

“The Age of the Earth”

Gerald Lenner, Ph.D.
November 5, 2010

Talk Outline

- What all clocks have in common
- Evidences for a young earth
- Detailed examples for selected evidences
- Radiometric dating
- RATE Project
- Future trends in creation research

The Age of the Earth:

Enter the Hall of Contradictions

An Ongoing Question

A World of Inconsistencies

A Subject as Large as Creation Itself

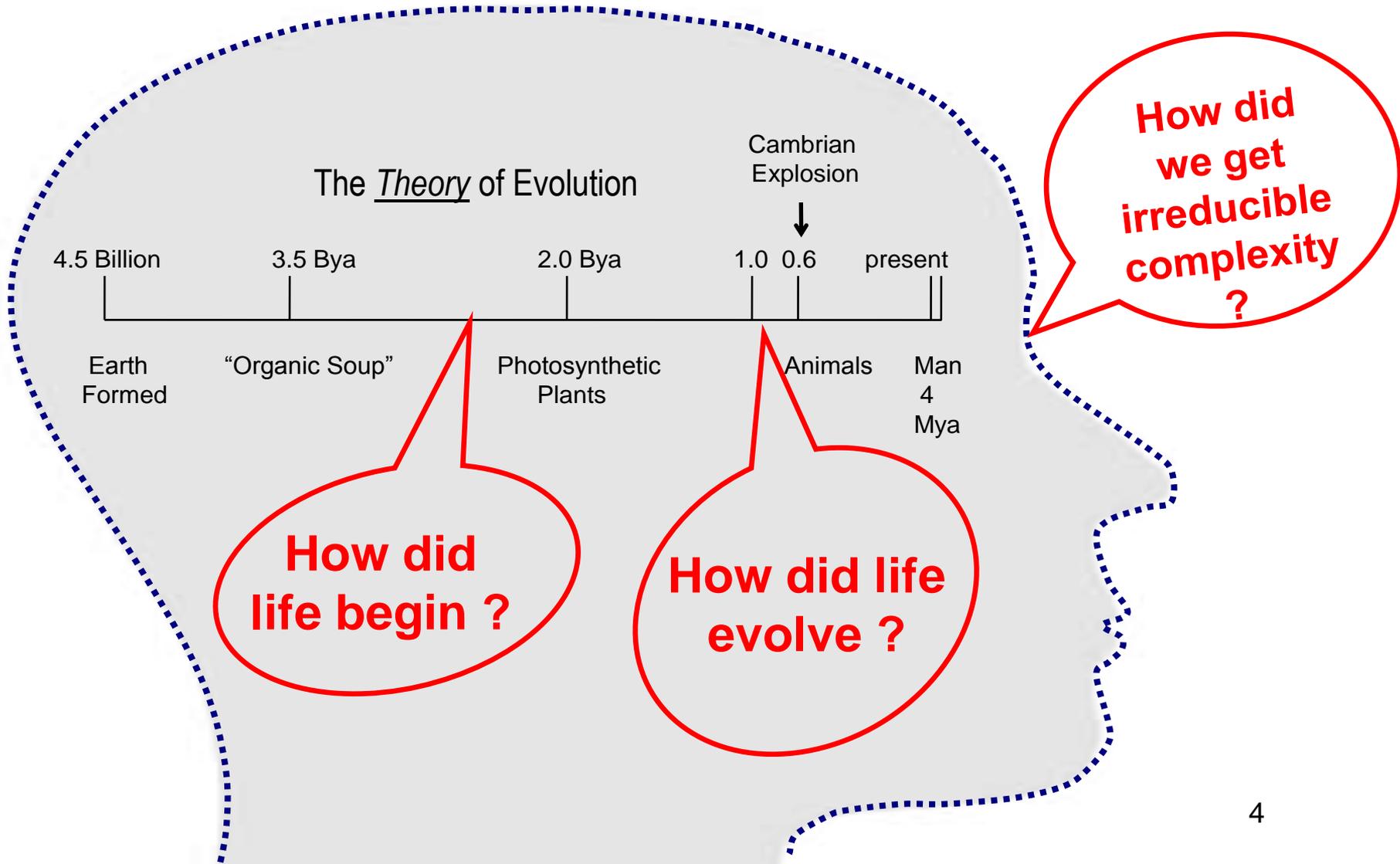
No One Knows for Sure

There's Still More to the Story

Subtitles ?

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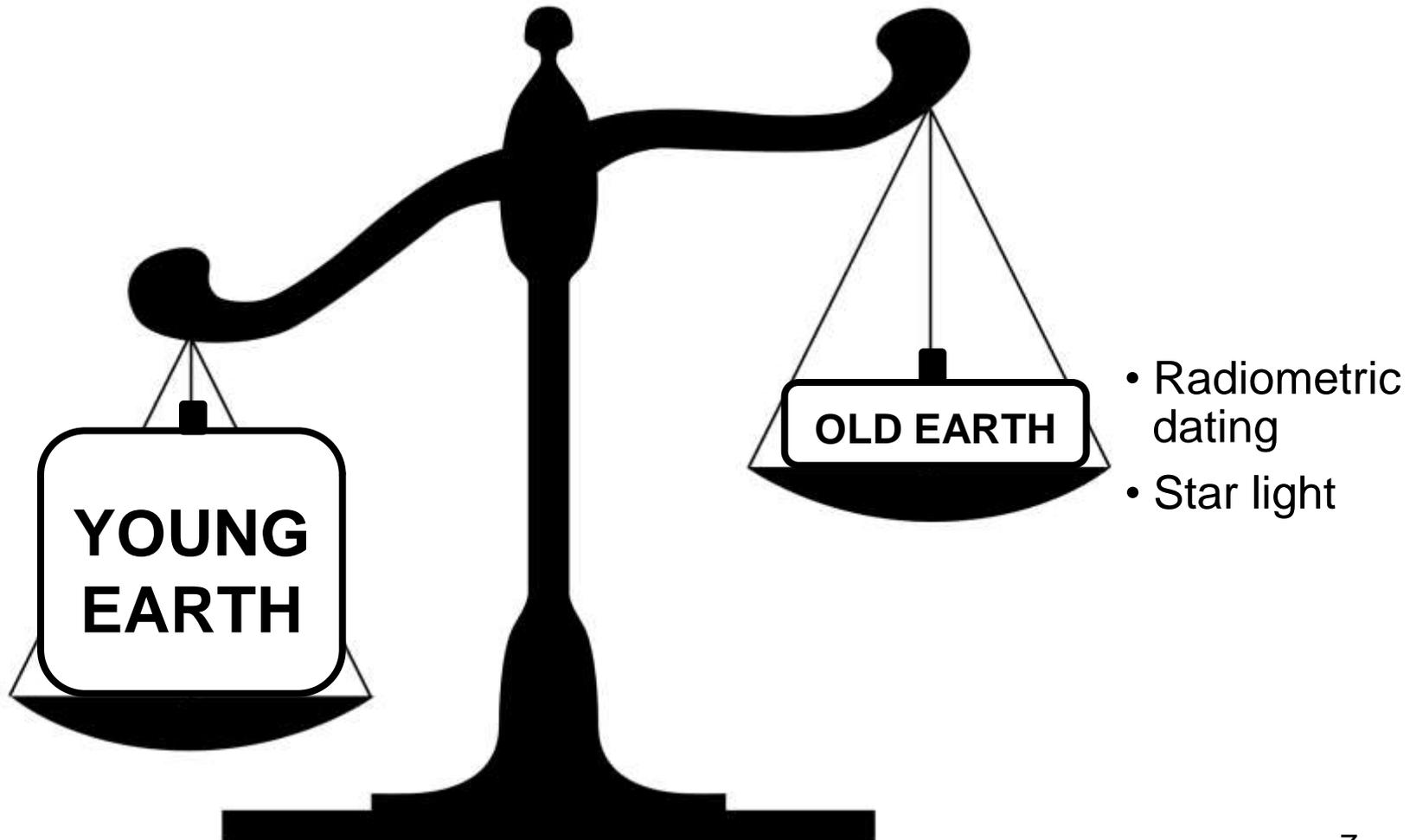
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- ***All clocks*** are based on:
 - 1) The starting time of the clock
 - 2) The speed of clock over time
 - 3) The clock was not disturbed
- These assumptions cannot be proven.

Evidence for a Young Earth, Solar System, and Universe

Evidence for a young earth greatly outweighs evidence for and old earth. We should try to reconcile the old instead of discarding all the young.



Biological evidence for a young age of the earth

1. [DNA in “ancient” fossils](#). DNA extracted from bacteria that are supposed to be 425 million years old brings into question that age, because DNA could not last more than thousands of years.
2. [Lazarus bacteria](#)—bacteria revived from salt inclusions supposedly 250 million years old, suggest the salt is not millions of years old.
3. The decay in the human genome due to multiple slightly deleterious mutations each generation is consistent with an origin several thousand years ago. Sanford, J., *Genetic entropy and the mystery of the genome*, Ivan Press, 2005; see [review of the book](#) and the interview with the author in [Creation 30\(4\):45–47](#), September 2008. This has been confirmed by realistic modelling of population genetics, which shows that genomes are young, in the order of thousands of years. See Sanford, J., Baumgardner, J., Brewer, W., Gibson, P. and Remine, W., [Mendel’s Accountant: A biologically realistic forward-time population genetics program](#), *SCPE* 8(2):147–165, 2007.
4. The data for [“mitochondrial Eve”](#) are consistent with a common origin of all humans several thousand years ago.
5. Very limited variation in the DNA sequence on the human [Y-chromosome around the world](#) is consistent with a recent origin of mankind, thousands not millions of years.
6. Many fossil bones “dated” at many millions of years old are hardly mineralized, if at all. This contradicts the widely believed old age of the earth. See, for example, [Dinosaur bones just how old are they really?](#)
7. [Dinosaur blood cells, blood vessels, proteins \(hemoglobin, osteocalcin, collagen\)](#) are not consistent with their supposed age, but make more sense if the remains are young.
8. Lack of 50:50 [racemization of amino acids in fossils](#) “dated” at millions of years old, whereas complete racemization would occur in thousands of years.
9. [Living fossils](#)—jellyfish, graptolites, coelacanth, stromatolites, Wollemi pine and hundreds more. That many hundreds of species could remain so unchanged, for even up to billions of years in the case of stromatolites, speaks against the millions and billions of years being real.
10. Discontinuous fossil sequences. E.g. [Coelacanth](#), [Wollemi pine](#) and various “index” fossils, which are present in supposedly ancient strata, missing in strata representing many millions of years since, but still living today. Such discontinuities speak against the interpretation of the rock formations as vast geological ages—how could Coelacanths have avoided being fossilized for 65 million years, for example? See [The “Lazarus effect”: rodent “resurrection”!](#)
11. The [ages of the world’s oldest living organisms, trees](#), are consistent with an age of the earth of thousands of years.

Geological evidence for a young age of the earth

12. [Lack of plant fossils in many formations containing abundant animal / herbivore fossils](#). E.g., the Morrison Formation (Jurassic) in Montana. See *Origins* 21(1):51–56, 1994. Also the Coconino sandstone in the Grand Canyon has many track-ways (animals), but is almost devoid of plants. Implication: these rocks are *not* ecosystems of an “era” buried *in situ* over eons of time as evolutionists claim. The evidence is more consistent with catastrophic transport then burial during the massive global Flood of Noah’s day. This eliminates supposed evidence for millions of years.
13. Thick, tightly bent strata without sign of melting or fracturing. E.g. the [Kaibab upwarp](#) in Grand Canyon indicates rapid folding before the sediments had time to solidify (the sand grains were not elongated under stress as would be expected if the rock had hardened). This wipes out hundreds of millions of years of time and is consistent with extremely rapid formation during the biblical Flood. See [Warped earth](#).
14. Polystrate fossils—tree trunks in coal (*Auracaria* spp. king billy pines, celery top pines, in [southern hemisphere coal](#)). There are also polystrate tree trunks in the [Yellowstone fossilized forests](#) and [Joggins, Nova Scotia](#) and in many other places. Polystrate fossilized lycopod trunks occur in [northern hemisphere coal](#), again indicating rapid burial / formation of the organic material that became coal.
15. Experiments show that with conditions mimicking natural forces, [coal forms quickly](#); in weeks for brown coal to months for black coal. It does not need millions of years. Furthermore, long time periods could be an impediment to coal formation because of the increased likelihood of the permineralization of the wood, which would hinder coalification.
16. Experiments show that with conditions mimicking natural forces, [oil forms quickly](#); it does not need millions of years, consistent with an age of thousands of years.
17. Experiments show that with conditions mimicking natural forces, [opals form quickly](#), in a matter of weeks, not millions of years, as had been claimed.
18. [Evidence for rapid, catastrophic formation of coal beds](#) speaks against the hundreds of millions of years normally claimed for this, including Z-shaped seams that point to a single depositional event producing these layers.
19. Evidence for [rapid petrification of wood](#) speaks against the need for long periods of time and is consistent with an age of thousands of years.
20. Clastic dykes and pipes (intrusion of sediment through overlying sedimentary rock) show that the overlying rock strata were still soft when it happened. This drastically compresses the time scale for the deposition of the penetrated rock strata. See, Walker, T., [Fluidisation pipes: Evidence of large-scale watery catastrophe](#), *Journal of Creation (TJ)* 14(3):8–9, 2000.

21. Para(pseudo)conformities—where one rock stratum sits on top of another rock stratum but with supposedly millions of years of geological time missing, yet the contact plane lacks any significant erosion; that is, it is a “flat gap”. E.g. Coconino sandstone / Hermit shale in the Grand Canyon (supposedly a 10 million year gap in time). The thick Schnebly Hill Formation (sandstone) lies *between* the Coconino and Hermit in central Arizona. See Austin, S.A., *Grand Canyon, monument to catastrophe*, ICR, Santee, CA, USA, 1994 and Snelling, A., [The case of the “missing” geologic time](#), *Creation* 14(3):31–35, 1992.
22. The presence of ephemeral markings (raindrop marks, ripple marks, animal tracks) at the boundaries of paraconformities show that the upper rock layer has been deposited immediately after the lower one, eliminating many millions of “gap” time. See references in [Para\(pseudo\)conformities](#).
23. Inter-tonguing of adjacent strata that are supposedly separated by millions of years also eliminates many millions of years of supposed geologic time. [The case of the “missing” geologic time](#); Mississippian and Cambrian strata interbedding: 200 million years hiatus in question, *CRSQ* 23(4):160–167.
24. The [lack of bioturbation](#) (worm holes, root growth) at paraconformities (flat gaps) reinforces the lack of time involved where evolutionary geologists insert many millions of years to force the rocks to conform with the “given” timescale of billions of years.
25. The almost complete lack of clearly recognizable soil layers anywhere in the geologic column. Geologists do claim to have found lots of “fossil” soils (paleosols), but these are quite different to soils today, lacking the features that characterize soil horizons; features that are used in classifying different soils. Every one that has been investigated thoroughly proves to lack the characteristics of proper soil. If “deep time” were correct, with hundreds of millions of years of abundant life on the earth, there should have been ample opportunities many times over for soil formation. See Klevberg, P. and Bandy, R., *CRSQ* 39:252–68; *CRSQ* 40:99–116, 2003; Walker, T., [Paleosols: digging deeper buries “challenge” to Flood geology](#), *Journal of Creation* 17(3):28–34, 2003.
26. Limited extent of unconformities (unconformity: a surface of erosion that separates younger strata from older rocks). Surfaces erode quickly (e.g. Badlands, South Dakota), but there are very limited unconformities. There is the “great unconformity” at the base of the Grand Canyon, but otherwise there are supposedly ~300 million years of strata deposited on top without any significant unconformity. This is again consistent with a much shorter time of deposition of these strata. See [Para\(pseudo\)conformities](#).
27. The amount of salt in the [world’s oldest lake contradicts its supposed age](#) and suggests an age more consistent with its formation after Noah’s Flood, which is consistent with a young age of the earth.
28. The discovery that underwater landslides (“turbidity currents”) travelling at some 50 km/h can create huge areas of sediment in a matter of hours (Press, F., and Siever, R., *Earth*, 4th ed., Freeman & Co., NY, USA, 1986). Sediments thought to have formed slowly over eons of time are now becoming recognized as having formed extremely rapidly. See for example, [A classic tillite reclassified as a submarine debris flow](#) (Technical).

29. Flume tank research with sediment of different particle sizes show that layered rock strata that were thought to have formed over huge periods of time in lake beds actually formed very quickly. Even the precise layer thicknesses of rocks were duplicated after they were ground into their sedimentary particles and run through the flume. See [Experiments in stratification of heterogeneous sand mixtures](#), [Sedimentation Experiments: Nature finally catches up!](#) and [Sandy Stripes Do many layers mean many years?](#)
30. Observed examples of rapid canyon formation; for example, [Providence Canyon](#) in southwest Georgia, [Burlingame Canyon](#) near Walla Walla, Washington, and [Lower Loowit Canyon](#) near Mount St Helens. The rapidity of the formation of these canyons, which look similar to other canyons that supposedly took many millions of years to form, brings into question the supposed age of the canyons that no one saw form.
31. Observed examples of rapid island formation and maturation, such as [Surtsey](#), which confound the notion that such islands take long periods of time to form. See also, [Tulumán—A Test of Time](#).
32. Rate of [erosion of coastlines](#), horizontally. E.g. Beachy Head, UK, loses a metre of coast to the sea every six years.
33. Rate of [erosion of continents vertically](#) is not consistent with the assumed old age of the earth. See *Creation* 22(2):18–21.
34. Existence of significant [flat plateaux that are “dated” at many millions of years old](#) (“elevated paleoplains”). An example is [Kangaroo Island](#) (Australia). C.R. Twidale, a famous Australian physical geographer wrote: “the survival of these paleoforms is in some degree an embarrassment to all the commonly accepted models of landscape development.” Twidale, C.R. On the survival of paleoforms, *American Journal of Science* 5(276):77–95, 1976 (quote on p. 81). See Austin, S.A., [Did landscapes evolve?](#) *Impact* 118, April 1983.
35. The recent and almost simultaneous origin of all the high mountain ranges around the world—including the Himalayas, the Alps, the Andes, and the Rockies—which have undergone most of the uplift to their present elevations beginning “five million” years ago, whereas mountain building processes have supposedly been around for up to billions of years. See Baumgardner, J., [Recent uplift of today’s mountains](#). *Impact* 381, March 2005.
36. Water gaps. These are gorges cut through mountain ranges where rivers run. They occur worldwide and are part of what evolutionary geologists call “discordant drainage systems”. They are “discordant” because they don’t fit the deep time belief system. The evidence fits them forming rapidly in a much younger age framework where the gorges were cut in the recessive stage / dispersive phase of the global Flood of Noah’s day. See Oard, M., [Do rivers erode through mountains?](#) Water gaps are strong evidence for the Genesis Flood, *Creation* 29(3):18–23, 2007.
37. [Erosion at Niagara Falls](#) and other such places is consistent with just a few thousand years since the biblical Flood.
38. River delta growth rate is consistent with thousands of years since the biblical Flood, not vast periods of time. The argument goes back to Mark Twain. E.g. 1. Mississippi—*Creation Research Quarterly (CRSQ)* 9:96–114, 1992; *CRSQ* 14:77; *CRSQ* 25:121–123. E.g. 2 Tigris–Euphrates: *CRSQ* 14:87, 1977.

39. Underfit streams. River valleys are too large for the streams they contain. Dury speaks of the “continent-wide distribution of underfit streams”. Using channel meander characteristics, Dury concluded that past streams frequently had 20–60 times their current discharge. This means that the river valleys would have been carved very quickly, not slowly over eons of time. See Austin, S.A., [Did landscapes evolve?](#) *Impact* 118, 1983.
40. Amount of [salt in the sea](#). Even ignoring the effect of the biblical Flood and assuming zero starting salinity and all rates of input and removal so as to maximize the time taken to accumulate all the salt, the *maximum* age of the oceans, 62 million years, is less than 1/50 of the age evolutionists claim for the oceans. This suggests that the age of the earth is radically less also.
41. The [amount of sediment on the sea floors](#) at current rates of land erosion would accumulate in just 12 million years; a blink of the eye compared to the supposed age of much of the ocean floor of up to 3 billion years. Furthermore, long-age geologists reckon that *higher* erosion rates applied in the past, which shortens the time frame. From a biblical point of view, at the end of Noah’s Flood lots of sediment would have been added to the sea with the water coming off the unconsolidated land, making the amount of sediment perfectly consistent with a history of thousands of years.
42. Iron-manganese nodules (IMN) on the sea floors. The measured rates of growth of these nodules indicates an age of only thousands of years. Lalomov, A.V., 2007. Mineral deposits as an example of geological rates. *CRSQ* 44(1):64–66.
43. The age of placer deposits (concentrations of heavy metals such as tin in modern sediments and consolidated sedimentary rocks). The measured rates of deposition indicate an age of thousands of years, not the assumed millions. See Lalomov, A.V., and Tabolitch, S.E., 2000. [Age determination of coastal submarine placer, Val’cumey, northern Siberia](#). *Journal of Creation (TJ)* 14(3):83–90.
44. Pressure in oil / gas wells indicate the recent origin of the oil and gas. If they were many millions of years old we would expect the pressures to equilibrate, even in low permeability rocks. “Experts in petroleum prospecting note the impossibility of creating an effective model given long and slow oil generation over millions of years (Petukhov, 2004). In their opinion, if models demand the standard multimillion-years geochronological scale, the best exploration strategy is to drill wells on a random grid.” Lalomov, A.V., 2007. Mineral deposits as an example of geological rates. *CRSQ* 44(1):64–66.
45. Direct evidence that [oil is forming today](#) in the Guaymas Basin and in [Bass Strait](#) is consistent with a young earth (although not *necessary* for a young earth).
46. [Rapid reversals in paleomagnetism](#) undermine use of paleomagnetism in long ages dating of rocks and speak of rapid processes, compressing the long-age time scale enormously.
47. The pattern of magnetization in the magnetic stripes where magma is welling up at the mid-ocean trenches argues against the belief that reversals take many thousands of years and rather indicates rapid sea-floor spreading as well as rapid magnetic reversals, consistent with a young earth (Humphreys, D.R., Has the Earth’s magnetic field ever flipped? *Creation Research Quarterly* 25(3):130–137, 1988).

48. [Measured rates of stalactite and stalagmite growth](#) in limestone caves are consistent with a young age of several thousand years. See also [articles on limestone cave formation](#).
49. The [decay of the earth's magnetic field](#). Exponential decay is evident from measurements and is consistent with theory of free decay since creation, suggesting an age of the earth of less than 20,000 years.
50. Excess heat flow from the earth is consistent with a young age rather than billions of years, even taking into account heat from radioactive decay. See Woodmorappe, J., 1999. [Lord Kelvin revisited on the young age of the earth](#). *Journal of Creation (TJ)* 13(1):14, 1999.

Radiometric dating

51. Carbon-14 in [coal](#) suggests ages of thousands of years and clearly contradict ages of millions of years.
52. Carbon-14 in [oil](#) again suggests ages of thousands, not millions, of years.
53. Carbon-14 in [fossil wood](#) also indicates ages of thousands, not millions, of years.
54. Carbon-14 in [diamonds](#) suggests ages of thousands, not billions, of years.
55. Incongruent radioisotope dates [using the same technique](#) argue against trusting the dating methods that give millions of years.
56. Incongruent radioisotope dates [using different techniques](#) argue against trusting the dating methods that give millions of years (or billions of years for the age of the earth).
57. Demonstrably [non-radiogenic "isochrons" of radioactive](#) and non-radioactive elements undermine the assumptions behind isochron "dating" that gives billions of years. ["False" isochrons](#) are common.
58. Different faces of the same zircon crystal and [different zircons from the same rock](#) giving different "ages" undermine all "dates" obtained from zircons.
59. Evidence of a period of [rapid radioactive decay in the recent past](#) (lead and helium concentrations and diffusion rates in zircons) point to a young earth explanation.
60. The amount of helium, a product of alpha-decay of radioactive elements, retained in zircons in granite is consistent with an age of 6,000±2000 years, not the supposed billions of years. See: Humphreys, D.R., Young helium diffusion age of zircons supports accelerated nuclear decay, in Vardiman, Snelling, and Chaffin (eds.), *Radioisotopes and the Age of the Earth: Results of a Young Earth Creationist Research Initiative*, Institute for Creation Research and Creation Research Society, 848 pp., 2005
61. Lead in zircons from deep drill cores vs. shallow ones. They are similar, but there should be less in the deep ones due to the higher heat causing higher diffusion rates over the usual long ages supposed. If the ages are thousands of years, there would not be expected to be much difference, which is the case (Gentry, R., *et al.*, Differential lead retention in zircons: Implications for nuclear waste containment, *Science* 216(4543):296–298, 1982; DOI: 10.1126/science.216.4543.296).

62. Lead in zircons from deep drill cores vs. shallow ones. They are similar, but there should be less in the deep ones due to the higher heat causing higher diffusion rates over the usual long ages supposed. If the ages are thousands of years, there would not be expected to be much difference, which is the case (Gentry, R., *et al.*, Differential lead retention in zircons: Implications for nuclear waste containment, *Science* 216(4543):296–298, 1982; DOI: 10.1126/science.216.4543.296).
63. Pleochroic halos produced in granite by concentrated specks of short half-life elements such as polonium suggest a period of rapid nuclear decay of the long half-life parent isotopes during the formation of the rocks and rapid formation of the rocks, both of which speak against the usual ideas of geological deep time and a vast age of the earth. See, [Radiohalos: Startling evidence of catastrophic geologic processes](#), *Creation* 28(2):46–50, 2006.
63. [Squashed pleochroic halos](#) (radiohalos) formed from decay of polonium, a very short half-life element, in coalified wood from several geological eras suggest rapid formation of all the layers about the same time, in the same process, consistent with the biblical “young” earth model rather than the millions of years *claimed* for these events.
64. [Australia’s “Burning Mountain”](#) speaks against radiometric dating and the millions of years belief system (according to radiometric dating of the lava intrusion that set the coal alight, the coal in the burning mountain has been burning for ~40 million years, but clearly this is not feasible).

Astronomical evidence

65. Evidence of recent volcanic activity on Earth’s moon is inconsistent with its supposed vast age because it should have long since cooled if it were billions of years old. See: [Transient lunar phenomena: a permanent problem for evolutionary models of Moon formation](#) and Walker, T., and Catchpoole, D., [Lunar volcanoes rock long-age timeframe](#), *Creation* 31(3):18, 2009.
66. [Recession of the moon from the earth](#). Tidal friction causes the moon to recede from the earth at 4 cm per year. It would have been greater in the past when the moon and earth were closer together. The moon and earth would have been in catastrophic proximity (Roche limit) at less than a quarter of their supposed age.
67. Slowing down of the earth. Tidal dissipation rate of Earth’s angular momentum: increasing length of day, currently by 0.002 seconds/day every century (thus an impossibly short day billions of years ago and a very slow day shortly after accretion and before the postulated giant impact to form the Moon). See: [How long has the moon been receding?](#)
68. Ghost craters on the moon’s *maria* (singular *mare*: dark “seas” formed from massive lava flows) are a problem for long ages. Evolutionists believe that the lava flows were caused by enormous impacts, and this lava partly buried other, smaller, impact craters, leaving “ghosts”. But this means that the smaller impacts can’t have been too long after the huge one, otherwise the lava would have hardened before the impact. This suggests a very narrow time frame for lunar cratering, and by implication the other cratered bodies of our solar system. They suggest that the cratering occurred quite quickly. See Fryman, H., [Ghost craters in the sky](#), *Creation Matters* 4(1):6, 1999; [A biblically based cratering theory](#) (Faulkner); [Lunar volcanoes rock long-age timeframe](#).

69. The presence of a significant [magnetic field around Mercury](#) is not consistent with its supposed age of billions of years. A planet so small should have cooled down enough so any liquid core would solidify, preventing the evolutionists' "dynamo" mechanism. See also, Humphreys, D.R., Mercury's magnetic field is young! [Journal of Creation 22\(3\)](#):8–9, 2008.
70. The outer planets Uranus and Neptune have magnetic fields, but they should be long "dead" if they are as old as claimed according to evolutionary long-age beliefs. Assuming a solar system age of thousands of years, physicist Russell Humphreys successfully predicted the strengths of [the magnetic fields of Uranus and Neptune](#).
71. Jupiter's larger moons, [Ganymede, Io, and Europa, have magnetic fields](#), which they should not have if they were billions of years old, because they have solid cores and so no dynamo could generate the magnetic fields. This is consistent with creationist Humphreys' predictions. See also, Spencer, W., [Ganymede: the surprisingly magnetic moon](#), *Journal of Creation* 23(1):8–9, 2009.
72. Volcanically active moons of Jupiter ([Io](#)) are consistent with youthfulness (Galileo mission recorded 80 active volcanoes). If Io had been erupting over 4.5 billion years at even 10% of its current rate, it would have erupted its entire mass 40 times. Io looks like a young moon and does not fit with the supposed billions of year's age for the solar system. Gravitational tugging from Jupiter and other moons accounts for only some of the excess heat produced.
73. The surface of Jupiter's moon Europa. Studies of the few craters indicated that up to 95% of small craters, and many medium-sized ones, are formed from debris thrown up by larger impacts. This means that there have been far fewer impacts than had been thought in the solar system and the age of other objects in the solar system, derived from cratering levels, have to be reduced drastically (see Psarris, Spike, *What you aren't being told about astronomy, volume 1: Our created solar system DVD*, available from [CMI](#)).
74. [Methane on Titan](#) (Saturn's largest moon)—the methane should all be gone because of UV-induced breakdown. The products of photolysis should also have produced a huge sea of ethane. As the [original Astrobiology paper](#) said, "If the chemistry on Titan has gone on in steady-state over the age of the solar system, then we would predict that a layer of ethane 300 to 600 meters thick should be deposited on the surface." No such sea is seen, which is consistent with Titan being a tiny fraction of the claimed age of the solar system.
75. The rate of change / disappearance of Saturn's rings is [inconsistent with their supposed vast age](#); they speak of youthfulness.
76. Enceladus, a moon of Saturn, looks young. Astronomers working in the "billions of years" mindset thought that this moon would be cold and dead, but it is a very active moon, spewing massive jets of water vapour and icy particles into space at supersonic speeds, consistent with a much younger age. Calculations show that the interior would have frozen solid after 30 million years (less than 1% of its supposed age); tidal friction from Saturn does not explain its youthful activity (Psarris, Spike, *What you aren't being told about astronomy, volume 1: Our created solar system DVD*; Walker, T., 2009. Enceladus: Saturn's sprightly moon looks young, *Creation* 31(3):54–55).

77. Miranda, a small moon of Uranus, should have been long since dead, if billions of years old, but its extreme surface features suggest otherwise. See [Revelations in the solar system](#).
78. Neptune should be long since “cold”, lacking strong wind movement if it were billions of years old, yet Voyager II in 1989 found it to be otherwise—it has the fastest winds in the entire solar system. This observation is consistent with a young age, not billions of years. See [Neptune: monument to creation](#).
79. Neptune’s rings have thick regions and thin regions. This unevenness means they cannot be billions of years old, since collisions of the ring objects would eventually make the ring very uniform. [Revelations in the solar system](#).
80. Young surface age of Neptune’s moon, Triton—less than 10 million years, even with evolutionary assumptions on rates of impacts (see Schenk, P.M., and Zahnle, K. [On the Negligible Surface Age of Triton](#), *Icarus* 192(1):135–149, 2007. <doi:10.1016/j.icarus.2007.07.004>).
81. Uranus and Neptune both have magnetic fields significantly off-axis, which is an unstable situation. When this was discovered with Uranus, it was assumed by evolutionary astronomers that Uranus must have just happened to be going through a magnetic field reversal. However, when a similar thing was found with Neptune, this *AD hoc* explanation was upset. [These observations are consistent with ages of thousands of years](#) rather than billions.
82. The orbit of Pluto is chaotic on a 20 million year time scale and affects the rest of the solar system, which would also become unstable on that time scale, suggesting that it must be much younger. (See: Rothman, T., God takes a nap, *Scientific American* 259(4):20, 1988).
83. The [existence of short-period comets](#) (orbital period less than 200 years), e.g. Halley, which have a life of less than 20,000 years, is consistent with an age of the solar system of less than 10,000 years. *AD hoc* hypotheses have to be invented to circumvent this evidence (see [Kuiper Belt](#)). See [Comets and the age of the solar system](#).
84. “Near-infrared spectra of the Kuiper Belt Object, Quaoar and the suspected Kuiper Belt Object, Charon, indicate both contain crystalline water ice and ammonia hydrate. This watery material cannot be much older than 10 million years, which is consistent with a young solar system, not one that is 5 billion years old.” See: [The “waters above”](#).
85. Lifetime of long-period comets (orbital period greater than 200 years) that are sun-grazing comets or others like Hyakutake or Hale–Bopp means they could not have originated with the solar system 4.5 billion years ago. However, their existence is consistent with a young age for the solar system. Again an *AD hoc* [Oort Cloud](#) was invented to try to account for these comets still being present after billions of years. See, [Comets and the age of the solar system](#).
86. The maximum expected lifetime of near-earth asteroids is of the order of one million years, after which they collide with the sun. And the Yarkovsky effect moves main belt asteroids into near-earth orbits faster than had been thought. This brings into question the origin of asteroids with the formation of the solar system (the usual scenario), or the solar system is much younger than the 4.5 billion years claimed. Henry, J., The asteroid belt: indications of its youth, *Creation Matters* 11(2):2, 2006.

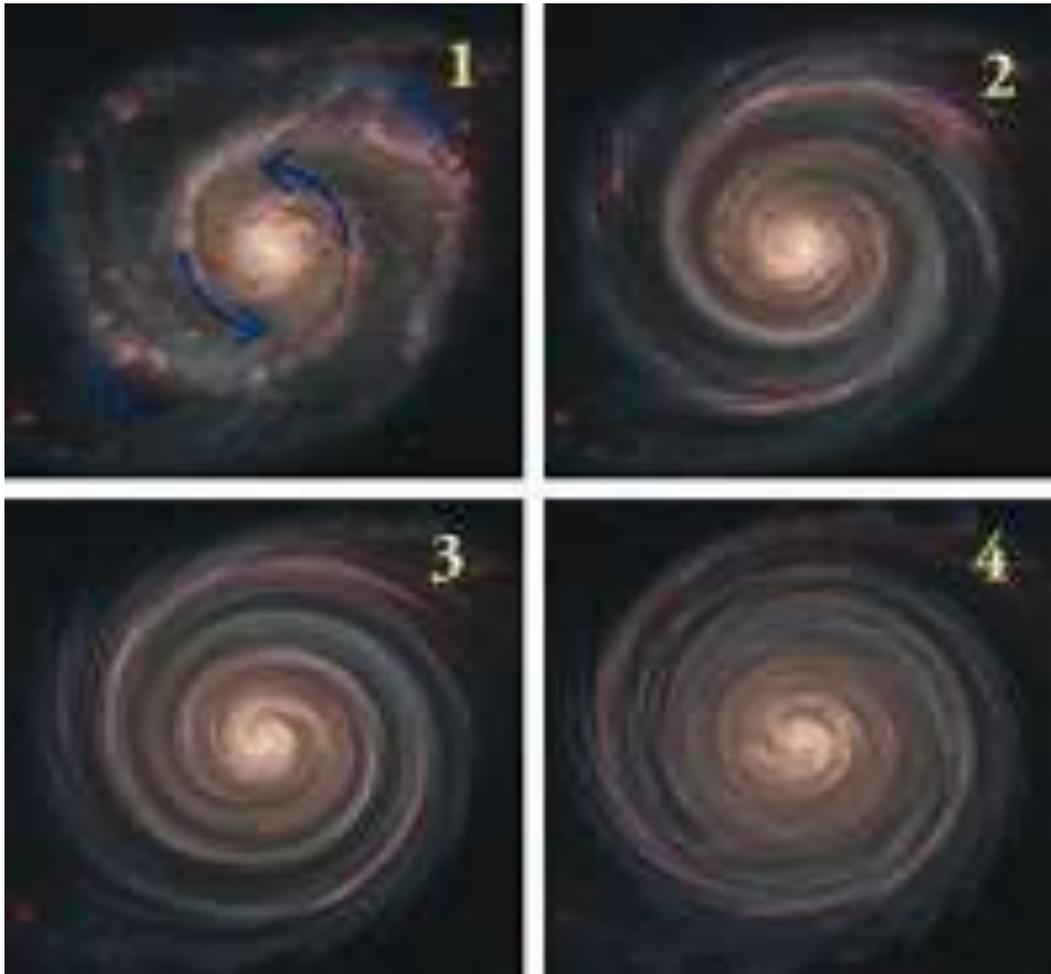
87. The lifetime of binary asteroids—where a tiny asteroid “moon” orbits a larger asteroid— in the main belt (they represent about 15–17% of the total): tidal effects limit the life of such binary systems to about 100,000 years. The difficulties in conceiving of any scenario for getting binaries to form in such numbers to keep up the population, led some astronomers to doubt their existence, but space probes confirmed it (Henry, J., The asteroid belt: indications of its youth, *Creation Matters* 11(2):2, 2006).
88. The observed [rapid rate of change in stars](#) contradicts the vast ages assigned to stellar evolution. For example, Sakurai’s Object in Sagittarius: in 1994, this star was most likely a white dwarf in the centre of a planetary nebula; by 1997 it had grown to a bright yellow giant, about 80 times wider than the sun (*Astronomy & Astrophysics* 321:L17, 1997). In 1998, it had expanded even further, to a red supergiant 150 times wider than the sun. But then it shrank just as quickly; by 2002 the star itself was invisible even to the most powerful optical telescopes, although it is detectable in the infrared, which shines through the dust (Muir, H., 2003, Back from the dead, *New Scientist* 177(2384):28–31).
89. The faint young sun paradox. According to stellar evolution theory, as the sun’s core transforms from hydrogen to helium by means of nuclear fusion, the mean molecular weight increases, which would compress the sun’s core increasing fusion rate. The upshot is that over several billion years, the sun ought to have brightened 40% since its formation and 25% since the appearance of life on earth. For the latter, this translates into a 16–18 °C temperature increase on the earth. The current average temperature is 15 °C, so the earth ought to have had a -2 °C or so temperature when life appeared. See: Faulkner, D., [The young faint Sun paradox and the age of the solar system](#), *Journal of Creation (TJ)* 15(2):3–4, 2001. As of 2010, the faint young sun remains a problem: Kasting, J.F., Early Earth: Faint young Sun redux, *Nature* 464:687–689, 1 April 2010; doi:10.1038/464687a; www.nature.com/nature/journal/v464/n7289/full/464687a.html
90. Cometesimals. From his studies, astronomer Louis Frank says that 100 million tonnes of water is being added to Earth every year in cometesimals (small comet remnants). This has strong implications for the supposed age of the oceans, if confirmed. See: Bergman, J., Advances in integrating cosmology: [The case of cometesimals](#), *Journal of Creation (CENTJ)* 10(2):202–210, 1996.
91. The giant gas planets Jupiter and Saturn radiate more energy than they receive from the sun, suggesting a recent origin. Jupiter radiates almost twice as much energy as it receives from the sun, indicating that it may be less than 1 % of the presumed 4.5 billion years old solar system. Saturn radiates nearly twice as much energy per unit mass as Jupiter. See [The age of the Jovian planets](#).
92. Speedy stars are consistent with a young age for the universe. For example, many stars in the dwarf galaxies in the Local Group are moving away from each other at speeds estimated at to 10–12 km/s. At these speeds, the stars should have dispersed in 100 Ma, which, compared with the supposed 14,000 Ma age of the universe, is a short time. See [Fast stars challenge big bang origin for dwarf galaxies](#).
93. The ageing of spiral galaxies (much less than 200 million years) is not consistent with their supposed age of many billions of years. The [discovery of extremely “young” spiral galaxies](#) highlights the problem of this evidence for the evolutionary ages assumed.

94. The number of type I [supernova remnants](#) (SNRs) observable in our galaxy is consistent with an age of thousands of years, not millions or billions. See Davies, K., *Proc. 3rd ICC*, pp. 175–184, 1994.
95. The rate of expansion and size of supernovas indicates that all studied are young (less than 10,000 years). See [supernova remnants](#).

Human history is consistent with a young age of the earth

96. Human population growth. Less than 0.5% p.a. growth from six people 4,500 years ago would produce today's population. [Where are all the people?](#) if we have been here much longer?
97. "Stone age" human skeletons and artefacts. There are not enough for 100,000 years of a human population of just one million, let alone more people (10 million?). See [Where are all the people?](#)
98. Length of recorded history. Origin of various civilizations, writing, etc., all about the same time several thousand years ago. See [Evidence for a young world](#).
99. Languages. Similarities in languages claimed to be separated by many tens of thousands of years speaks against the supposed ages (e.g. compare some aboriginal languages in Australia with languages in south-eastern India and Sri Lanka). See [The Tower of Babel account affirmed by linguistics](#).
100. Common cultural "myths" speak of recent separation of peoples around the world. An example of this is the frequency of [stories of an earth-destroying flood](#).
101. Origin of agriculture. Secular dating puts it at about 10,000 years and yet that same chronology says that modern man has supposedly been around for at least 200,000 years. Surely someone would have worked out much sooner how to sow seeds of plants to produce food. See: [Evidence for a young world](#).

Milky Way age limit: 200 million years



Inner arms of spiral galaxies rotate faster than outer arms. In a couple hundred million years spiral galaxies will be unrecognizable. If the universe has existed for billions of years, why are spiral galaxies still visible?

Differential rotation of a spiral galaxy

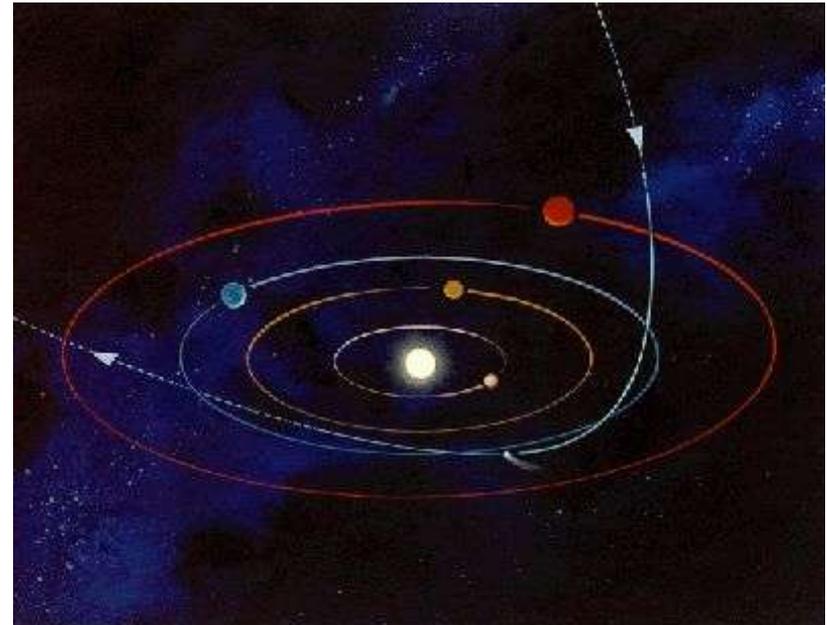
Solar System age limit: 100,000 years

Comets, which are balls of ice and dirt orbit the sun in an elliptical orbit. With each passage by the sun a fraction of their mass is vaporized and appears as the comet's tail. The typical lifetime a comet is 10,000 years; 100,000 years maximum.

Defenders of an old age, rely on a "kuiper belt" or "oort cloud" to supply new comets as required. No direct evidence of these have been found.



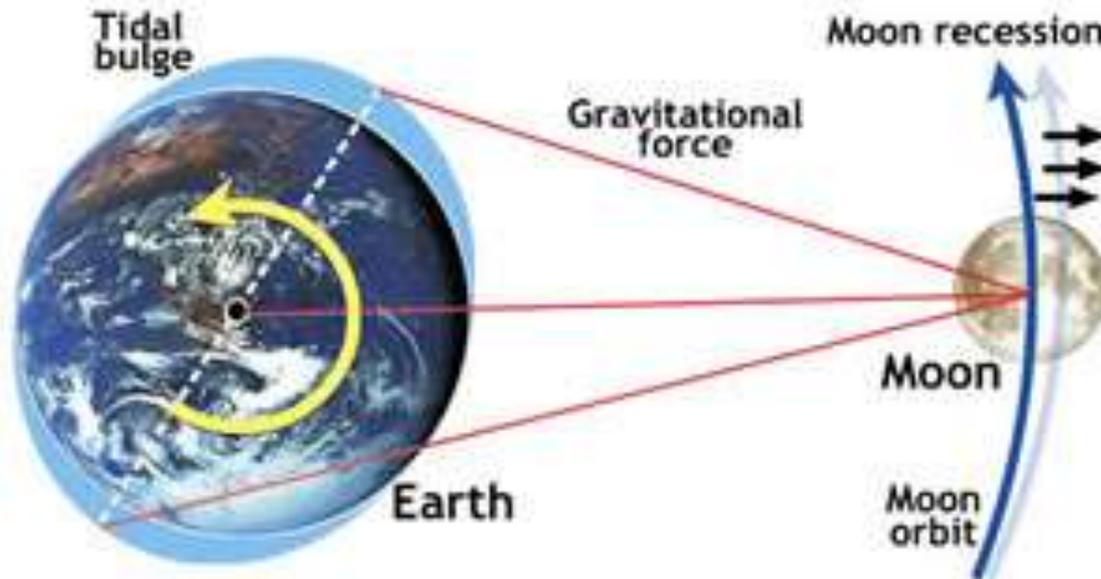
Halley's Comet



Path of Halley's comet
through the solar system

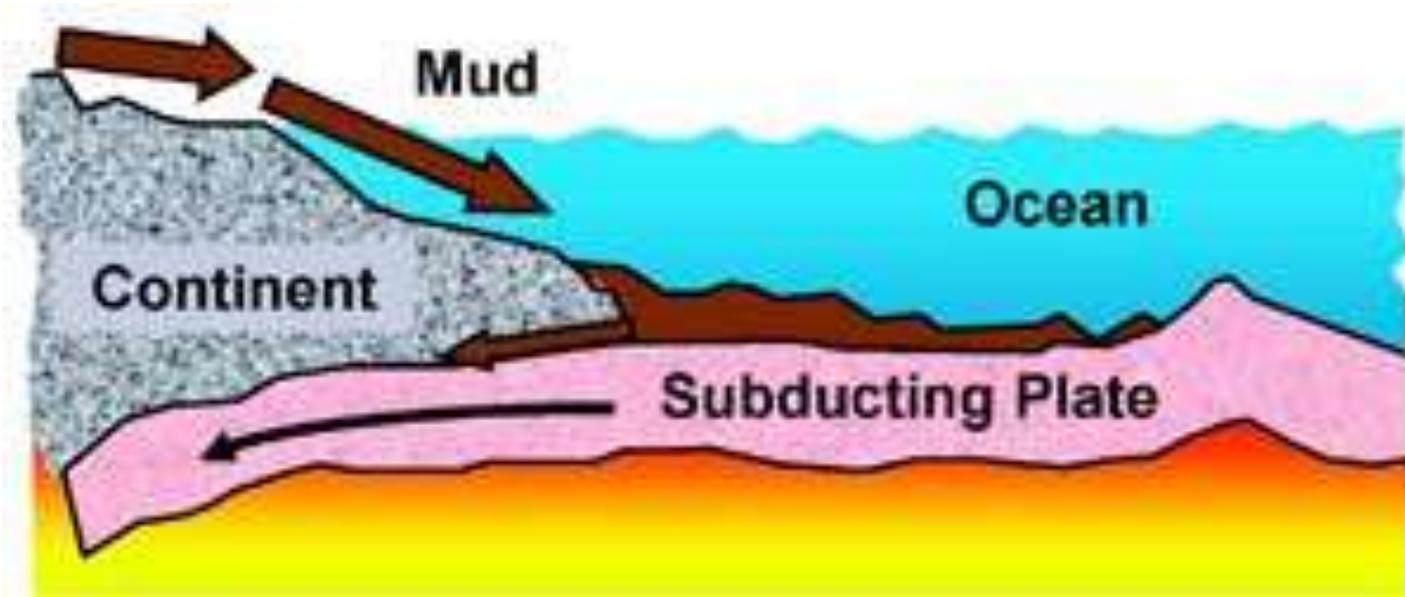
Earth / Moon age limit: 1.5 Billion Years ?

Tides on earth create a forward pull on the moon causing it to spiral outward. Current rate of recession is 1.5 inches per year. For a biblical time scale of 6,000 years, this would be 800 feet (not a problem). However the moon would be touching the earth in less than 1.5 billion years.



Earth limit: 12 Million Years

Each year 20 billion tons of dirt and rock settle into the ocean. The depth of sediment in the ocean is 400 meters, which even when considering plate tectonic subduction calculates to an age of 12 million years.



Earth limit: 62 Million Years

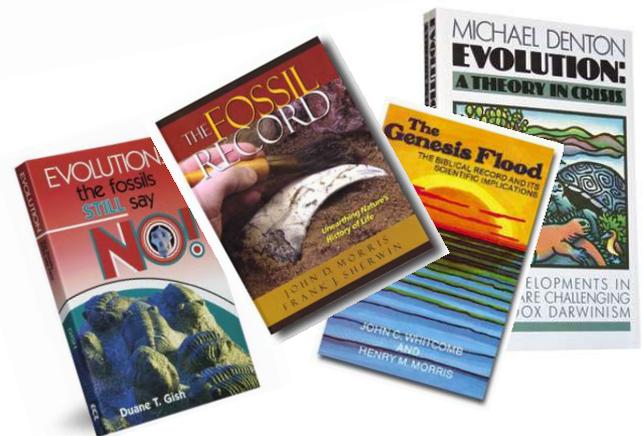
Each year rivers and other sources deposit 420 million tons of salt into the ocean and 73% is retained. If the earth is billions of years old, the ocean salinity would be extreme.



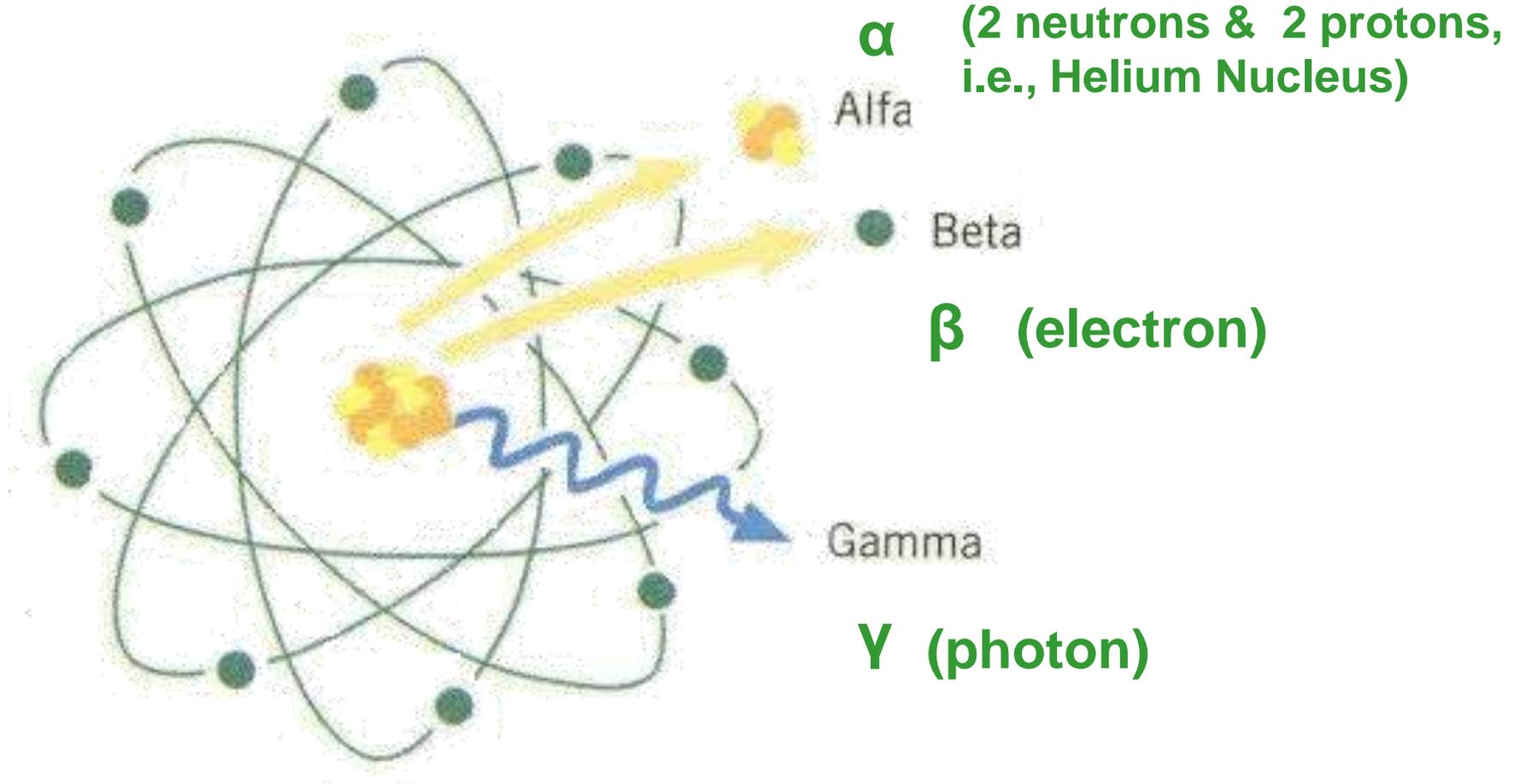
Radiometric Dating

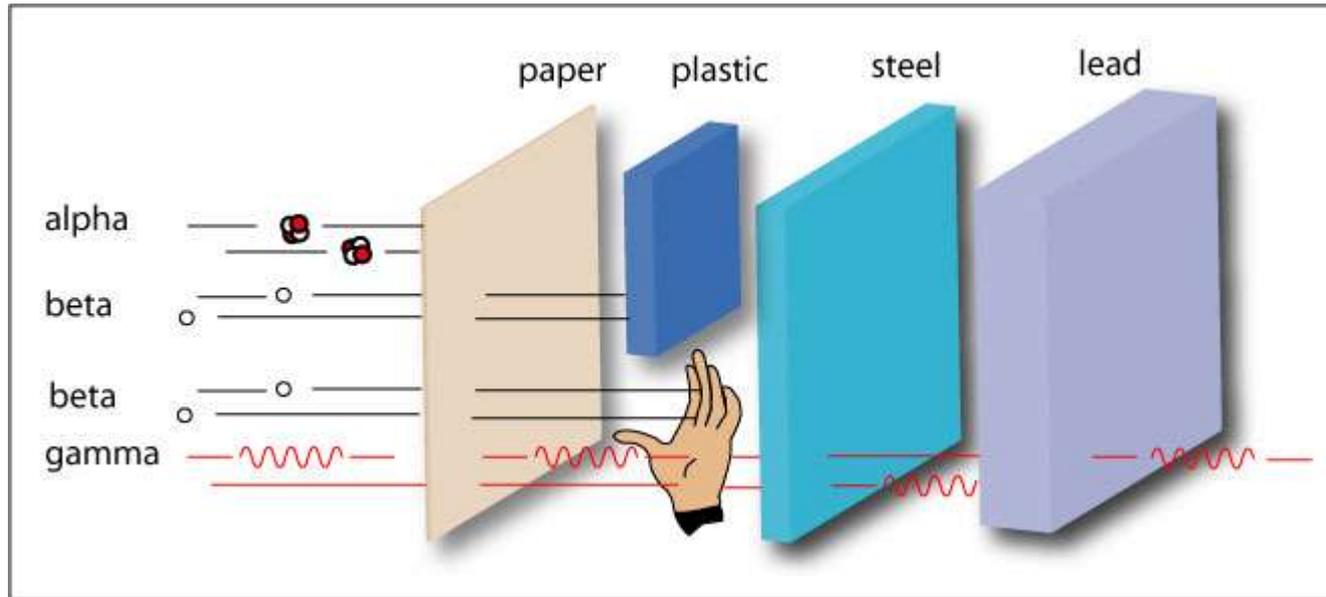


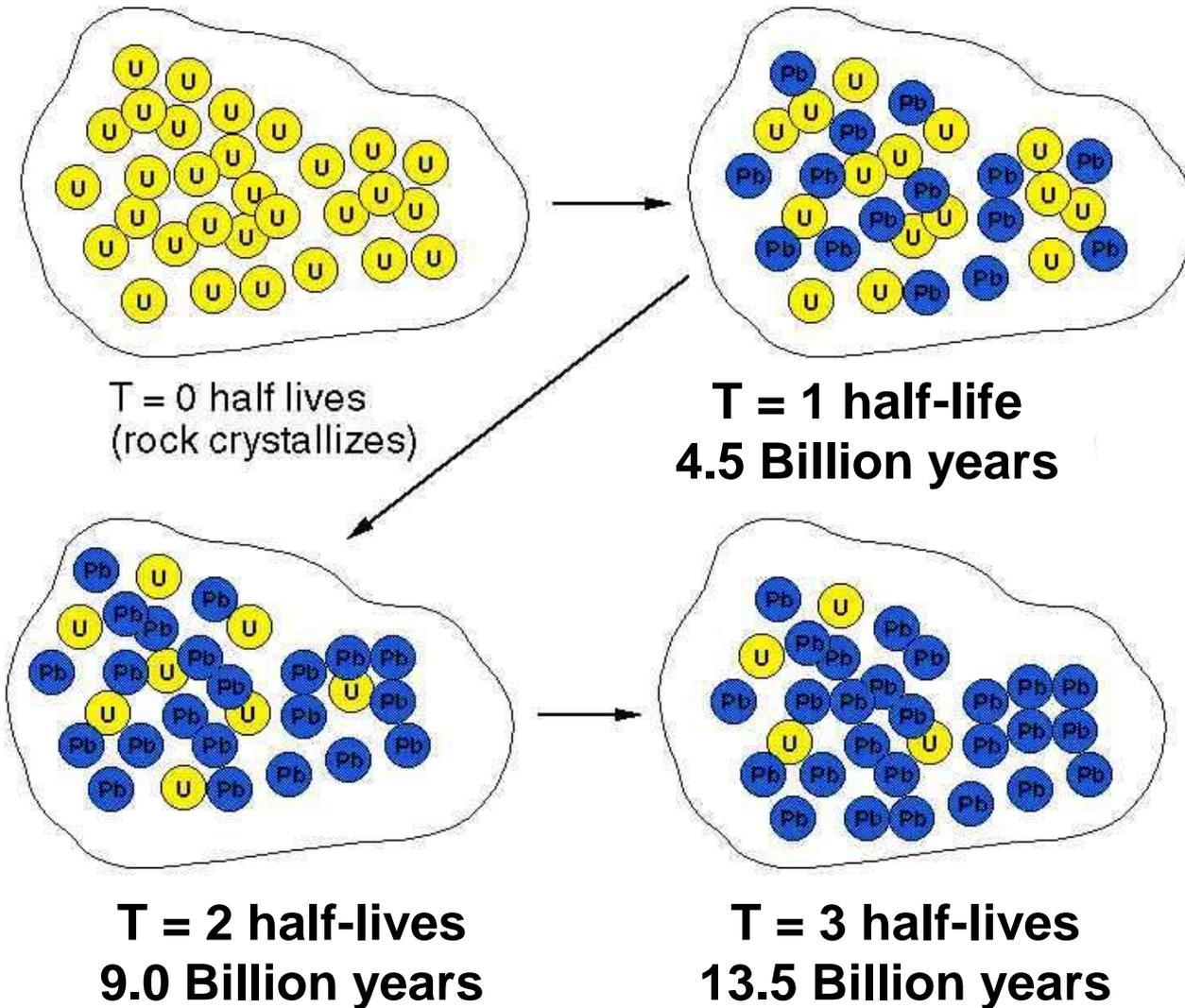
RADIOMETRIC DATING

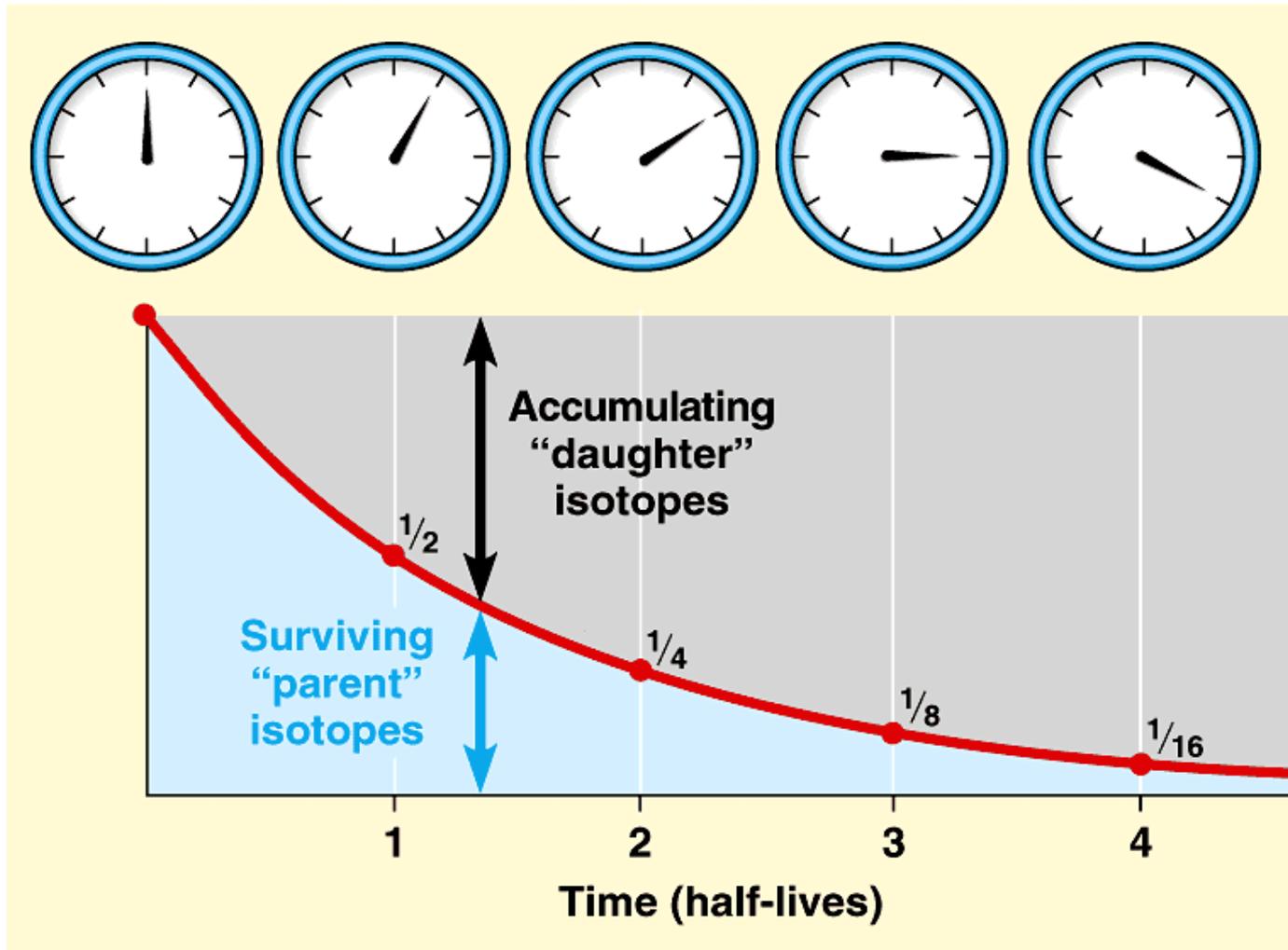


Types of Radioactive Day









Radioactive Isotope (Parent)	Product (Daughter)	Half-Life (Years)
Samarium-147	Neodymium-143	106 billion
Rubidium-87	Strontium-87	48.8 billion
Rhenium-187	Osmium-187	42 billion
Lutetium-176	Hafnium-176	38 billion
Thorium-232	Lead-208	14 billion
Uranium-238	Lead-206	4.5 billion
Potassium-40	Argon-40	1.26 billion
Uranium-235	Lead-207	0.7 billion
Beryllium-10	Boron-10	1.52 million
Chlorine-36	Argon-36	300,000
Carbon-14	Nitrogen-14	5715
Uranium-234	Thorium-230	248,000
Thorium-230	Radium-226	75,400

Most half-lives taken from Holden, N.E. (1990) *Pure Appl. Chem.* 62, 941-958.

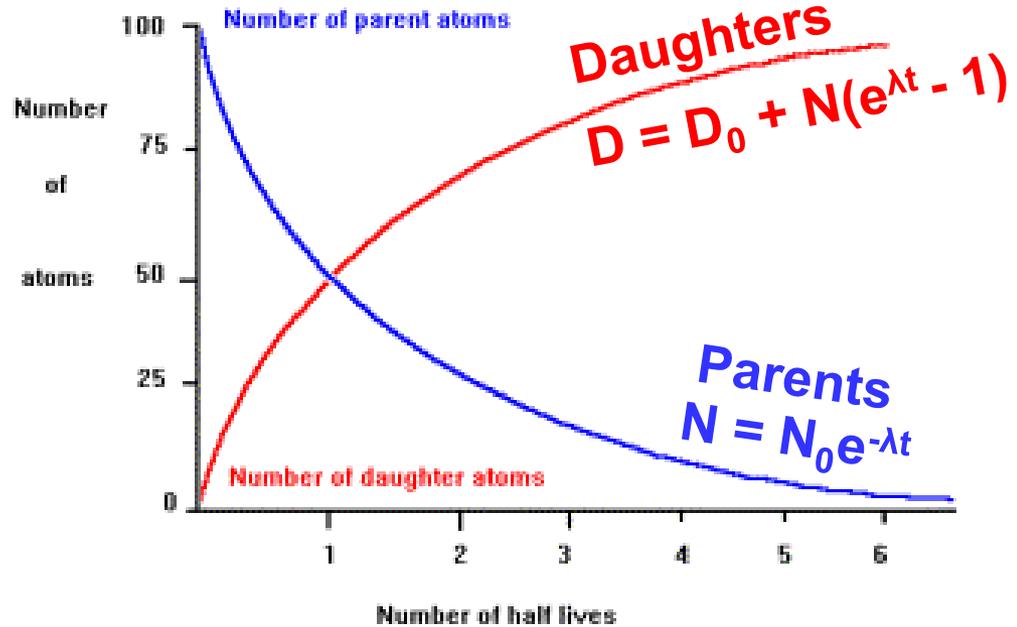


$$D = D_0 + N_0 - N$$

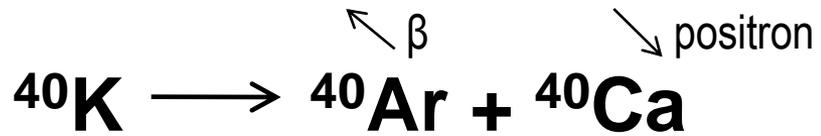
Final Initial Initial Decayed
Daughters Daughters Parents Parents

$$N = N_0 e^{-\lambda t}$$

$$D = D_0 + N(e^{\lambda t} - 1)$$



For Potassium Argon



$${}^{40}\text{Ar} = {}^{40}\text{Ar}_0 + \left(\frac{\lambda_e}{\lambda}\right) {}^{40}\text{K}(e^{\lambda t} - 1)$$

⁴⁰Ar fraction

$$t = \frac{1}{\lambda} \ln \left[\left(\frac{\lambda}{\lambda_e}\right) \frac{({}^{40}\text{Ar} - {}^{40}\text{Ar}_0)}{{}^{40}\text{K}} + 1 \right]$$

Watch out for initial Argon !

Start with K-Ar equation

$$^{40}\text{Ar} = ^{40}\text{Ar}_0 + \left(\frac{\lambda_e}{\lambda}\right) ^{40}\text{K} (e^{\lambda t} - 1)$$

Divide by ^{36}Ar

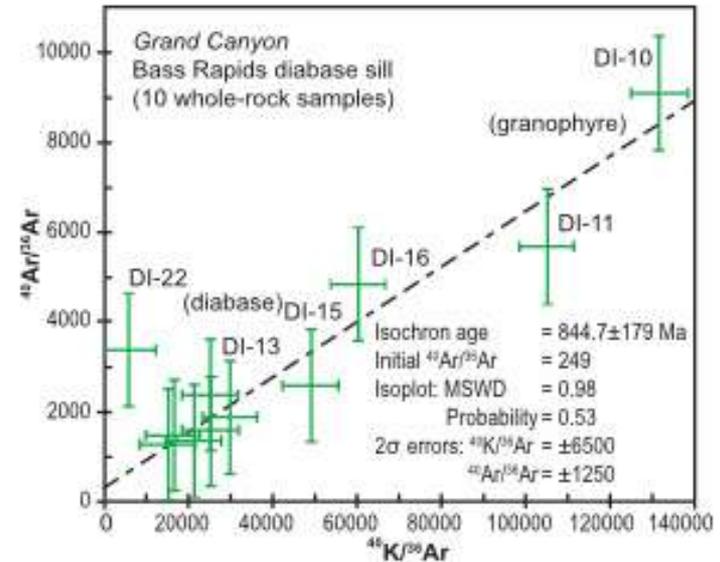
$$\frac{^{40}\text{Ar}}{^{36}\text{Ar}} = \frac{^{40}\text{Ar}_0}{^{36}\text{Ar}_0} + \left(\frac{\lambda_e}{\lambda}\right) \frac{^{40}\text{K}}{^{36}\text{Ar}} (e^{\lambda t} - 1)$$

Consider the equation of a line $y = mx + b$, then

$$m = \left(\frac{\lambda_e}{\lambda}\right) (e^{\lambda t} - 1) \quad b = \frac{^{40}\text{Ar}_0}{^{36}\text{Ar}_0}$$

The slope gives the age, initial concentrations are not needed

$$t = \frac{1}{\lambda} \ln \left[m \left(\frac{\lambda}{\lambda_e}\right) + 1 \right]$$

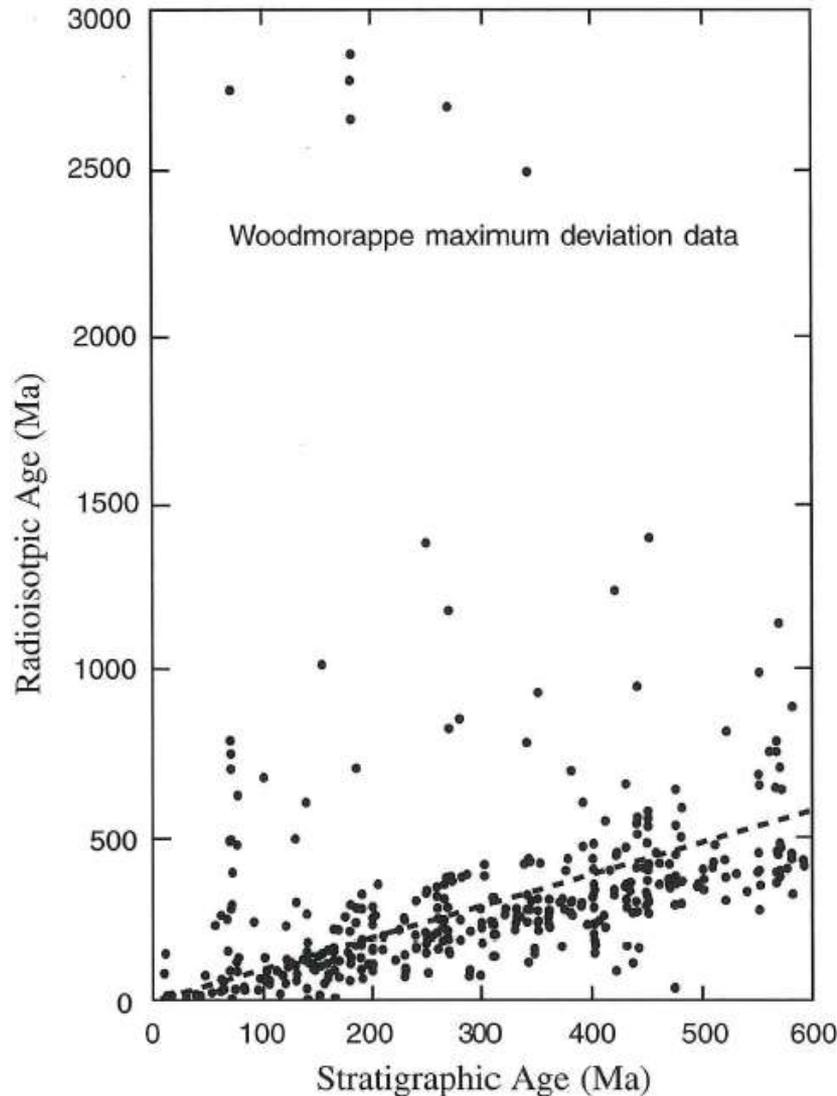


K-Ar Whole Rock Dating from Mt. Ngauruhoe (New Zealand) Lava flows in the 1949-1975

FLOW DATE	SAMPLE	LAB CODE	K-Ar 'AGE' (million years)
11 February 1949	A	R-11714	<0.27
	B	R-11511	1.0 ± 0.2
4 June 1954	A	R-11715	<0.27
	B	R-11512	1.5 ± 0.1
30 June 30, 1954	A #1	R-11718	<0.27
	A #2	R-12106	1.3 ± 0.3
	B #1	R-12003	3.5 ± 0.2
	B #2	R-12107	0.8 ± 0.2
	C	R-11513	1.2 ± 0.2
14 July 1954	A	R-11509	1.0 ± 0.2
	B	R-11716	<0.29
19 February 1975	A	R-11510	1.0 ± 0.2
	B	R-11717	<0.27

Up to 3.5 million years !

Table 1. Potassium-argon 'dates' of recent Mt Ngauruhoe (New Zealand) lava flows.⁷



A Puzzle

This is a collection of “bad” radiometric dates. Nevertheless there is a trend in the data. Is this because scientists are reluctant to publish dates that differ from evolutionary assumptions or are there real physical reasons ?

- Sponsored by the Institute for Creation Research (ICR)
- Driven by Discrepancy in Radiometric dates
- Started in 1997, lasted 8 years, budget of over 1 Million \$
- 7 Scientists

Larry Vardiman, Ph.D.

Steven A. Austin, Ph.D.

John R. Baumgardner, Ph.D.

Steven W. Boyd, Ph.D.

Eugene F. Chaffin, Ph.D.

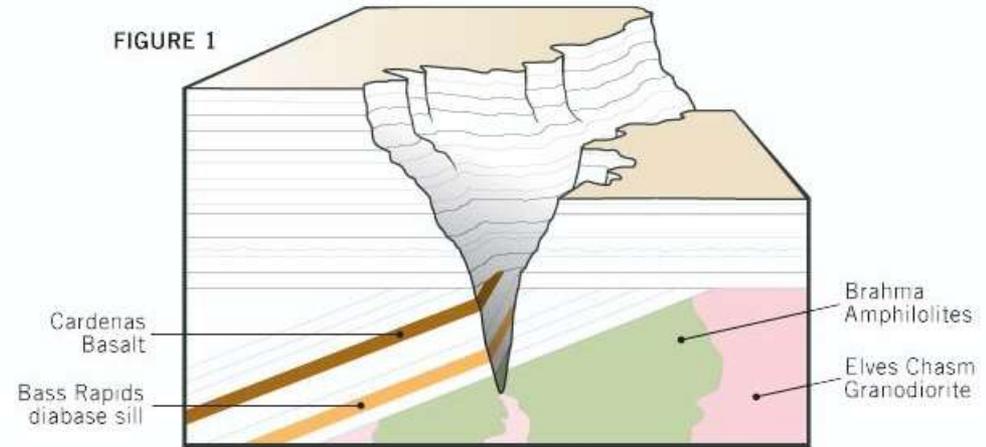
Donald B. DeYoung, Ph.D.

D. Russell Humphreys, Ph.D.

Andrew A. Snelling, Ph.D.

RADIOMETRIC AGES OF ROCK SAMPLES

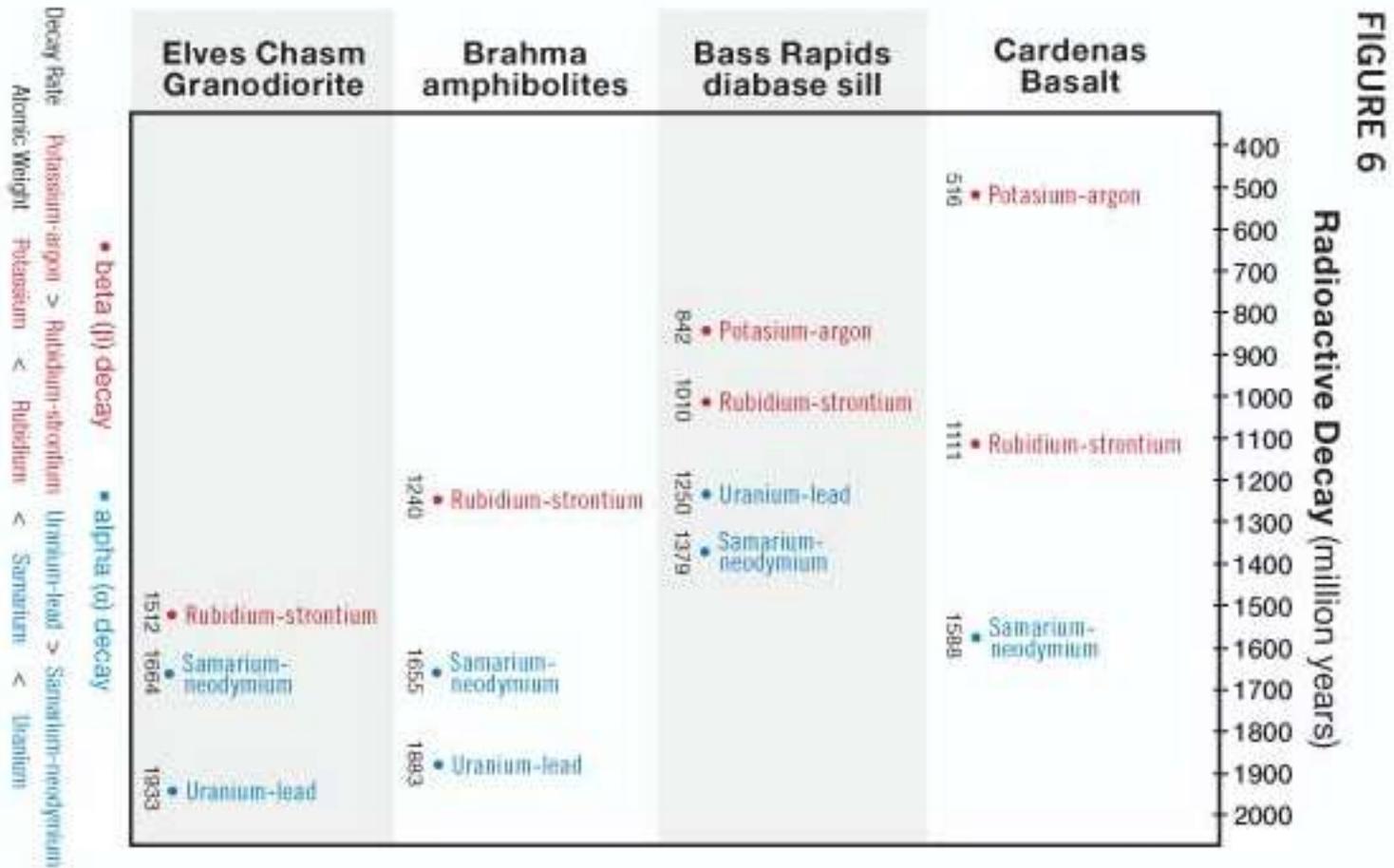
Samples from the same rock unit can yield very different radiometric “ages,” depending on the atoms being measured. The table below shows varying “ages” from rock units found in the Grand Canyon. Why is there so much variation? The measurements are not wrong, so there is only one reasonable answer: each radioactive element decayed at a different, faster rate in the past!



photos courtesy Andrew Snelling

TABLE 1—Radioactive ages yielded by four Grand Canyon rock units. (The error margins are shown in parentheses.)

Rock Unit	Ages (million years)			
	Potassium-argon	Rubidium-strontium	Uranium-lead	Samarium-neodymium
Cardenas Basalt	516 (±30)	1111 (±81)		1588 (±170)
Bass Rapids diabase sill	842 (±164)	1060 (±24)	1250 (±130)	1379 (±140)
Brahma Amphibolites	—	1240 (±84)	1883 (±53)	1655 (±40)
Elves Chasm Granodiorite	—	1512 (±140)	1933 (±220)	1664 (±200)



Potassium and Rubidium decay by beta (β) decay and always give younger ages. Uranium and Samarium decay via alpha (α) decay give older ages. This suggests **alpha decay was accelerated more than beta decay.**

Good Isochrons, Bad Systematics ?

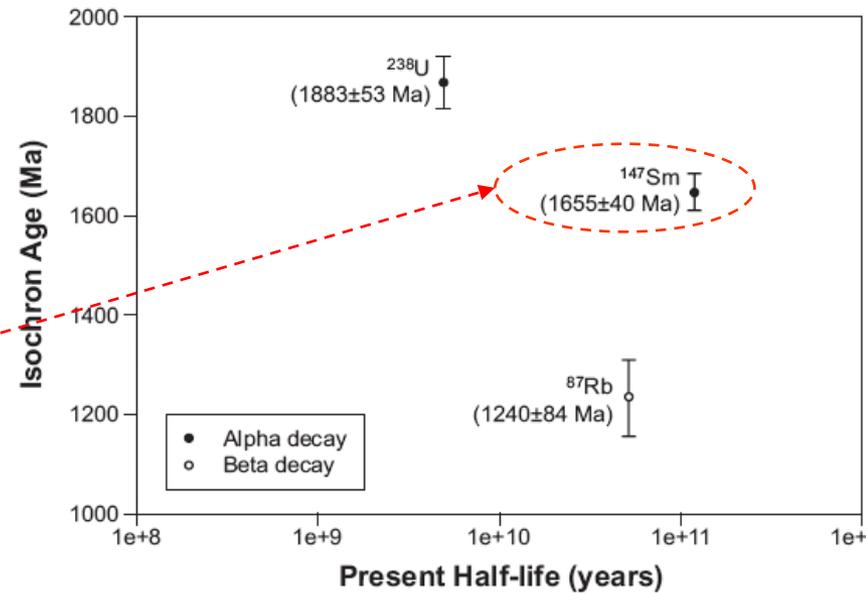
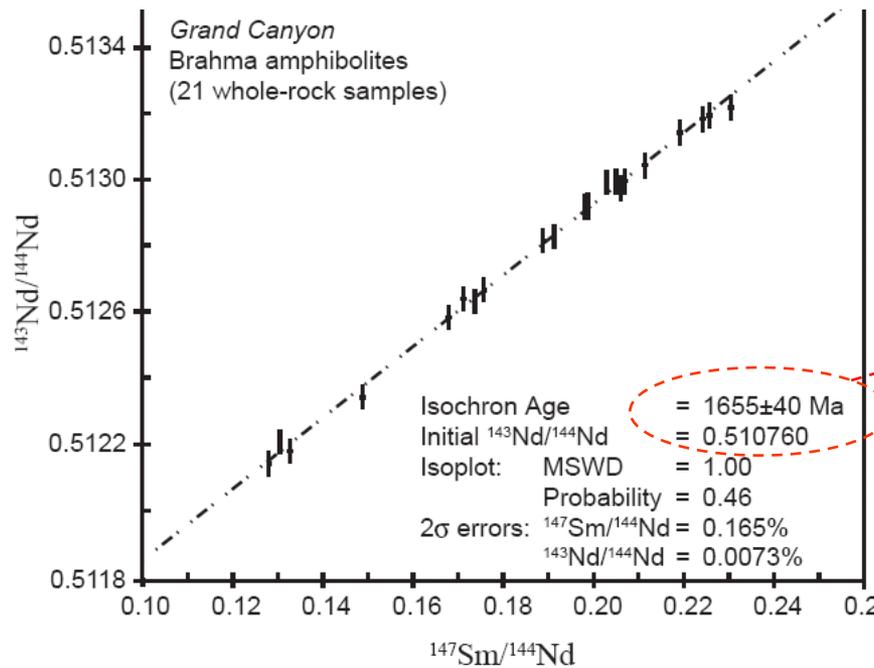
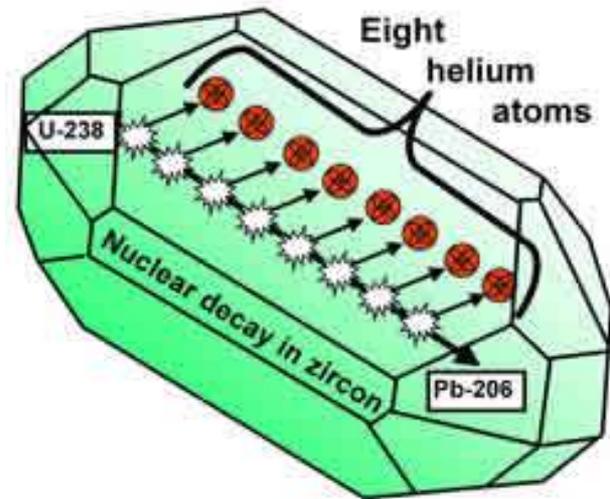
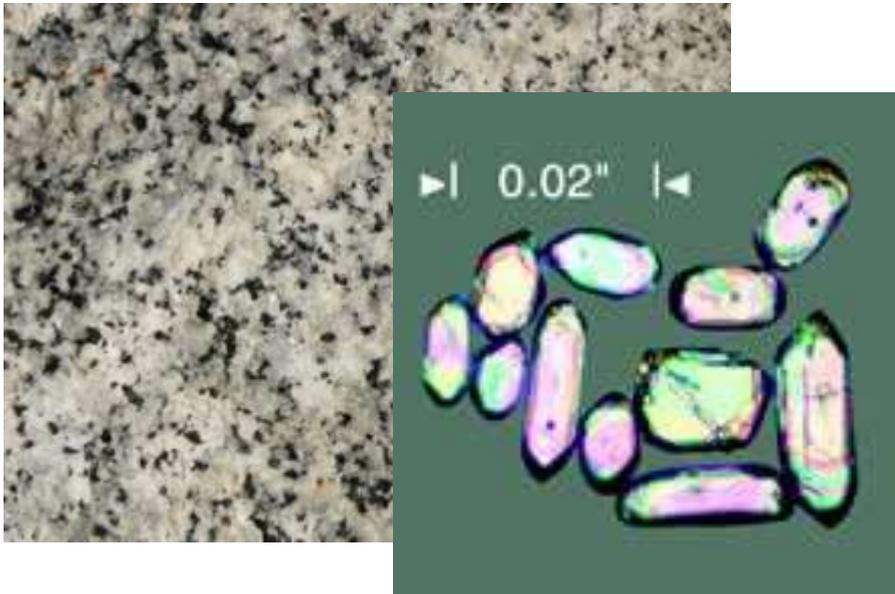


Figure 2. $^{147}\text{Sm}/^{144}\text{Nd}$ versus $^{143}\text{Nd}/^{144}\text{Nd}$ isochron diagram for the amphibolites in Grand Canyon. Twenty-one of the twenty-seven whole-rock samples were used in the isochron and “age” calculations. The bars represent the 2 σ uncertainties.

The isochron “ages” yielded by the different parent radioisotopes for the Brahma amphibolites plotted against the present half-lives (decay rates) of those radioisotopes according to their mode of decay (Note that there is total disagreement between the “dates,” and the alpha-decay “dates” are much older than the beta-decay “date.”)

Topic: Helium Diffusion in Zircons

Conclusions: Helium from nuclear decay is retained crystals. **Accelerated nuclear decay.**



RATE Project measures diffusivity of He in zircons, calculates age as 6000 ± 2000 years

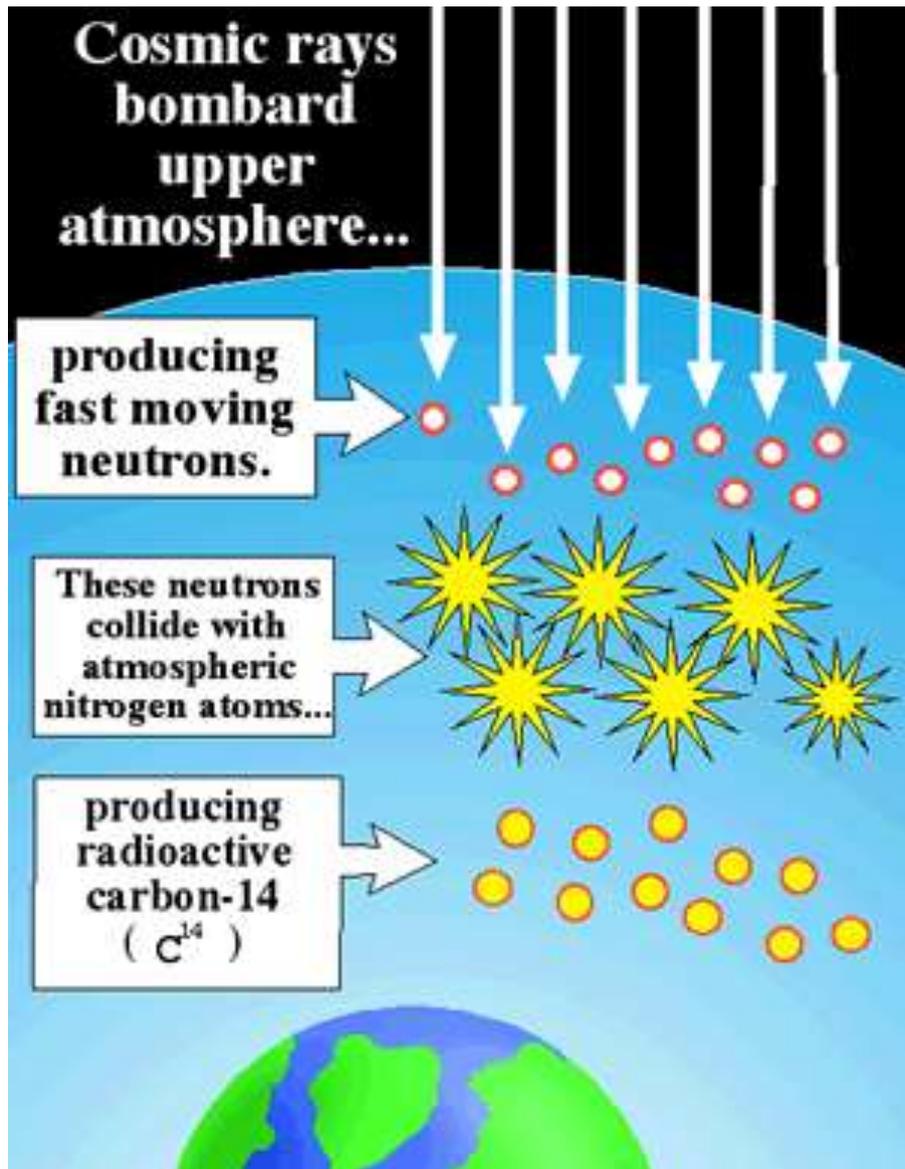
Problem of Heat -

Accelerated decay during the Flood would constitute 500 Million years of decay and melt the crustal rocks of the earth, and vaporize the oceans. Possibilities are:

- No accelerated decay occurred ?
- No large amount was produced ?
- God Supernaturally protects Noah and family
(mechanism unknown)

Problem of Radiation -

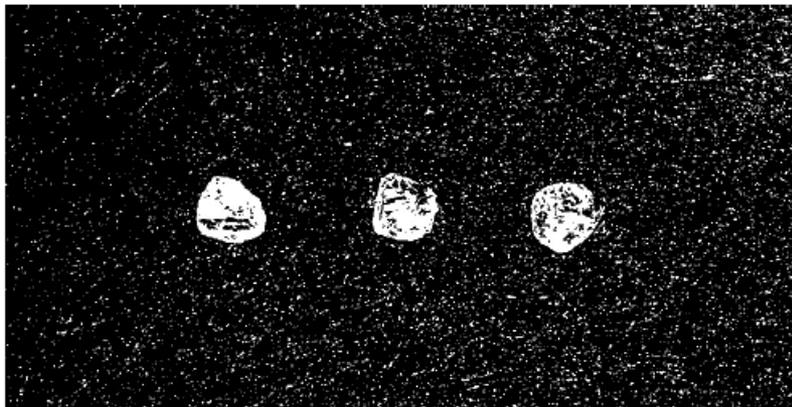
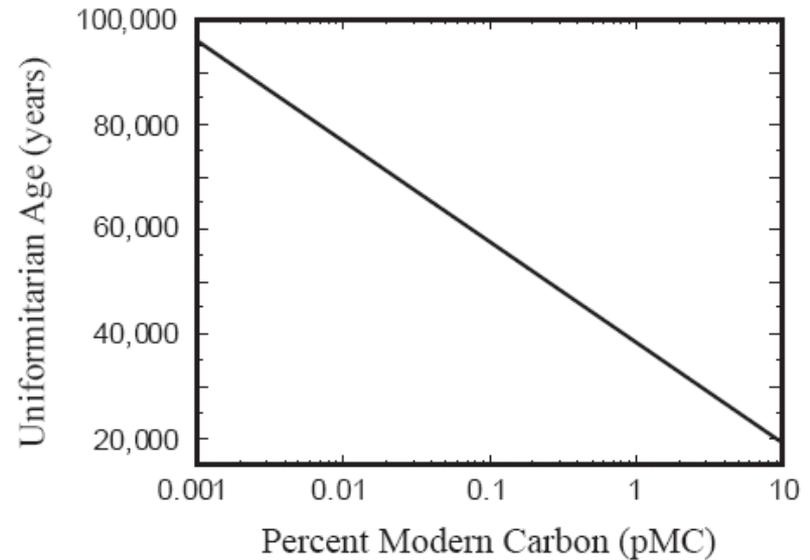
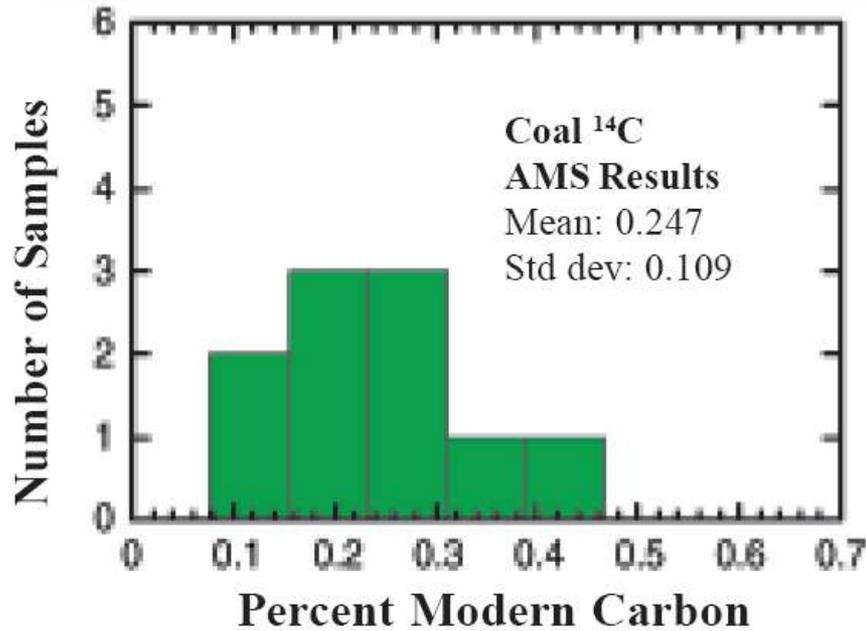
How could Noah and family survive a massive dose of radiation? A simple answer is the that the flood waters act as a shield, like a swimming pool reactor. More serious problem is that radioactive materials in our bodies, e.g. ^{40}K would produce lethal doses.



¹⁴C dating is a bit different than other methods since a known amount is produced in the atmosphere. Living things ingest the carbon and when the organism dies, the “clock” starts (¹⁴C decaying into ¹²C). It’s half-life is 5715 years, so it is useful for dating young organic artifacts.

Something is really wrong here !

- ^{14}C has half life of 5730 years.
- ^{14}C should be non-measurable in old materials. For 1,000,000 years, that is 175 ^{14}C half-lives. The concentration is 3×10^{-53} which is equal to one ^{14}C atom for the entire mass of the earth !
- Numerous samples in conventional literature ($> 100,000$ years) have ^{14}C of 0.3 pMC (percent modern carbon) for Cambrian to present, 0.06 pMC for Precambrian. Results were explained away as contamination
- RATE project tested 10 coal samples. ^{14}C found to be present. **This is impossible for an old earth.**
- RATE project tested diamonds. ^{14}C present found to be present. **This is impossible for an old earth.**

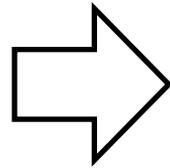


¹⁴C found in Diamonds
 0.04 pMC in kimberlite mines, 0.12 pMC in 7 alluvial samples

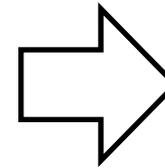
Figure 5. Photo of three diamonds from the Orapa mine, Botswana, from the set analyzed in this study. Weight of each is approximately 0.20 carats, or 40mg. The average diameter is about 2.5 mm.

Stages of Development

Identify
and
publicize
defects in
the theory
of evolution

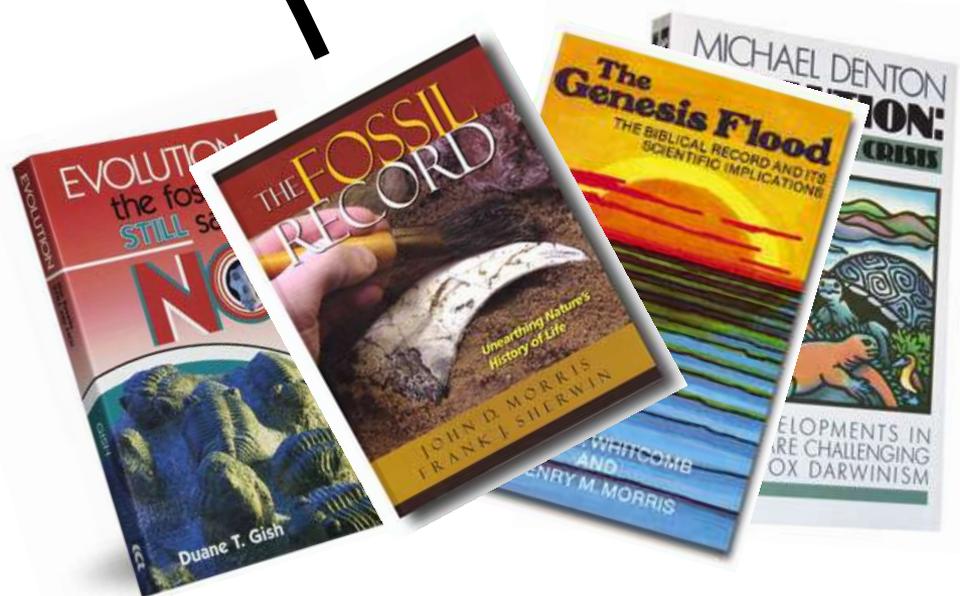
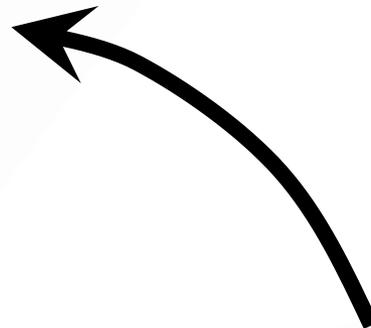


Perform
research
from a
creationist
perspective



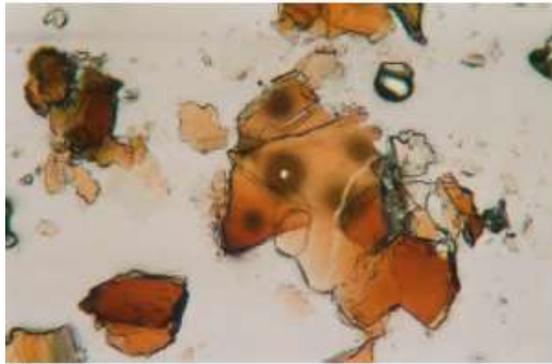
Propose
superior
theories and
contribute to
science

Continued scientific research clarifies radiometric issues...

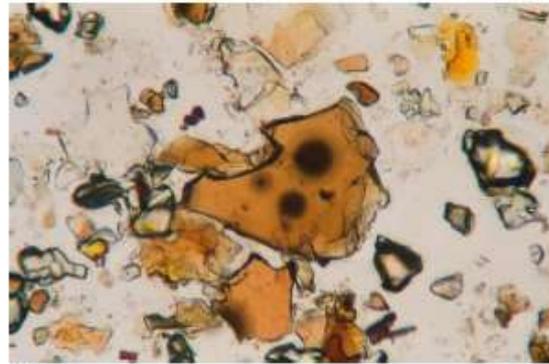


Back-up Slides

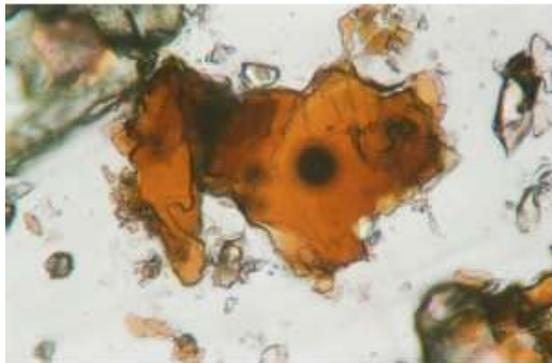
Alpha Particle damage



(c)



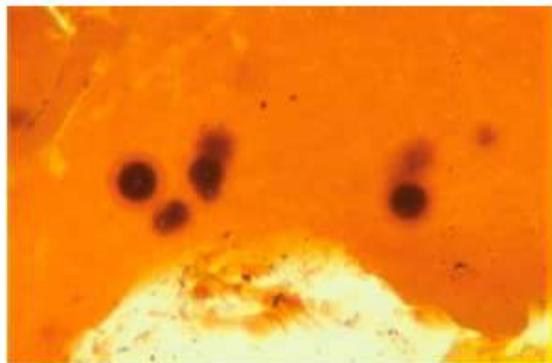
(d)



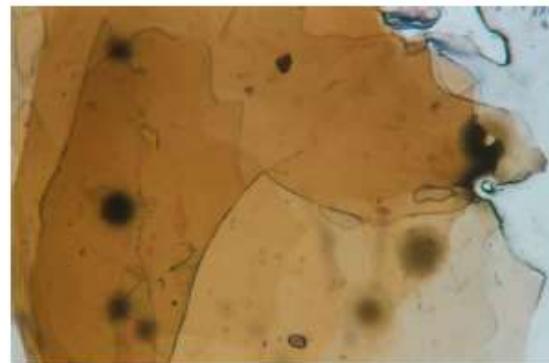
(e)



(f)



(g)



(h)

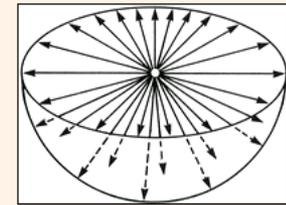
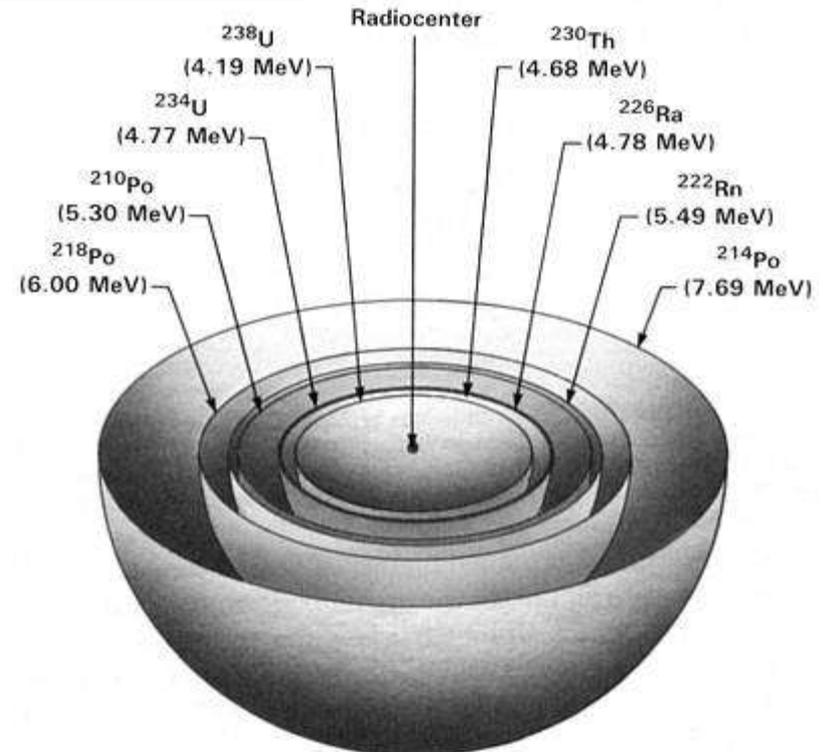
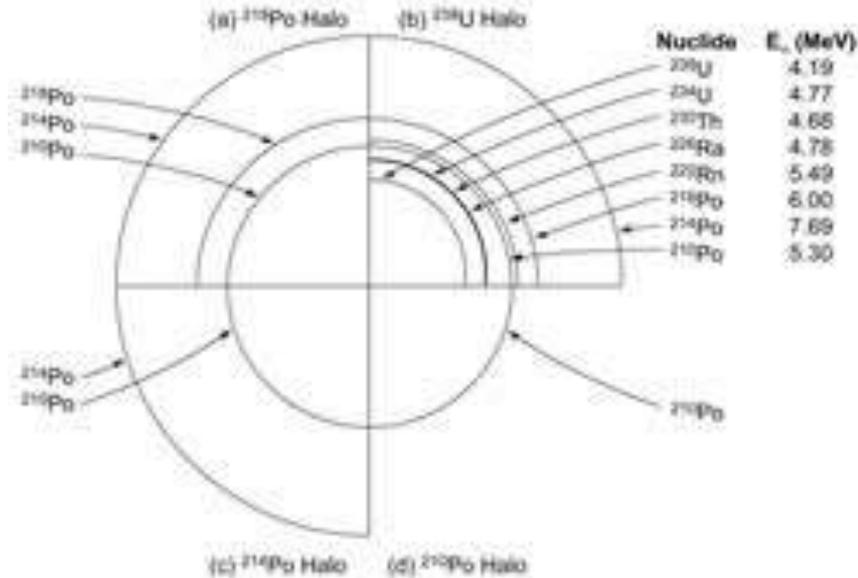
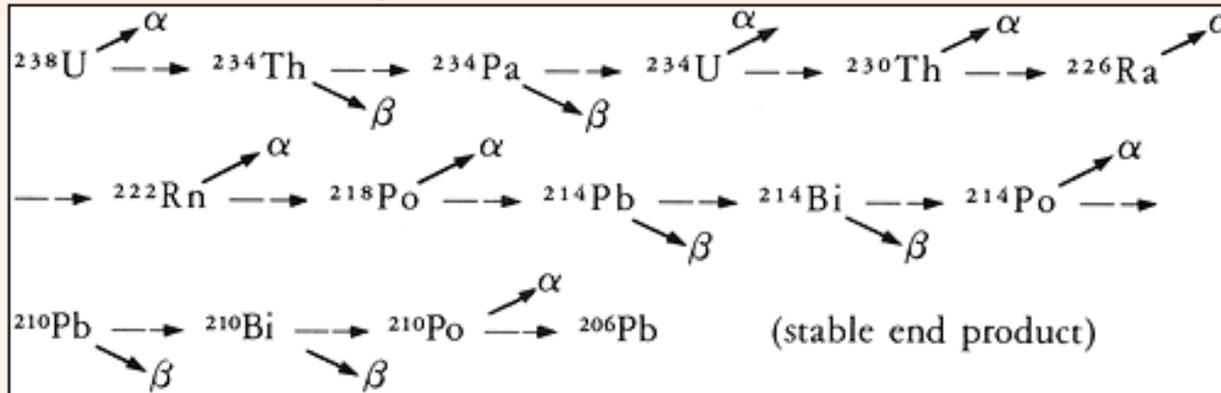


Figure 1.2 Sunburst Effect of Alpha-Damage Trails

^{238}U Decay Chain



Current Radiohalo Interpretations:

Greater than “100 million years” of U decay is needed to make U radiohalos.

U supplies Po to make the Po halos. Rock must be below 150 degrees C.

Cooling of granites and radiohalos must be rapid and decay rates must be accelerated.