

GSA Data Repository item #2012308

From:

Gobert, J., Wild, S., and Rossi, L., 2012, Testing the effects of prior coursework and gender on geoscience learning with Google Earth, *in* Whitmeyer, S.J., Bailey, J.E., De Paor, D.G., and Ornduff, T., eds., Google Earth and Virtual Visualizations in Geoscience Education and Research: Geological Society of America Special Paper 492, p. 453–468, doi:10.1130/2012.2492(35).

Appendix A: Study 1: Iceland Pre- and Post-test

Appendix B: Study 2: Tonga Pre- and Post-test

Study 1: Iceland Pre- and Post-test

NSF-TUES: Pre-post Test, November 2010

Note: Your score in this test will not affect your grade.

Study ID number: _____ **Circle one: pre / post**

Q1 What is your previous experience of the geology or geography of Iceland?

- (i) I have no significant previous study experience
- (ii) I did a class project about the geology or geography of Iceland
- (iii) I participated in a real field trip or a holiday visit
- (iv) I am Icelandic or lived in Iceland for an extended period

Q2 Where is Iceland relative to the Arctic Circle?

- (i) Iceland lies entirely south of the Arctic Circle
- (ii) Iceland lies entirely north of the Arctic Circle
- (iii) The Arctic Circle touches the northern coast or offshore islands
- (iv) The Arctic Circle touches the southern coast or offshore islands
- (v) The Arctic Circle goes through the center of Iceland

Q3 Trace the location of Iceland in pencil or felt pen on this map:



Q4 If you camped out in northern Iceland in mid-summer and looked at the northern ocean horizon close to midnight, what would you expect to see, weather permitting?

- (i) Continuous sunshine
- (ii) Continuous darkness
- (iii) Darkness except for a brief period of twilight
- (iv) Sunshine except for a brief period of twilight

Q5 If you camped out in southern Iceland in mid-winter and looked at the southern ocean horizon close to midday, what would you expect to see, weather permitting?

- (i) Continuous sunshine
- (ii) Continuous darkness
- (iii) Darkness except for a brief period of twilight
- (iv) Sunshine except for a brief period of twilight

Q6 Outside of city and town limits, Iceland is:

- (i) Predominantly forested in fir trees
- (ii) Predominantly industrialized
- (iii) Predominantly farmed for cereal crops
- (iii) Predominantly undeveloped land

Q7 How much of Iceland is covered in ice all year round?

- (i) about 99%
- (ii) more than 75%
- (iii) about 50%
- (iv) less than 25%
- (iv) about 1%

Q8 What is the principal rock type seen in Iceland?

- (i) limestone
- (ii) basalt
- (iii) granite
- (iv) marble

Q9 Which best describes the geological origins of Iceland?

- (i) Iceland sits on top of both a deep mantle plume and a divergent plate boundary
- (ii) Iceland is a fragment of continental crust, like Britain and Ireland, that detached from the European margin during North Atlantic spreading
- (iii) Iceland is a volcanic island arc forming above a subduction zone
- (iv) Iceland is a huge floating mass of ice drifting very slowly away from Greenland

Q9 What does a glacier look like?

- (i) A river of rapidly flowing ice
- (ii) a mass of pure white ice
- (iii) a mixture of ice with lots of dirty rock

Study 2: Tonga Pre- and Post-test

NSF-TUES: Pre-post Test, November 2010

Note: Your score in this test will not affect your grade.

Study ID number: _____ Circle one: pre / post

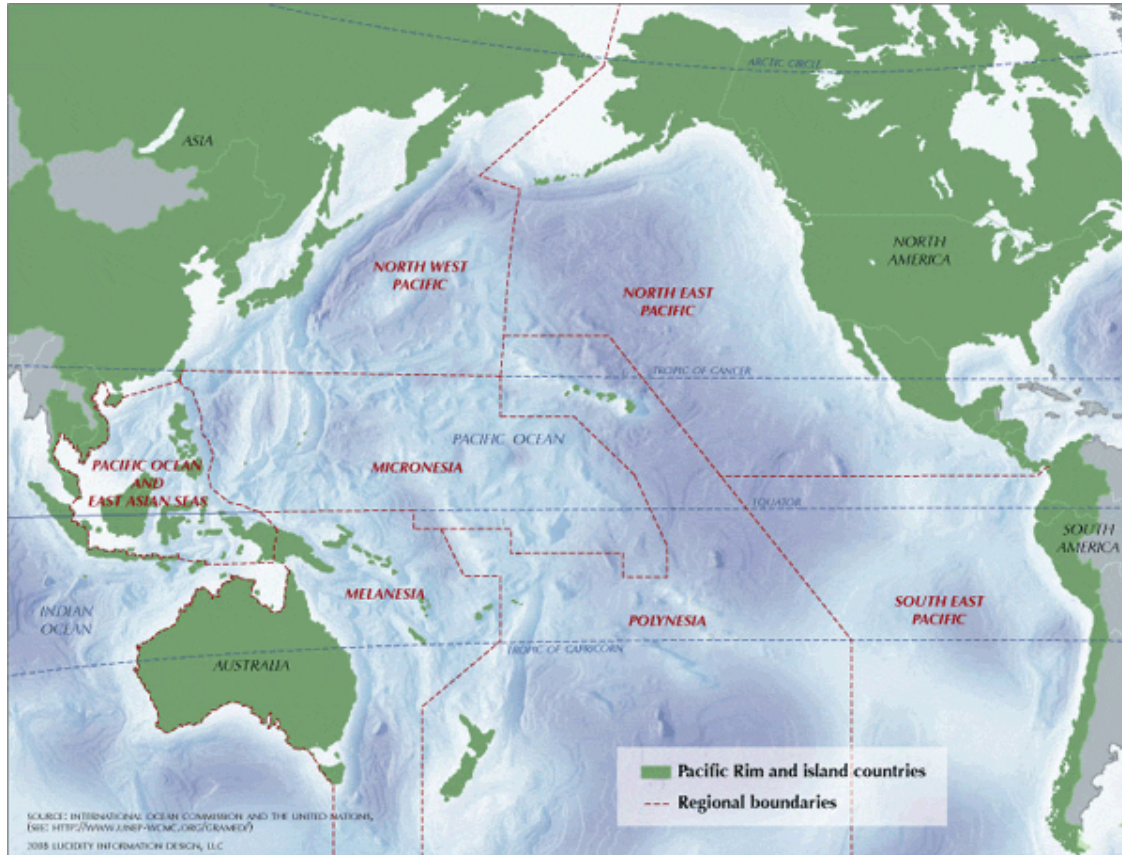
Q1 What is your previous experience of the geology or geography of American-Samoa/Tonga?

- (i) I have no significant previous study experience
- (ii) I did a class project about the geology or geography of American-Samoa/Tonga
- (iii) I participated in a real field trip or a holiday visit
- (iv) I am Native to or lived in the American-Samoa/Tonga region for an extended period

Q2 Where is American-Samoa/Tonga region relative to Equator?

- (i) American-Samoa/Tonga region lies entirely south of the Tropic of Capricorn
- (ii) American-Samoa/Tonga region lies entirely north of the Tropic of Capricorn
- (iii) The Tropic of Capricorn touches the northern part of the American-Samoa/Tonga
- (iv) The Tropic of Capricorn touches the southern part of the American-Samoa/Tonga
- (v) The Tropic of Capricorn goes through the center of the American-Samoa/Tonga region

Q3 Circle the location of the Samoa-Tonga region in pencil or felt pen on this map:

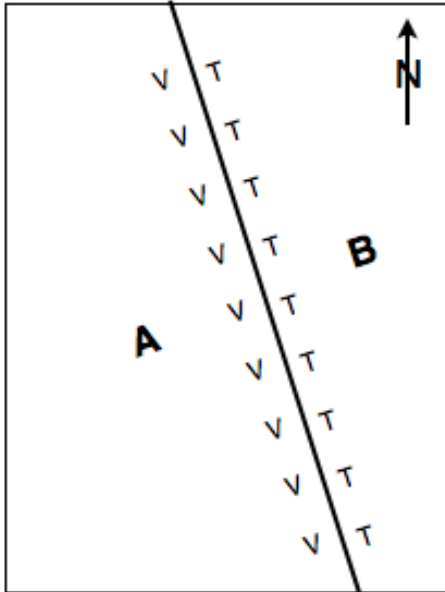


Q 4 Study this sketch map where:

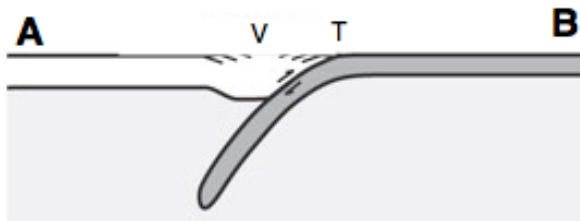
A, B = two converging tectonic plates.

V = line of volcanic islands,

T = line of ocean trench

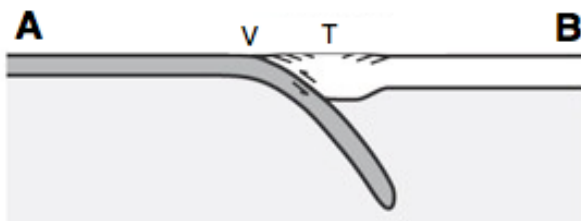


Based on the map view above which cross section below describes the relative plate motion between A and B? Circle cross section (i) or cross section (ii).



Above: cross section (i) A is moving east and subducting under B

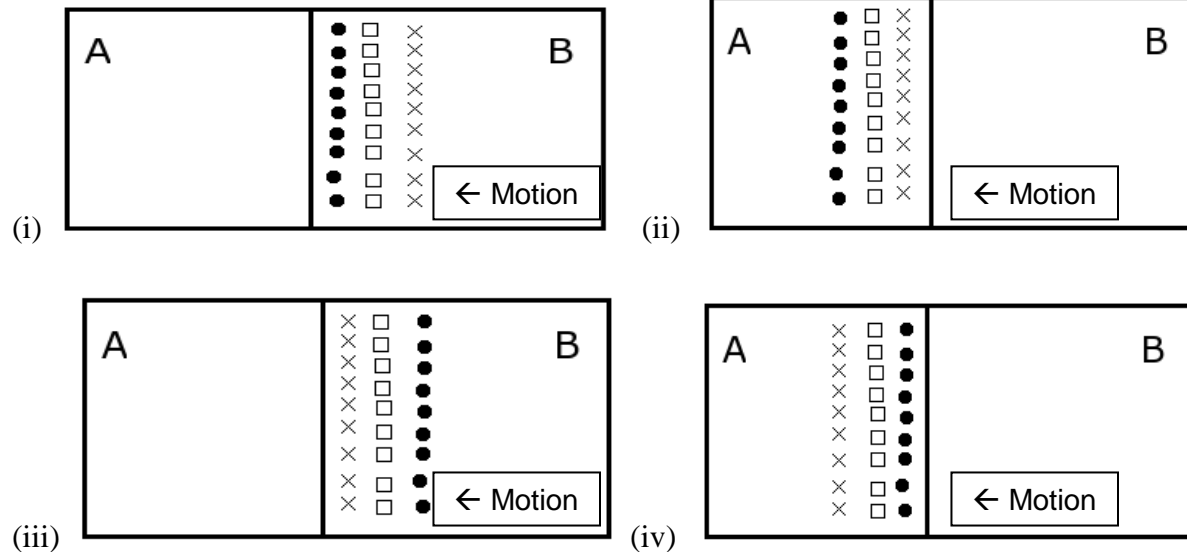
Below: cross section (ii) B is moving west and subducting under A



Q5 Which of the following pictures shows the earthquake pattern for the American-Samoa/Tonga region, where **A** represents the Australian Plate and **B** is the Pacific Plate. Plate B moves under Plate A.

With

- being deep earthquakes;
- being medium depth earthquakes; and
- X representing shallow earthquakes



Q6 The Tonga Trench's motion relative to the Pacific Plate is

- (i) Moves forward with the Pacific Plate
- (ii) Stationary (trench does not move)
- (iii) Moves against Plate Motion
- (iv) There is no such thing as the Tonga Trench

Q7 Which volcanic arc is closer to a trench?

- (i) Active Arc closer and Dormant arc farther
- (ii) Dormant Arc closer and Active Arc farther

Q8 A Convergent Plate Boundary is described as

- (i) two tectonic plates slide by each other side by side
- (ii) two tectonic plates move apart from each other
- (iii) two tectonic plates moving together but they slam into each other
- (iv) two tectonic plates moving together but one goes under the other

Q9 Put the two events in the correct order

- (i) trench rollback occurs then spreading ridge forms _____
- (ii) spreading ridge forms and then trench rollback occurs _____

Q10 Where is new ocean crust formed?

- (i) Trench
- (ii) Volcanic Arc
- (iii) Spreading Ridge
- (iv) Island Chains

Q11 Put the events in the correct order, using 1 for the first and 4 for the last

- Tear Point Forms _____
- Spreading Ridge Forms _____
- Trench Rollback _____
- Trench Forms _____