

BIBLICAL THEOLOGY OF MISSION

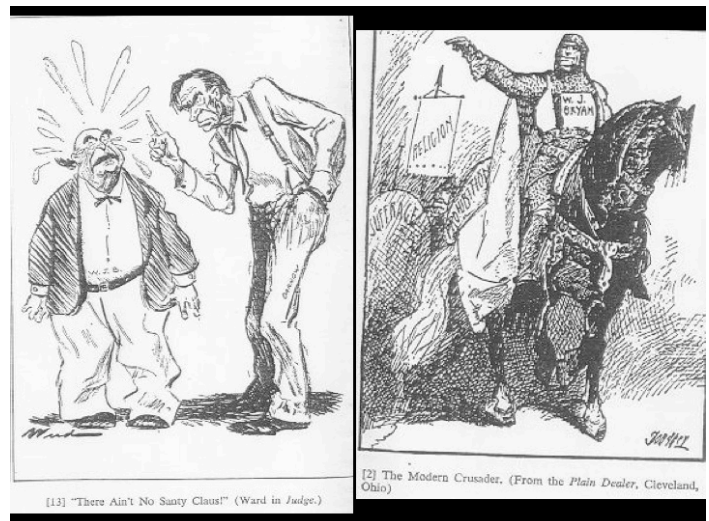
Class 1b: Earth's Global Flood

John Harrigan

THE SLIDES RELATED TO THIS TEACHING ARE PLACED THROUGHOUT THESE NOTES FOR EASIER INTEGRATION OF THE MATERIAL BEING SHARED.

I. DENIAL > THE SCOPES “MONKEY TRIAL” (1925)

- A. During the late 19th and early 20th centuries, the general response of Bible believing Christians to evolution was one of *denial*. Though paleontologists were unearthing thousands of fossilized dinosaur bones, many evangelicals refused to believe they were even real. This denial of reality and lack of constructive alternatives to Darwinism and old earth geology led to a mounting cultural condescension toward “fundamentalists,” which came to a head during the Scopes Trial.
- B. “The Trial of the Century” – John T. Scopes, a 24 year old football coach in Dayton, TN, taught George W. Hunter’s chapter on evolution in *Civic Biology* (1914) while substituting for the regular biology teacher in April 1925. This seemingly insignificant act put the young man at the center of one of the greatest trials in America’s history.
- C. Testing the Butler Act – At issue was the Butler Act passed in early 1925 by the Tennessee General Assembly forbidding the teaching of evolution in public schools. The ACLU had offered to defend anyone accused of teaching the theory of evolution in defiance of this law. George Rappelyea, who managed a number of local mines, convinced a group of businessmen in Dayton, TN, then a town of 1,800, that the controversy of such a trial would put Dayton on the map. With their agreement, he called in his friend, John Scopes.
- D. Eight Day Trial
1. The ACLU called on Clarence Darrow, a staunch agnostic, to defend Scopes, while William Jennings Bryan, a lawyer and three-time Democratic presidential candidate, was persuaded to prosecute Scopes. Darrow’s strategy was to humiliate the creationists by bringing in expert evolutionists to ridicule the intellectual validity of creationism. At one point he was even found to be in contempt of court for making sarcastic and insulting remarks to Judge Raulston.
 2. By the latter stages of the trial, Darrow



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had resorted to an all out personal attack on Bryan, calling him to the stand as an expert witness on the seventh day of the trial in an effort to demonstrate that belief in the historicity of the Bible and its many accounts of miracles was unreasonable.

3. The celebrated “duel in the shade” was a very heated debate with Darrow telling Bryan, “You insult every man of science and learning in the world because he does not believe in your fool religion.”¹ Bryan, correctly gauging the effect the session was having, snapped back that Darrow’s only purpose was “to cast ridicule on everybody who believes in the Bible.” Darrow, with equal vehemence, retorted, “We have the purpose of preventing bigots and ignoramuses from controlling the education of the United States.” In the end, Scopes was found guilty on July 21 and ordered to pay a US\$100 fine, which Bryan offered to pay.

E. Publicity

1. The trial was covered by journalists from around the world with over hundred newspaper reporters from every part of the United States. Twenty two telegraphers sent out 165,000 words a day on the trial. It was also the first U.S. trial to be broadcast on national radio. H. L. Mencken’s trial reports were heavily influential and slanted against the prosecution and the jury, which was “unanimously hot for Genesis.”
2. It was Mencken who labeled the trial the “Monkey Trial” of “the infidel Scopes.” He mocked the town’s inhabitants as “yokels” and “morons.” He called Bryan a “buffoon” and his speeches “theologic bilge.” In contrast, he called the defense “eloquent” and “magnificent.” Most historians recognize that Mencken’s trial reports have played a significant role historically in turning public opinion against creationism.
3. Many books were subsequently written about the trial in an effort to ridicule the “anti-evolution” movement. Likewise, the widely watched fictitious play/film, *Inherit the Wind* (1955/1960), was later produced to promote evolutionism in public education.

II. GEORGE MCCREADY PRICE (1870-1963)

- A. Born in New Brunswick, Canada, Price as a youth joined the Seventh-day Adventists, a small religious group founded and supposedly still led by a prophetess named Ellen G. White (1827-1915). In one of her visions, White claimed to have actually witnessed the Creation, which occurred in a literal week. She also taught that Noah’s flood had sculpted the surface of the earth, burying the plants and animals found in the fossil record, and that the Christian Sabbath should be celebrated on Saturday rather than Sunday as a memorial of a six-day creation.
- B. Price went on to hold professorships at Loma Linda University, Pacific Union College, Union College, Stanborough College, and Emmanuel Missionary College (now Andrews University), and he became a leading advocate for the scientific defense and logical acceptance of a

George
McCready Price
(1870–1963)

The New Geology (1923)



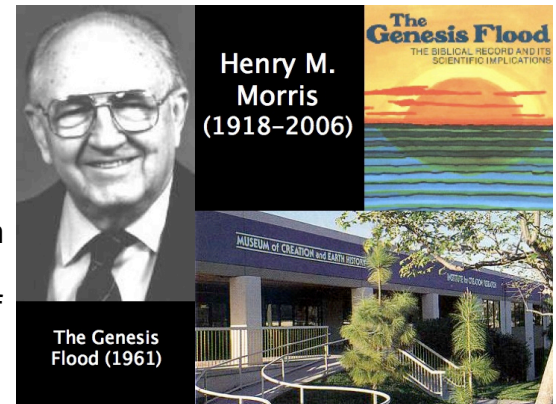
¹ All quotes from the well documented Wikipedia article, “Scopes Trial,” available from http://en.wikipedia.org/wiki/Scopes_Trial.

geologically young earth. His work was heavily influential upon William Jennings Bryan and was later picked up by Henry Morris.

- C. Price laid out the basics of his “flood geology” in *The Fundamentals of Geology* (1913), though his most notable work, *The New Geology* (1923), a 726 page college textbook, contains numerous arguments that refute key elements of Darwin’s theory of evolution, several of which remain popular in creationist circles today.

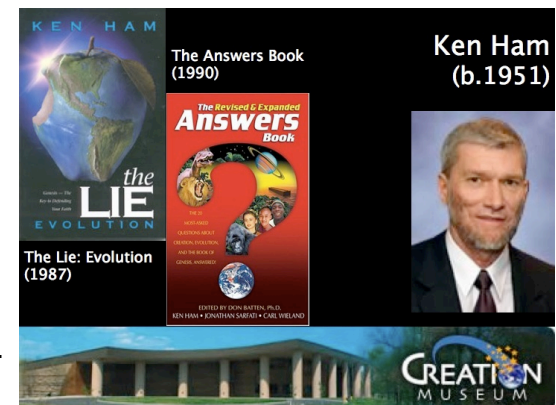
III. HENRY M. MORRIS (1918-2006)

- A. Morris grew up in Texas during the 1920’s and 1930’s as a religiously indifferent youth. He graduated from Rice University with a bachelor’s degree in civil engineering in 1939, and shortly afterwards he became a Christian. His belief in the Bible drove him to question the theistic evolution of his youth, and after reading Price’s book, *The New Geology* (1923), he gave himself to the promotion of “flood geology.”
- B. Morris spent the next two decades as a member of the civil engineering faculty at four different universities before taking a job as the head of the department at Virginia Polytechnic Institute in 1959. In 1961, Morris partnered with an Old Testament scholar, John C. Whitcomb, Jr., and published *The Genesis Flood*, an enormously influential book that did more than anything else to popularize Price’s model of earth history among evangelical Christians.
- C. Two years after the appearance of *The Genesis Flood*, Morris joined nine other like-minded scientists in forming the *Creation Research Society*, dedicated to the propagation of young-earth creationism and the elimination of the day-age and gap interpretations of Genesis 1. In 1970, Morris gave up a professorship in civil engineering at Virginia Polytechnic Institute and moved to San Diego to help establish a creationist center, which in 1972 became the Institute for Creation Research (ICR). During the last quarter of the twentieth century the Morris-led ICR has served as the epicenter of creation science.



IV. KEN HAM (B. 1951)

- A. Ham grew up in Queensland, Australia, and after completing a Bachelor’s degree in Applied Science and a Masters in Education, he taught science in the Queensland public high schools. After hearing a teacher from ICR, he co-founded with his friend Carl Wieland the Creation Science Foundation of Australia, which later became Answers in Genesis (AiG). Ham moved to the US in 1987 and worked for ICR until 1993. Then, he moved to Cincinnati in 1994 to establish the ministry center for AiG.
- B. Ham’s book *The Lie: Evolution* (1987) was one of the first to emphasize a *presuppositional approach* (vs. evidentialist) to creationist apologetics. That is, instead of emphasizing

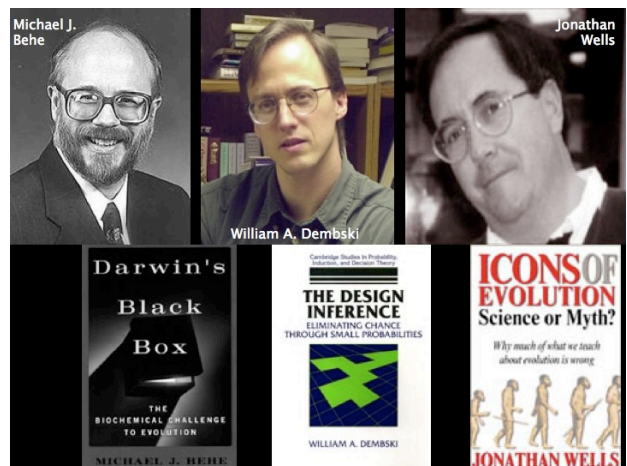
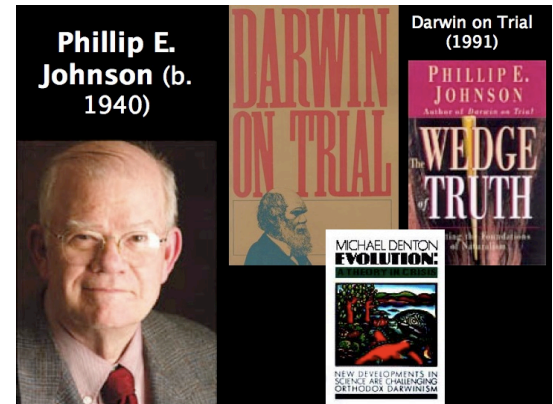


arguments concerning evidence for or against creation and evolution, Ham advocated pointing out the assumptions behind the interpretations of this evidence.

V. PHILIP E. JOHNSON (B. 1940)

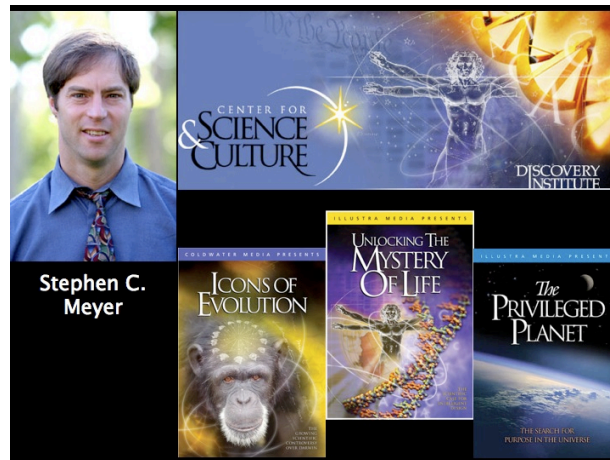
- A. Johnson was born in Aurora, Illinois, and received a B.A. in English Literature from Harvard in 1961. He studied law at the University of Chicago and served as a law clerk for Chief Justice, Earl Warren. He is an emeritus professor of law at Boalt School of Law at the University of California at Berkley, where he served on the active faculty from 1967-2000.
- B. *Evolution: A Theory in Crisis* (1985) by Michael Denton is cited by Johnson as having convinced him of the problems with the theory of evolution, the scientific method, and its epistemological underpinnings. This set the foundation for Johnson to go on and thoroughly question the naturalistic presuppositions of evolutionism in his 1991 book, *Darwin on Trial*. In it he popularized the term "Intelligent Design," and thus he is considered the father of the modern intelligent design movement. Intelligent design argues that certain features of the universe and of living things are best explained by an intelligent cause, not a naturalistic process such as natural selection which only creates the *illusion* of design.
- C. Stephen C. Meyer – The co-founder and Director of the Center for Science and Culture (CSC) at the Discovery Institute, Meyer received a degree in geology from Whitworth College in 1980 and a Ph.D. in the History and Philosophy of Science from the University of Cambridge in 1991. The CSC was founded in 1996 by the Discovery Institute with funding provided by Howard Ahmanson, Jr. (whose son Meyer tutored), the MacLellan Foundation, and others.
- D. The CSC has more than 40 Fellows, including biologists, biochemists, chemists, physicists, philosophers, historians of science, and public policy and legal experts, many of whom also have affiliations with colleges and universities. A few of the prominent Fellows include:

1. Michael J. Behe – Professor of Biochemistry at Lehigh University, Behe graduated from Drexel University in 1974 with a B.S. in Chemistry, did his graduate studies in Biochemistry at the University of Pennsylvania in 1978, and did postdoctoral work on DNA structure at the National Institutes of Health. He taught at Queens College until moving to Lehigh University in 1985. Behe's major work, *Darwin's Black Box: The Biochemical Challenge to Evolution* (1996), argues that many systems in nature are "irreducibly complex," such as the bacterial flagellum of *E. coli*, the blood clotting cascade, cilia, and the adaptive immune system. Such systems are



“composed of several interacting parts that contribute to the basic function, and where the removal of any one of the parts causes the system to effectively cease functioning.”²

2. William A. Dembski – A mathematician and a philosopher, Dembski graduated from the University of Illinois at Chicago with a B.A. in psychology, an M.S. in statistics, and a Ph.D. in philosophy. He also received a Ph.D. in Mathematics from the University of Chicago in 1988 and a Master of Divinity from Princeton Theological Seminary in 1996. In his major work, *The Design Inference: Eliminating Chance through Small Probabilities* (1998), he argues that the extraordinary diversity of life was statistically unlikely to have been produced by natural selection, coining the phrase “specified complexity.”
3. Jonathan Wells – After graduating from Unification Theological Seminary in 1978, Wells earned two doctorates—one in theology at Yale University and the other in Molecular and Cell Biology at the University of California at Berkeley. Wells’ major work, *Icons of Evolution* (2000), questions and dissects 10 case studies that are used in almost every public education textbook to support evolutionism (**these videos will be highlighted in the next session**).



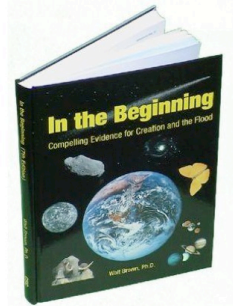
4. Johnson also drafted the Santorum Amendment, an amendment to the No Child Left Behind Act (2001), proposed by Pennsylvania Republican Senator Rick Santorum, which promotes the teaching of intelligent design while questioning the academic standing of evolutionism in public schools. This amendment has become the cornerstone of the ID movement’s “Teach the Controversy” campaign.

² Michael J. Behe, *Darwin’s Black Box: The Biochemical Challenge to Evolution* (New York: The Free Press, 1996), 9.

VI. WALTER T. BROWN (B. 1937)

- A. Born in Kansas City, MO, Walt grew up in the Methodist Church and went to West Point after high school. After graduating, he became an Army Ranger and earned a master's degree in Mechanical Engineering from New Mexico State University. He went on to get a Ph.D. in Mechanical Engineering from MIT before serving in the Vietnam War. After returning home he became the Director of Benét Laboratories near Albany, New York before being hired by the Air Force Academy to teach Math and Physics in 1970.
- B. After hearing a radio program on reported sightings of Noah's Ark on Mt. Ararat and talking to Jim Lee, a traveling lecturer on the subject, Walt became fascinated with the physics of how a boat that large might end up on top of a mountain over 14,000 feet high. If it was caused by the Biblical Flood, where did the water come from and where did it go? By 1972, Walt had reversed his beliefs in theistic evolution, believing that a global flood was the only logical explanation for the fossil record and the geologic column.
- C. After five years at the Air Force Academy, Walt took a professorship at the Air War College at the Maxwell Air Force Base in Alabama, and after teaching for five years, he retired from the Air Force in 1980 to pursue creationist studies. He moved to Chicago and began speaking and debating evolutionists. However, in 1984 ICR published an inaccurate account of Dr. Brown's work, which stifled most of his seminar support. In 1985, Walt decided to move to Phoenix to study geology at Arizona State University under Dr. Robert S. Dietz, world-famous geologist and one of the founders of the plate tectonic theory.
- D. Living near the Grand Canyon, Walt frequently took trips to study it. In 1988, Dr. Brown confirmed his theory that the Grand Canyon was carved by huge lakes whose waters suddenly broke through their natural dam. During this time Walt also began publishing his book, *In the Beginning: Compelling Evidence for Creation and the Flood*, discussing it regularly with Dr. Dietz, who conceded privately to many of the fatal flaws of the plate tectonic theory.³ Walt continues as the Director of the Center for Scientific Creation in Phoenix and works full-time in research and writing on origins. Walt's book *In the Beginning...* is free online at this address: <http://www.creationscience.com/onlinebook/>

Walt Brown
(b.1937)



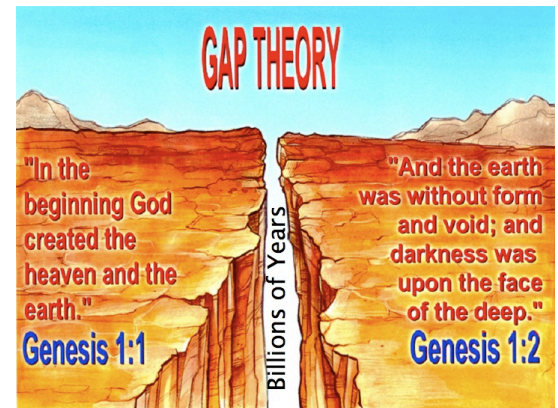
*In the Beginning:
Compelling Evidence for
Creation and the Flood*,
(7th Edition, 2001)

³ Telephone interview with Walt Brown on 8.29.06; cf. Walt Brown, *In the Beginning: Compelling Evidence for Creation and the Flood*, 7th ed. (Phoenix: Center for Scientific Creation, 2001), 115.

VII. OTHER CREATIONIST RESPONSES

A. Gap Theory

1. The Gap Theory (also known as Gap Creationism, Restitution Creationism, and Ruin-Reconstruction Creationism) was first propagated by William Buckland and Thomas Chalmers in the early 1800s and became quite popular when it was promoted by the Scofield Reference Bible (1909).⁴
2. In response to the uniformitarians of the early 19th century (e.g. Hutton, Playfair, Lyell, etc.) who seemingly proved beyond a reasonable doubt that the Earth was in fact far older than can be accounted for by merely adding up the ages of biblical patriarchs, gap theorists inserted much of geologic time (millions or billions of years) between either: 1) Genesis 1:1 and 1:2, or 2) Genesis 1 and 2.⁵
3. God originally created a perfect world with a “pre-Adamite race,” but then, in this gap, the anointed cherub fell to become Satan (meaning “adversary”), and God judged the world by a catastrophe, which formed most of the fossil record. To substantiate this, Gap Theorists argue that Gen. 1:2 should be translated as “the earth *became* formless and void,” rather than “the earth *was* formless and void.” However, this has been well refuted.⁶



B. Theistic Evolution

1. Incorporating the “day-age theory,” theistic evolutionists believe that the six days of Genesis 1 are not literal days, but ages of time (thousands, millions, or billions of years). Becoming prominent in the late 19th century in response to Darwinism, theistic evolution believes that evolution is just like any other science and is completely compatible with Christian beliefs (though not with a literal interpretation of Genesis).
2. Theistic evolutionists tend to believe what atheistic evolutionists believe about the universe, except that God set the wheels of cosmic and biological evolution rolling at the “Big Bang.” Since that time, God has been the One guiding the evolution of life by means of natural selection.⁷

⁴ The most academic presentation of the Gap Theory is by Arthur C. Custance, *Without Form and Void* (Brookfield: Doorway Publications, 1970).

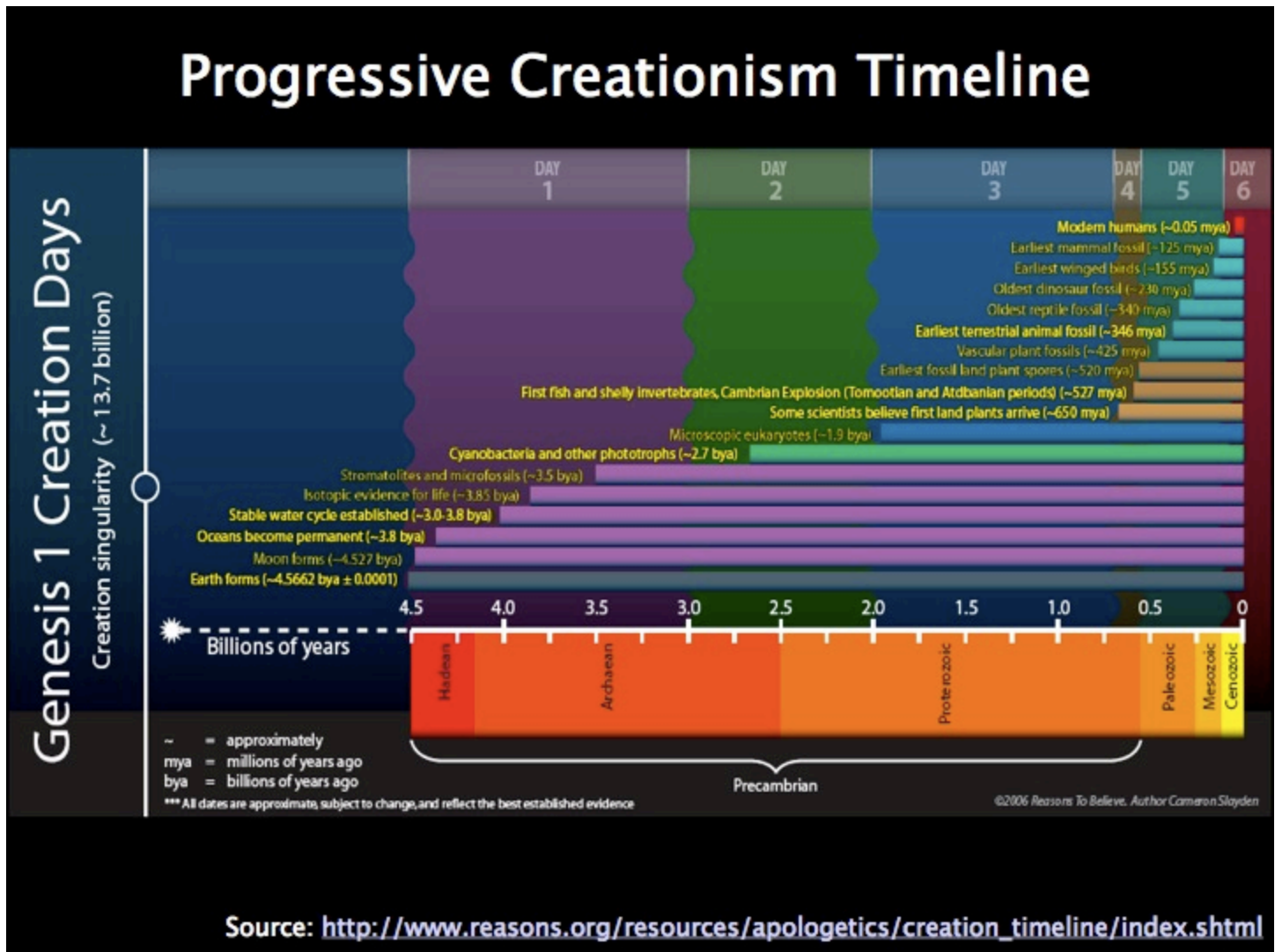
⁵ Because Gap Theory allows for an *almost* literal reading of the bible, retains the 24-hour days of creation, and rejects evolution, it is considered one of the more conservative interpretations of Genesis, though soundly rejected by YECs.

⁶ See Weston W. Fields, *Unformed and Unfilled: A Critique of the Gap Theory* (Collinsville: Burgener Enterprises, 1976); see also Russell Grigg, “From the beginning of Creation: Does Genesis have a gap?” *Creation Ex Nihilo* 19(2):35-38 (March 1997); archived at <http://www.answersingenesis.org/creation/v19/i2/beginning.asp>.

⁷ For prominent works on theistic evolution, see Kenneth R. Miller, *Finding Darwin's God: A Scientist's Search for Common Ground Between God and Evolution* (HarperCollins Publishers, 1999); Keith B. Miller, *Perspectives on an Evolving Creation* (William B. Eerdmans Publishing, 2003); Darrel Falk, *Coming to Peace with Science: Bridging the Worlds Between Faith and Biology* (InterVarsity Press, 2004).

- Like the Gap Theory, it places death before the sin of Adam. However, far worse than this is theistic evolution's placement of God as the author of natural selection, ordaining by divine will the death of the "unfit."⁸

C. Progressive Creationism



- As a compromise between the first two, Progressive Creationism, like theistic evolution, incorporates “day-age theory” and accepts secular estimates for the age of the universe. However, in contrast, it rejects naturalistic macroevolution as biologically untenable and counter-indicated in the fossil record.⁹

⁸ For an analysis and critique, see Charles V. Taylor, “Biblical problems for theistic evolution and progressive creation,” *Creation Ex Nihilo* 17(2):46-48 (March 1995); archived at <http://www.answersingenesis.org/creation/v17/i2/creation.asp>; Werner Gitt, “10 dangers of theistic evolution,” *Creation Ex Nihilo* 17(4):49-51 (September 1995); archived at http://www.answersingenesis.org/creation/v17/i4/theistic_evolution.asp.

⁹ The most well known progressive creationist is Hugh Ross; see *The Fingerprint of God* (Orange: Promise Publishing, 1989—3rd ed., 2005); *The Creator and the Cosmos* (Colorado Springs: NavPress, 1993—3rd ed., 2001); and *Creation and Time* (Colorado Springs: NavPress, 1994).

2. Progressive creationism posits that the new “kinds” of plants and animals that have appeared successively over our planet’s history (as seen in the clear gaps in the fossil record) represent instances of God directly intervening to create those new types by means outside the realm of naturalistic science.
3. Like theistic evolution it places death before the sin of Adam and argues for a local flood of Noah rather than global, which had little effect on the Earth’s geology.¹⁰

D. Framework Hypothesis

1. First proposed by Meredith Kline (also known as the “Literary Framework Theory”), it simply notes that there is a literary pattern or “framework” present in the Genesis 1 account. Because of this, the account should not be read as a strict chronological account of creation, but rather a literary device, communicating theological and redemptive principles about God and His relationship to creation.¹¹
2. Kline specifically points out that days 4-6 in Genesis 1 parallel days 1-3, with days 1-3 referring to the “realms” of the Kingdom and days 4-6 referring to the “rulers” of those realms:

Realms Created	Rulers of Realms Created
Day 1: light; day and night	Day 4: sun, moon and stars
Day 2: sea and sky	Day 5: sea creatures; birds
Day 3: land and vegetation	Day 6: land creatures; man

3. This view has become increasingly popular in evangelical seminaries today since no commitment is required concerning chronology (though most adherents believe in an old earth). However, since the framework hypothesis dispenses with Genesis as history, questions arise concerning other sections of the Bible lacking historicity.¹²

VIII. YOUNG EARTH CREATIONIST RESOURCES

A. Websites

1. Center for Scientific Creation (Walt Brown)
www.creationscience.com
2. Institute for Creation Research (Henry Morris, Duane Gish)
www.icr.org

¹⁰ For a thorough critique of progressive creationism, see Jonathan Sarfati, *Refuting Compromise: A Biblical and Scientific Refutation of “Progressive Creationism” (Billions of Years)*, as Popularized by Astronomer Hugh Ross (Green Forest: Master Books, 2004); see also Ken Ham, “What’s wrong with ‘progressive creation?’” available at <http://www.answersingenesis.org/docs/4077.asp>.

¹¹ See Meredith G. Kline, “Because it had not rained,” *WTJ* 20:146-157 (1958); Meredith G. Kline, “Space and time in the Genesis cosmogony,” *Perspectives on Science and Christian Faith* 48:2-15 (1996).

¹² Exodus 20:8-11, for example, makes it clear that the Sabbath was based on the *historical* events of Genesis, not vice versa. For a limited critique of the Framework Hypothesis, see Wayne Grudem, *Systematic Theology* (Grand Rapids: Zondervan, 1994), 302; see also Andrew Kulikovsky, “A critique of the literary framework view of the days of Creation,” available at <http://www.kulikovskyonline.net/hermeneutics/Framework.pdf>.

www.creationresearch.org

3. Discovery Institute (Phillip E. Johnson, Stephen C. Meyer)

www.discovery.org/csc

www.arn.org

www.origins.org

4. Creation Ministries International (Carl Wieland, Jonathan Sarfati)

www.creationontheweb.com

5. Answers in Genesis (Ken Ham)

www.answersingenesis.org

6. CreationWiki (Northwest Creation Network)

www.creationwiki.org

7. Biblical Creation Apologetics (Paul Abramson)

www.creationism.org

8. Scientific Evidence for Creation (Don Patton)

www.bible.ca/tracks

9. Foundation for Scientific Research (Adnan Oktar, "Harun Yahya")

www.harunyahya.com

www.darwinismrefuted.com

B. Books

1. Ackerman, Paul D. *It's a Young World After All* (Grand Rapids: Baker Publishing Group, 1986); updated online version available at www.creationism.org/ackerman/.
2. Behe, Michael J. *Darwin's Black Box: The Biochemical Challenge to Evolution* (New York: The Free Press, 1996).
3. Berlinski, David. *The Devil's Delusion: Atheism and Its Scientific Pretensions* (New York: Crown Forum, 2008)
4. Brown, Walt. *In the Beginning: Compelling Evidence for Creation and the Flood*, 8th ed. (Phoenix: Center for Scientific Creation, 2008); updated online version available at www.creationscience.com/onlinebook/index.html.
5. Dembski, William A. *The Design Inference: Eliminating Chance Through Small Probabilities* (New York: Cambridge University Press, 1998).
6. Denton, Michael. *Evolution: A Theory in Crisis* (Bethesda: Adler & Adler Publishing, 1985).

7. DeYoung, Donald. *Thousands... Not Billions: Challenging an Icon of Evolution, Questioning the Age of the Earth* (Green Forest: Master Books, 2005).
8. Gish, Duane T. *Evolution: The Fossils Still Say No!* (El Cajon: Institute for Creation Research, 1995).
9. Johnson, Phillip E. *Darwin on Trial* (Downers Grove: InterVarsity Press, 1991).
10. Lubenow, Marvin L. *Bones of Contention: A Creationist Assessment of Human Fossils, Revised ed.* (Grand Rapids: Baker Books, 2004).
11. Milton, Richard. *Shattering the Myths of Darwinism* (London: Inner Traditions, 1997).
12. Morris, Henry M., ed. *Scientific Creationism*, 2nd ed. (Green Forest: Master Books, 1985).
13. Morris, Henry M. and Gary E. Parker, *What Is Creation Science?* (Green Forest: Master Books, 1987).
14. Morris, John D. *The Young Earth: The Real History of the Earth – Past, Present, and Future*, Revised and Expanded ed. (Green Forest: Master Books, 2007).
15. Petersen, Dennis R. *Unlocking the Mysteries of Creation: The Explorer's Guide to the Awesome Works of God*, Premier 2nd ed. (El Dorado: Creation Resource Publications, 2003).
16. Sarfati, Jonathan. *Refuting Evolution: A Handbook for Students, Parents, and Teachers Countering the Latest Arguments for Evolution* (Green Forest: Master Books, 1999).
17. Taylor, Ian. *In the Minds of Men: Darwin and the New World Order*, 5th ed. (Zimmerman: TFE Publishing, 2003); available at www.creationism.org/books/TaylorInMindsMen/.
18. Wells, Jonathan. *Icons of Evolution: Why Much of What We Teach About Evolution Is Wrong* (Washington, DC: Regnery Publishing, 2000).
19. Wise, Kurt P. *Faith, Form, and Time: What the Bible Teaches and Science Confirms About Creation and the Age of the Universe* (Nashville: Broadman & Holman Publishers, 2002).

C. Videos

1. *Unlocking the Mystery of Life* (Illustra Media, 2002); available at www.illustramedia.com.
2. *Icons of Evolution* (Coldwater Media, 2002); available at www.coldwatermedia.com.
3. *Privileged Planet* (Illustra Media, 2004); available at www.illustramedia.com.
4. *Thousands... Not Billions: Challenging an Icon of Evolution, Questioning the Age of the Earth* (Institute for Creation Research, 2006); available at www.icr.org/store.
5. *The Grand Canyon: Monument to the Flood* (American Portrait Films, 1996); available at www.icr.org/store.
6. *Fountains of the Great Deep* (Kevin Lea: Calvary Church, 2002); available at www.calvarypo.org.
7. *Expelled: No Intelligence Allowed* (Premise Media, 2008); available at www.amazon.com.

IX. OVERVIEW OF THE “HYDROPLATE THEORY”¹³

- A. Rupture phase (hours) – fountains of the great deep burst forth
- B. Flood phase (months) – torrential rains and ice dumps
- C. Continental drift phase (1 day) – mid-oceanic ridges > rapid continental drift
- D. Recovery phase (continuing today) – recession of the waters to oceanic basins

X. PRIMARY EVENTS OF THE FLOOD

- A. Pre-Flood Conditions
 - 1. Subterranean water
 - 2. Granite crust and basaltic subterranean floor
- B. Rupture Phase (hours)

In the six hundredth year of Noah's life, in the second month, on the seventeenth day of the month, on that day all the fountains of the great deep burst forth, and the windows of the heavens were opened. (^{ESV} Genesis 7:11)

- 1. Fountains of the great deep burst forth > crust breaks up
- 2. Formation of continental shelves and slopes
- 3. Launching of comets, asteroids and meteoroids

- C. Flood Phase (months)

For forty days the flood kept coming on the earth, and as the waters increased they lifted the ark high above the earth. ¹⁸ The waters rose and increased greatly on the earth, and the ark floated on the surface of the water... ²⁴ The waters flooded the earth for a hundred and fifty days. (^{NIV} Genesis 7:17-24)

- 1. Torrential rains & ice dumps (frozen mammoths)
- 2. Liquefaction > sedimentary stratification
- 3. Formation of limestone and most fossils
- 4. Formation of coal and oil

- D. Continental Drift Phase (1 day)

- 1. Formation of mid-oceanic ridges (magnetic variations)
- 2. Formation of oceanic trenches
- 3. Rapid continental drift > the “Compression Event”
 - a) Formation of major mountains

¹³ See Walt Brown, *In the Beginning: Compelling Evidence for Creation and the Flood*, 8th ed. (Phoenix: Center for Scientific Creation, 2008); available online at <http://www.creationscience.com/onlinebook/index.html>.

- b) Overthrusts occur
- c) The "Big Roll" begins

E. Recovery Phase (continuing today)

The fountains of the deep and the windows of the heavens were closed, the rain from the heavens was restrained, ³ and the waters receded from the earth continually. At the end of 150 days the waters had abated, ⁴ and in the seventh month, on the seventeenth day of the month, the ark came to rest on the mountains of Ararat... ¹⁴ In the second month, on the twenty-seventh day of the month, the earth had dried out.
(^{ESV} Genesis 8:2-14)

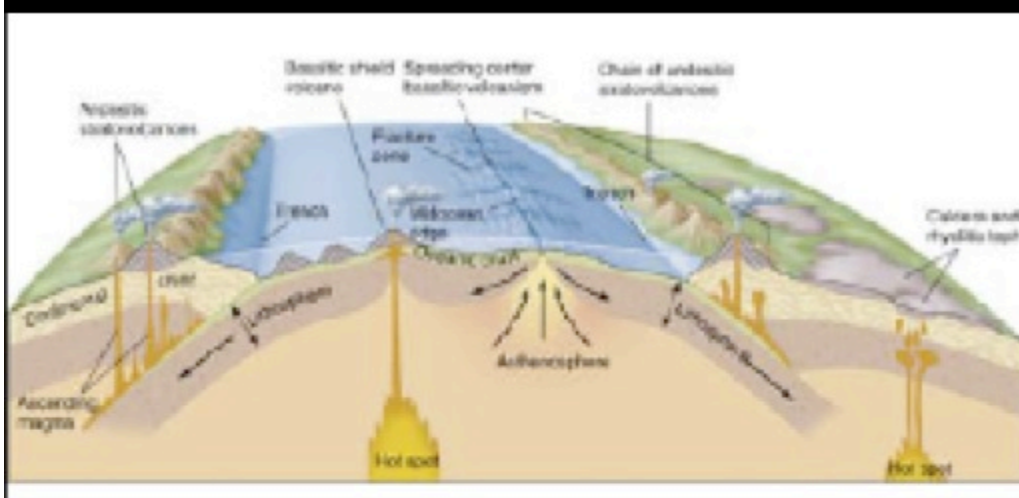
1. Formation of land canyons
2. Formation of submarine canyons
3. Formation of seamounts and tablemounts
4. Formation of plateaus

F. Biblical References

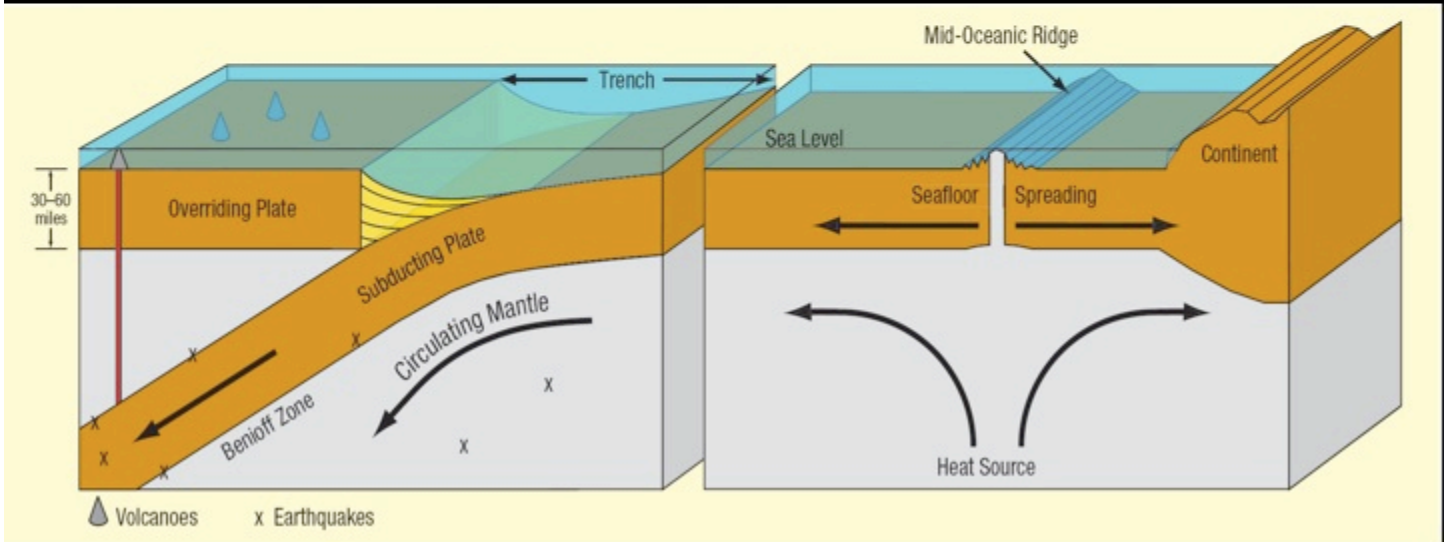
1. Job 38:1-11
2. Psalm 24:1-2
3. Psalm 33:6-9
4. Psalm 104:1-9
5. Psalm 136:1-6
6. Proverbs 3:19-20
7. 2 Peter 3:5-7

<p>The "Hydroplate Theory"</p>  <p>Walt Brown (b.1937)</p>		<p>Explanation of 25 Features of the Earth</p> <table border="0"> <tr> <td>1) The Grand Canyon and Other Canyons</td> <td>13) Major Mountain Ranges</td> </tr> <tr> <td>2) Mid-Oceanic Ridge</td> <td>14) Overthrusts</td> </tr> <tr> <td>3) Continental Shelves & Slopes</td> <td>15) Volcanoes and Lava</td> </tr> <tr> <td>4) Ocean Trenches</td> <td>16) Geothermal Heat</td> </tr> <tr> <td>5) Seamounts & Tablemounts</td> <td>17) Strata and Layered Fossils</td> </tr> <tr> <td>6) Earthquakes</td> <td>18) Limestone</td> </tr> <tr> <td>7) Magnetic Variations on the Ocean Floor</td> <td>19) Metamorphic Rock</td> </tr> <tr> <td>8) Submarine Canyons</td> <td>20) Plateaus</td> </tr> <tr> <td>9) Coal and Oil Formations</td> <td>21) Salt Domes</td> </tr> <tr> <td>10) Methane Hydrates</td> <td>22) Jigsaw Fit of the Continents</td> </tr> <tr> <td>11) Ice Age</td> <td>23) Changing Axis Tilt</td> </tr> <tr> <td>12) Frozen Mammoths</td> <td>24) Comets</td> </tr> <tr> <td></td> <td>25) Asteroids and Meteoroids</td> </tr> </table>	1) The Grand Canyon and Other Canyons	13) Major Mountain Ranges	2) Mid-Oceanic Ridge	14) Overthrusts	3) Continental Shelves & Slopes	15) Volcanoes and Lava	4) Ocean Trenches	16) Geothermal Heat	5) Seamounts & Tablemounts	17) Strata and Layered Fossils	6) Earthquakes	18) Limestone	7) Magnetic Variations on the Ocean Floor	19) Metamorphic Rock	8) Submarine Canyons	20) Plateaus	9) Coal and Oil Formations	21) Salt Domes	10) Methane Hydrates	22) Jigsaw Fit of the Continents	11) Ice Age	23) Changing Axis Tilt	12) Frozen Mammoths	24) Comets		25) Asteroids and Meteoroids
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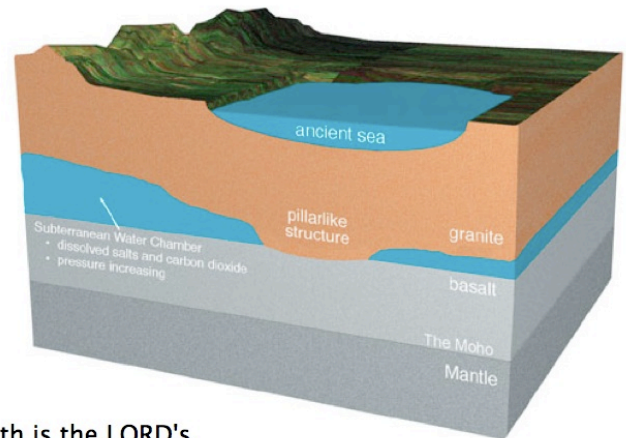
OVERVIEW OF FLOOD EVENTS



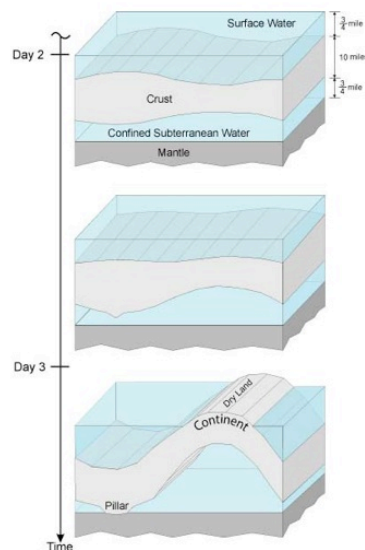
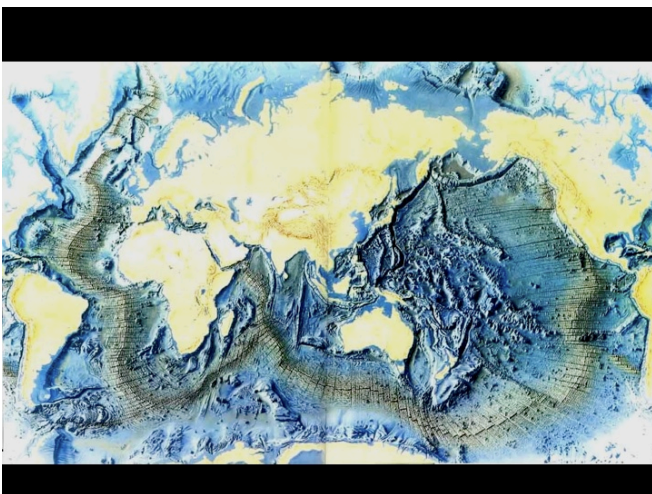
Contra Plate Tectonic Theory



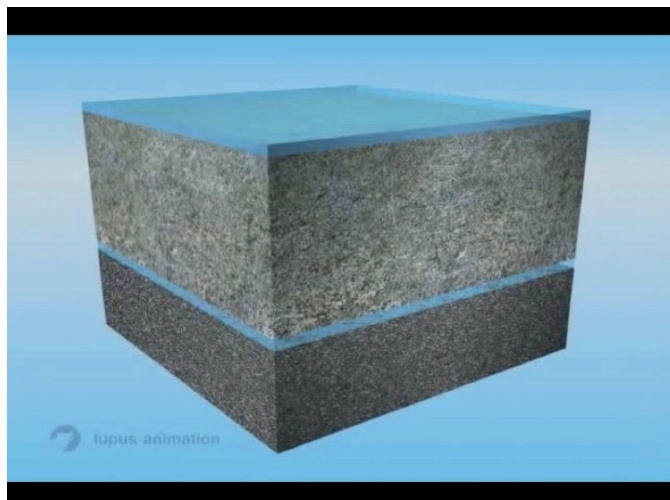
PRE-FLOOD CONDITIONS



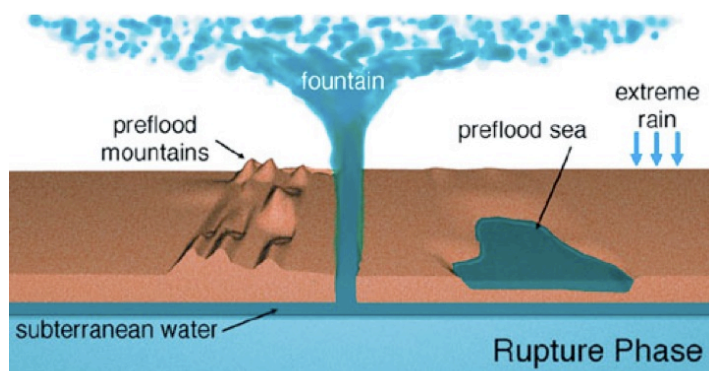
The earth is the LORD's,
and everything in it, the world, and all
who live in it; ² for he founded it upon the seas
and established it upon the waters. (NIV Psalm 24:1-2)



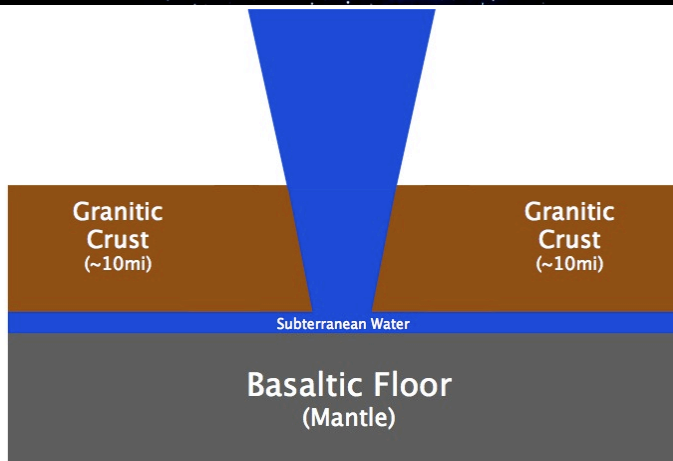
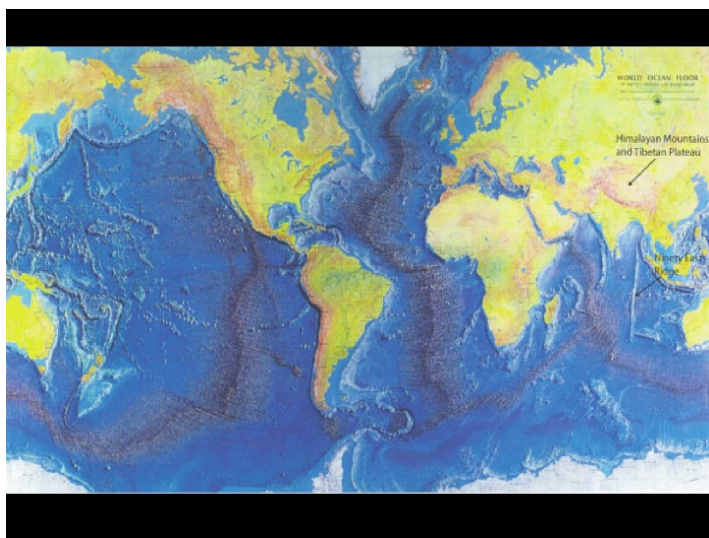
For this they willfully
forget: that by the
word of God the
heavens were of old,
and the earth
standing out of water
and in the water, ⁶
by which the world
that then existed
perished, being
flooded with water.
(NKJV 2 Peter 3:5-6)



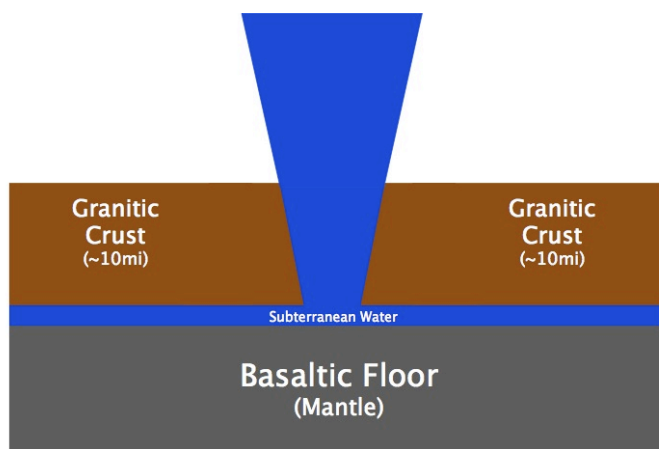
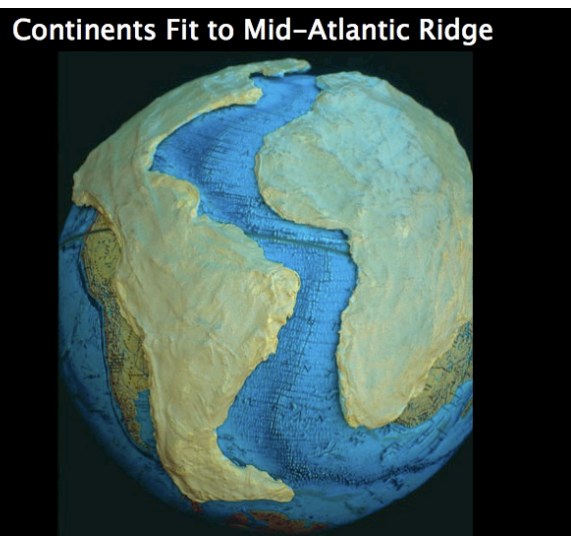
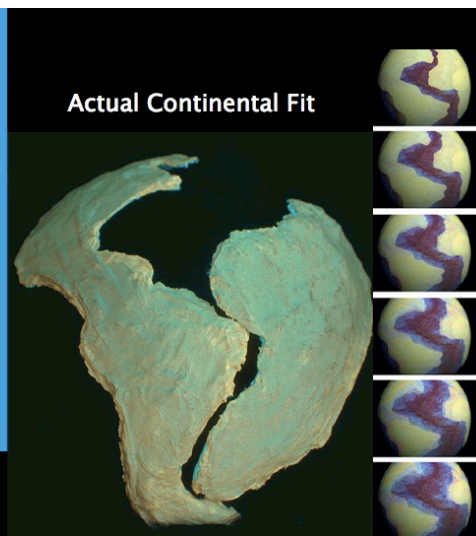
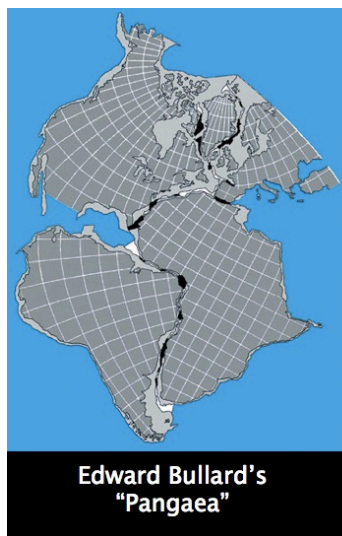
RUPTURE PHASE



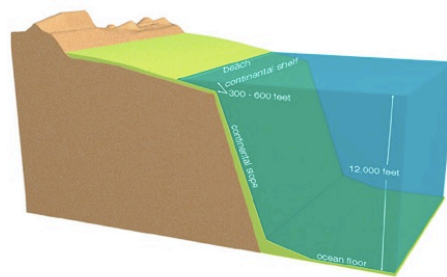
In the six hundredth year of Noah's life, in the second month, on the seventeenth day of the month, on that day all the fountains of the great deep burst forth, and the windows of the heavens were opened. (ESV Genesis 7:11)



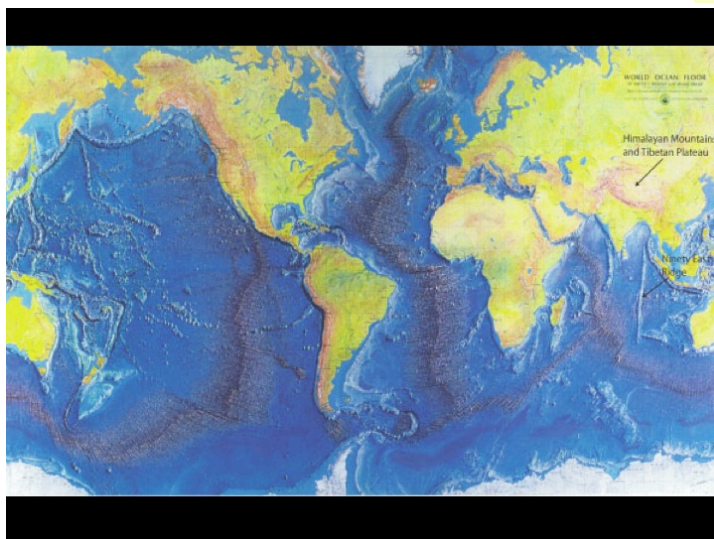
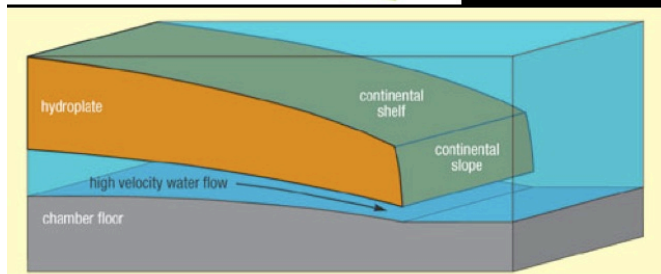
"Continental Fit"



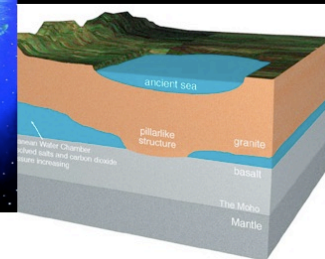
Continental Slope

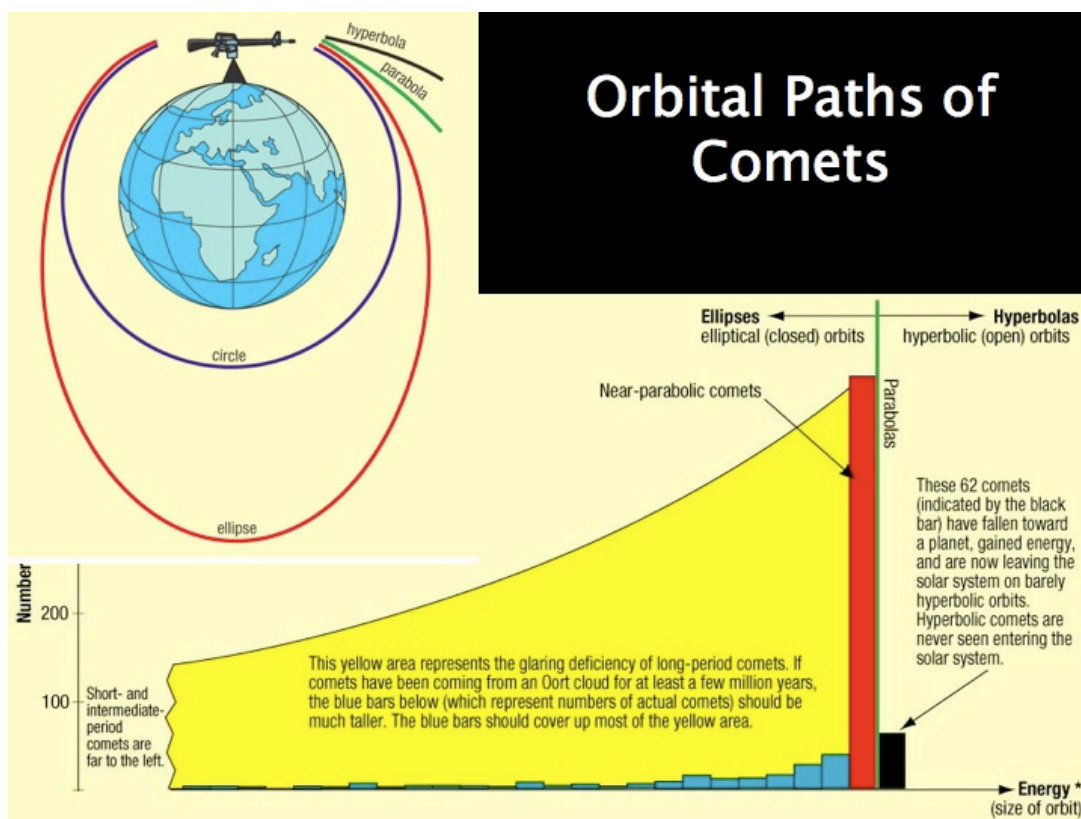
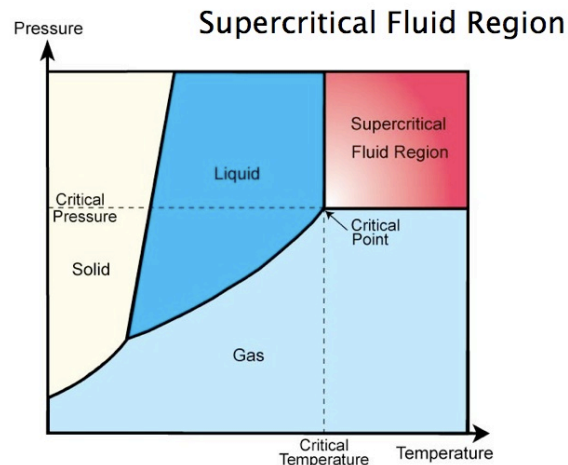


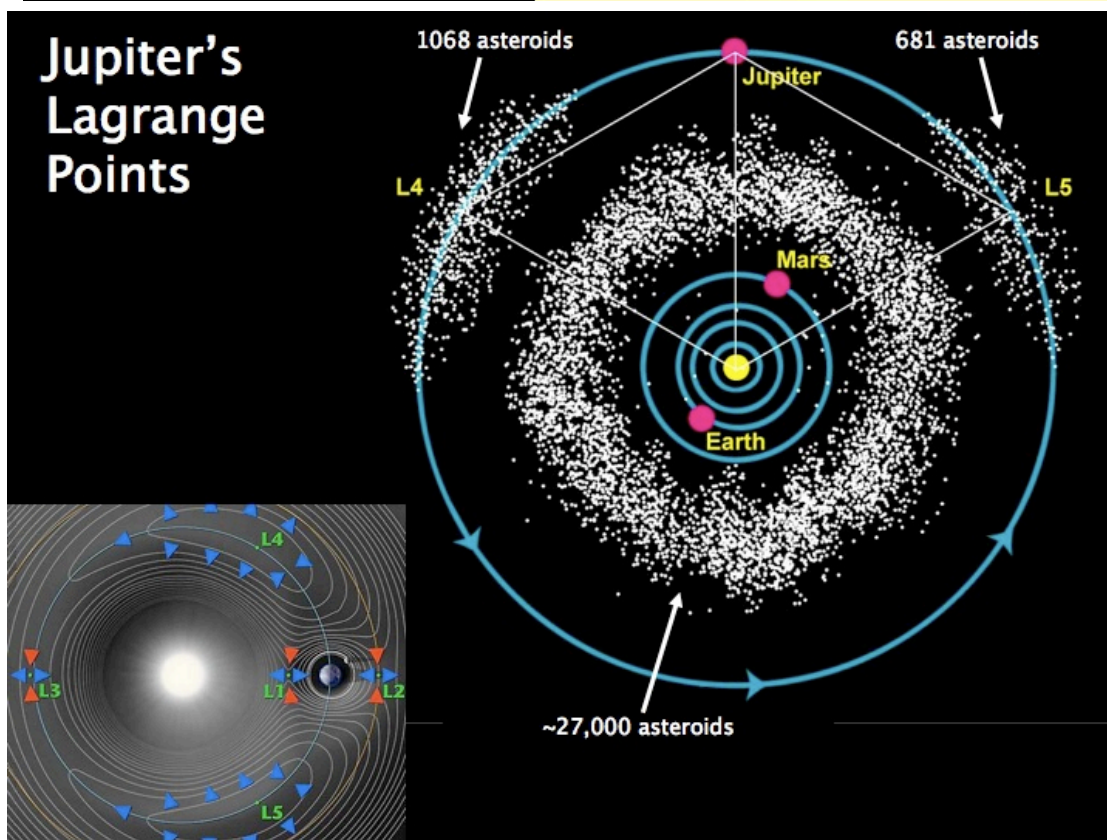
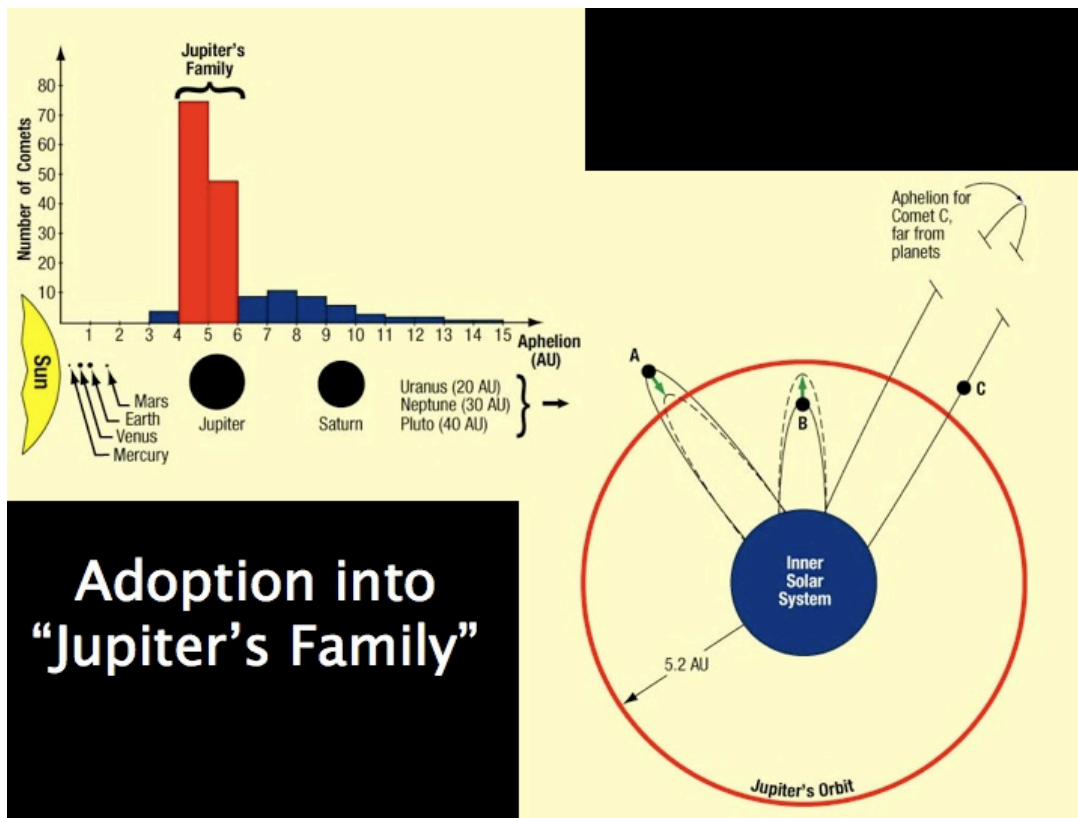
Formation of Continental Shelves and Slopes



Launching of Comets, Asteroids and Meteoroids







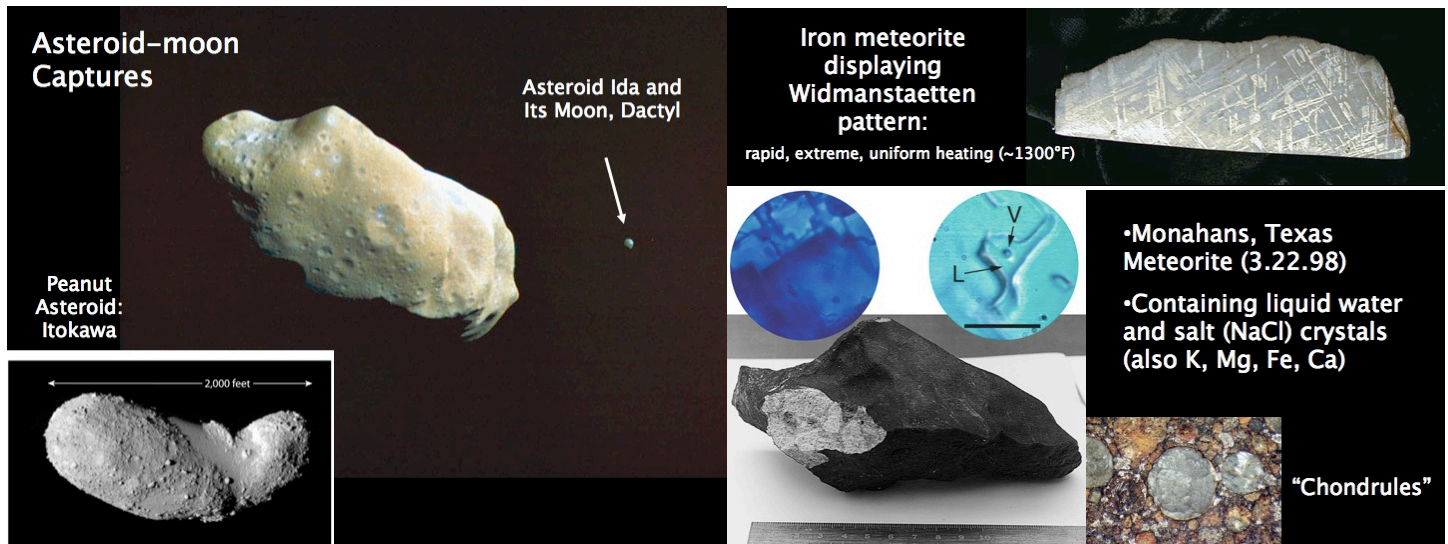
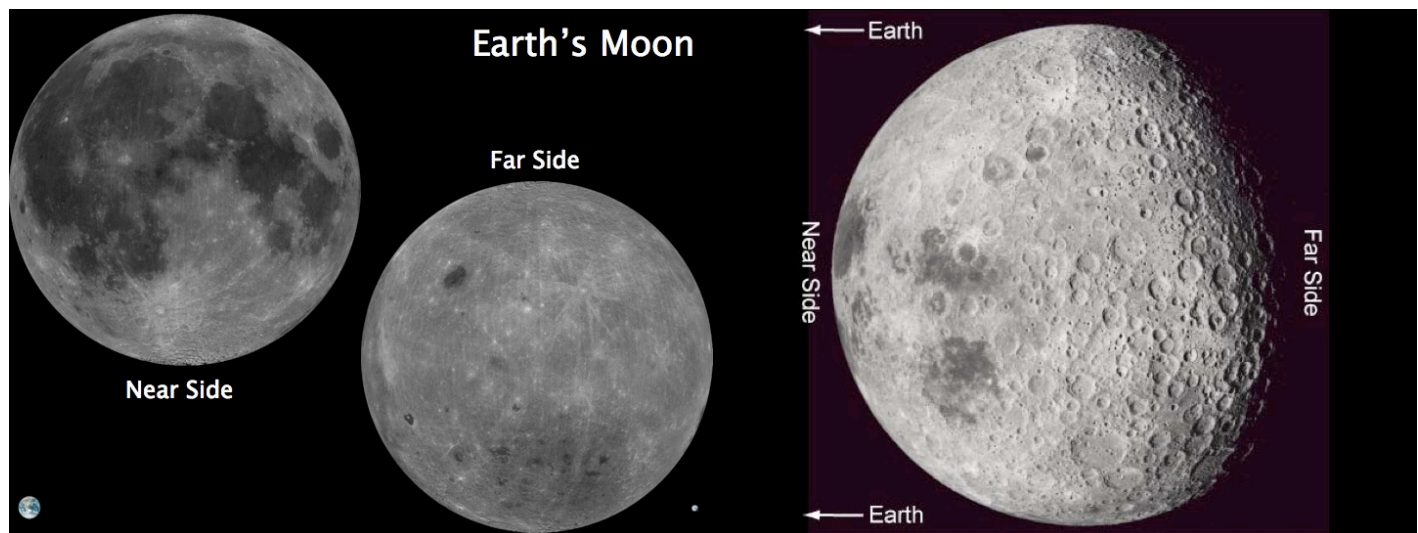
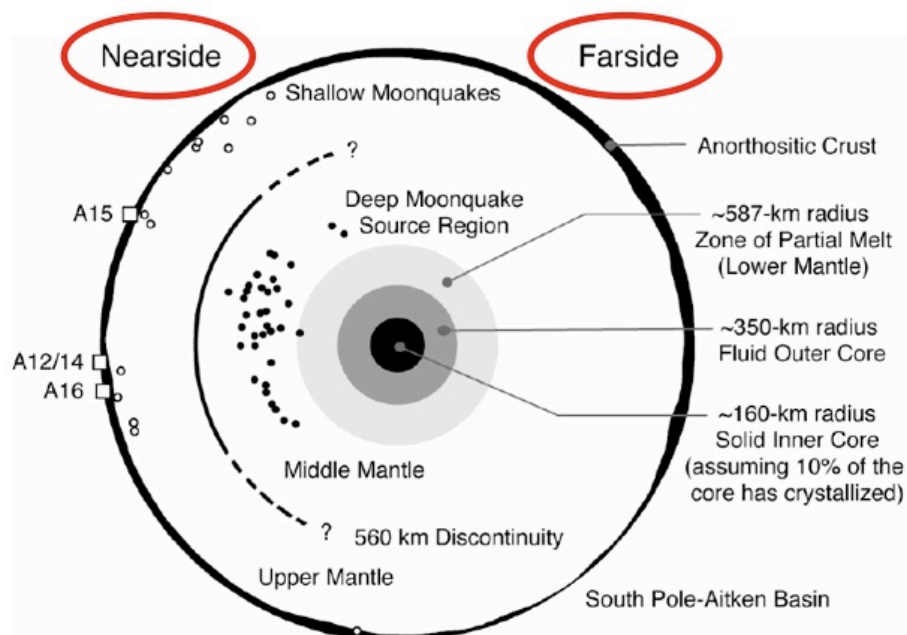


Table 14. Evidence vs. Theories: Origin of Comets

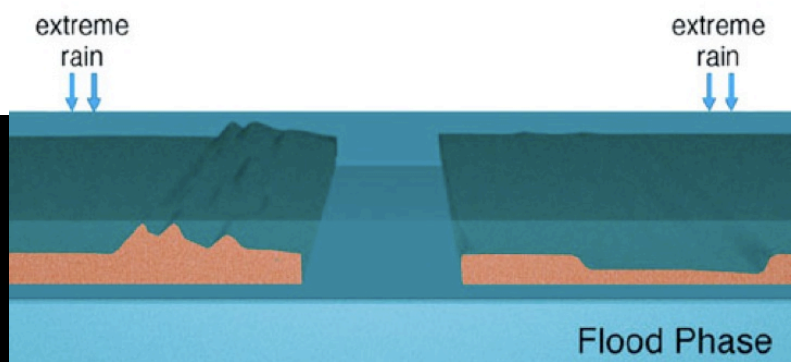
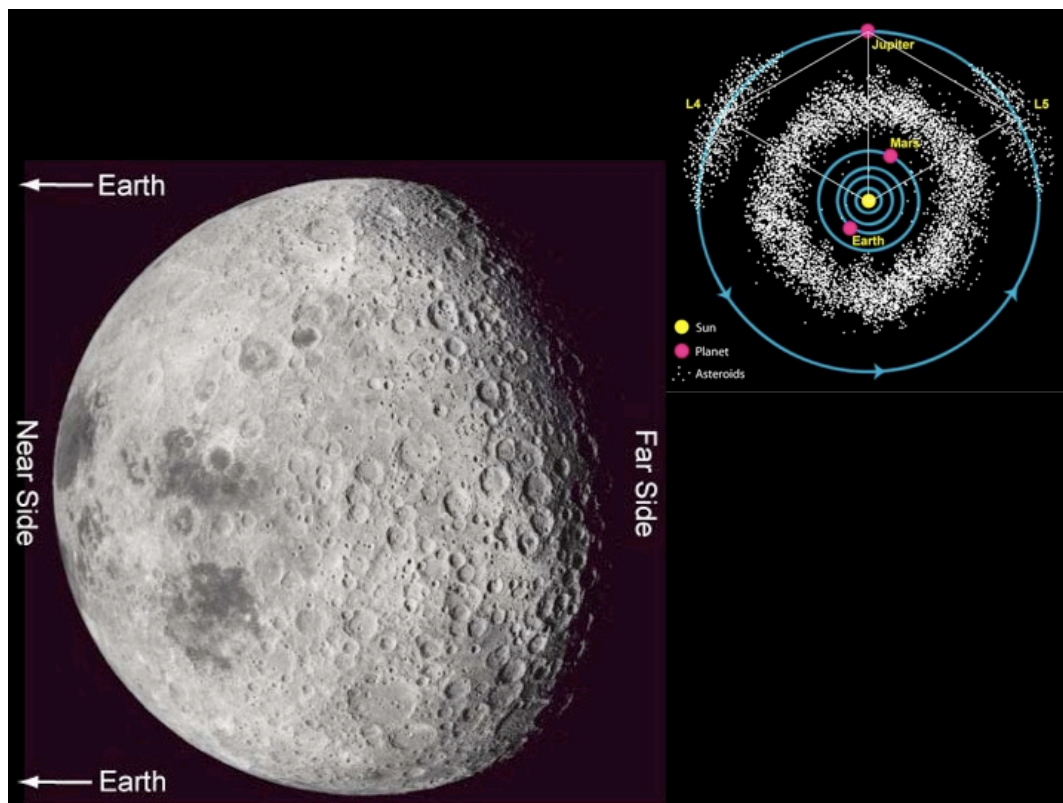
	Theories							
	Formed Inside Solar System				Formed Near or Beyond Edge of Solar System			
	From Earth by "Fountains of the Great Deep" (Hydroplate Theory)	From Exploded Planet between Mars and Jupiter	From Eruptions on Giant Planets	Original Oort Cloud: Began Far Beyond Solar System	Revised Oort Cloud: Began Near Edge of Solar System	From Meteor Streams	From Interstellar Dust and Gas Clouds	
Evidence to be Explained	Formation Mechanism	1	12	21	29	44	59	71
	Ice on Moon and Mercury	1	13	22	30	45	60	72
	Crystalline Dust	2		21	31	46	61	73
	First Returns of Many Comets	3			32	47		
	Random Perihelion Directions	4		23	33	48	62	74
	No Hyperbolic Orbits				34	49		
	Small Perihelions			24	35	50	63	75
	Orbit Directions and Inclinations	5		23	36		62	74
	Two Separate Populations	5			37	51		
	Jupiter's Family	6	14		38	52	64	76
	High Loss Rates of Comets			25		53		
	Composition	7	15	26	39	54	65	77
	Heavy Hydrogen	7		26	29	44	66	78
	Small Comets	8	16	27	40	55	67	79
	Missing Meteorites		17				68	80
	Recent Meteor Streams	9	18	28	41	56	69	81
	Crater Ages	9	19		42	57		
	Other	10-11	20		43	58	70	



Internal Structure of the Moon



Source: http://en.wikipedia.org/wiki/Internal_structure_of_the_Moon



For forty days the flood kept coming on the earth, and as the waters increased they lifted the ark high above the earth. 18 The waters rose and increased greatly on the earth, and the ark floated on the surface of the water... 24 The waters flooded the earth for a hundred and fifty days. (NIV Genesis 7:17-24)

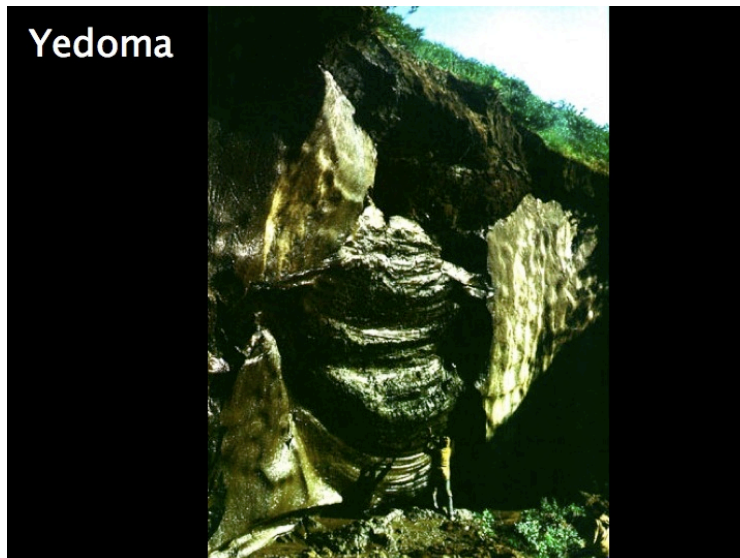
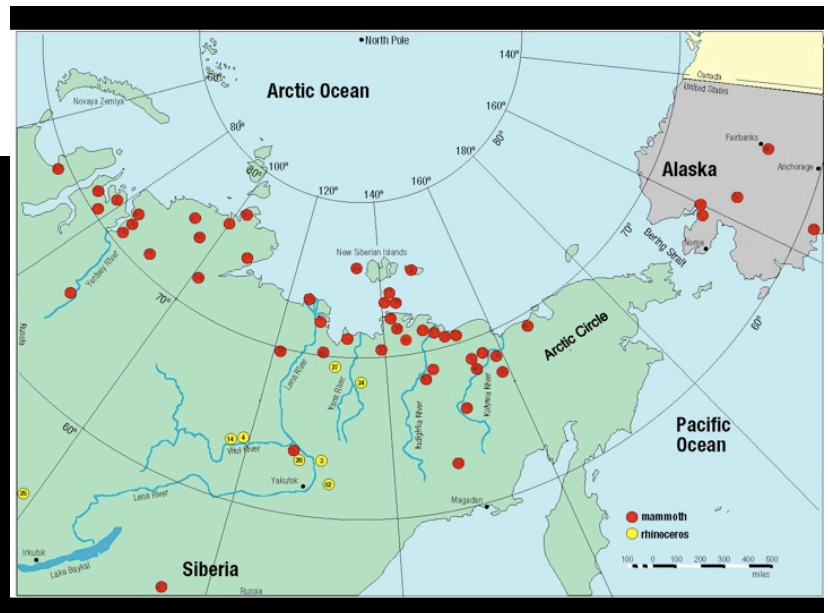


Table 9. Characteristics of Rock Ice vs. Three Types of Ice

Some Characteristics of Ice ^a	Type 1: A body of stationary or slowly moving liquid water freezes. Examples: frozen rivers and lakes, ice cubes, subsurface water ^b	Type 2: Water vapor condenses and freezes on microscopic particles in air, forming a type of ice called snow. (Its volume can decrease enormously by compaction, partial melting, and refreezing.) Examples: glaciers, icebergs, ice on winter roads	Type 3: Many small drops of water freeze while moving rapidly through cold air or outer space. Examples: hail, sleet, windblown spray just above a choppy lake	Characteristics of Rock Ice ^c
Bubble Numbers and Sizes	a few the size of a pin head	many tiny air pockets	large pockets trapped between ice particles	many large bubbles ^d
Bubble Percentage	less than 6%	about 6% for glacier ice	much more than 6%	16%
Dissolved Air	saturated	saturated	depends on water source	undersaturated
Granularity	no grains	very tiny grains	very granular	very granular, "like compacted hail" ^{ee}
Color	usually clear	usually white	depends on the impurities dissolved in the liquid *	usually has a yellow tinge
Dirt Content	slight	very little when it first forms	depends on the liquid water's dirt content *	dirt and plant particles easily seen

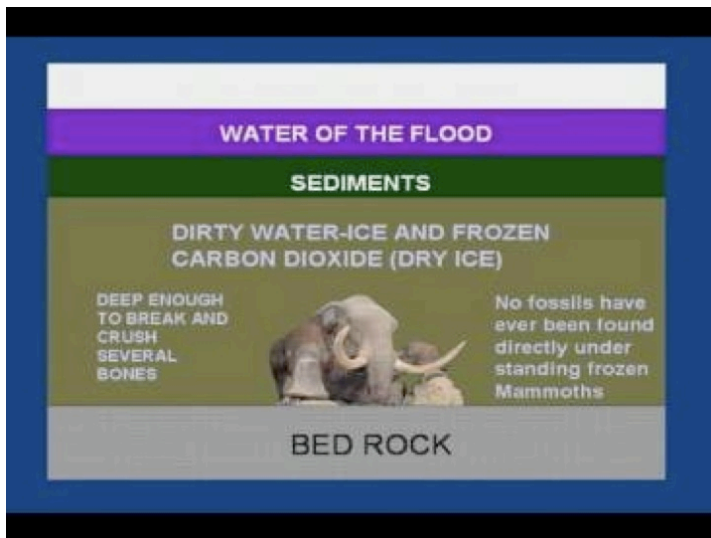
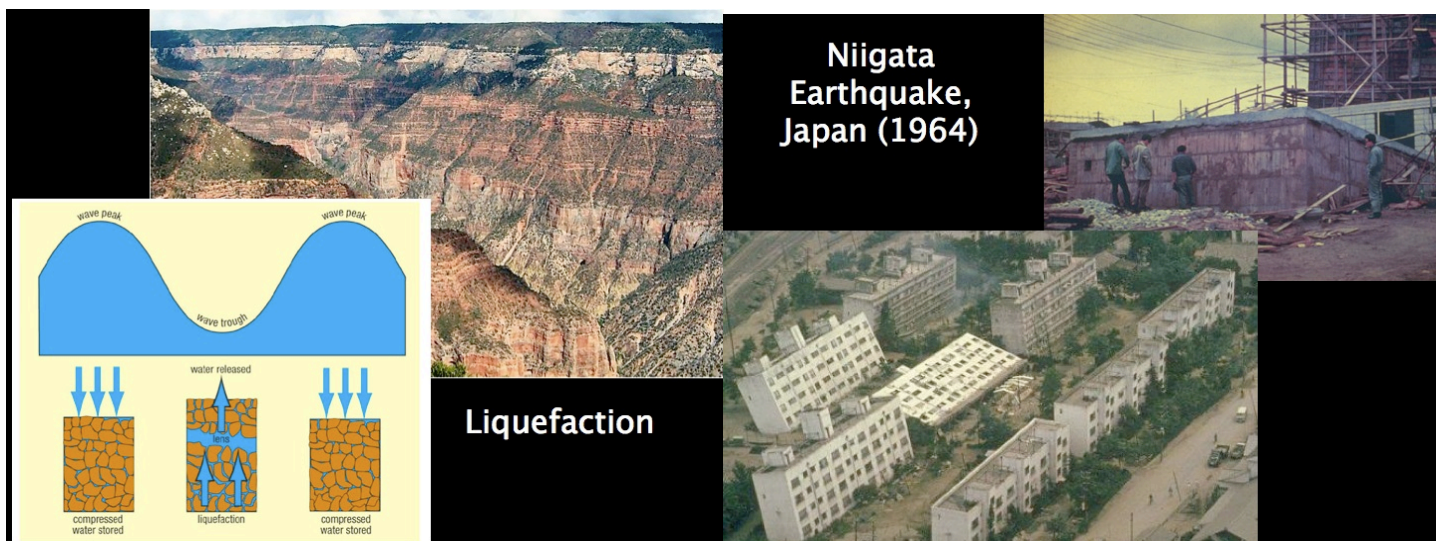


Table 11. Evidence vs. Theories: Frozen Mammoths

		Theories								
		Hydroplate	Lake Drowning	Cravasse	Mud Burial	River Transport	Extinction by Man	Bering Barrier	Shifting Crust	Meteorite
Evidence to Be Explained	Abundant Food	● 1	● 11	● 19	●	●	● 55	● 69	●	● 85
	Warm Climate	●	● 12	● 20	●	●	●	● 69	●	● 85
	Away from Rivers	●	●	●	● 32	● 44	●	●	●	●
	Yedomas and Loess	● 2	● 13	● 21	● 33	● 44	● 56	● 70	● 78	● 85
	Elevated Burial	● 3	●	● 22	● 32	● 45	● 57	●	●	●
	Multi-Continental	●	● 13	● 21	● 33	● 44	●	● 71	●	●
	Rock Ice	● 4	● 14	● 28	● 34	● 46	● 58	● 72	● 79	● 86
	Frozen Muck	● 3	● 13	● 24	● 33	● 44	● 59	● 73	● 80	● 85
	Sudden Freezing	●	● 15	● 25	● 35	●	●	●	●	●
	Suffocation	● 5	●	● 21	●	●	● 60	● 74	●	● 85
	Dirty Lungs	● 6	● 16	● 26	● 36	● 47	● 61	● 75	●	●
	-150°F	● 7	● 15	● 27	● 33	● 44	● 56	● 71	● 78	● 87
	Large Animals	● 7	●	● 28	●	● 44	● 58	● 78	● 78	●
	Summer-Fall Deaths	●	●	●	●	● 48	●	●	● 81	●
	Animal Mixes	● 3	● 17	● 29	● 37	●	● 62	●	●	● 88
	Upright	● 8	● 13	● 30	● 38	● 49	● 63	●	●	●
	Vertical Compression	● 8	● 18	● 21	● 39	● 44	● 56	● 71	● 78	● 85
	Other	● 9-10	●	● 31	● 40-43	● 50-54	● 64-68	● 77	● 82-83	● 89

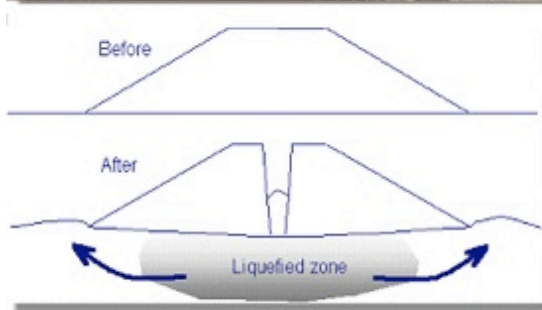




Good Friday Earthquake, AK

(1964)

Turnagain Heights Landslide

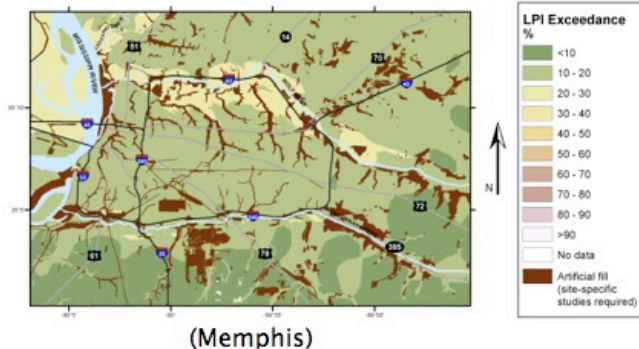


Lateral spreading beneath roadway
embankment



USGS Liquefaction Susceptibility Maps

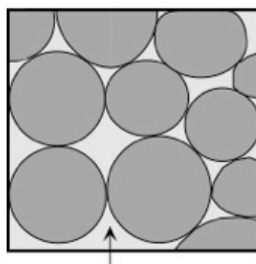
Liquefaction Potential Index >5
Probability of Exceedance 10% in 50 years



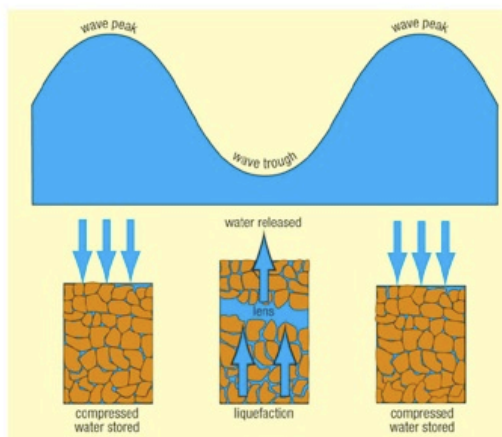
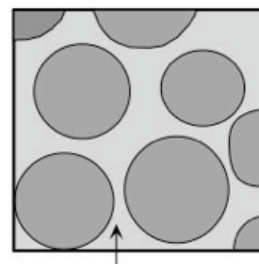
Mechanics of Liquefaction



Water-Saturated Sediment

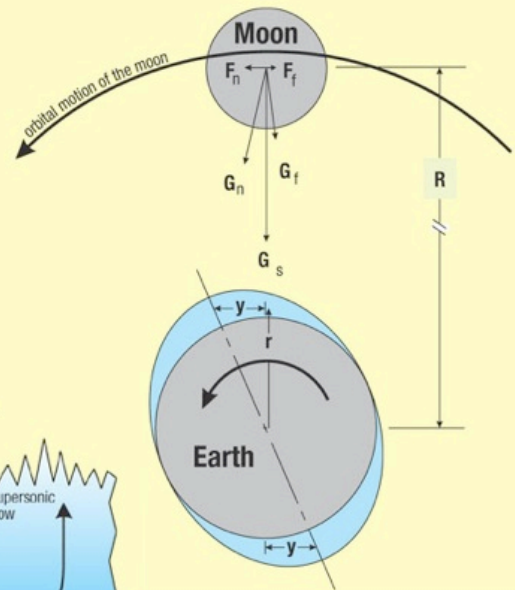
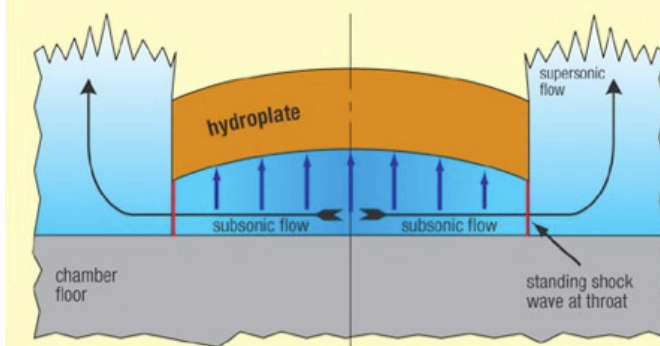


Liquefaction



Causes of Global Liquefaction

Hydroplate Palpitation

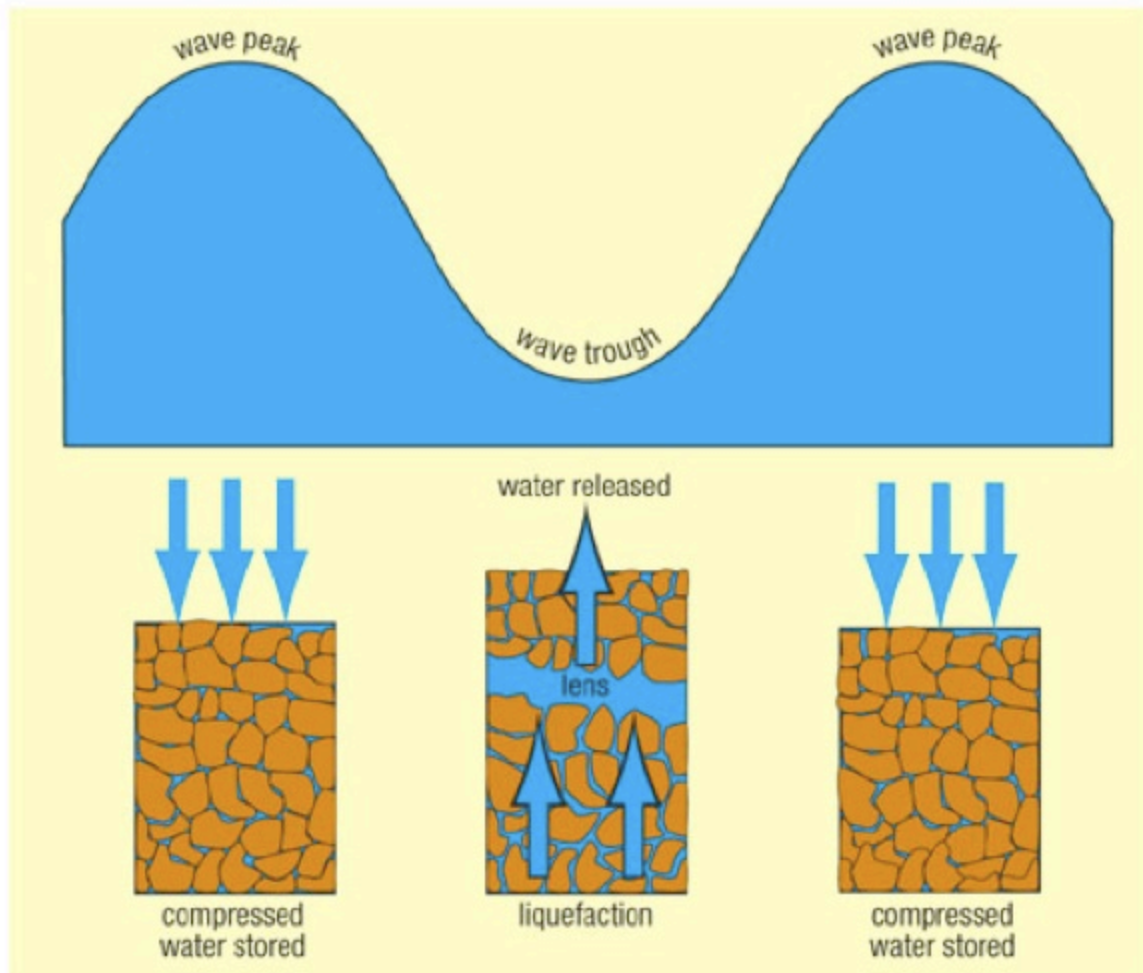


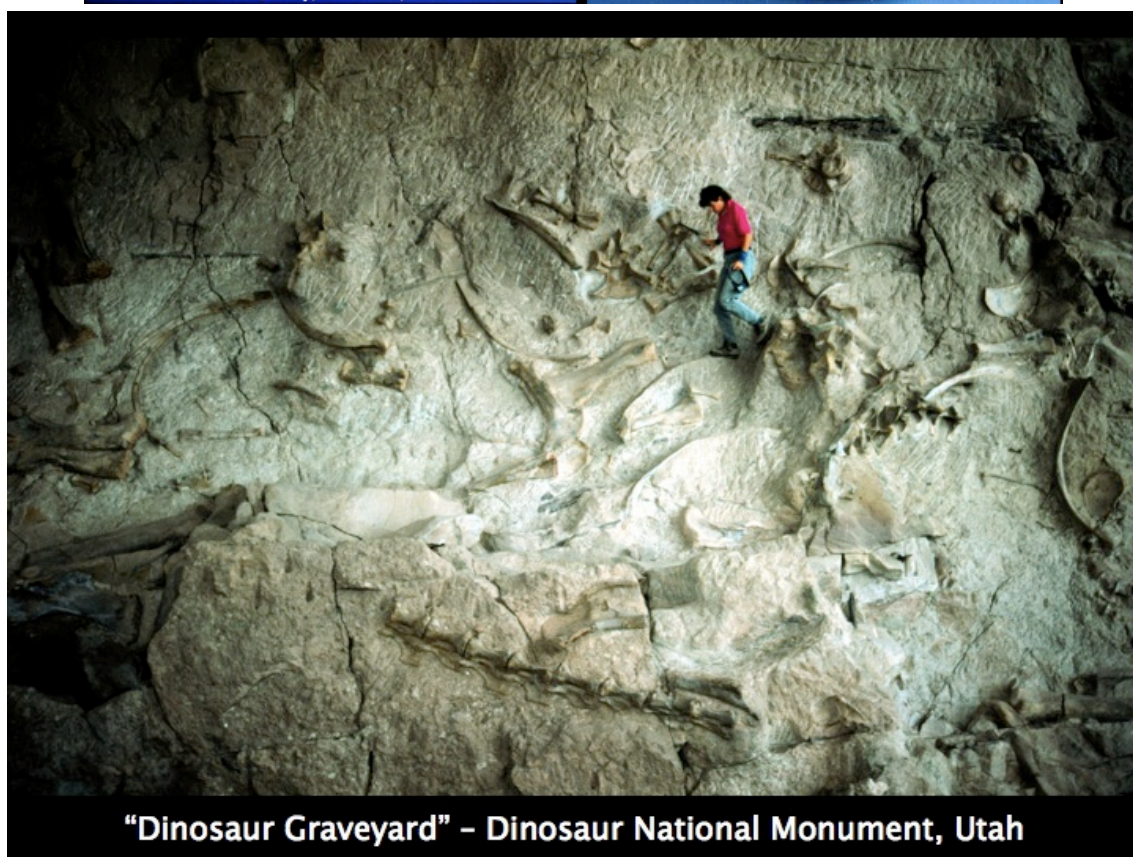
Lunar Tidal Effects

Uniform Global Stratification

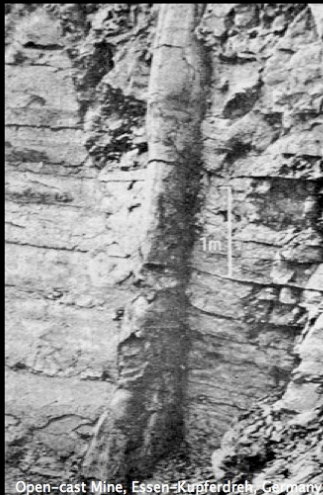


Liquefaction “Lens”





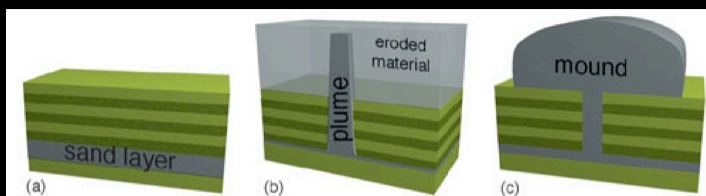
Poly-strata Tree Fossils



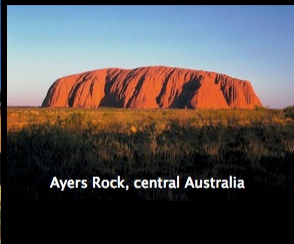
Open-cast Mine, Eisen-Kupferdorf, Germany



Kettles Coal Mines, Cookville, TN



Kodachrome Basin State Reserve, south-central Utah

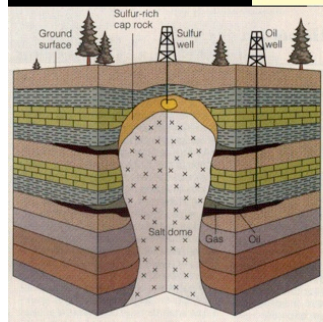
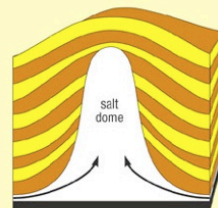
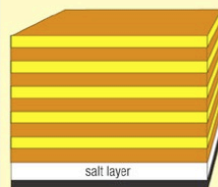


Ayers Rock, central Australia



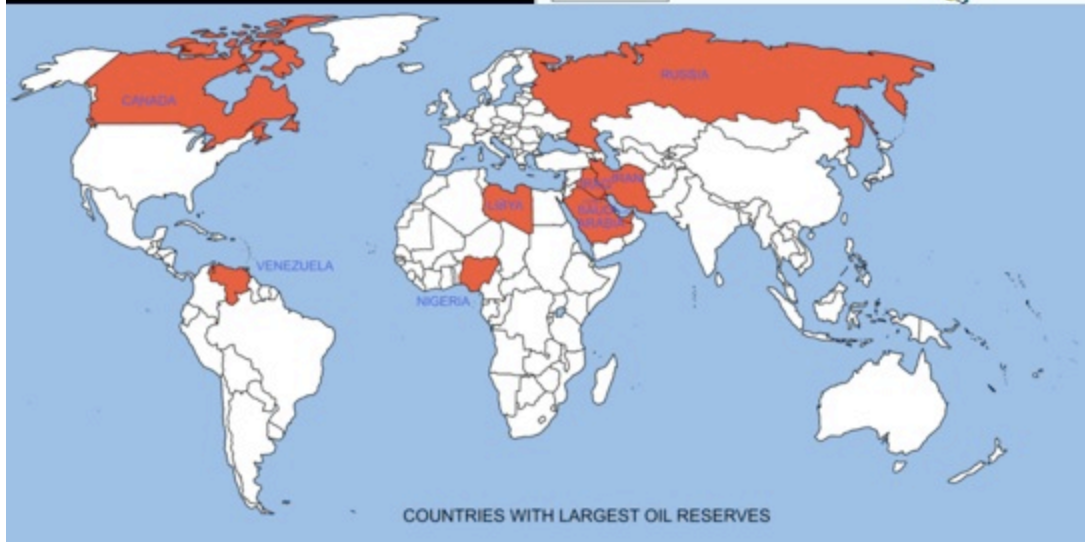
Ayers Rock, central Australia

Salt Domes

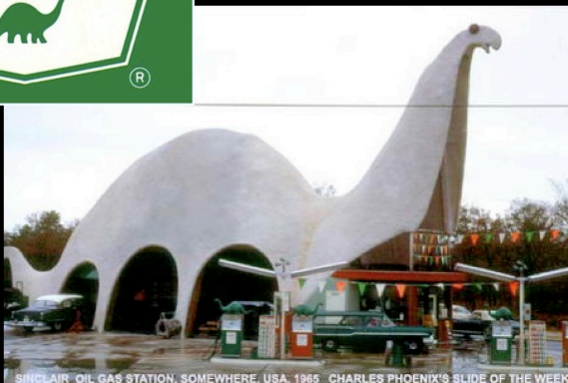


Zagros Mountains, Iran

Formation of Coal and Oil

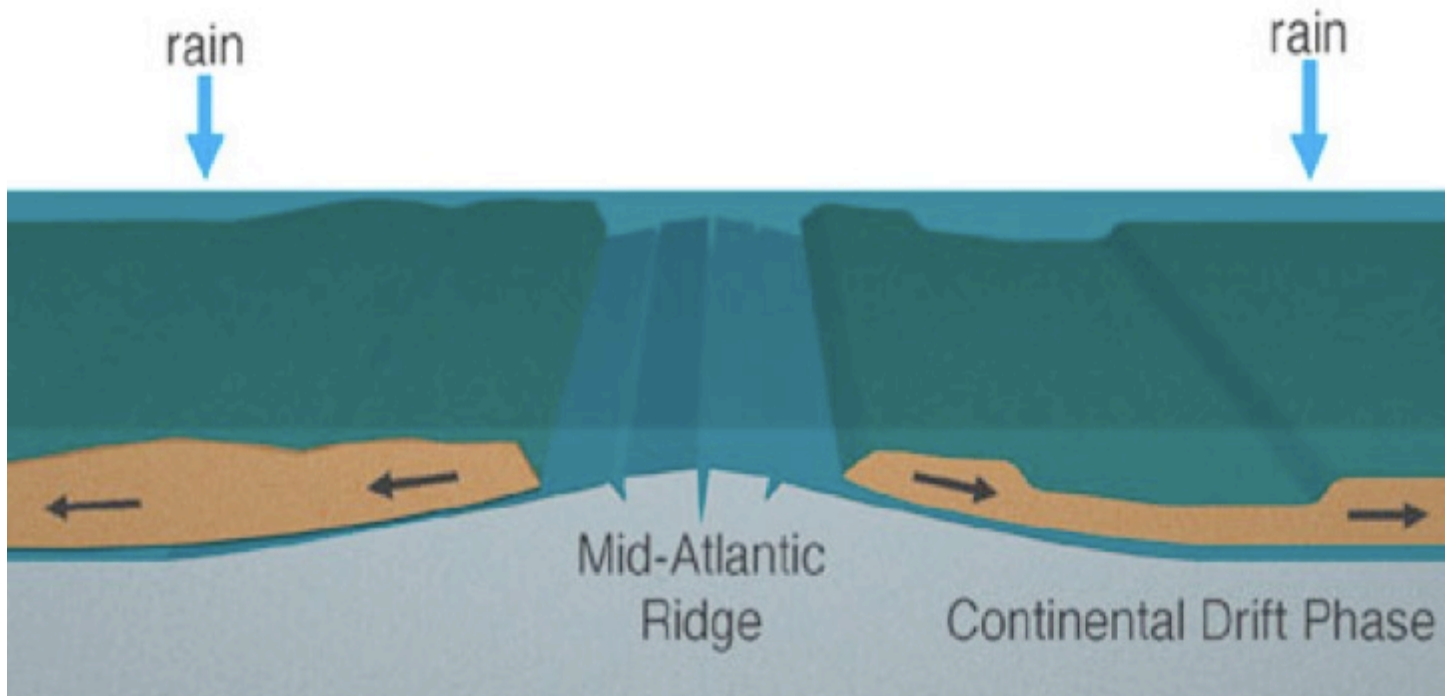


Sinclair Oil Gas Station:
Spring Hill, Florida (1965)

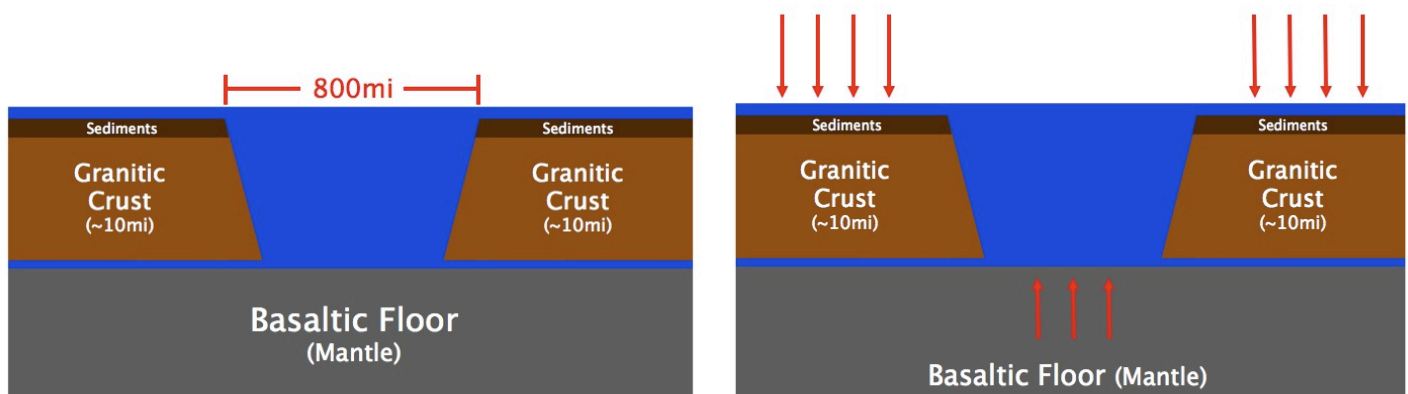


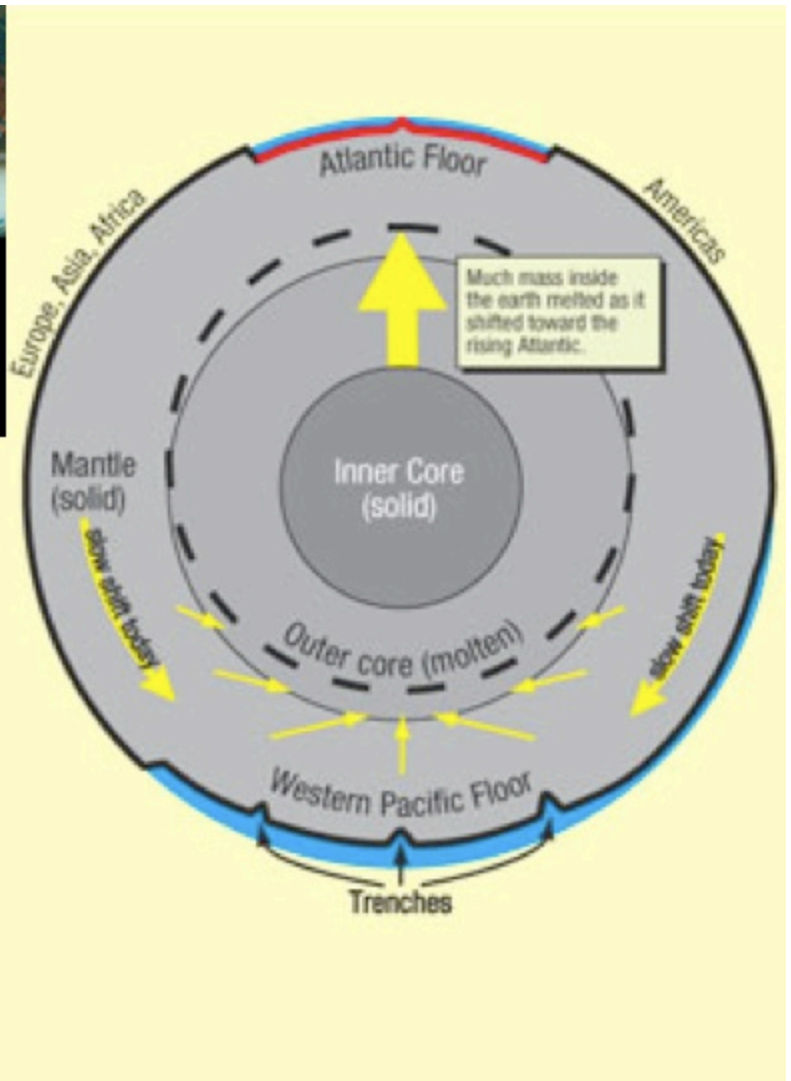
SINCLAIR OIL GAS STATION, SOMEWHERE, USA, 1965 CHARLES PHOENIX'S SLIDE OF THE WEEK

CONTINENTAL DRIFT PHASE

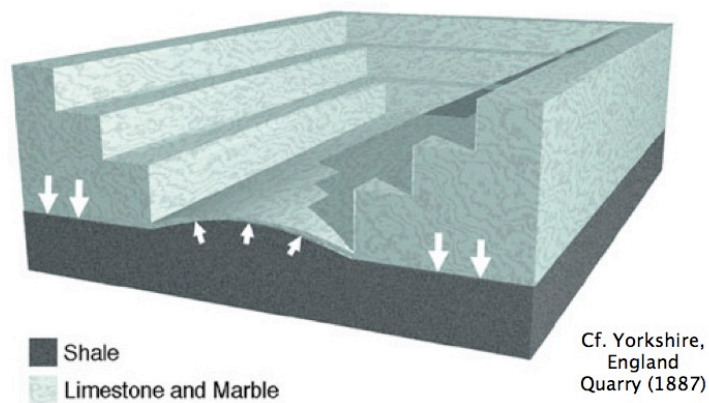


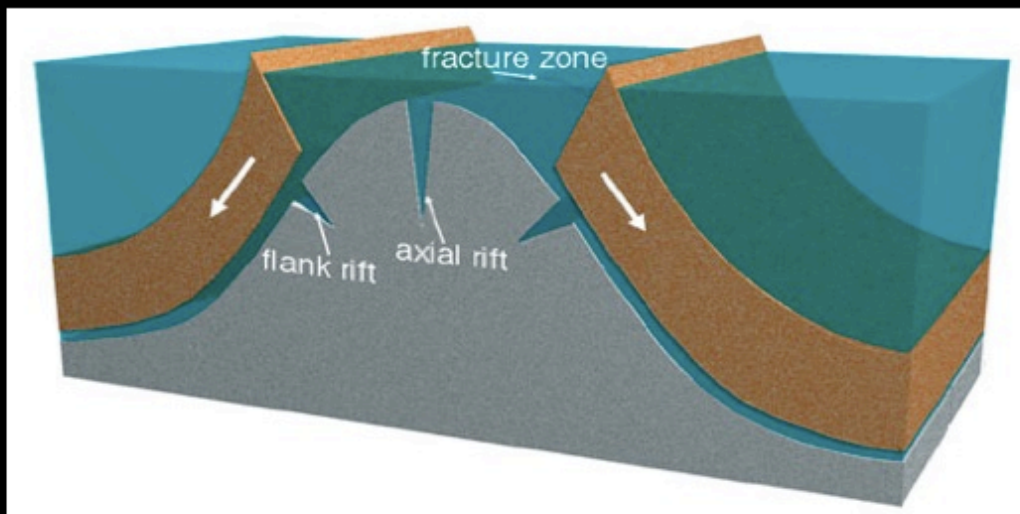
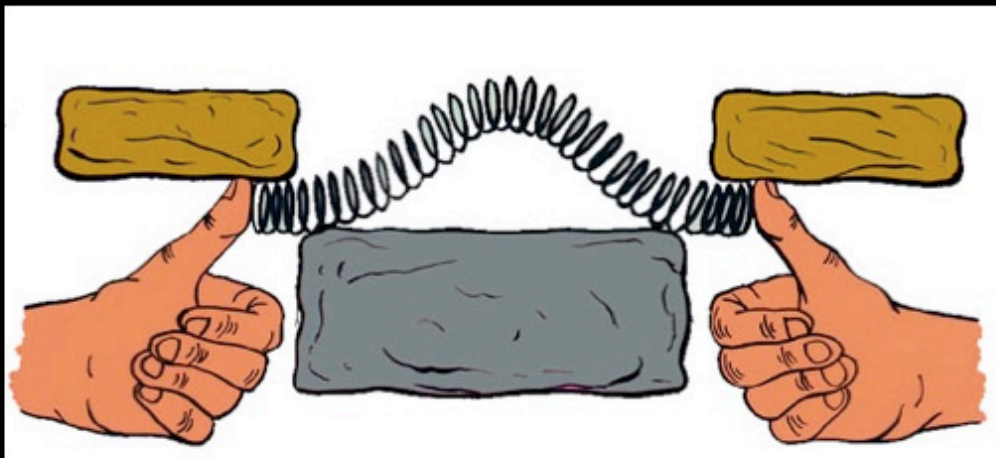
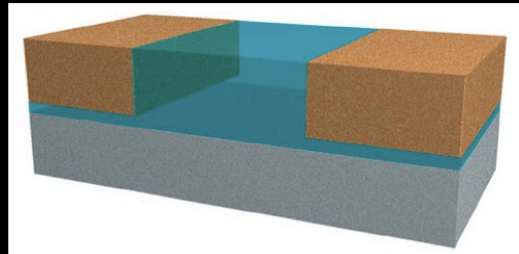
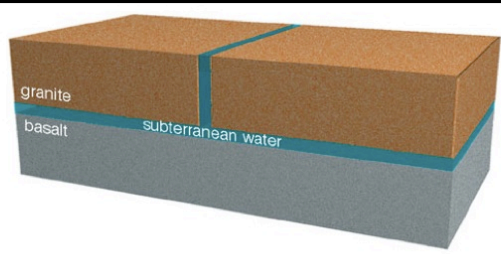
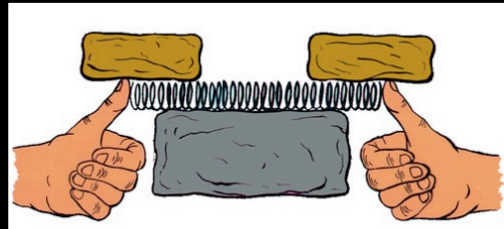
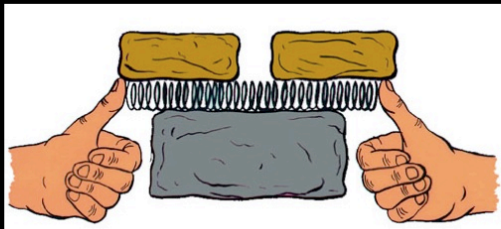
You set the earth on its foundations... ⁶ You covered it with the deep as with a garment; the waters stood above the mountains. ⁷ At your rebuke they fled; at the sound of your thunder they took to flight. ⁸ The mountains rose, the valleys sank down to the place that you appointed for them. (ESV Psalm 104:5–8)





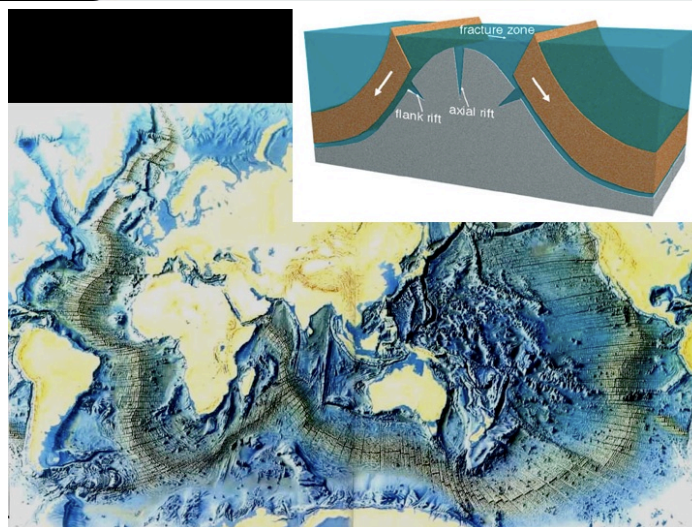
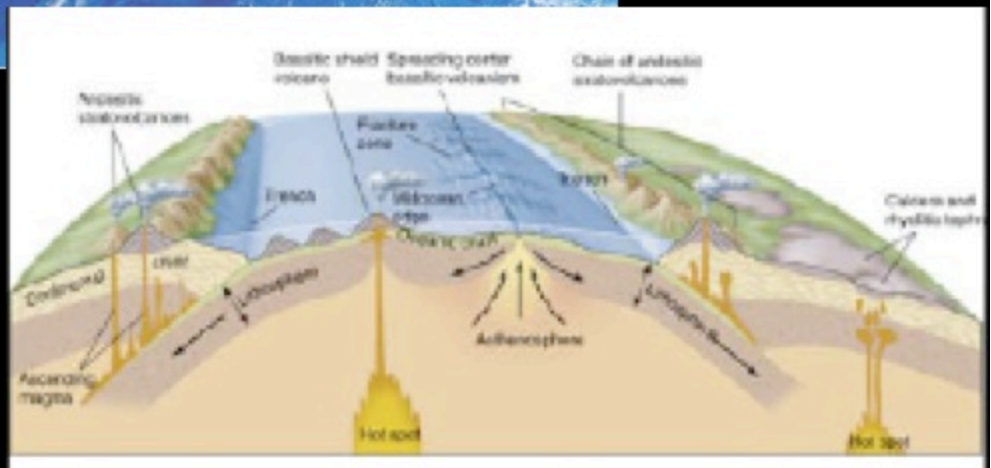
"The Buckling of a
Beam on an Elastic
Foundation"



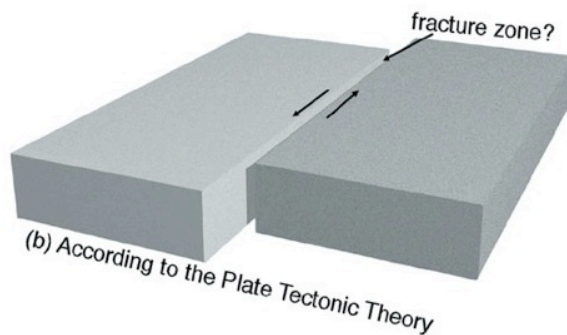
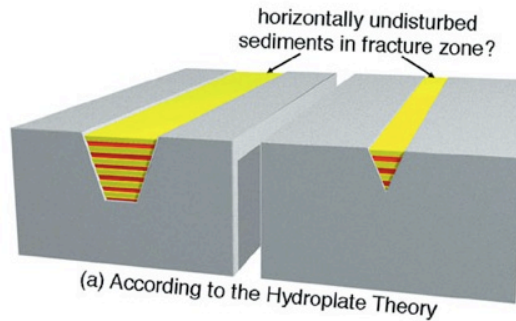




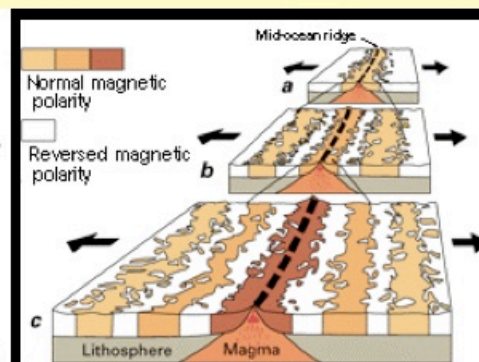
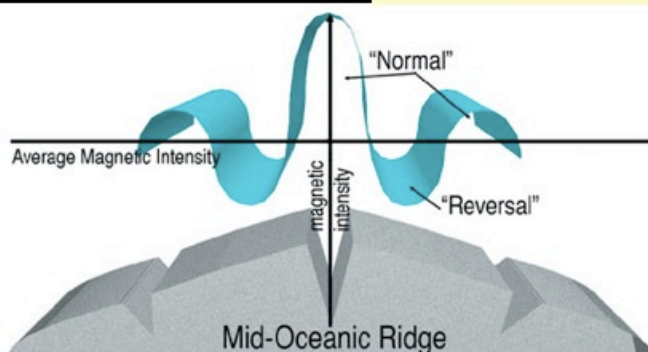
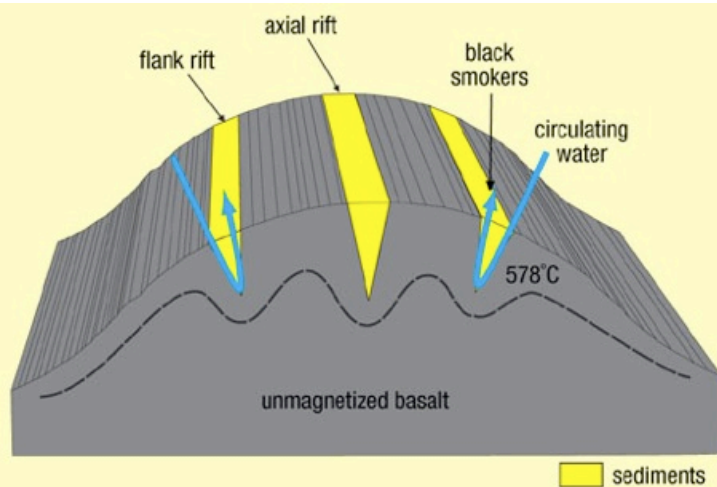
Discovery of the Oceanic Ridges



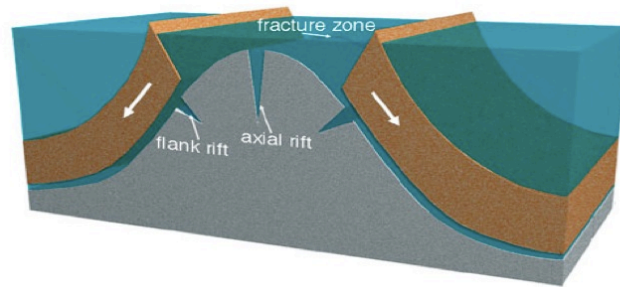
Fracture Zones: Hydroplate vs. Plate Tectonic



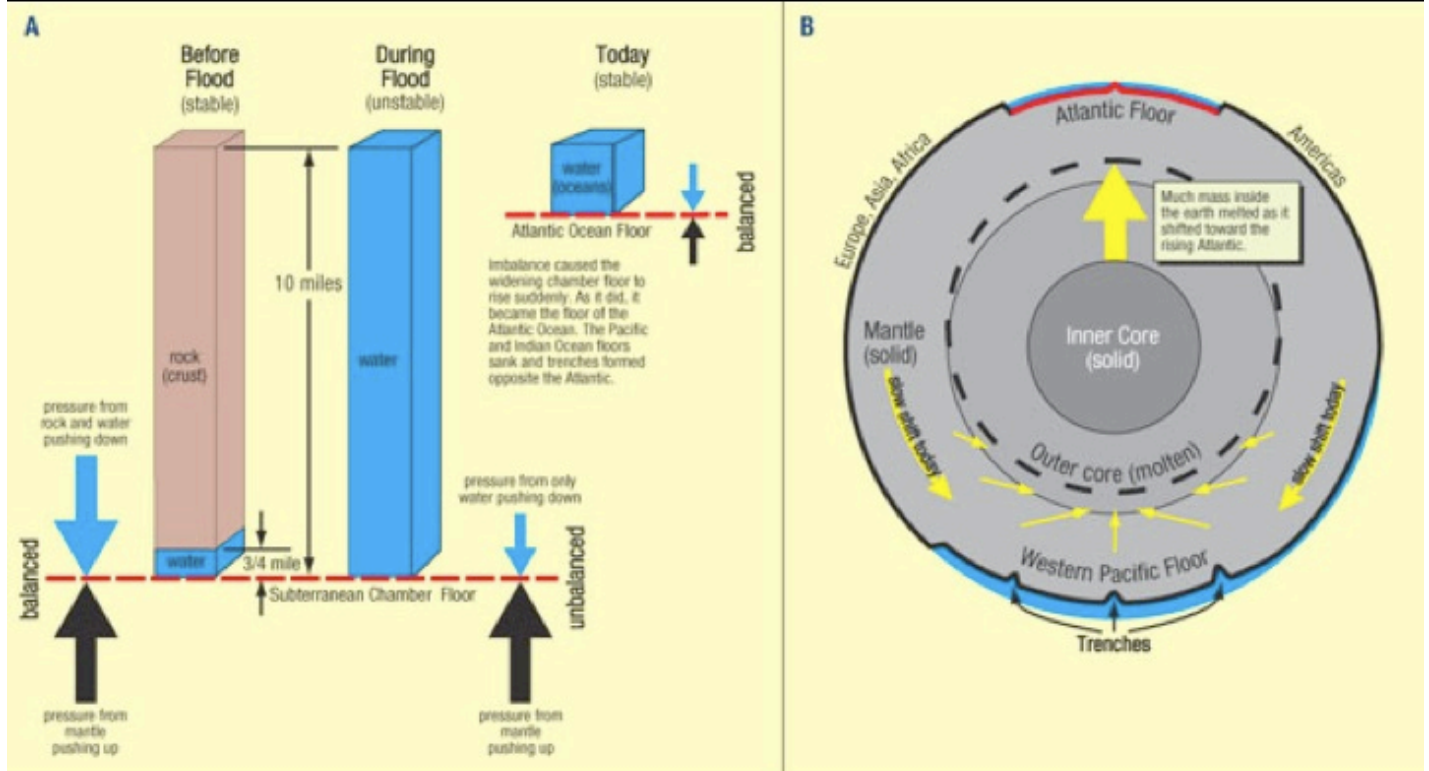
Mid-Oceanic Ridge: Magnetic Variations



Formation
of Oceanic
Trenches



Formation of Oceanic Trenches



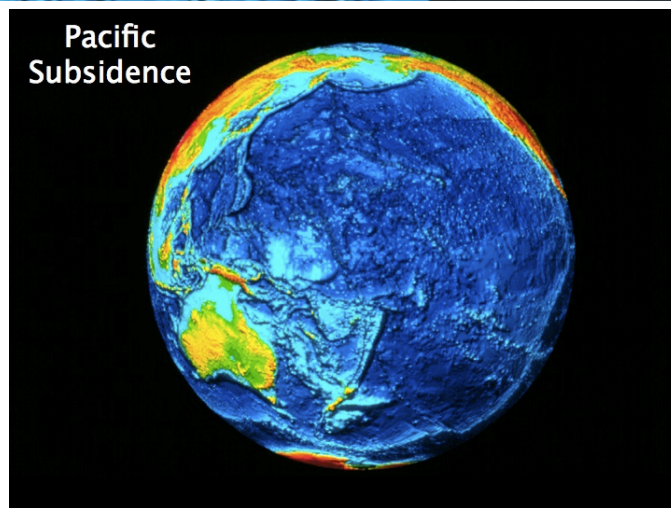
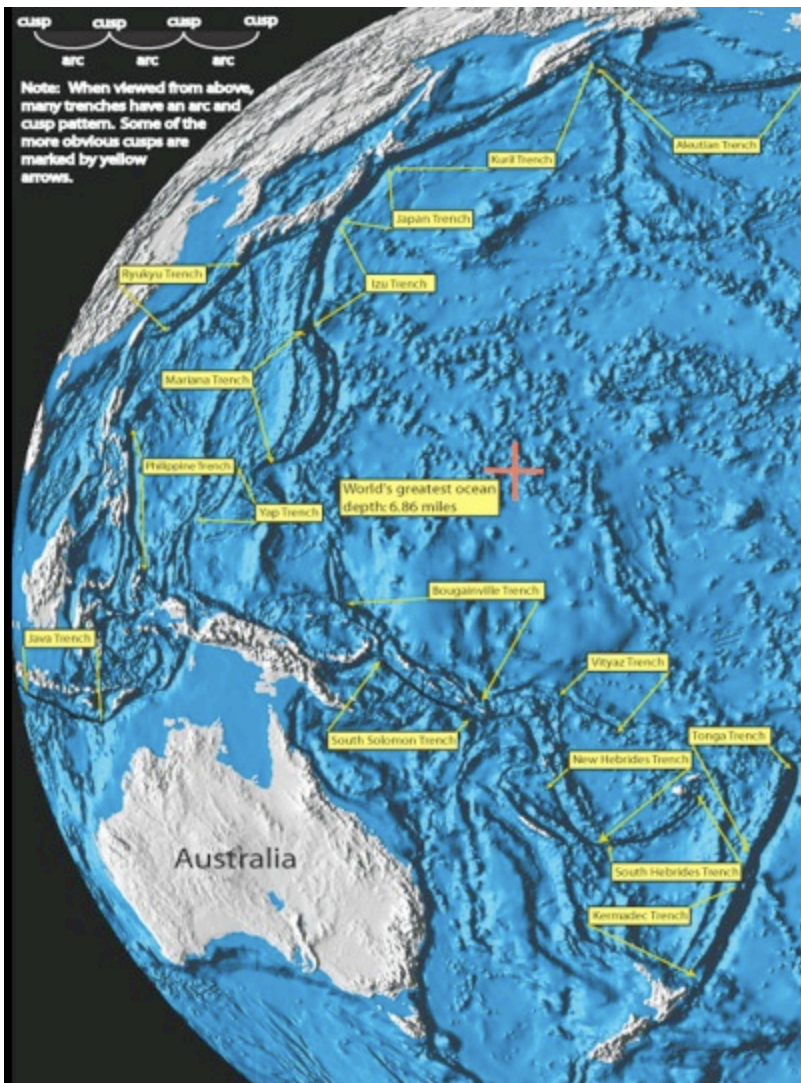


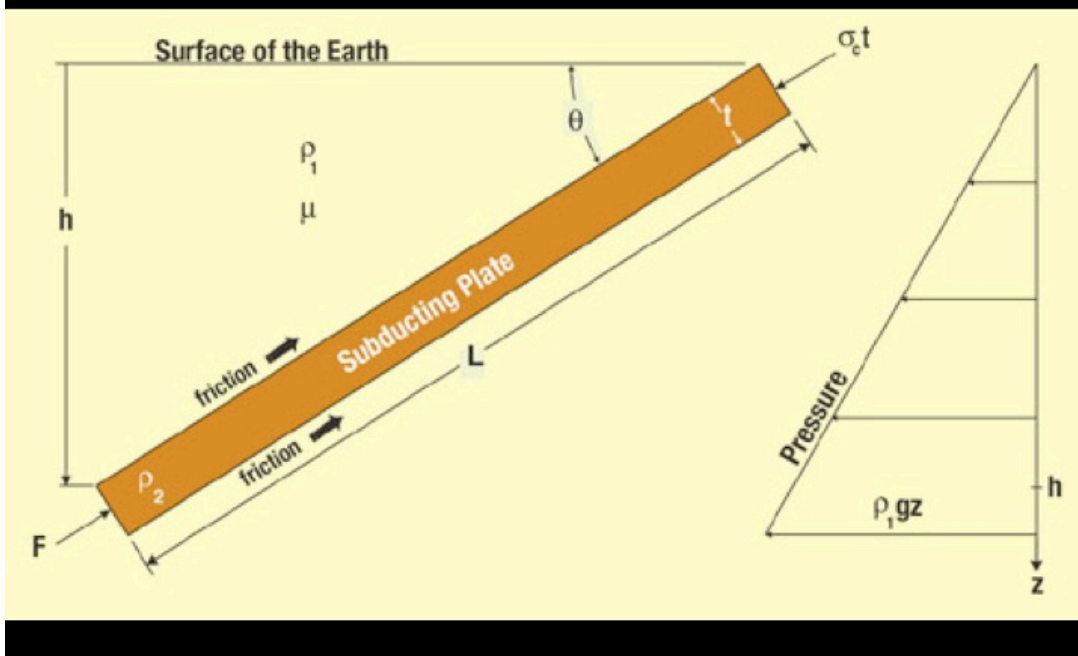
Table 3. Evidence vs. Theories: Origin of Trenches

		Theories	
		Hydroplate Theory Formed by Movements Inside Earth and Subsiding Western Pacific Floor Driven by Gravity	Plate Tectonic Theory Formed by Subducting Plates Driven by Heat
Evidence to be Explained	Gravity Anomalies	● 1	● 2
	Flood Basalts	● 3	● 4
	Core-Mantle Boundary	● 5	● 6
	Seamounts and Tablemounts	● 7	● 8
	Stretched Oceanic Ridges	● 9	● 10
	Continental Material under Ocean Floor	● 11	● 12
	Images of Earth's Interior	● 13	● 14
	Fast Seismic Waves	● 15	● 16
	Fossils in Trenches	● 17	● 18
	Earthquake Driving Force	● 19	● 20
	Tension Failures	● 21	● 22
	Wide Earthquakes	● 23	● 24
	Reasonable Driving Mechanism	● 25	● 26
	Displaced Material	● 27	● 28
	Frictional Resistance	● 29	● 30
	Arcs and Cusps	● 31	● 32
	Concentrated Trenches	● 33	● 34
	Undistorted Layers in Trenches	● 35	● 36
	Initiation	● 37	● 38
	Scattered Volcanoes	● 39	● 40
	"Fossil" Trenches	● 41	● 42
	Other	● 43	● 44-47

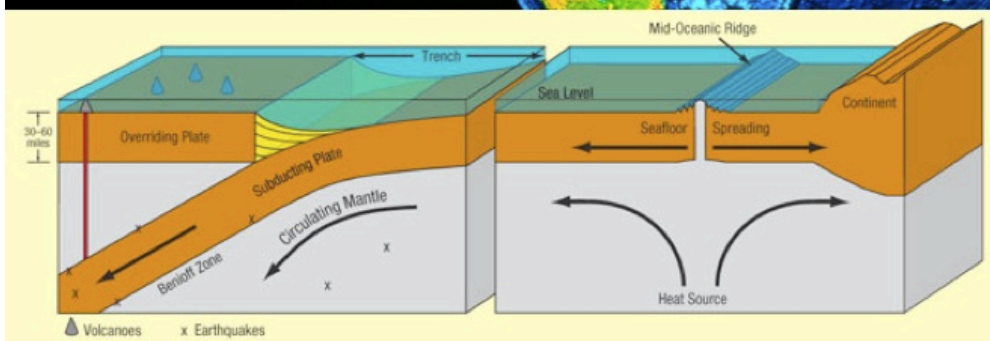
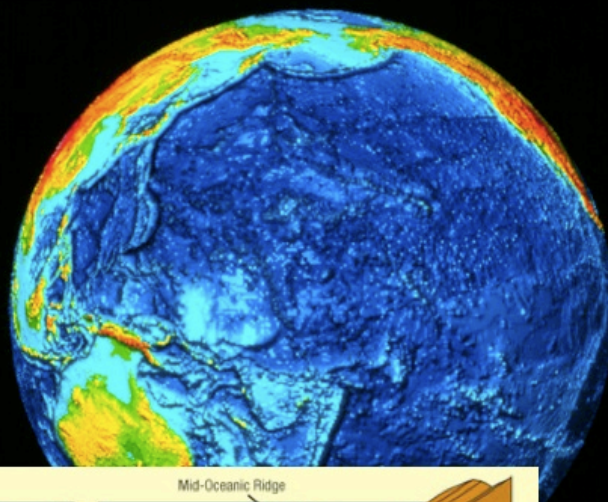
Table 5. Subduction: Possible or Impossible?

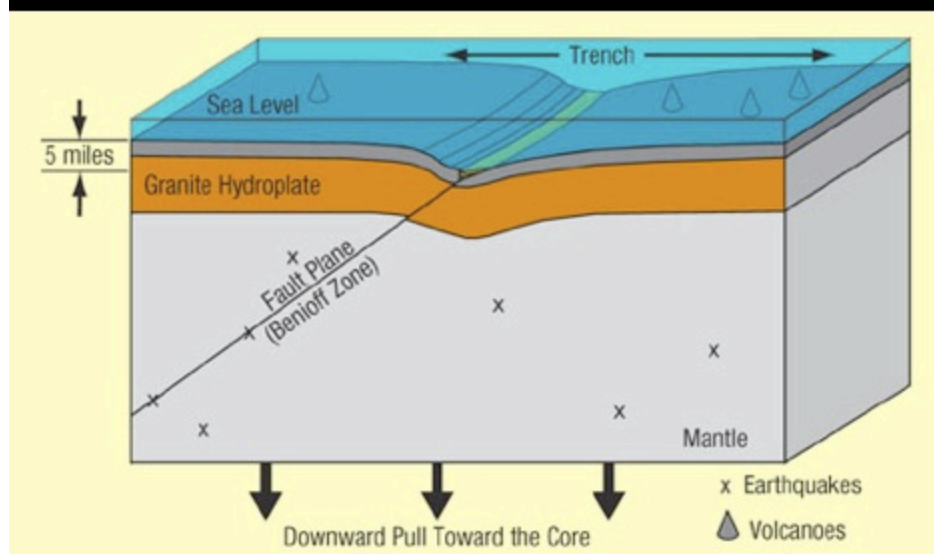
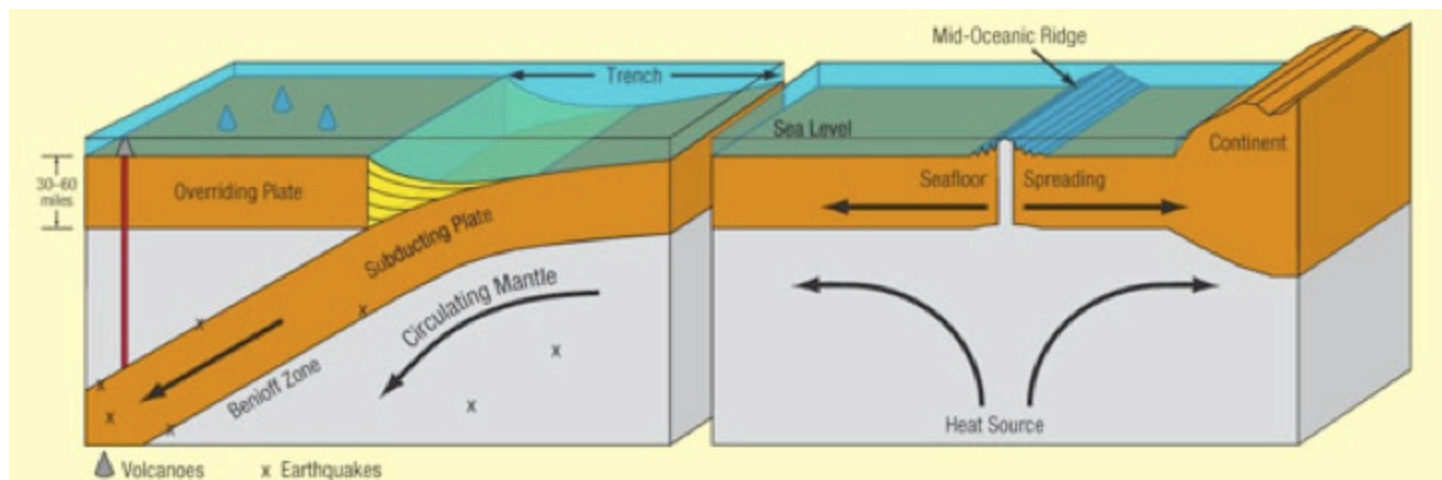
Why We Know Plates Have Not Subducted	See Pages
1. A subducting plate would experience too much resistance in diving down through just the top of the mantle. The blunt, front end alone would stop movement. The unspecified force needed to overcome these resistances would (if a push force) crush the plate or (if a pull force) pull the plate apart.	149, 151–152, 401
2. Sediments, volcanoes, and plateaus have not been scraped off “subducting” plates in trenches.	153
3. Sedimentary layers in trenches are undisturbed. These layers would be mangled if plates subducted.	153
4. Forces are not available to break the crust into plates or separate those plates from their bases.	153
5. One plate cannot even begin its dive under an adjacent plate that is 30–60 miles thick, because cliffs cannot be higher than 5 miles.	153–154
6. Subduction cannot occur along an arc. Subduction is geometrically possible along only a straight line. (The arc and cusp pattern of oceanic trenches indicates subsidence, not subduction.)	152
7. Most volcanoes are on the wrong side of trenches if subducting plates produce volcanoes.	154
8. Below trenches are mass deficiencies, not mass excesses as subduction would produce.	141–142, 146, 152
9. Beneath trenches, large earthquakes sometimes occur across a broader region than the width of a plate.	151
10. Seismic tomography has not shown unambiguous subducted plates in even two dimensions. If plates subducted, seismic tomography could convincingly and dramatically show them in three dimensions.	149
11. Some Benioff zones are horizontal. Subducting plates should always move on a downward slope.	155
12. Thick, buoyant continents would prevent subduction.	155
13. Trench locations and lengths do not correspond to ridges as plate tectonic theory requires.	154
14. At the three locations where a trench (and supposedly a descending plate) intersects a ridge (where material is supposedly rising), material cannot be going up and down at the same time.	154
15. Ancient trenches have not been found.	154

Weak Tensile Strength of Granite



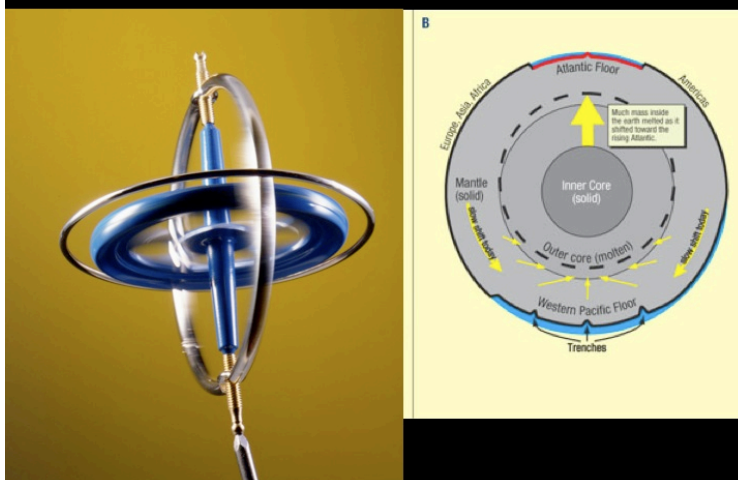
Lack of Trench Rubble

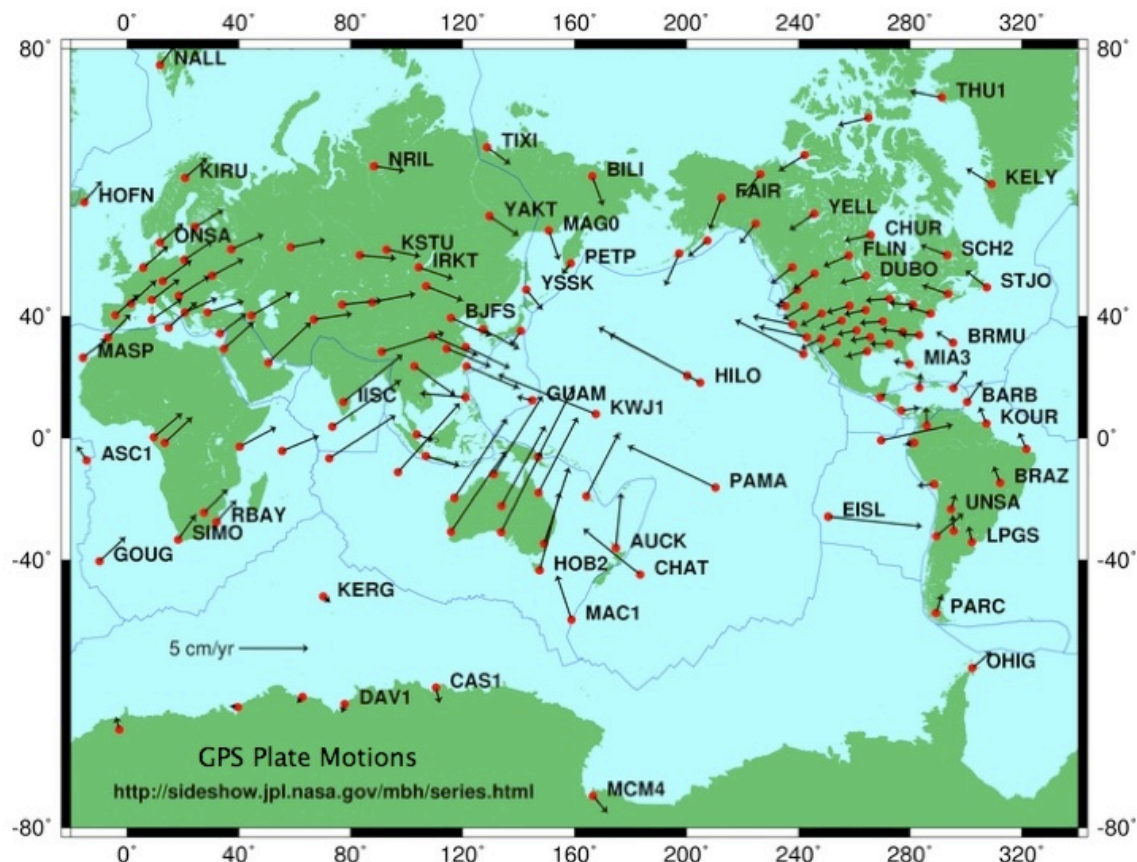




Gravitational Anomalies Over Trenches

Origin of Earthquakes

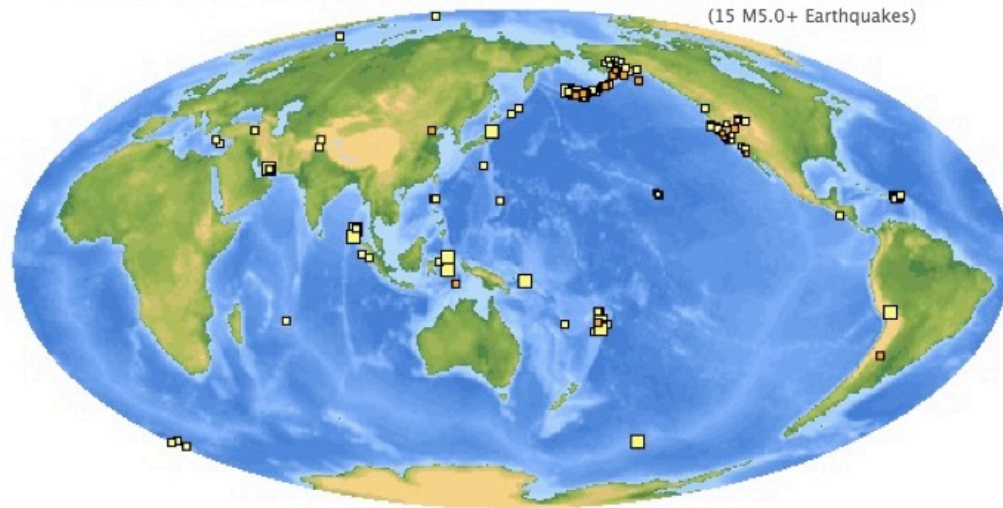




USGS Earthquake Center: 7 Day Summary (6.27.06–7.4.06)

Tue Jul 4 14:04:57 UTC 2006

232 earthquakes on this map
 (15 M5.0+ Earthquakes)



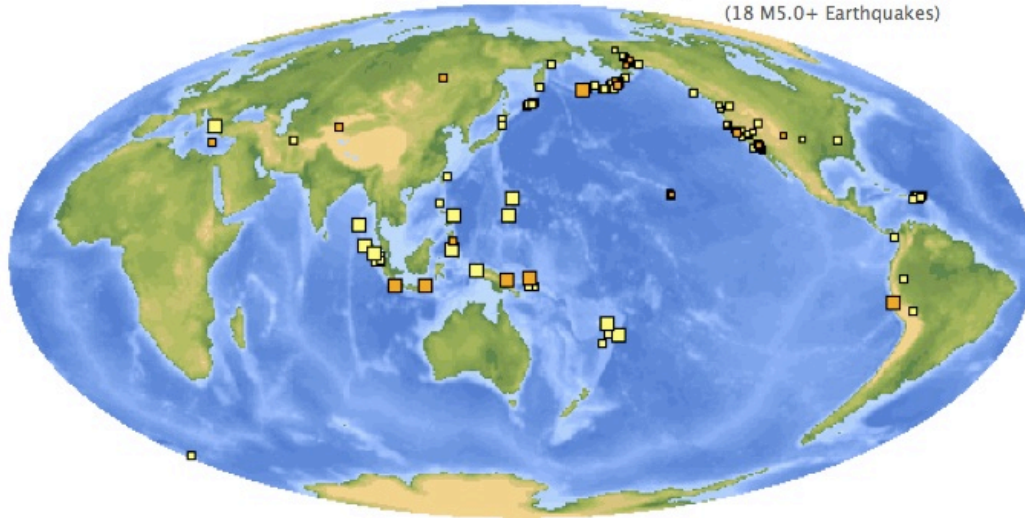
ages
 last hour day week
 magnitudes
 >7 >5 >2.5 ? (not known)

Worldwide earthquakes with M4.0+ located by USGS and Contributing Agencies.
 (Earthquakes with M2.5+ within the United States and adjacent areas.) <http://earthquake.usgs.gov/eqcenter/recenteqsww/>

USGS Earthquake Center: 7 Day Summary (12.17–12.24.06)

Sun Dec 24 16:26:36 UTC 2006

134 earthquakes on this map
(18 M5.0+ Earthquakes)



ages magnitudes

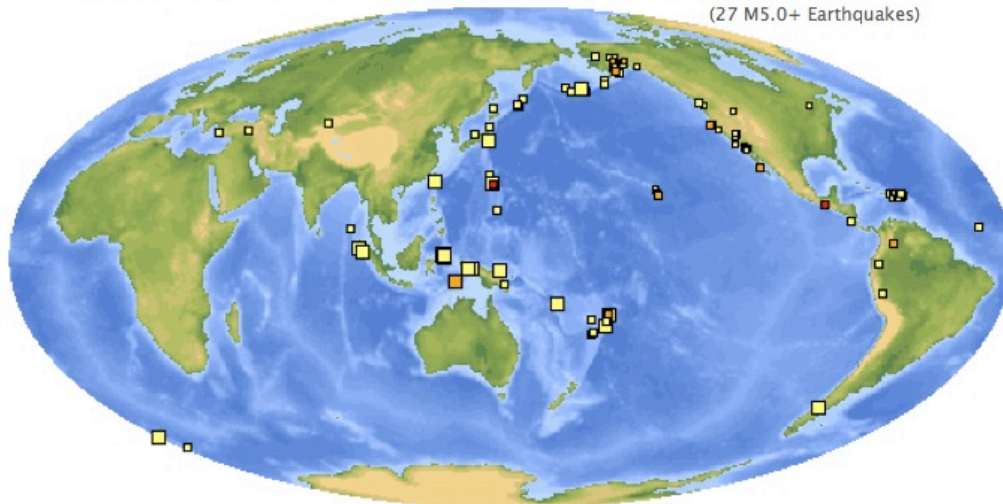
■ last hour ■ day ■ week □ >7 □ >5 □ >2.5 ☒ ? (not known)

Worldwide earthquakes with M4.0+ located by USGS and Contributing Agencies.
(Earthquakes with M2.5+ within the United States and adjacent areas.) <http://earthquake.usgs.gov/eqcenter/recenteqsw/>

USGS Earthquake Center: 7 Day Summary (3.11–3.18.07)

Mon Jan 29 13:25:28 UTC 2007

156 earthquakes on this map
(27 M5.0+ Earthquakes)

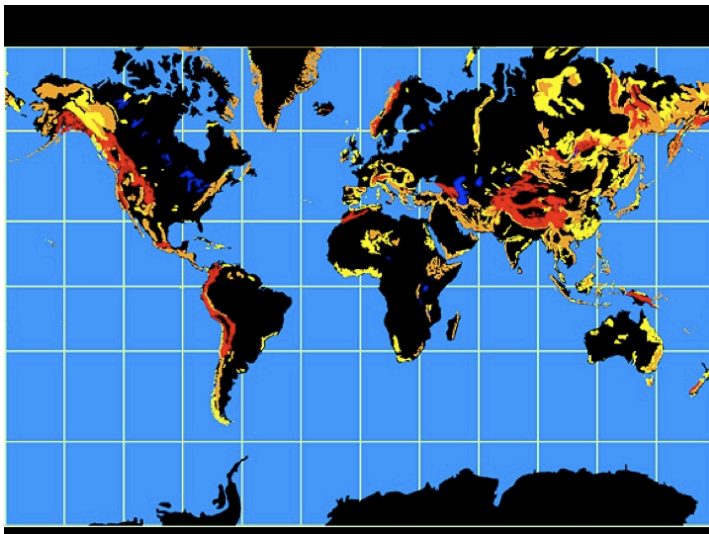
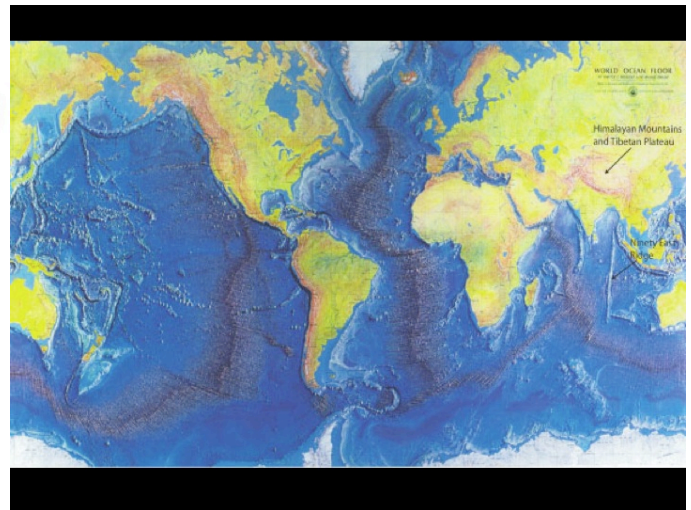
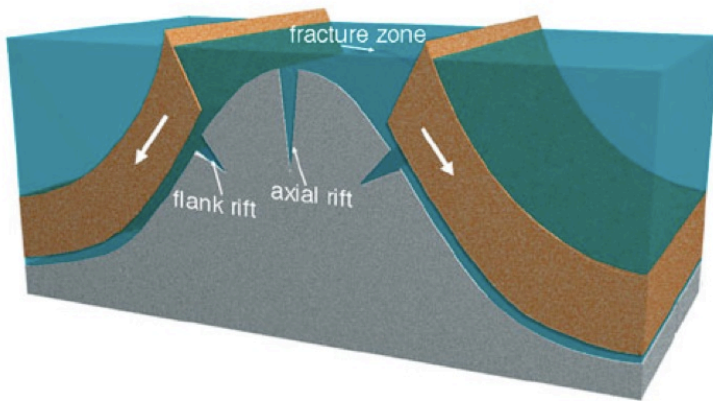


ages magnitudes

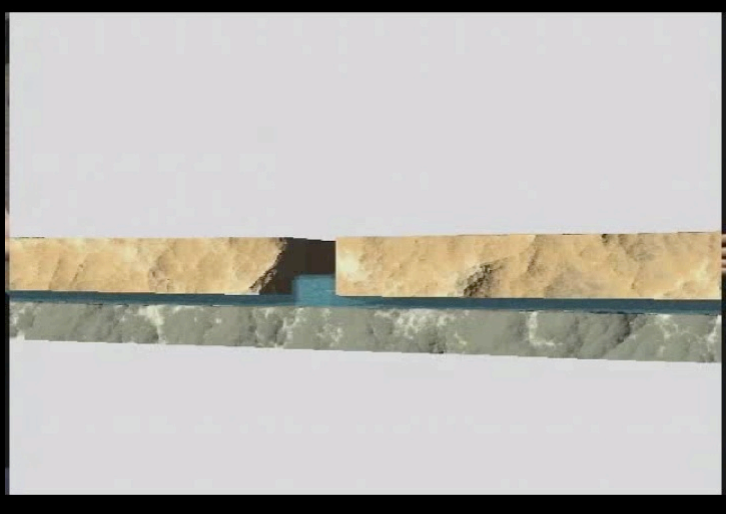
■ last hour ■ day ■ week □ >7 □ >5 □ >2.5 ☒ ? (not known)

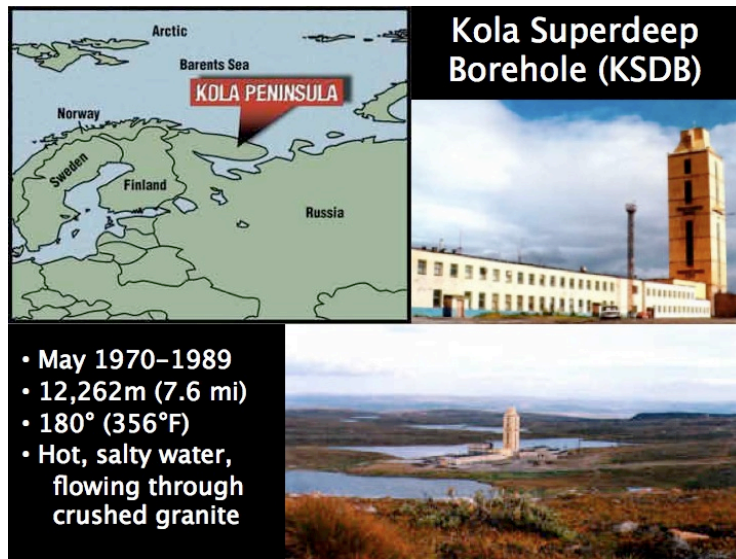
Worldwide earthquakes with M4.0+ located by USGS and Contributing Agencies.
(Earthquakes with M2.5+ within the United States and adjacent areas.) <http://earthquake.usgs.gov/eqcenter/recenteqsw/>

Formation of Major Mountains Ranges

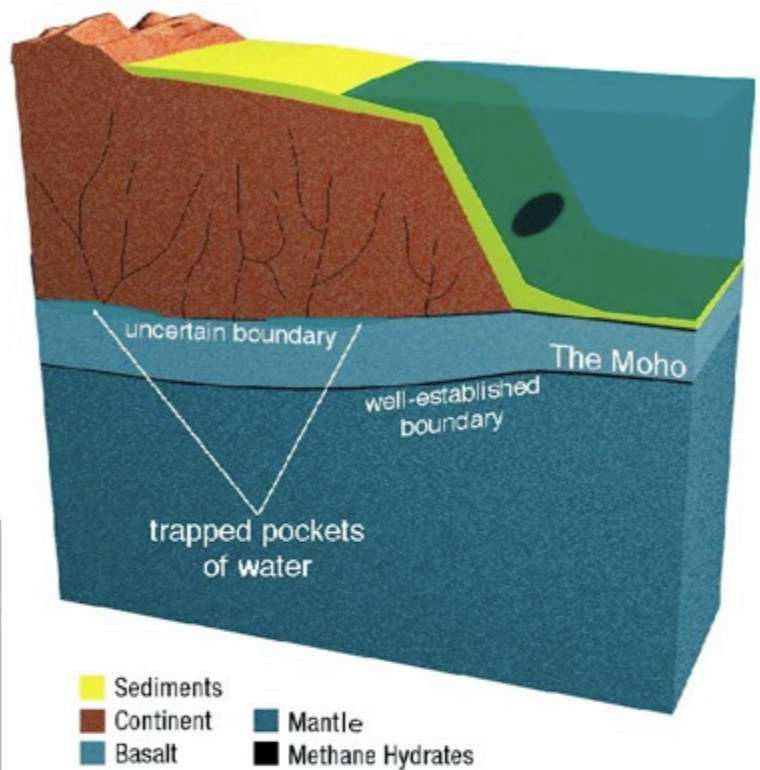


Mountains Near the Sullivan River – British Columbia, Canada



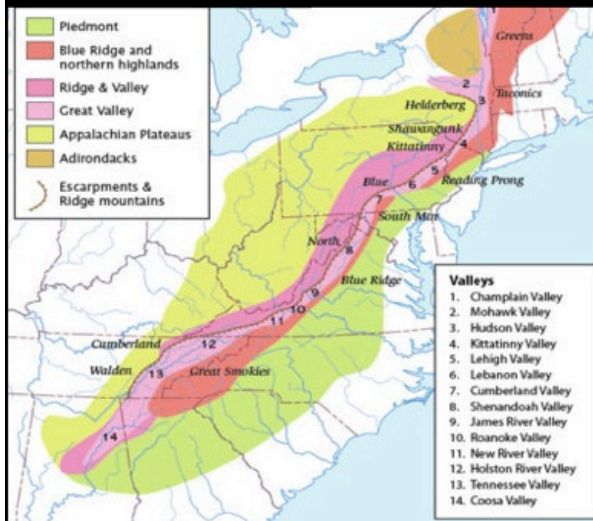


Appalachian Ultradeep Core Hole (ADCOH)



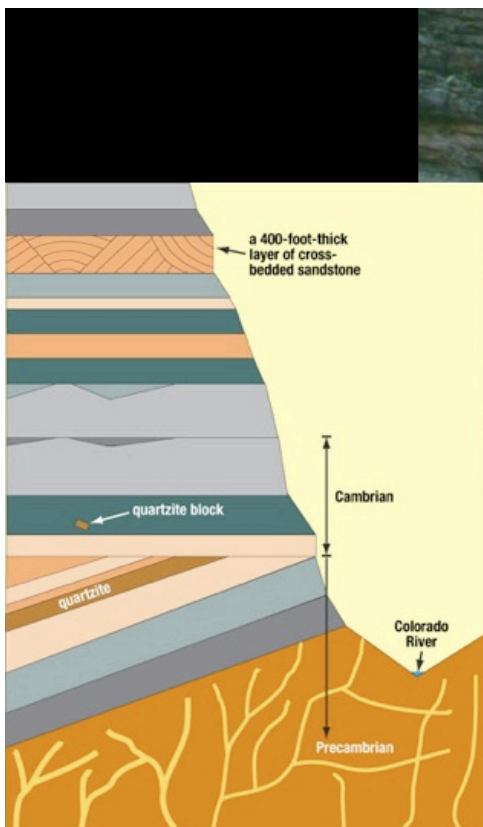
- Near Westminster, South Carolina
- Robert D. Hatcher, Univ. of Tennessee
- http://geothermal.geol.vt.edu/adcoh_s.html

Overthrusts

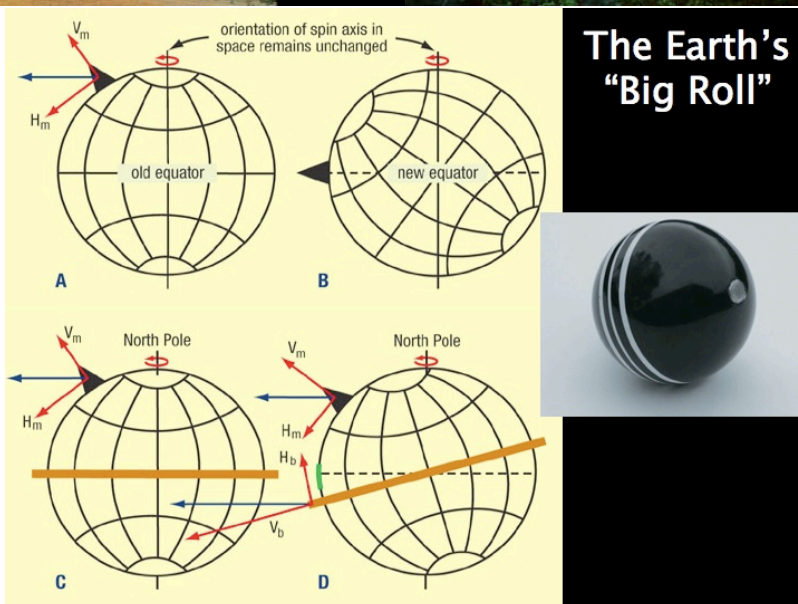
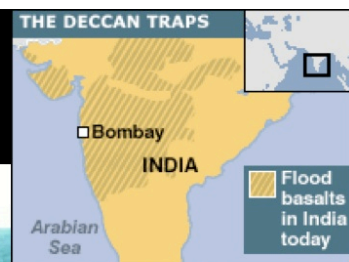
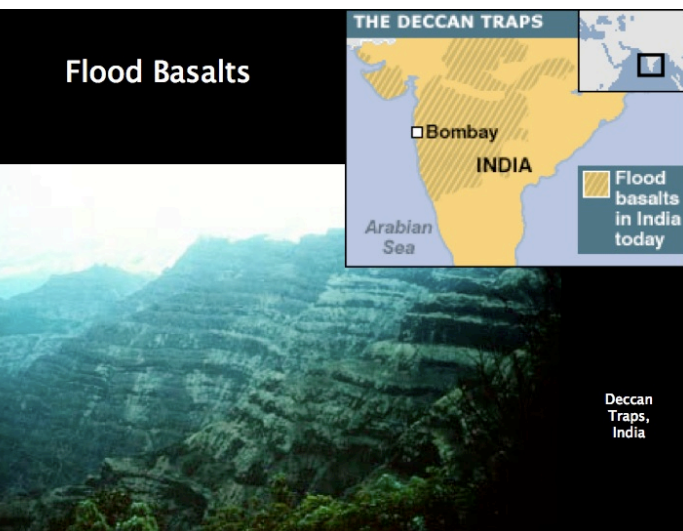
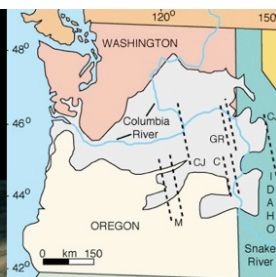
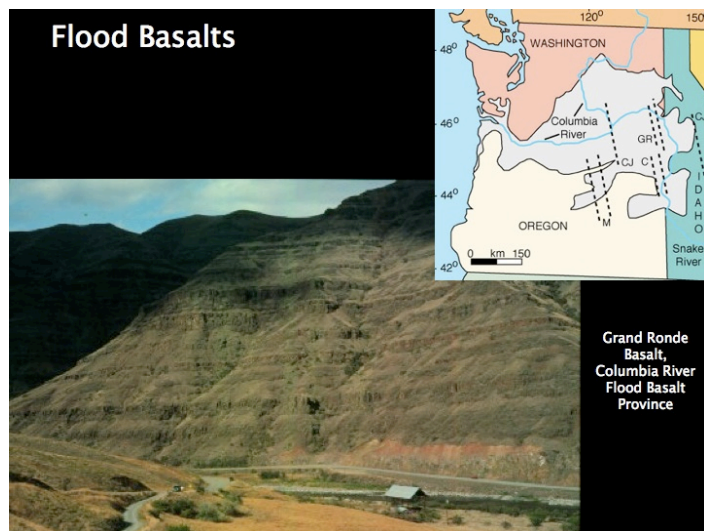


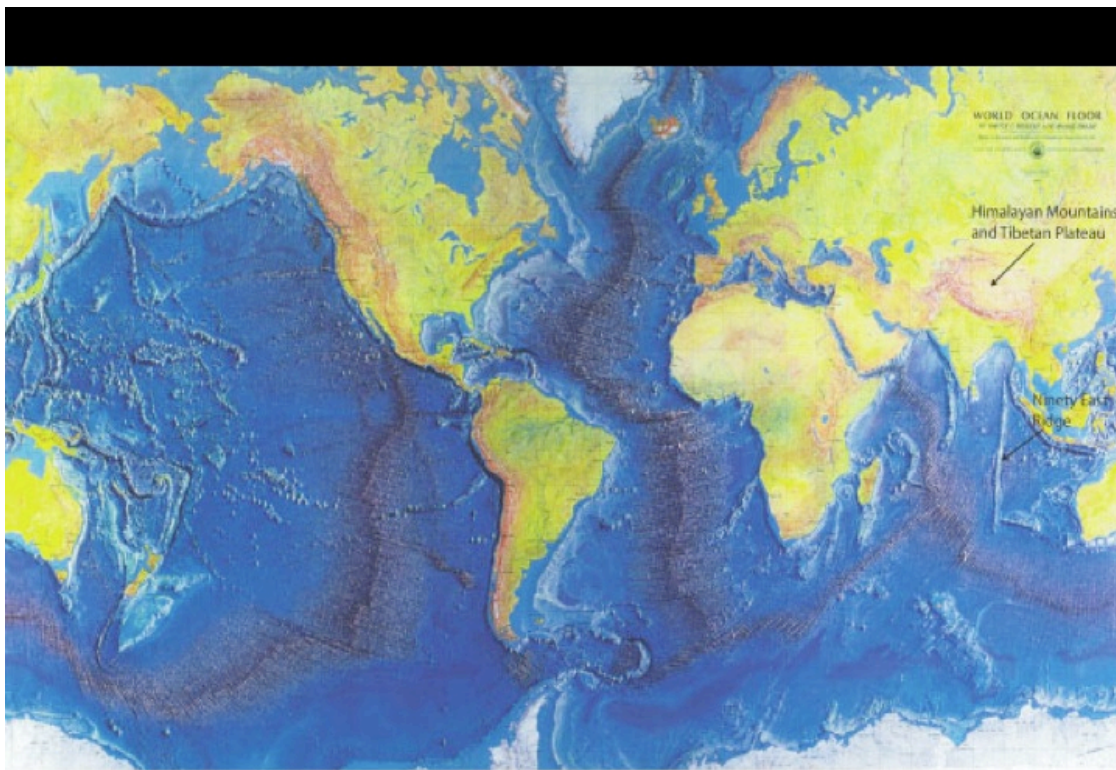
The Matterhorn
(Swiss Alps)

Appalachian
Mountains



Grand Canyon
Overthrust

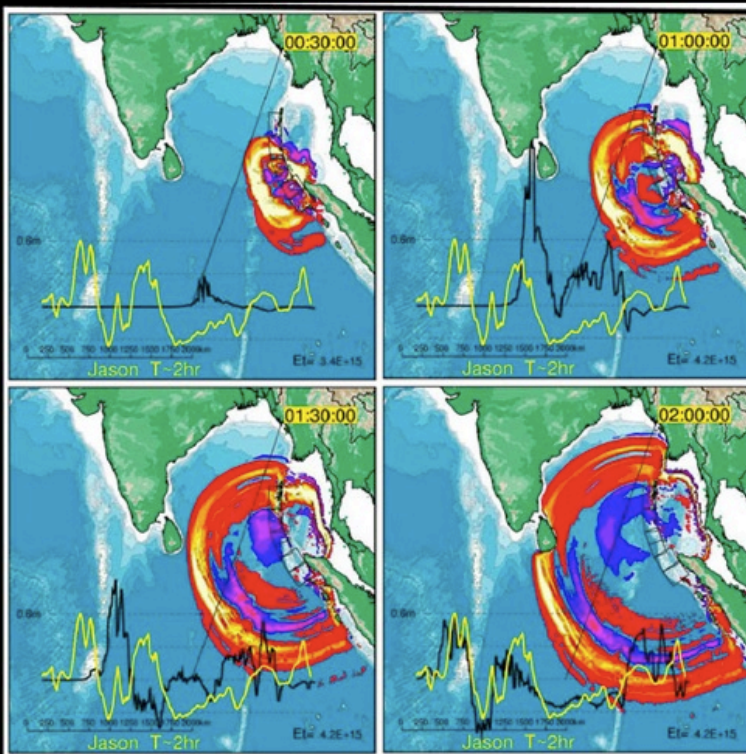




"The Earth 'Unzipped'"

"The great Sumatra-Andaman earthquake of Dec. 26 'unzipped' an 800-mile stretch... from Banda Aceh northward, taking anywhere from seconds to hours to unevenly push up different locations 17 to 50 feet."

<http://dsc.discovery.com/news/briefs/20050516/quakestudy.html>



(cf. <http://igscb.jpl.nasa.gov/mail/igsmail/2005/msg00005.html>)

“IGSMail-5082: IGS and the Earthquake offshore Sumatra ”

Dear IGS [International GPS Service] Community,

we all were shocked by the effect of the earthquake offshore the coast of Sumatra on December 26 and the tsunami events associated with it. The question naturally arises whether (a) the IGS products were negatively affected by the event and whether (b) the event left its traces in the IGS products...

The IGS will continue to analyze the data to improve our understanding of the geophysical processes. We do not comment on the origin of the motion... The IGS only provides observational evidence, no interpretation.

First evidence that the stations NTUS and IISC(BAN2) (1000 km from the epicenter) are shifted ~1–2 cm in the eastern direction can even be obtained using the Precise Point Positioning with the IGS Rapid orbits and clocks (see attached plot), and are clearly seen from the Final analysis...

Gerd Gendt, IGS Analysis Coordinator

<http://igs.cb.jpl.nasa.gov/mail/igsmail/2005/msg00005.html>

AMERICA'S TSUNAMI: ARE WE NEXT?

**December 18, 2005
Discovery Channel**

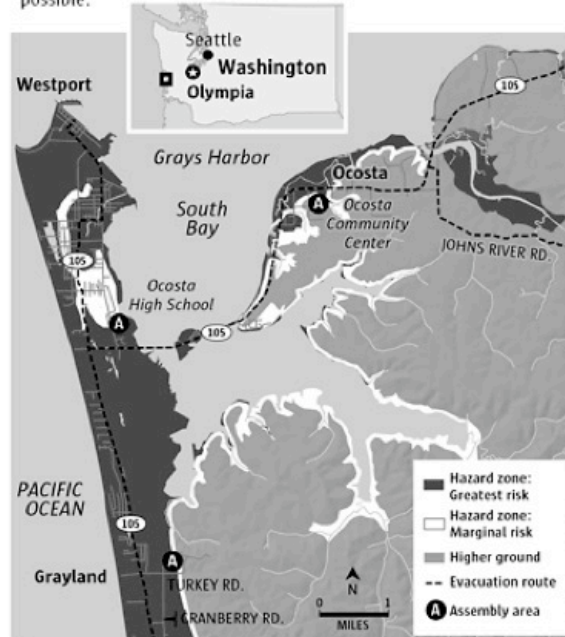
"Tsunami expert's forecast 'raises a flag'"

by Sandi Doughton,
The Seattle Times,
7 December 2005

http://seattletimes.nwsources.com/html/localnews/2002668973_tsunami07m.htm

Will "high ground" be safe?

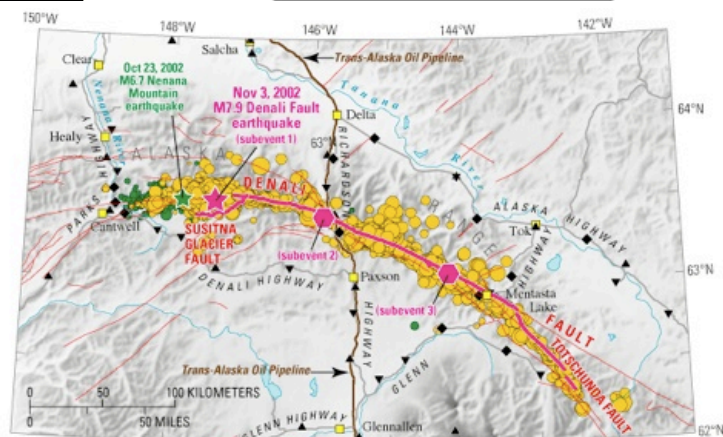
Some designated safe zones in coastal areas, such as Ocosta High School in Westport, are less than 30 feet above sea level. The current worst-case scenario, reflected in this map, is for 30-foot tsunamis, but some scientists say waves from 65 to 98 feet are possible.



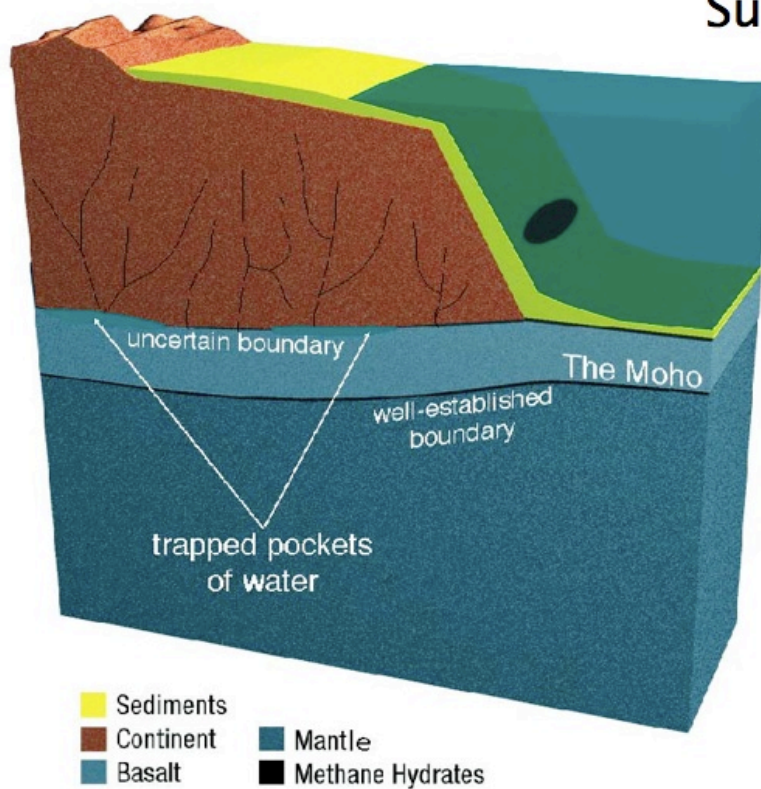
Source: Department of Natural Resources

THE SEATTLE TIMES

Denali Earthquake (11.3.2002)

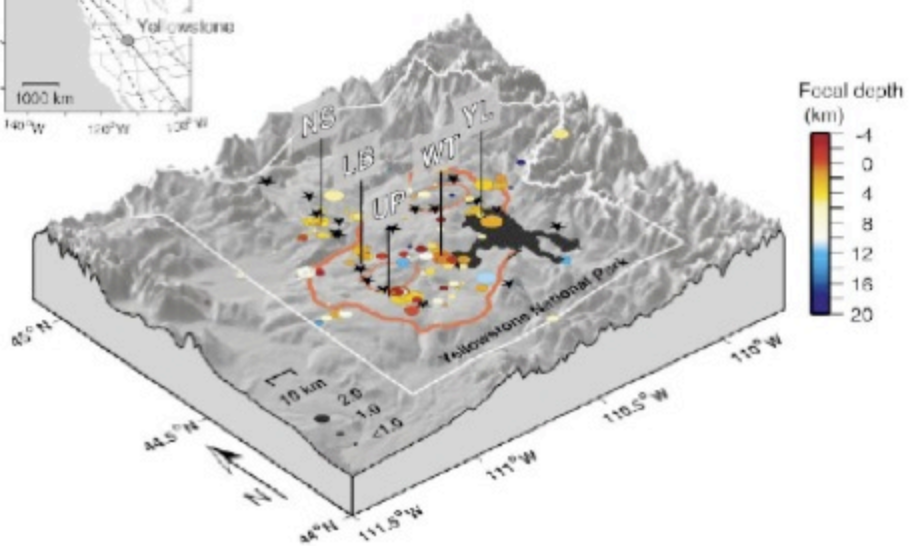
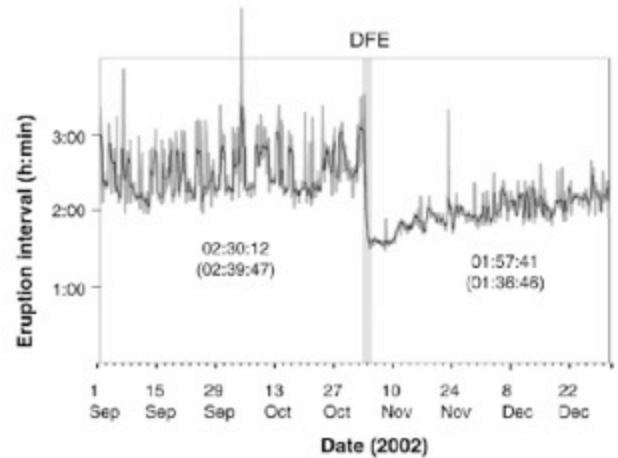
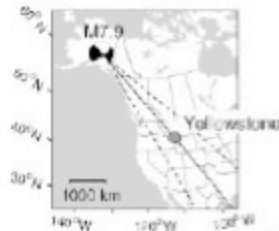
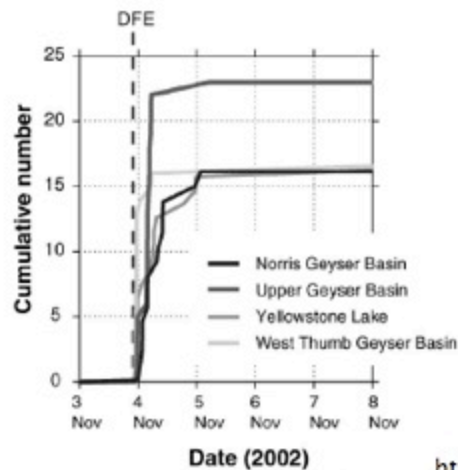


<http://pubs.usgs.gov/fs/2003/fs014-03/>



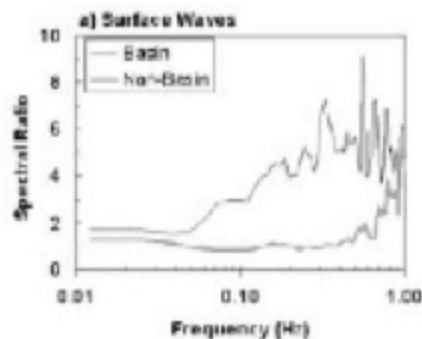
Subterranean
Water

Yellowstone Seismicity

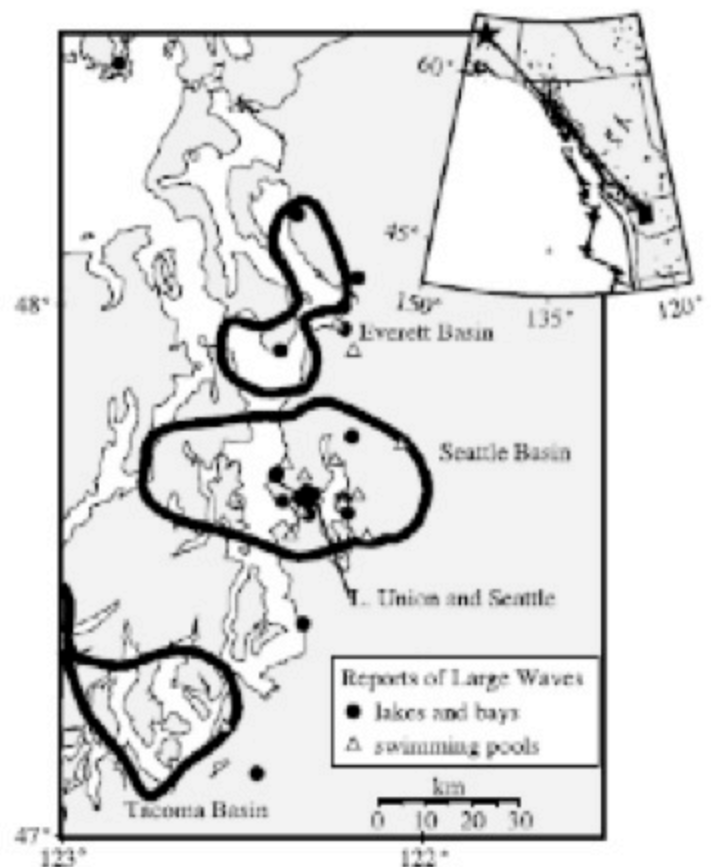
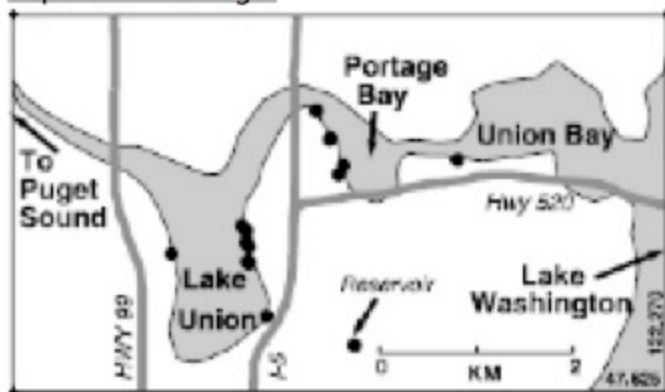


<http://www.sg.geophys.ethz.ch/aes/stephan/html/YellDenali/YellDenali.html>

Lake Union Seismicity



Reports of Damage:

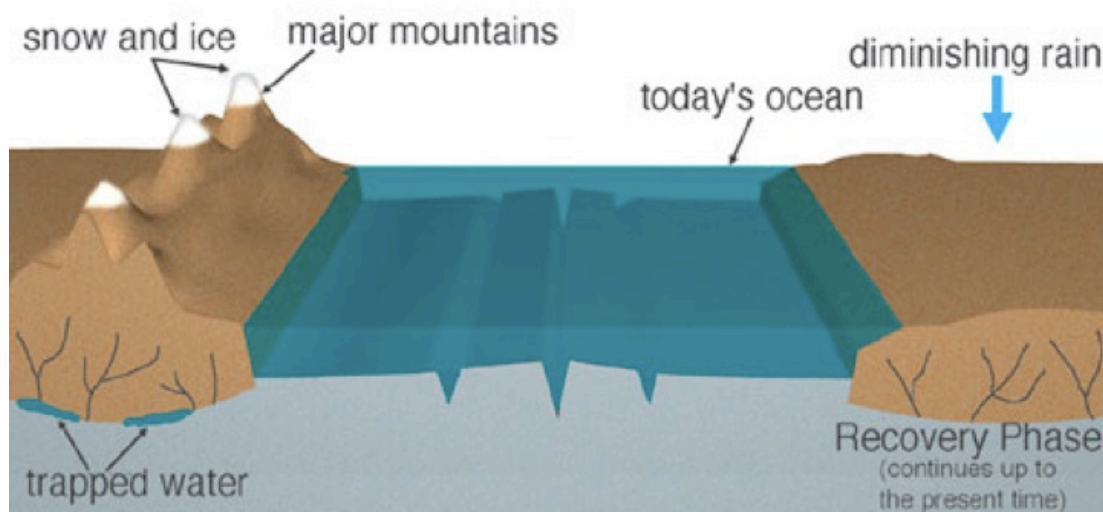


<http://faculty.washington.edu/tpratt/denali.htm>

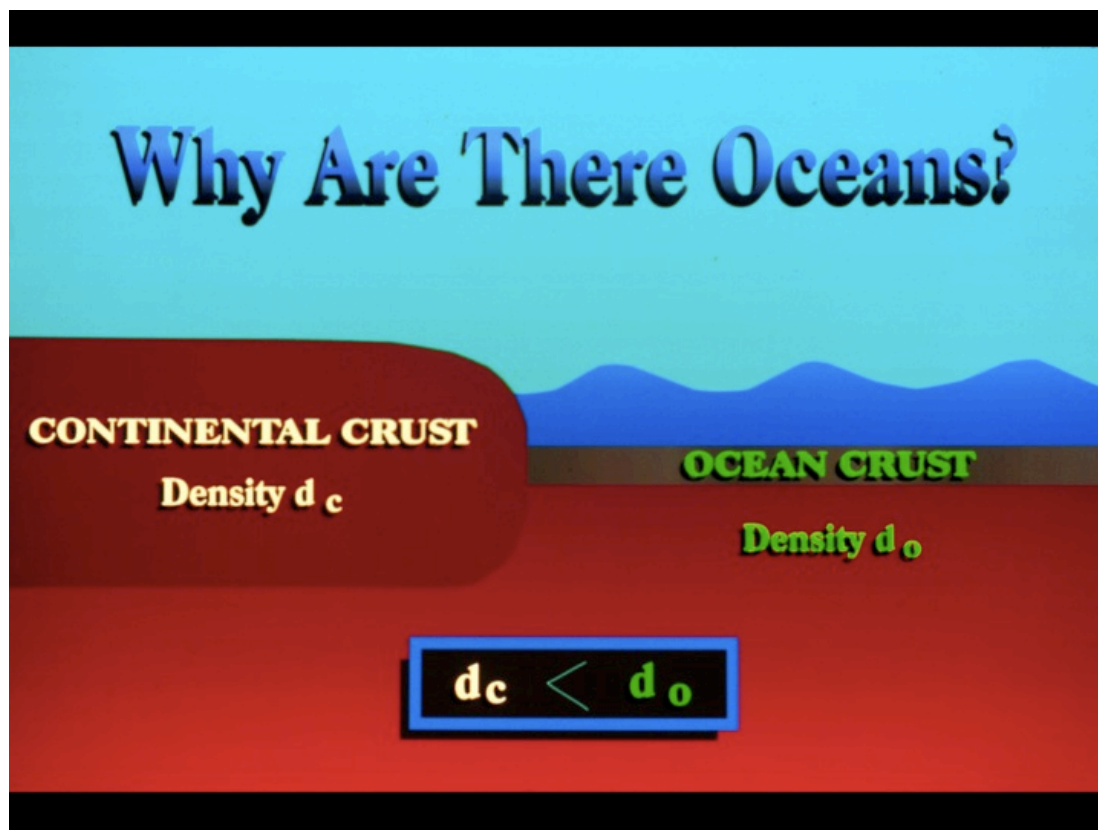
**Alaska earthquake:
effect on Lake Union,
Seattle**

**November 2002
KOMO-TV, Seattle**

RECOVERY PHASE

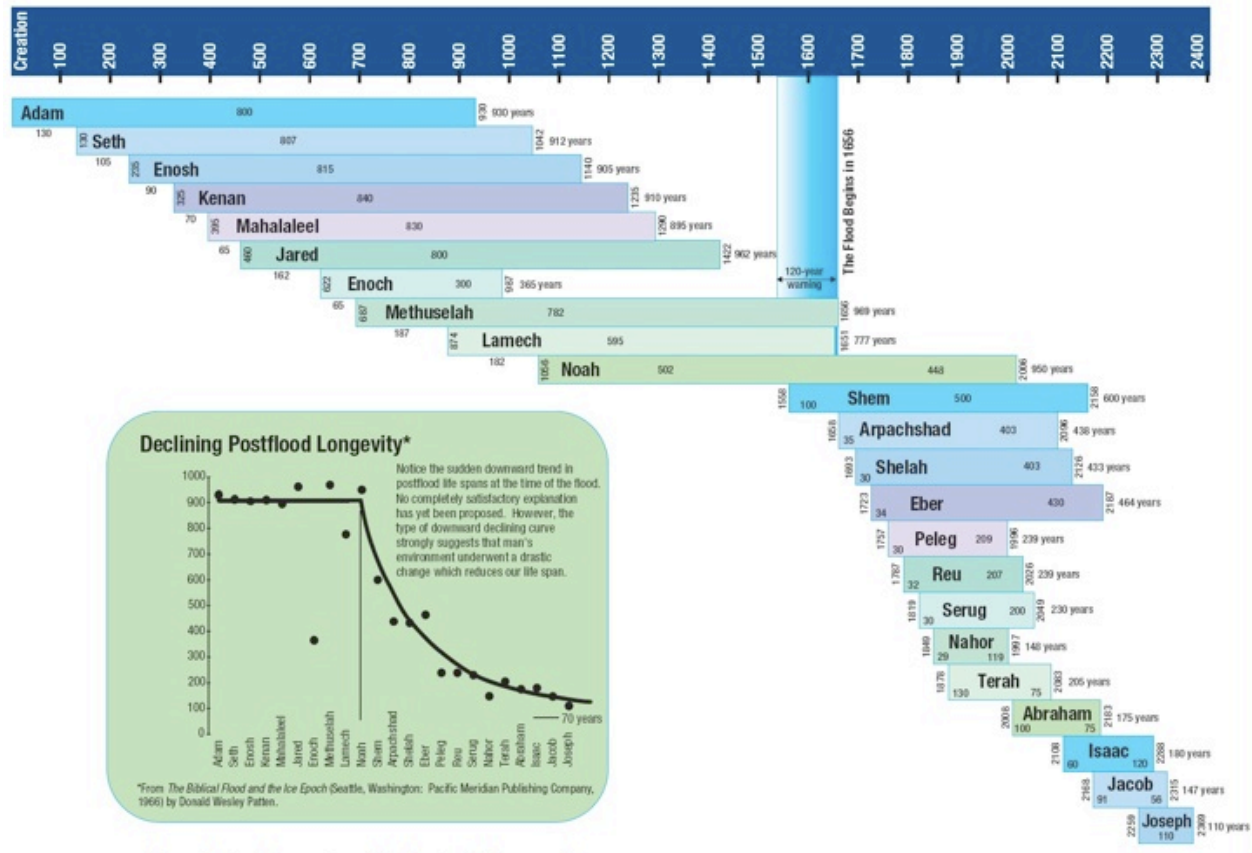


The fountains of the deep and the windows of the heavens were closed, the rain from the heavens was restrained, ³ and the waters receded from the earth continually. At the end of 150 days the waters had abated... ¹⁴ In the second month, on the twenty-seventh day of the month, the earth had dried out. (ESV Genesis 8:2–14)



To Eber were born two sons: the name of the one was Peleg, for in his days the earth was divided, and his brother's name was Joktan. (ESV Genesis 10:25)





Noah > Ham > Cush > Nimrod
 Noah > Shem > Arpachshad > Shelah > Eber > Peleg





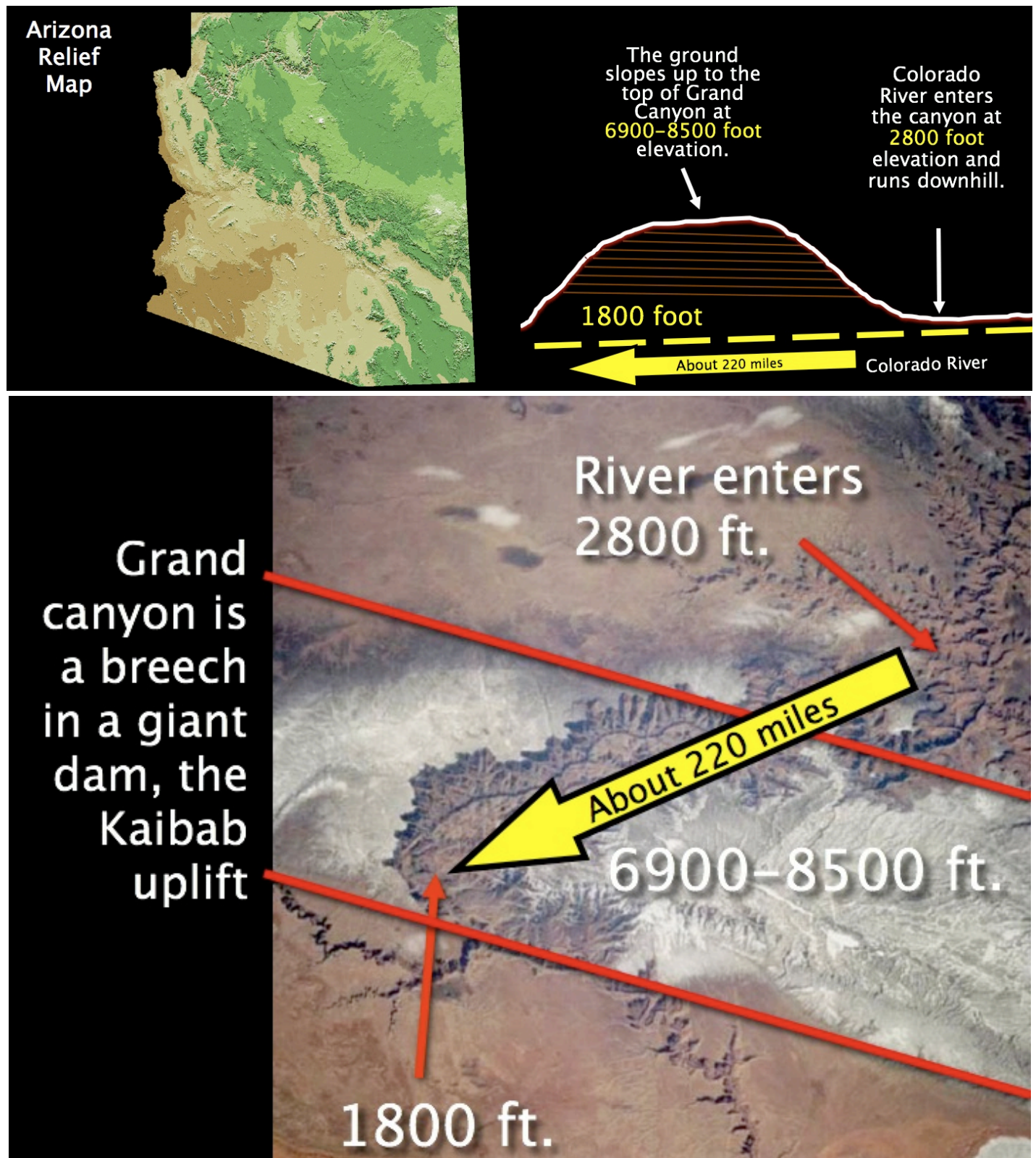


Table 6. Evidence vs. Proposals for the Origin of the Grand Canyon

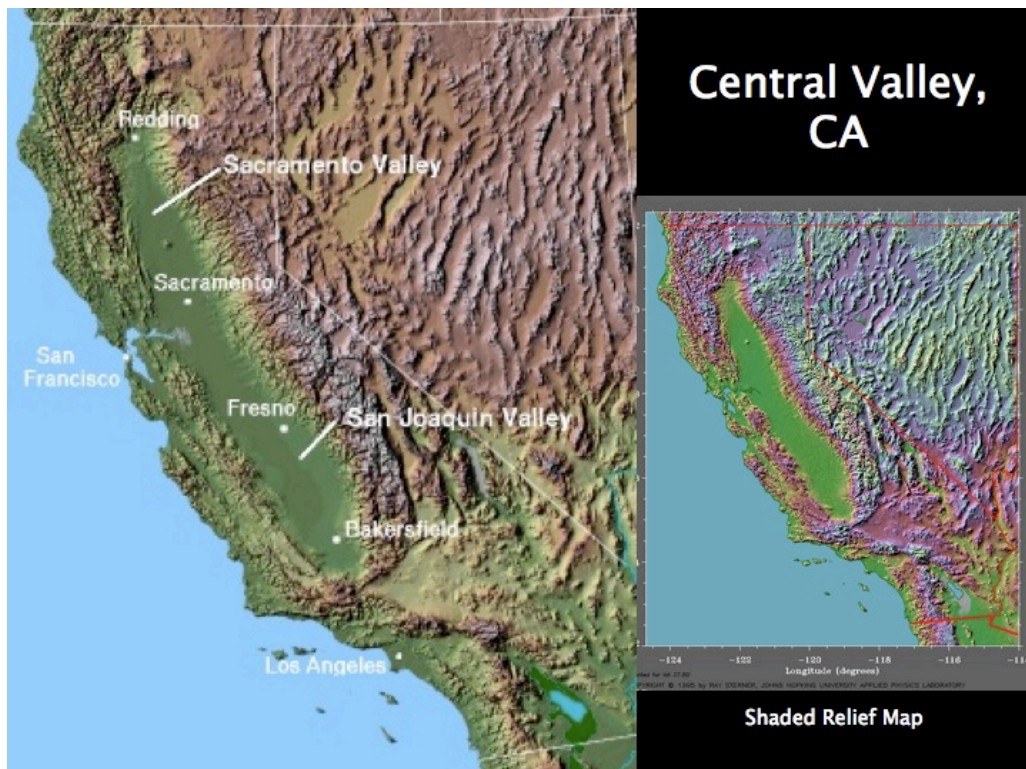
		Proposals								
		Brown (Hydroplate) 1989	Powell 1869	Gilbert 1875	Emmons 1897	Blackwelder 1934	McKee 1964	Hunt 1976	Lucchitta 1978	Meek/ Douglass 2000
Evidence to Be Explained	Layering	● 1	● 15	● 23	● 32	● 40	● 49	● 58	● 67	● 77
	Limestone	● 2	● 15	● 23	● 32	● 40	● 49	● 58	● 67	● 77
	Why Here?	● 3	● 15	● 23	● 32	● 40	● 49	● 58	● 67	● 77
	Forces, Energy, and Mechanisms	● 3	● 17	● 25	● 34	● 42	● 51	● 60	● 69	● 79
	Marble Canyon	● 4	● 15	● 23	● 32	● 40	● 49	● 58	● 67	● 77
	Side Canyons	● 5	● 16	● 24	● 33	● 41	● 50	● 59	● 68	● 78
	Slot Canyons	● 5	● 16	● 24	● 33	● 41	● 50	● 59	● 68	● 78
	Barbed Canyons	● 5	● 16	● 24	● 33	● 41	● 50	● 59	● 68	● 78
	Missing Mesozoic Rock	● 6	● 19	● 28	● 35	● 43	● 54	● 62	● 72	● 81
	Perpendicular Faults	● 7	● 15	● 23	● 32	● 40	● 49	● 58	● 67	● 77
	Arching	● 7	● 15	● 23	● 32	● 40	● 49	● 58	● 67	● 77
	Inner Gorge	● 7	● 15	● 23	● 32	● 40	● 49	● 58	● 67	● 77
	Missing River	● 8	● 18	● 26	● 36	●	● 52	● 61	● 70	●
	Missing Talus	● 9	● 15	● 23	● 32	● 40	● 49	● 58	● 67	● 77
	Kaibab Plateau	● 9	●	● 27	●	●	● 53	●	● 71	● 80
	Nankowap Canyon	● 10	● 15	● 23	● 32	● 40	● 49	● 58	● 67	● 77
	Unusual Erosion	● 10	● 15	● 23	● 32	● 40	● 49	● 58	● 67	● 77
	Missing Dirt	● 11	● 18	● 26	● 36	●	●	● 63	● 73	●
	Fossils	● 1	● 20	● 29	● 37	● 44	● 55	● 64	● 74	● 82
	Tipped Layers below Unconformity	● 12	● 21	● 30	● 38	● 46	● 56	● 66	● 76	● 83
	Time or Intensity?	● 13	● 22	● 31	● 39	● 46	● 57	● 66	● 76	● 84
	Other	● 14				● 47-48				● 85-86

Petrified Forest National Park, AZ



Petrified Forest National Park, AZ







Soil "Scabs" on Flood Basalts



Columbia River Basalt
Stripped of Loess



Palouse Falls Gorge

University of Wisconsin:
Geology Department

"small gravel
bar"
long, 25m high, 200m wide)

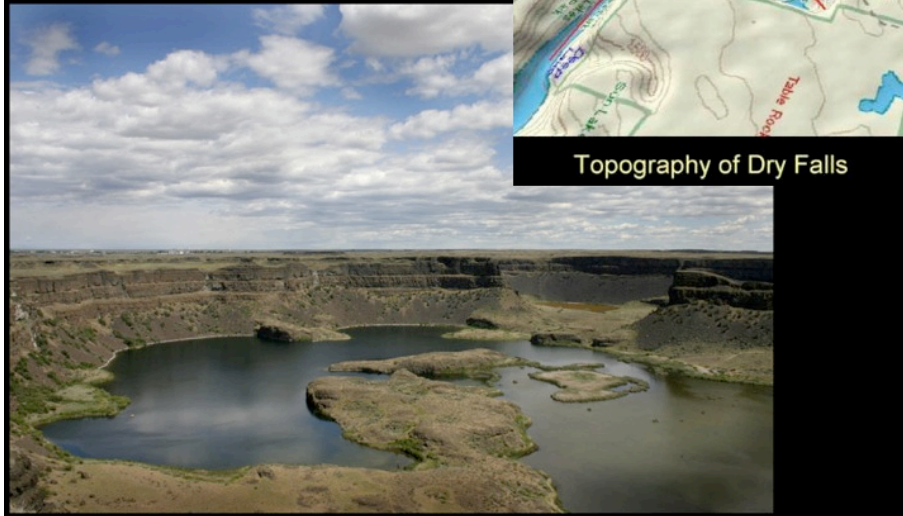


"Floods 250–300 meters deep
moving 15–25 meters per
second or more..."

"Are you getting the numbers
here? This is water a thousand
feet deep, moving with the
force of a fire hose."

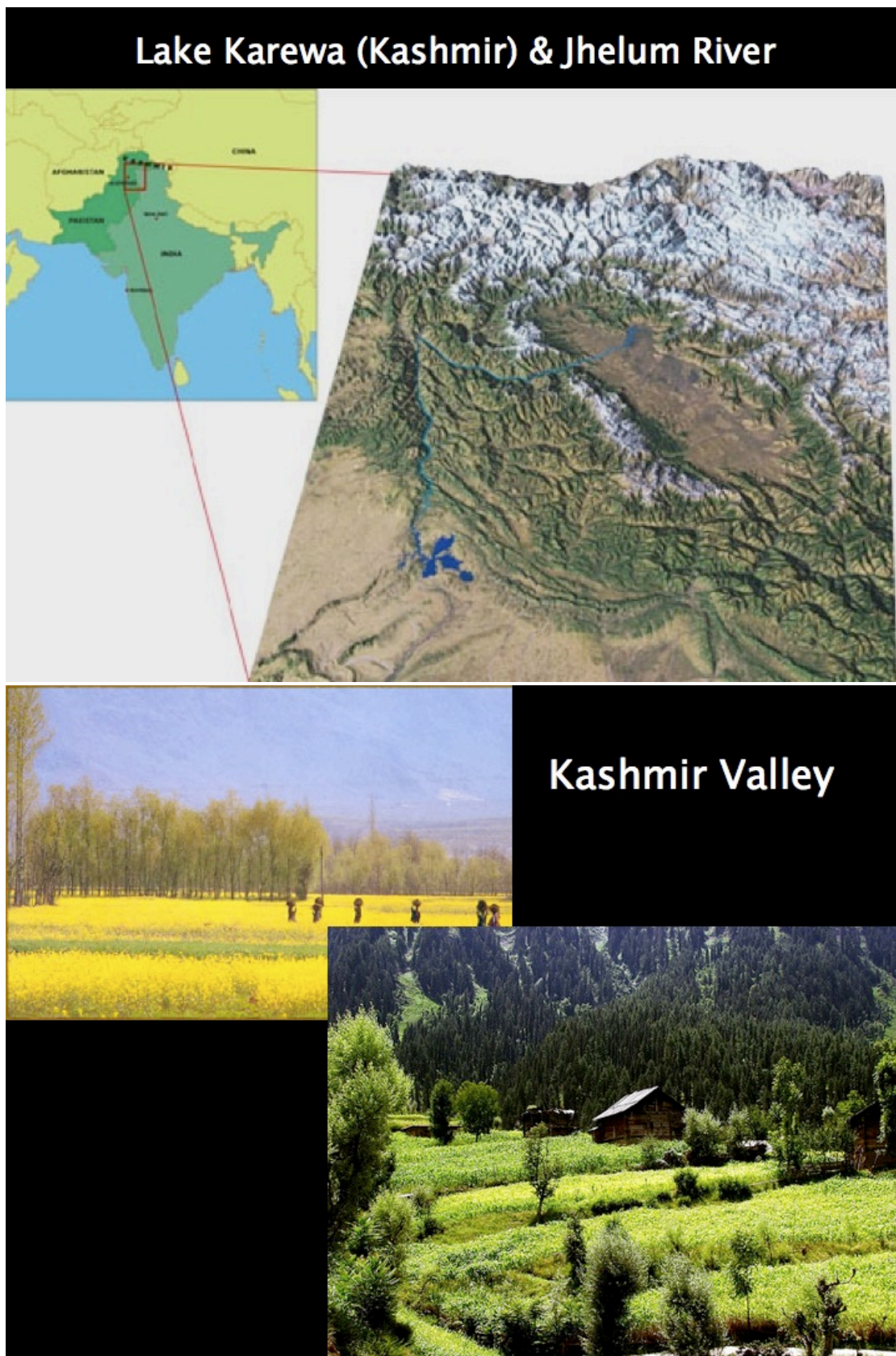
[http://www.uwsp.edu/geo/
projects/geoweb/participants/
dutch/vtrips/Scablands0.HTM](http://www.uwsp.edu/geo/projects/geoweb/participants/dutch/vtrips/Scablands0.HTM)

“Dry Falls”

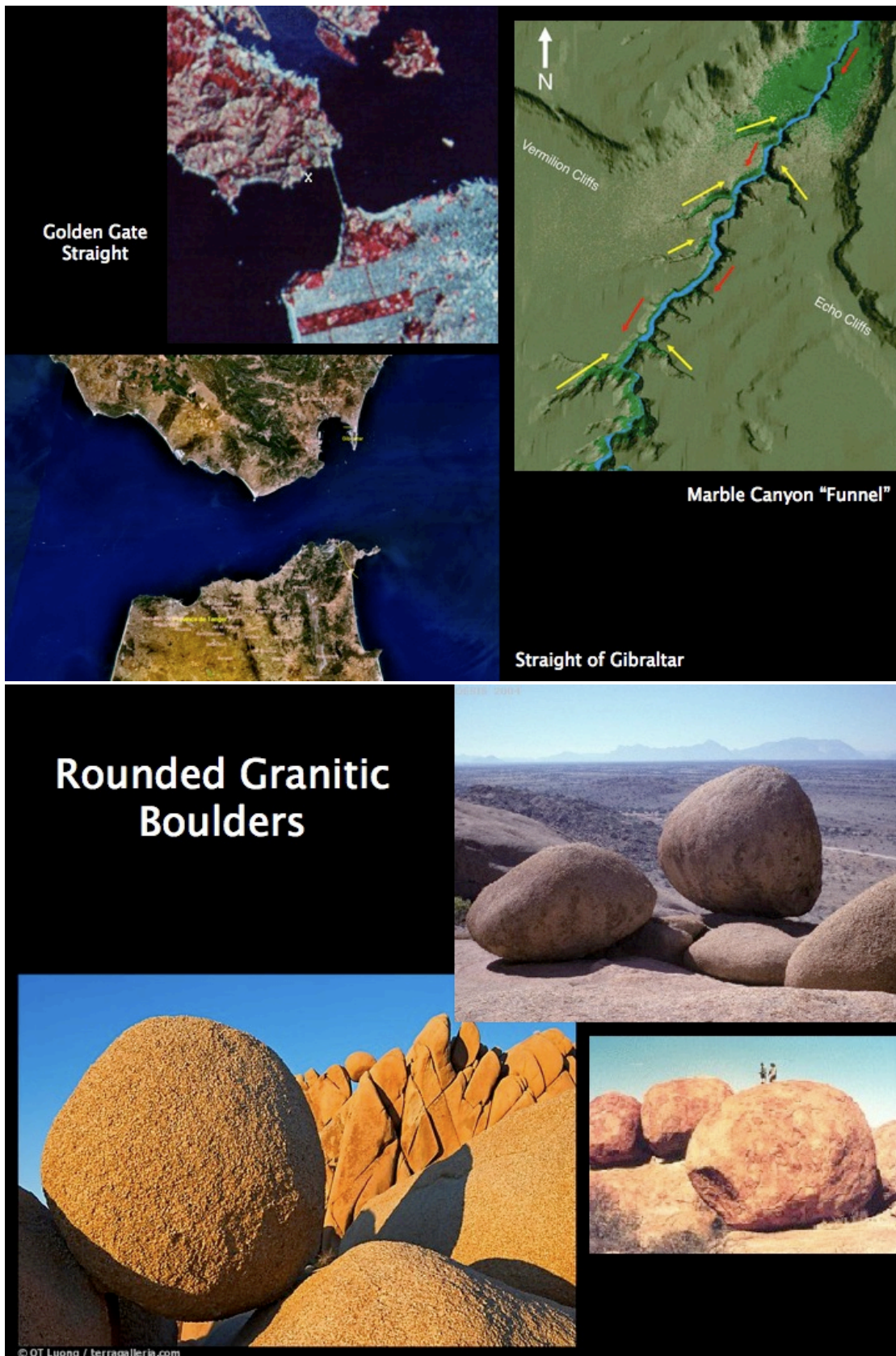


“Glacial Lake Missoula” (~15Kya)



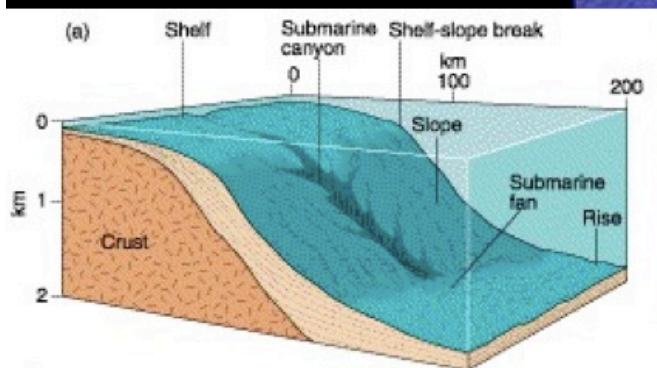






Formation of Submarine Canyons

(Cf. Congo, Amazon, Hudson, Ganges, Indus, and Bering Canyons)



La Jolla Canyon

Monterey Canyon

