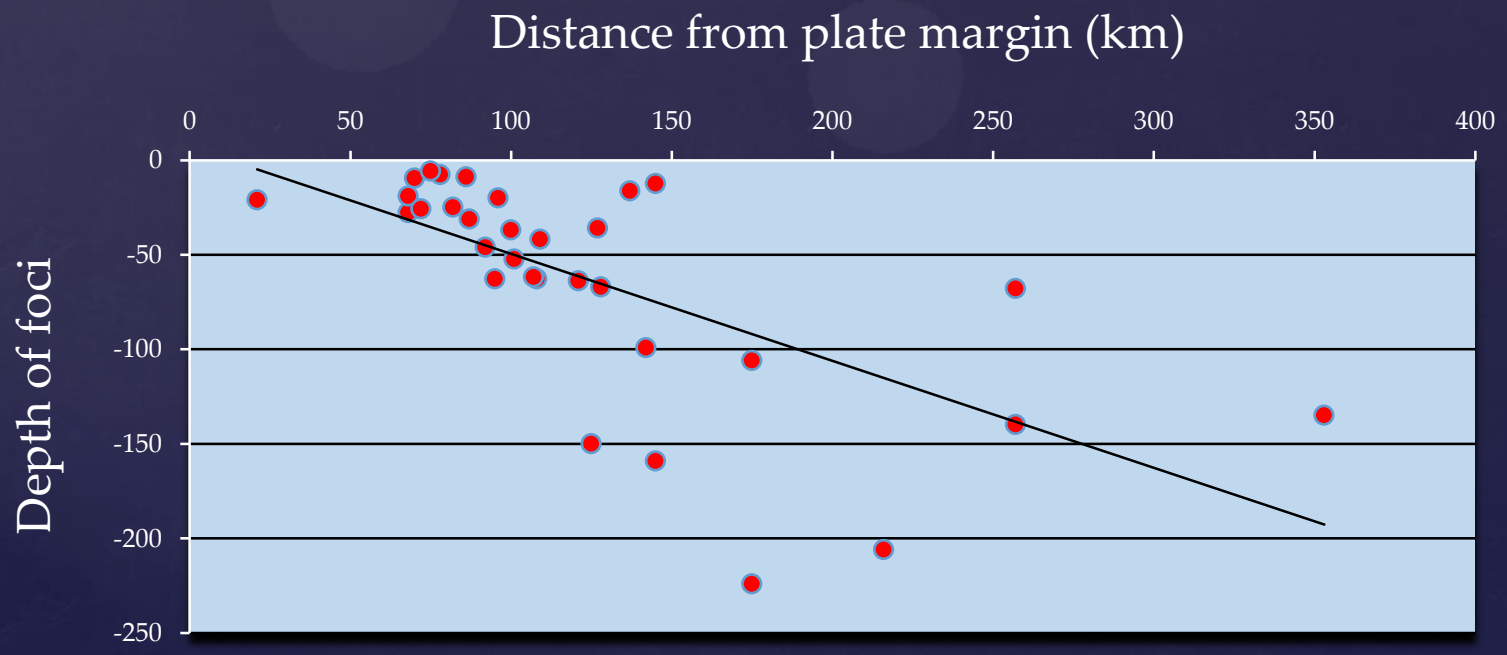
Date: Monday, September 17, 2012 19:09:30 UTC
Tuesday, September 18, 2012 04:09:30 AM at epicenter

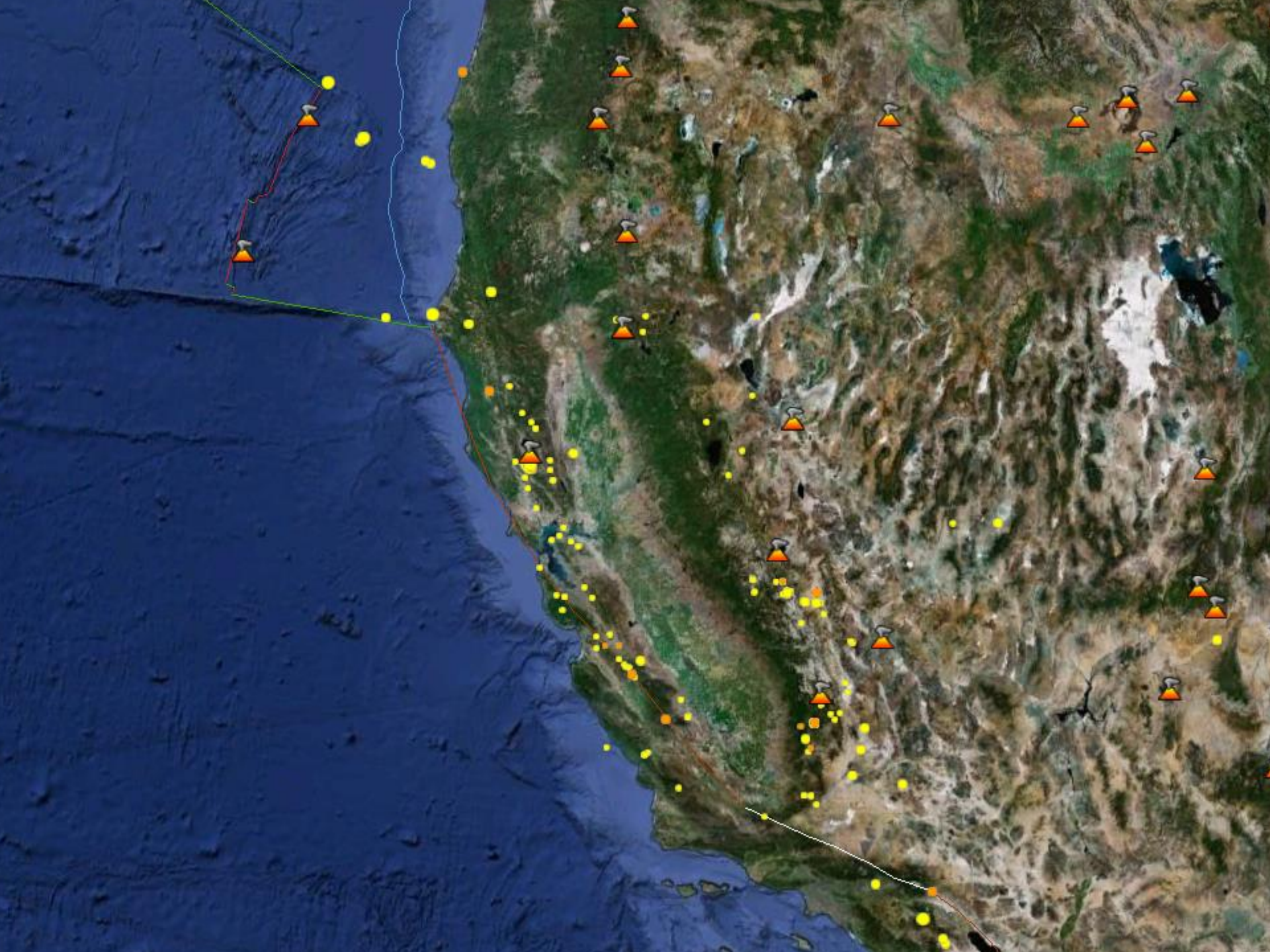
Depth: 36.70 km (22.80 mi)

Details from USGS web site


Ruler
Line
Path
Measure the distance between two points on the ground
Map Length: 184.15 Kilometers
Ground Length: 184.12
Heading: 102.51 degrees
Mouse Navigation
Save
Clear
92 mm/yr
USGS
science for a changing world
M 5.0, near the east coast of Honshu, Japan
Date: Monday, September 17, 2012 19:09:30 UTC
Tuesday, September 18, 2012 04:09:30 AM at epicenter
Depth: 36.70 km (22.80 mi)
Details from USGS web site

Sample	Location	Distance	Depth	Size
1	Aleutian	127	-35.9	4.5
2	Aleutian	108	-62.8	3.2
3	Aleutian	92	-46	1.9
4	Aleutian	68	-27.8	2.8
5	Aleutian	78	-7.6	1.5
6	Aleutian	68	-19	4.8
7	Aleutian	121	-63.7	2.6
8	Aleutian	128	-67	1.6
9	Aleutian	70	-9.4	3
10	Aleutian	75	-5.7	2.6
11	Aleutian	96	-20	2.4
12	Aleutian	353	-134.9	4.3
13	Aleutian	82	-24.9	2.1
14	Aleutian	101	-52.2	1.8
15	Aleutian	145	-12.3	3.1
16	Aleutian	175	-106	2.9
17	Aleutian	107	-61.8	2.6
18	Aleutian	109	-41.7	2.2
19	Aleutian	72	-25.7	2.5
20	Aleutian	87	-31.2	2.4
21	Aleutian	257	-139.7	3.3
22	Aleutian	86	-8.8	1.8
23	Aleutian	142	-99.2	3
24	Aleutian	21	-21	2.1
25	Aleutian	95	-62.8	1.9
26	Aleutian	100	-36.9	1.8
27	Aleutian	257	-67.9	3.1
28	Aleutian	137	-16.3	1.5
29	Aleutian	216	-206	3.1
30	Aleutian	145	-159	2.7
31	Aleutian	175	-224	3.5
32	Aleutian	125	-150	2.8





PREDICTION

What would a graph plot of the San Andreas fault look like?