Radiometric rock dating fooled everyone

John Michael Fischer & Wesley M. Steinbrink 2022

"It doesn't matter how beautiful your theory is, it doesn't matter how smart you are. If it doesn't agree with experiment, it's wrong. In that simple statement is the key to science. - Dr. Richard Feynman, Theoretical Physicist

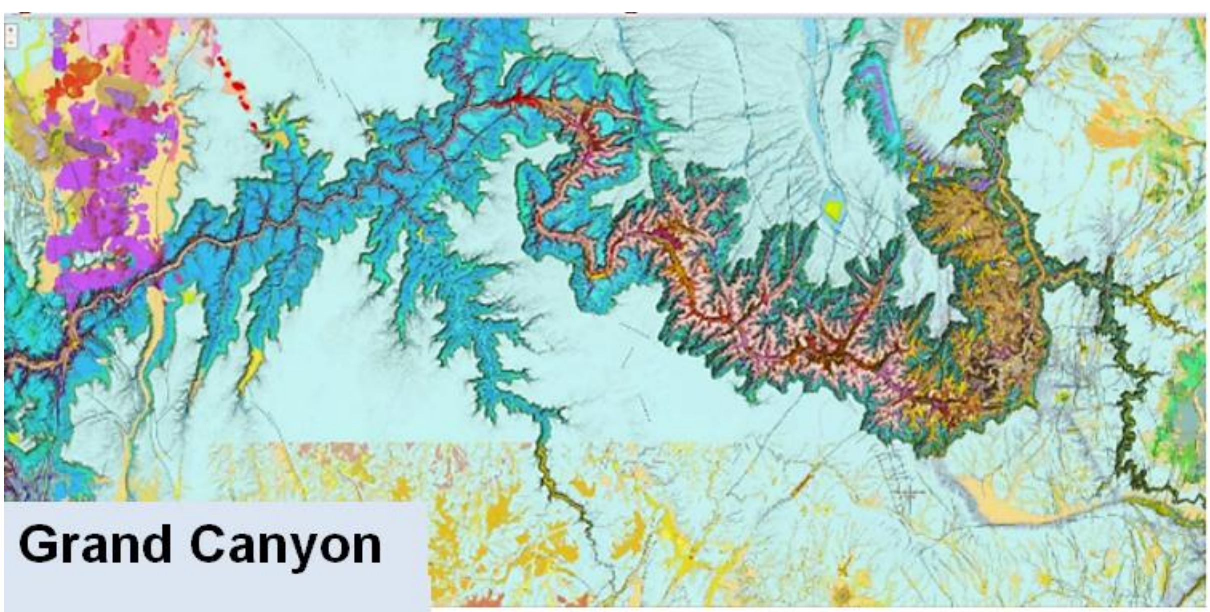
Radioisotope dating of rocks is deceptively simple: a radioactive element decays at a certain rate; you measure how much has decayed, and that is how long it has been decaying. With the "isochron" technique, no assumptions are needed about how much of the decayed (daughter) element was initially present. That is as much as the public and many academics feel they need to understand, and specialists who know better have no interest in casting doubt. After all, dating igneous rocks is the source for the timeline for the geologic column, paleontology, evolution theory, and plate tectonics theory, and many well-intentioned professionals are committed to this worldview. If people knew that it is a scientific illusion, it would open the gates to ideas unacceptable to conventional science.

What is the biggest flaw? The requirement that isotopes be isolated for many millions of years of constant change in temperature, pressure, and chemistry of the air, land, and sea; that is just make-believe. The elements radiometric dating measures formed together deep in the earth, rose to the surface where they concentrated, and have moved around ever since, as we will see below.

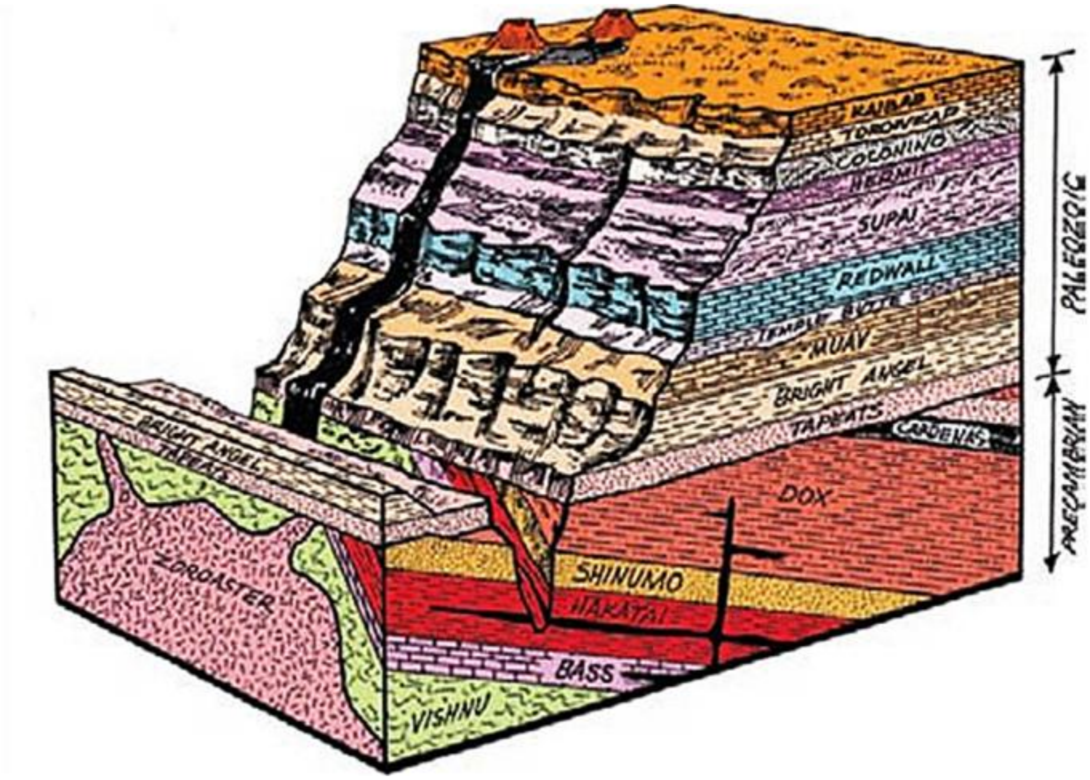
The scientific method is supposed to challenge ideas, to try to disprove them, so that if they hold up we can trust them. Since conventional science has no intention of challenging radioisotope dating of rocks, it is left to critics to step up, including scientific creationists.

A perfect test of radiometric dating

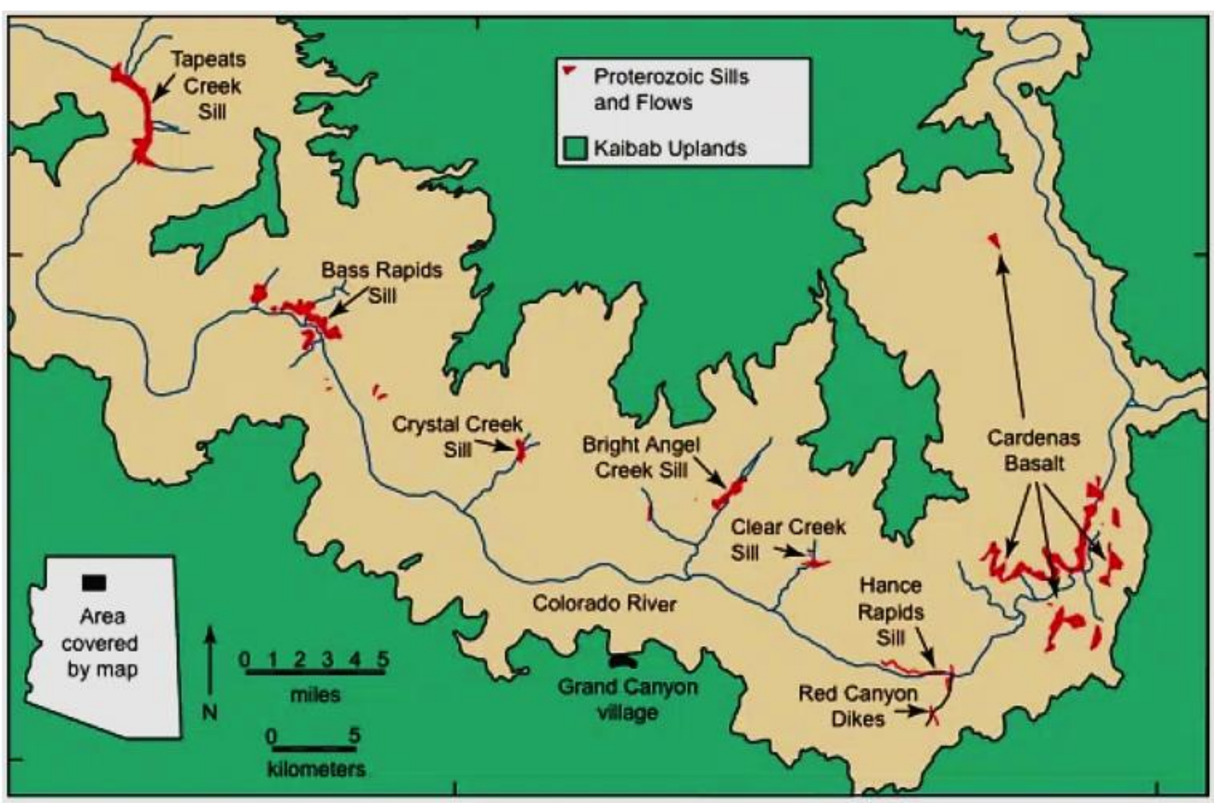
Researchers at the Institute for Creation Research (ICR) conducted an expensive experiment with rocks from the Grand Canyon in Arizona.



Many layers of rocks are exposed there.



A sill is where molten magma was forced in between two other rock layers. The researchers took a piece of rock from the Bass Rapids diabase sill, which is basalt intruded between sedimentary strata.

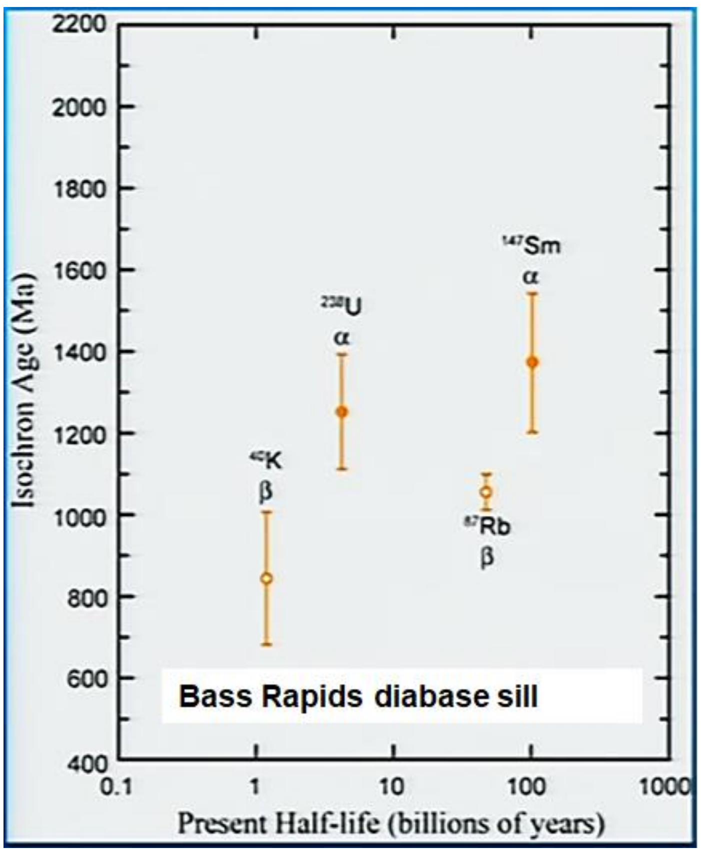


They sent samples of the rock to several professional Accelerator Mass Spectrometry (AMS) laboratories, the state-of-the-art for geological analysis.

The four major radioisotope dating methods used on rocks are:

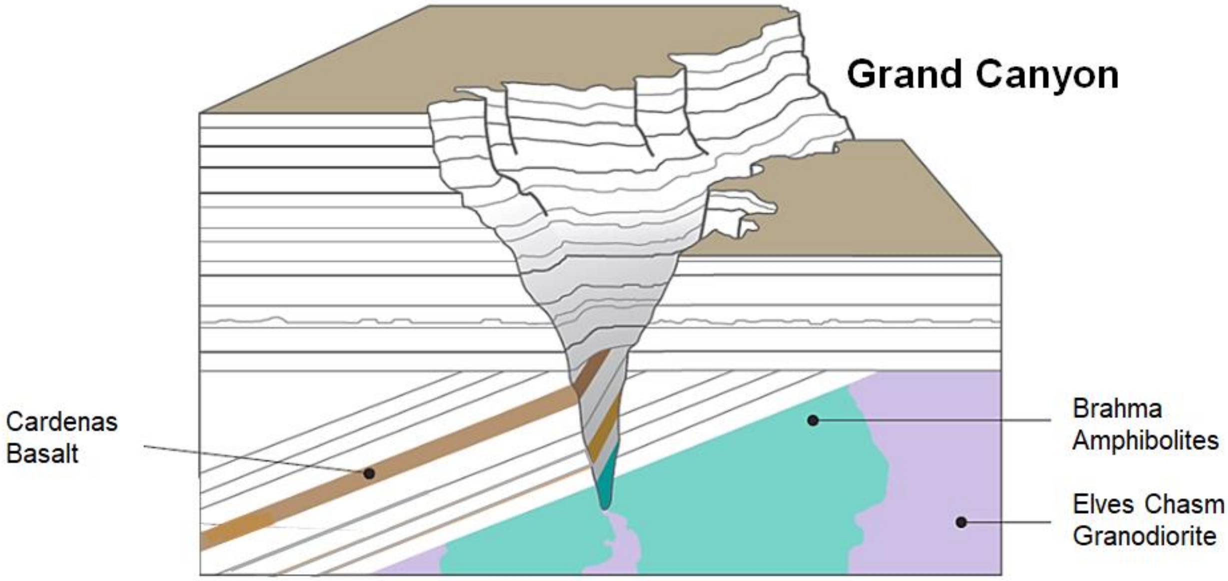
- Potassium-49 to Argon-40 (^{49}K to ^{40}Ar)
- Rubidium-87 to Strontium-87 (^{87}Rb to ^{87}Sr)
- Uranium-235/238 to Lead-207/206 ($^{235/238}U$ to $^{207/206}Pb$)
- Samarium-147 to Neodymium-143 (^{147}Sm to ^{143}Nd)

The labs were instructed to test their rock sample using ***all four*** methods, not just one. The results were determined with the isochron technique, which is supposed to be the gold standard of radiometric dating.

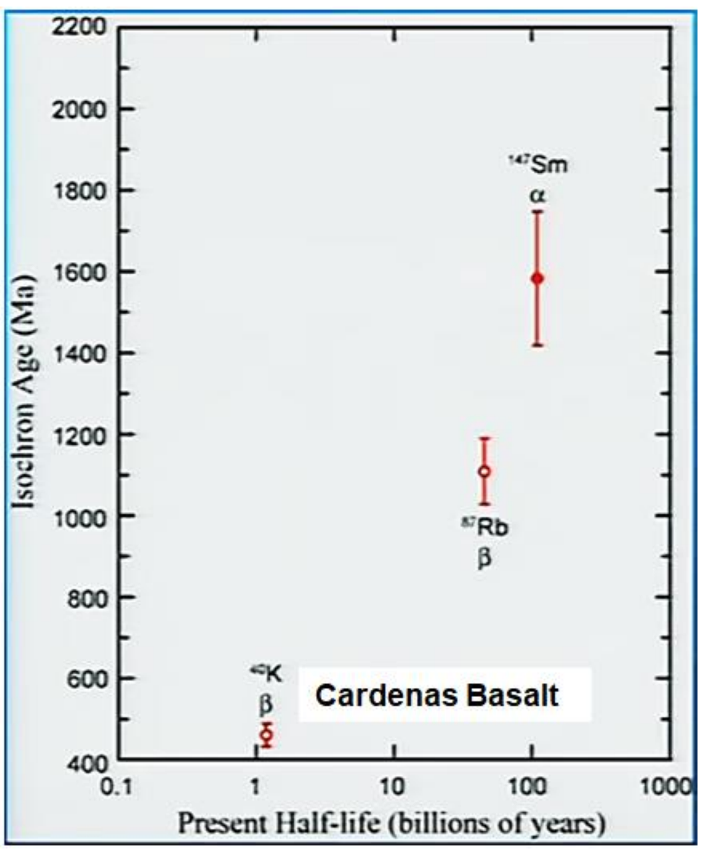


The left column shows the age obtained for each method, with an “error bar” appropriate to the precision of each method. If radiometric dating worked, all methods would give the same age for each rock sample.

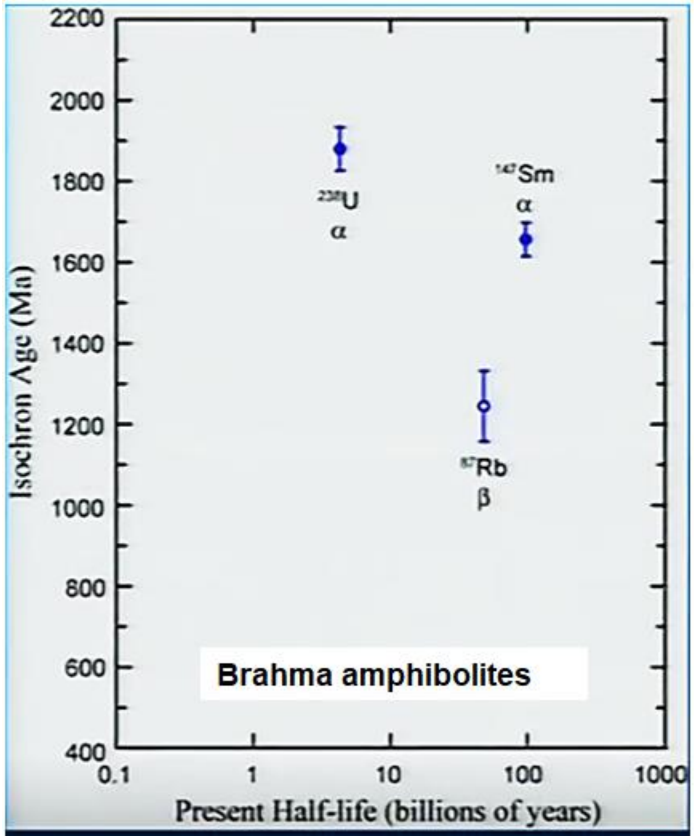
The researchers also took pieces of rock from three other strata and sent samples from them to the AMS labs to be tested using three dating methods.



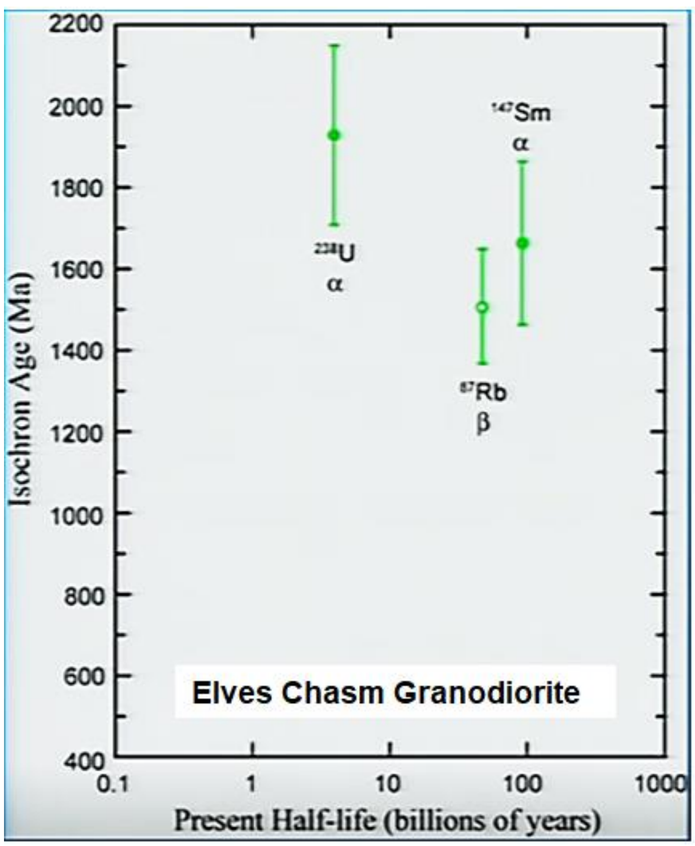
The Cardenas Basalt is a series of basalt lava flows in eastern Grand Canyon.



The Brahma Amphibolites are metamorphosed basalt lava flows.



Elves Chasm granodiorite is a coarse-grained intrusive igneous rock similar to granite, but with more plagioclase than orthoclase feldspar.

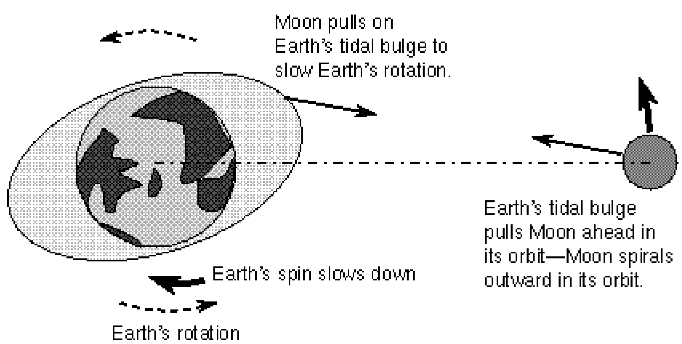


From: Radioactive & Radiocarbon Dating: Turning Foe Into Friend – Dr. Andrew Snelling, 2009, Answers in Genesis video lecture (21:40 to 29:48)   https://www.youtube.com/watch?v=JIZo4o77kRI

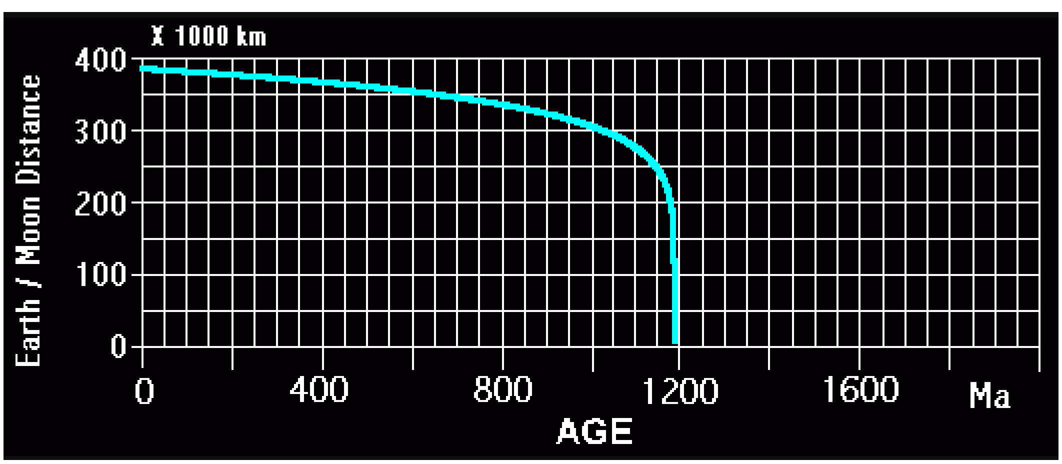
If radiometric dating worked, no matter which dating method you used you would get the exact same age from each method for any rock sample. As you can see, in no case did the various dating methods produce the same age for any of the rocks tested. Dating rocks with radioisotopes clearly does not work.

The receding Moon provides another simple test of radiometric dating by comparison with the age derived using orbital physics.

Gravitational interaction between the Earth and Moon slows Earth's spin while pushing the Moon farther away.



The newly formed Moon, just beyond the Roche limit, receded to its current distance from the Earth over about 1.2 billion years. Early tides between the Earth and Moon were very powerful. As a result, the Moon became tidally "locked" within 100 million years. From then on, its rotational and orbital periods were the same, and only one side of the Moon ever faced the Earth. The Moon's orbit also expanded rapidly.



Earth's Roche limit is 18,470 km. The Moon is now 384,400 km from Earth.

Radiometric dating of Moon rocks produces an age of around 4.5 billion years. Compared with the physics-derived age of 1.2 billion years, that is a huge discrepancy.

Within the conventional model of Earth's past, "The consensus is that tidal friction must have been significantly lower than today." However, "the early Earth is thought to have been rather hotter and more fluid than today: higher mantle temperature and a thinner lithosphere would have led to increased dissipation within the solid Earth, inevitably leading to higher (and not lower) tidal friction”. - Lathe, Richard. 2006. Early Tides: Response to Varga et al. Icarus, Vol. 180, No. 1, pp. 277-280.

Calculating its age

“The recession rate dr/dt of the moon is

$$\frac{dr}{dt} = \frac{k}{r^6} \; , \qquad (1)$$

where r is the semimajor axis of the moon’s orbit about the earth, t is time, and k is a proportionality constant. When t = 0, r = r_0.

To compute the moon’s recession time to its present orbit, we first integrate equation (1). Over the time interval 0 to t, the moon’s distance from the earth increases from the Roche limit r_0 (where the moon would disintegrate because of tidal forces) to its present orbit at distance r:

$$t = \frac{1}{7k}(r^7 - r_0^7) \, , \qquad (2)$$

in which t is the maximum age of the earth-moon system. The present value of r is 3.844 x 10^8 m. For an object orbiting a planet, the Roche limit r_0 is

$$r_0 = 2.4554R\left(\frac{\rho_p}{\rho_m}\right)^{1/3} , \qquad (3)$$

where R is the radius of the central body (the earth in this case); ρ_p is the density of the central body; and ρ_m is the density of the orbiting body, in this case the moon. With R = 6.3781 x 10^6 m for the earth; ρ_p = 5515 kg/m^3; and ρ_m = 3340 kg/m^3, we find that r_0 = 1.84 x 10^7 m. This is less than 5% of the moon’s current orbital radius.

From equation (1), the proportionality constant k is the product of the sixth power of the distance r, and the current recession rate. The present value of the recession rate is 4.4 ± 0.6 cm/yr, or (4.4 ± 0.6) x 10^{-2} m/yr. Therefore, k = 1.42 x 10^{50} m^7/yr. With this value for k, the right hand side of equation 1 equals the present recession rate dr/dt, when r = the moon’s current orbital radius.

From equation (2), the time for the moon to recede from r_0 to r is 1.3 Ga. Without introducing tidal parameters, …this is the moon’s *highest allowable* age.”

https://creation.com/the-moons-recession-and-age

The receding Moon dramatically reveals that radiometric dating does not work.

Dinosaur bones that are *not* petrified (replaced by minerals and turned to stone) are more hard evidence against radiometric dating of rocks. Radiometric dating is performed on igneous rocks, not fossil bones or sedimentary rocks, so conventional science has “dated” igneous rocks found around, above, and below dinosaur fossils, giving dates of 245 to 66 million years ago.

The discovery and confirmation of soft tissue, biomolecules, and even DNA fragments in some dinosaur bones stunned conventional scientists because these should not survive if they are as old as radiometric dating says they are. But what brought out harsh censorship was Accelerator Mass Spectrometry (AMS) Carbon-14 dating of un-petrified dinosaur bones. Excuses can be concocted for soft tissue survival, but consistent AMS radiocarbon test results are purely empirical data.

In the reports, laboratory technicians described how they processed the bone samples. The average ages obtained were around 30,000 years before present. However, the accuracy of carbon dates depends on whether the ratio of Carbon-14 to Carbon-12 was the same in the past as it is today.

Since conventional scientists are prohibited from radiocarbon dating dinosaur bones (a single case did slip through), once again it required creationists to step up. You can see all the details at https://www.newgeology.us/presentation48.html.

Radiometric dating obviously does not measure time

What does it measure?

Though decay rates of radioisotopes are periodically refined, they are precise enough for rock dating.

Radioactive Isotope	Decays to	Half-life (years)
Rubidium-87	Strontium-87	49,000,000,000
Rhenium-187	Osmium-187	41,600,000,000
Thorium-232	Lead-208	14,000,000,000
Uranium-238	Lead-206	4,500,000,000
Potassium-40	Argon-40	1,250,000,000
Uranium-235	Lead-207	704,000,000
Samarium-147	Neodymium-143	108,000,000

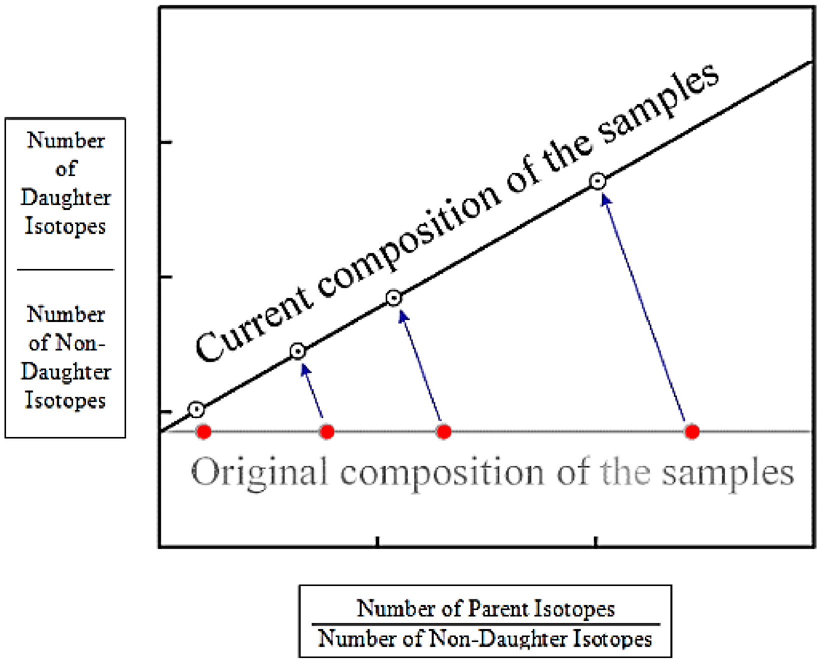
But the rest is a guess about the initial amount of daughter product in the rock, the assumption that neither parent nor daughter product has migrated into or out of the closed rock system, and that chemicals in molten magma are evenly distributed. One or more of these must be wrong.

The isochron trick

“Since the mid-20th century, the isochron age model has been the standard for dating rocks”. “It’s widely claimed that this model eliminates the need for any assumptions about the initial amount of the daughter isotopes”.

“By assumption, at the time… that the lava or magma cools and hardens the relative abundance of the daughter isotope… is the same everywhere in the lava”. “This means that, in theory, the data points should form a flat, horizontal line”. Then, “as time passes, some of the parent atoms will decay into daughter atoms and project as an evolving straight line with decreasing amounts of the parent nuclei and increasing amounts of the daughter nuclei.” - Cupps, Vernon R. June 2020. Revisiting the Isochron Age Model - Part 1. Acts & Facts, Vol. 49, No. 6, pp. 10-13.

If the daughter and stable (non-radiogenic) isotopes are supposed to be distributed evenly throughout the rock, the parent isotope should be too, right? But that is not an assumption in the isochron model.



You need to know that the red dots above are not amounts of the parent isotope; they are *ratios* of the parent isotope over the stable, non-radiogenic isotope. If the samples were from a homogeneous rock, as assumed in the isochron method, there would be **only one ratio** regardless of the amounts of each isotope. There would be only one point; there would be no other points on the diagram. A line of points, like the one above, means that the rock is heterogeneous. So every whole-rock isochron is invalid.

"The ability to obtain a whole-rock diagram, straight-line or not, can be considered proof that the data represent a 'mixing line' rather than an 'isochron'. If mixing has not occurred, and the system has remained closed, then the whole-rock data must all lie on a single point. In fact, even if the whole-rock data show scatter, either mixing is indicated - but of a complex nature, with more than two components - or there have been subsequent alterations described as the system being open, or both.

Has any legitimate isochron ever been formed? It is improbable. There is ample evidence for mixing. Any 'isochron' could be mixing. There is no way to rule it out. All whole-rock 'isochrons' are mixing, and they are approximately 90% of all published. - Overn, William. Isochron rock dating is fatally flawed. Twin Cities Creation Science Association https://www.tccsa.tc/articles/isochrons2.html

All heterogeneous rocks have a mix of isotopes inherited from their magmas, which have hosted radioactive decay for a long time. Heterogeneity is no surprise; melting, intrusion and extrusion of magma does not lead to smooth blends; it's complicated, as we will see.

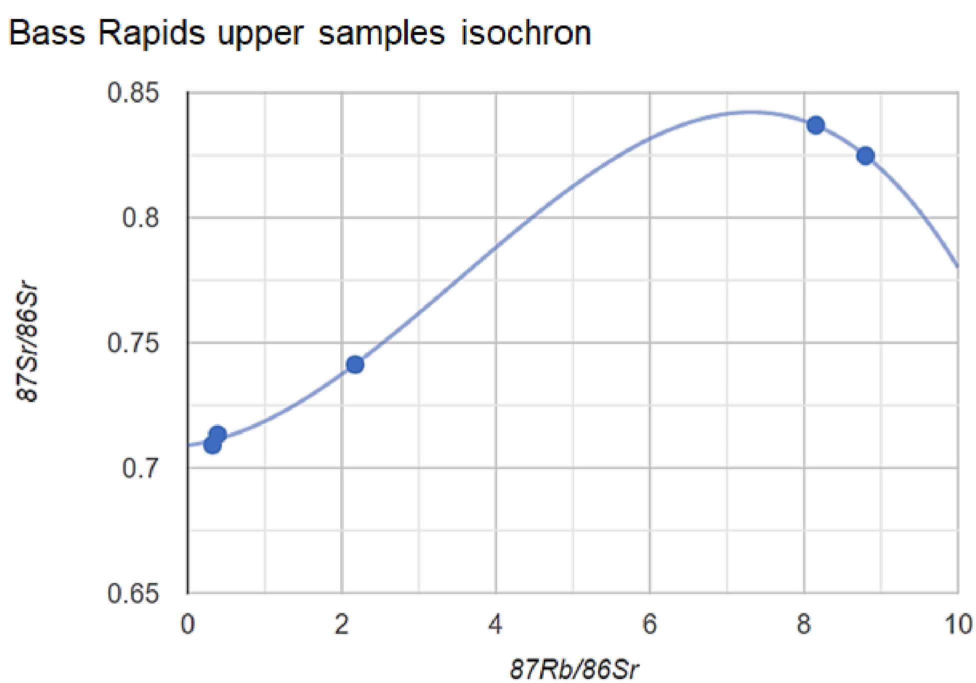
A test of whole-rock isochrons in the Grand Canyon

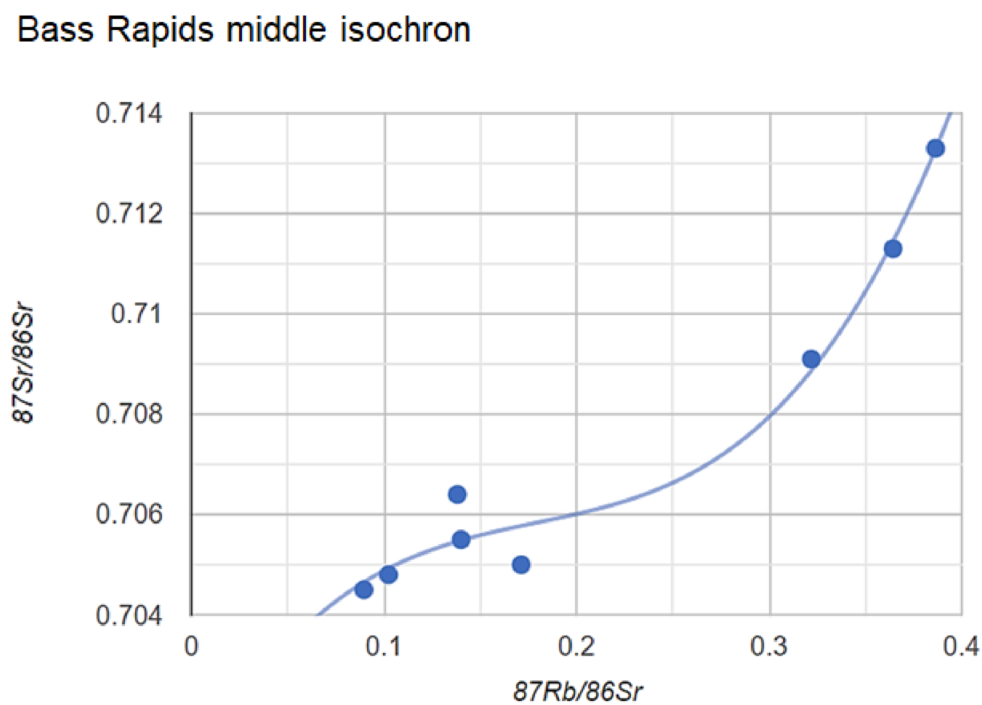
We are fortunate to have Rubidium/Strontium data taken by the RATE group from two columns of rock: the Bass Rapids diabase and the Cardenas basalts in the Grand Canyon:

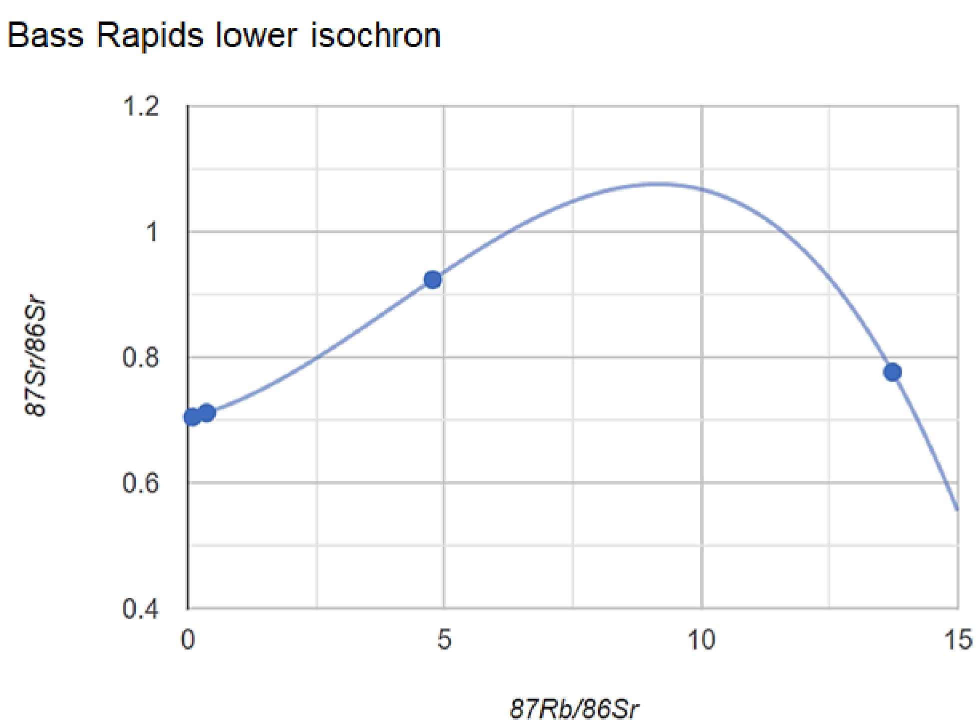
Sample I.D.	Rock Type	$^{87}RB/^{86}Sr$	$^{87}Sr/^{86}Sr$	Approximate depth from bottom of top Contact Hornfels (m)
DI-10	Granophyre	8.1539	0.8370	2.4
DI-11	Granophyre	8.7996	0.8248	4.2
DI-16	Granophyre	2.1731	0.7413	6.0
DI-17	Diabase	0.3864	0.7133	7.5
DI-15	Diabase	0.3219	0.7091	22.0
DI-18	Diabase	0.1381	0.7064	29.0
DI-14	Diabase	0.1400	0.7055	49.0
DI-13	Diabase	0.1024	0.7048	59.0
DI-19	Diabase	0.1713	0.705	72.0
DI-7	Diabase	0.0896	0.7045	73.0
DI-22	Diabase	0.3644	0.7113	86.0
DI-21	Contact Hornfels	4.7691	0.9235	94.0
DI-20	Contact Hornfels	13.7277	0.7763	96.0

Figure 1. Bass Rapids diabase samples from top (~1 meter) to bottom (95 meters)

And here are the isochrons derived from the upper, middle, and lower samples.







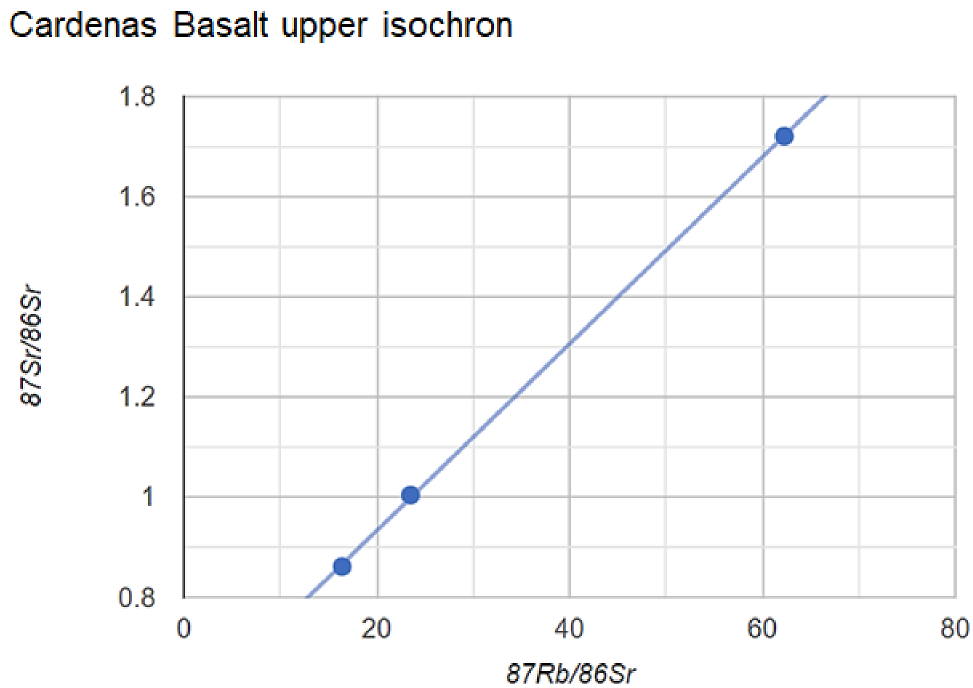
There was obviously a lot of mixing in this sill.

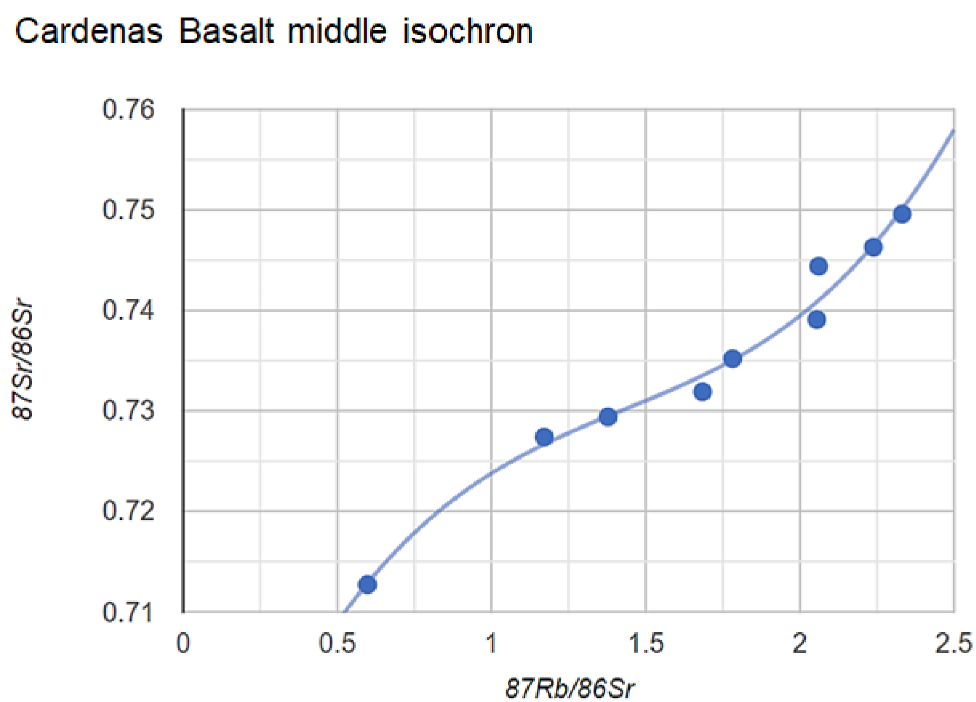
Ten Cardenas Basalt layers are sandwiched between nine mostly-sandstone layers.

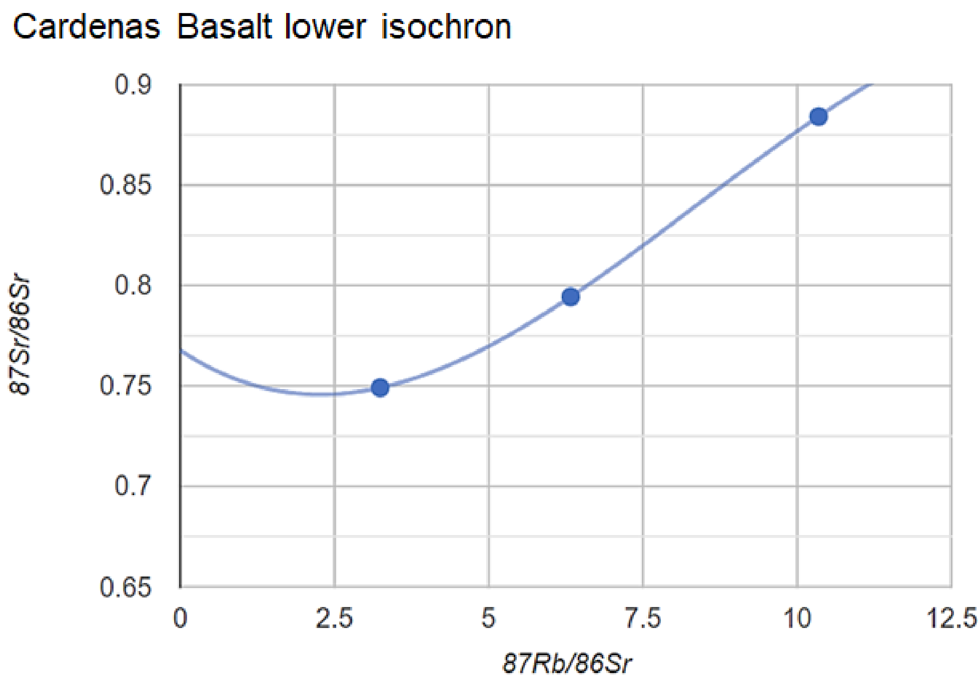
Sample I.D.	Rock Type	$^{87}RB/^{86}Sr$	$^{87}Sr/^{86}Sr$	Approximate depth from bottom of formation (m)
C-19	Basalt	16.4059	0.8610	290.0
C-18	Basalt	23.5210	1.0040	270.0
	Sandstone			265.0
C-17	Basalt	1.6840	0.7319	255.0
	lapillite			240.0
C-16	Basalt	62.2835	1.7210	230.0
	Sandstone			222.0
C-7	Basalt	1.1707	0.7274	212.0
	Sandstone			210.0
C-6	Basalt	1.3777	0.7294	190.0
C-5	Sandstone	no data	no data	180.0
C-8	Basalt	2.0548	0.7391	160.0
	Sandstone			150.0
C-4	Basalt	2.2385	0.7463	125.0
C-3	Basalt	2.3316	0.7496	118.0
C-2	Basalt	1.7816	0.7352	108.0
C-1	Basalt	2.0609	0.7444	102.0
C-9	Sandstone	no data	no data	95.0
C-10	Basalt	0.5974	0.7127	83.0
	Sandstone			58.0
C-15	Lava Chuar	10.3492	0.8842	42.0
	Sandstone			38.0
C-11	Basalt	no data	no data	35.0
C-14	Lava Chuar	6.3293	0.7944	21.0
C-12	Basalt	no data	no data	18.0
C-13	Basalt	3.2407	0.7491	5.0
none	Dox Formation	no data	no data	0.0

Figure 2. Cardenas Basalt samples for top (300 meters high) to bottom (0 meters or start of Dox Formation)

And here are the isochrons derived from the upper, middle, and lower samples.







The Cardenas Basalts apparently intruded between the sedimentary strata. The ratios are similar throughout the 300-meter-high column of rock, as if coming from the same source magma, with some mixing.

All the data were compared to the assumptions of the isochron model, and these are some conclusions:

"**The amount of ^{86}Sr varies significantly from sample to sample**, negating the [isochron] assumption that it is uniformly distributed throughout the rock formation when it solidifies. The observed distribution is more likely due to differential isotopic diffusion and/or fractionation. Whatever the case, the original $^{87}Sr/^{86}Sr$ ratio has not reached a uniform value throughout the rock system during formation as is assumed in the isochron dating model."

"**The observed amounts and ratios of ^{86}Sr, ^{87}Sr, and ^{87}Rb are primarily determined by pre-existing amounts of said isotopes**, as would be expected for the mixing of two or more different rock types solidifying as they mix together. This is supported by the data. The ratios obtained seem to have very little relationship with decay time (age) or decay rates. The closed system assumption, the homogeneity assumption, and the constant initial ratio of $^{87}Sr/^{86}Sr$ don't appear to be supported by the data. These problematic issues combine to nullify the isochron model as a valid dating method." (emphasis added) - Cupps, Vernon R. 30 June 2020. Revisiting the Isochron Age Model, Part 2. Acts & Facts https://www.icr.org/article/revisiting-isochron-age-model-part-2 (Diagrams are derived from the data)

"[T]here is very clear evidence that modern, historic, and recent volcanic rocks have inherited the radioisotope signatures of the mantle sources of the magmas that produced them". (page 435)

"[I]t may be that a significant quantity of the radioisotope decay indicated by the isochron "ages" occurred in the mantle source". (page 453)

"[B]oth the $^{87}Sr/^{86}Sr$ and $^{143}Nd/^{144}Nd$ isotope ratios in… western Grand Canyon basalts reflect the mantle source of their magma, compositional trends not being compatible with bulk crustal contamination but due to a heterogeneous mantle source." (page 429)

“[I]t could be argued that these Rb-Sr isochron ‘ages’ for the Cardenas Basalt and Bass Rapid diabase sill are also the result of their inheritance of the isotopic signature of their magmas’ mantle source.” (page 444) - Snelling, Andrew A. 2005. Isochron Discordances and the Role of Inheritance and Mixing of Radioisotopes in the Mantle and Crust. Chapter 6 *in* RATE II: Radioisotopes and the Age of The Earth: Results of a Young-Earth Creationist Research Initiative, (Volume II), L. Vardiman et al., *eds.* San Diego, CA: Institute for Creation Research and the Creation Research Society.

Mount Ngauruhoe

“Mt. Ngauruhoe in the Taupo Volcanic Zone of New Zealand erupted andesite lava flows in 1949 and 1954, and avalanche deposits in 1975.” A creationist geologist removed pieces of these rocks, and had laboratories conduct geochemical and “Rb-Sr, Sm-Nd, and Pb-Pb radioisotopic analyses of samples of these andesites”.

“Variations in the depleted mantle Nd ‘model ages’, which range from 724.5 to 1453.3 Ma, and which are meaningless in this recent (even in conventional terms) tectonic and petrogenetic framework, and the Pb isotopic linear arrays, indicate geochemical heterogeneity in the mantle wedge.”

“Thus, the radioisotopic ratios in these recent Ngauruhoe andesite lava flows were inherited from both the peridotitic mantle wedge and the subducted trench sediments, and are fundamental characteristics of their geochemistry. They therefore only reflect the origin and history of the mantle and crustal sources from which the magma was generated, and therefore have no age significance.”

Other “petrographic studies of the basalts of the Taupo Volcanic Zone” “concluded that the parental basaltic magmas must be broadly similar to each other, and thus much of the diversity observed in the andesites can be attributed to secondary processes as the magmas ascended through complex plumbing systems in the mantle and crust beneath this volcanic arc.”

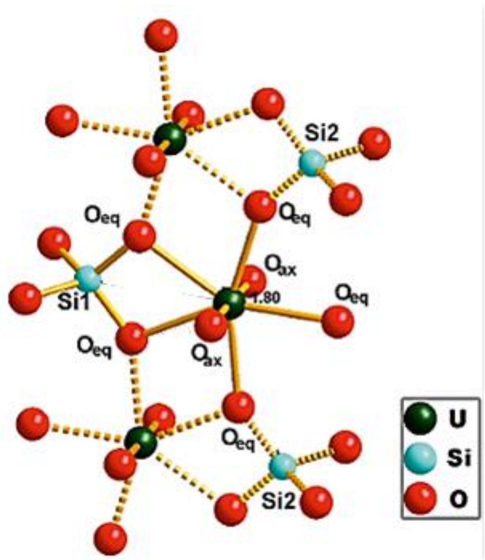
“By implication, the radioisotopic ratios in ancient lavas found throughout the geologic record are likely fundamental characteristics of their geochemistry. They therefore probably only reflect the magmatic origin of the lavas from mantle and crustal sources, and any history of mixing or contamination in their petrogenesis, rather than any valid age information.” - Snelling, Andrew A. 2003. The Relevance of Rb-Sr, Sm-Nd, and Pb-Pb Isotope Systematics to Elucidation of the Genesis and History of Recent Andesite Flows at Mt. Ngauruhoe, New Zealand, and the Implications for Radioisotopic Dating. Proceedings of the Fifth International Conference on Creationism, editor Robert L. Ivey, Jr., Creation Science Fellowship of Pittsburgh, Pittsburgh, Pennsylvania, pp. 285-303.

Minerals could give good isochrons if they weren't so leaky

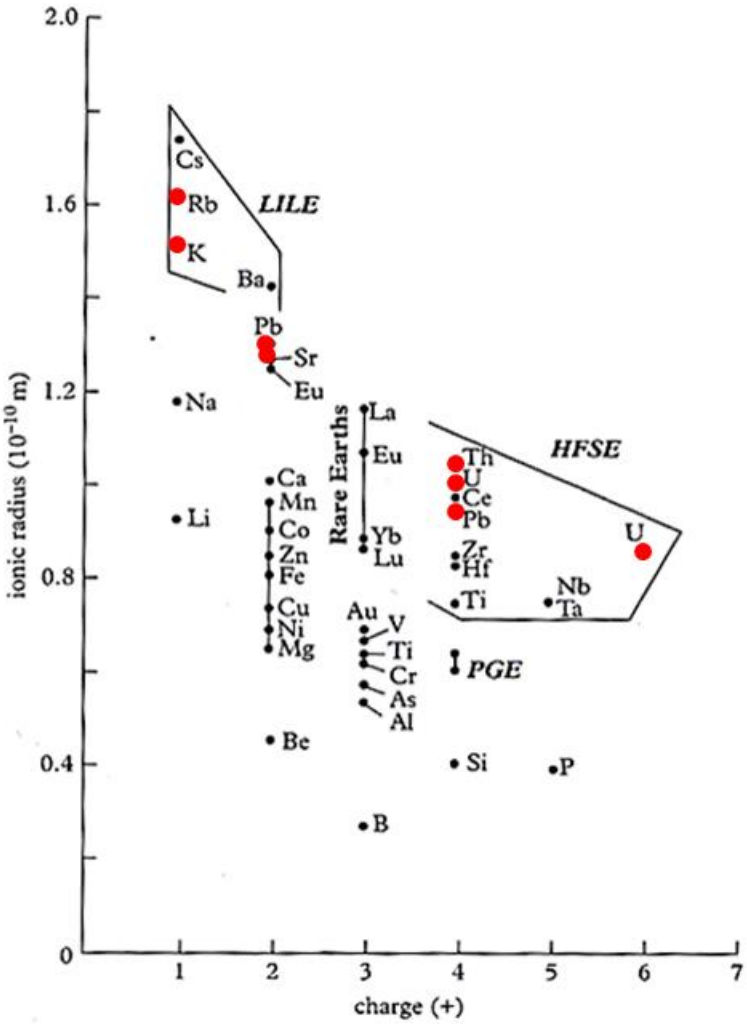
"What is needed but missing in the whole rock isochron is a mechanism to establish initial homogeneity, and then to extract heterogeneous samples. The mineral crystals do the job in an elegant way. Each type accepts a different level of contamination of the parent isotope, chemically determined."

"As the crystals form, each different mineral type accepts a different trace level of rubidium and of strontium. Because of their individual unique chemistry they each extract a different amount of rubidium and of strontium from the melt. The crystals of the individual minerals are used as the rock samples in the mineral isochrons." - Overn, William. Isochron rock dating is fatally flawed. Twin Cities Creation Science Association https://www.tccsa.tc/articles/isochrons2.html

For "a granite composed of the minerals quartz, feldspar and biotite (for argument's sake), each mineral will have differing amounts of trace elements". "For example, feldspars have huge amounts of both Rb and Sr. In contrast, micas, such as biotite, typically do not have as much Rb and Sr; however, they have a lot of Rb compared with Sr, i.e. they have a high Rb/Sr ratio, whereas feldspars will have relatively lower Rb/Sr ratios. Quartz has virtually no Rb or Sr, but typically has very low Rb/Sr." - https://www.cambridge.org/core/books/abs/radiogenic-isotope-geochemistry/isochron-geochronology/0F9731F401829366EF16C3690D6F3F43



"[T]he parent radioisotopes (^{87}Rb, ^{147}Sm, ^{238}U, ^{235}U) and their daughter products (^{87}Sr, ^{143}Nd, ^{206}Pb, ^{207}Pb respectively) are not the elements which form the minerals in the rocks being dated, but are merely trace elements that substitute into, or are trapped inside, the crystal lattices of those rock-forming minerals. As such they are held more loosely in the crystal lattices and thus are much more likely to diffuse than any of the major elements that are more tightly bonded to form the mineral crystals. - Snelling, Andrew A. March 27, 2017. Key Flaw Found in Radioisotope Isochron Dating. https://answersingenesis.org/geology/radiometric-dating/key-flaw-found-radioisotope-isochron-dating/



Adapted from: Nedelec, Anne, Jean-Luc Bouchez. 2015. Granites – Petrology, Structure, Geological Setting, and Metallogeny. Oxford University Press, Croydon, UK. (page 145)

Radioactive element atoms tend to be large and unstable, so it is no surprise that the radioisotopes used in rock dating (red) have “a large ionic radius (LILE: Large Ion Lithophile Elements)… and/or a high [electric] charge (HFSE: High Field Strength Elements)… **complicating their substitution into the crystal lattices.** Consequently, **they remain as long as possible in the melt or in the hydrous fluid**.” (page 145) - Nedelec, Anne, Jean-Luc Bouchez. 2015. Granites – Petrology, Structure, Geological Setting, and Metallogeny. Oxford University Press, Croydon, UK.

“There is sound logic supporting the mineral isochron, but another fatal flaw. Individual mineral crystals are not closed systems.” - Overn, William. Isochron rock dating is fatally flawed. Twin Cities Creation Science Association https://www.tccsa.tc/articles/isochrons2.html

Isotopes can migrate small distances:

“The ratios of strontium-86 to rubidium-87 and strontium-87 are thought to only be influenced by the radioactive decay of the rubidium-87 into strontium-87. The current model of radioisotope dating is based on that idea.”

“But that model doesn’t account for **differential mass diffusion** – the tendency of different atoms to **diffuse** though a material **at different rates**. And atoms of strontium-86 can diffuse more readily than atoms of strontium-87 or rubidium, simply because **atoms of strontium-86 are smaller**.”

“The rate of diffusion will vary, based on the sample – what type of rock it is, the number of cracks and amount of surface area, and so on,” Professor Robert Hayes says. **“If we don’t account for differential mass diffusion, we really have no idea how accurate a radioisotope date actually is.”** (emphasis added)

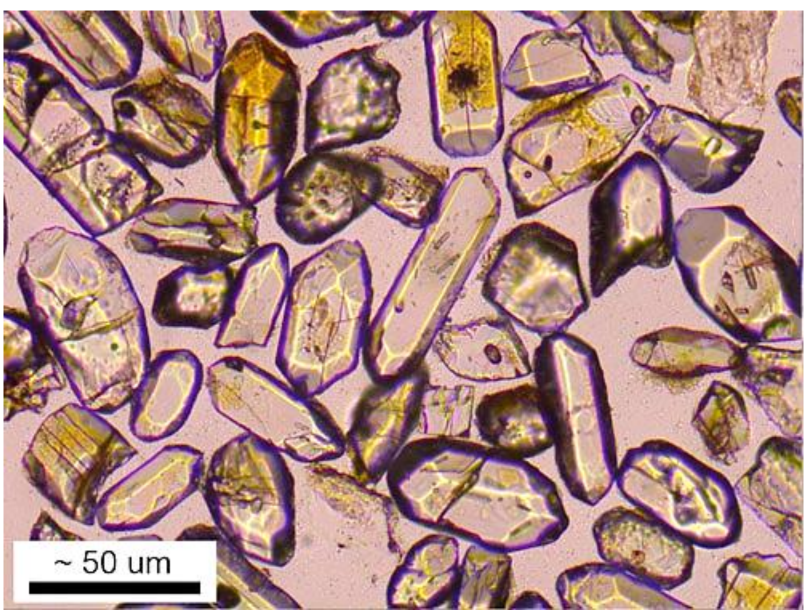
From press release: Paper Spotlights Key Flaw in Widely Used Radioisotope Dating Technique. January 31, 2017 *by* Matt Shipman, North Carolina State University.
Reference paper: Hayes, Robert B. 2017. Some Mathematical and Geophysical Considerations in Radioisotope Dating Applications. Nuclear Technology, Vol. 197, No. 2 DOI: 10.13182/NT16-98

“The isotope effect [differential mass diffusion rate] is that **isotopes having a smaller atomic mass will diffuse faster throughout a medium than will their heavier counterparts** causing concentration gradients of their ratios even when there are no contributions from radioactive decay.” “[T]he only method to fully eliminate the isotope effect is to not use isotopic ratios at all in radioisotopic dating”. (emphasis added) - Robert B. Hayes (2017) Some Mathematical and Geophysical Considerations in Radioisotope Dating Applications, Nuclear Technology, 197:2, 209-218, DOI: 10.13182/NT16-98

“Recent experiments on silicate melts have shown that **isotopes fractionate significantly along a temperature gradient**, such that heavy isotopes accumulate in the cold end and light isotopes accumulate in the hot end. The magnitude of this fractionation can be quite large; for example, in molten basalt an isotopic enhancement of several tenths of a percent is observed for ^{26}Mg with **as little as 50°C difference in temperature**.”

“This mass-dependent persistence effect can be visualized by an analogy to American football - in a collision between a (heavier) lineman and a (lighter) cornerback, the lineman can push his way through the cornerback if he has enough speed. In the same way, …it is more probable that a heavy particle will move from the hot side to the cold side than vice versa. For this reason, **the cold side will become enriched in heavy isotopes, leaving the hot side enriched in light isotopes**, as has been found in all experimental studies.” (emphasis added) - Daniel J. Lacks,1 Gaurav Goel,1,2 Charles J. Bopp IV,3 James A. Van Orman,1,2 Charles E. Lesher,4 and Craig C. Lundstrom. 2012. Isotope Fractionation by Thermal Diffusion in Silicate Melts. PHYSICAL REVIEW LETTERS, 108(6), pp.065901(1-5)

Are zircons time capsules?



“Zircon is a common accessory mineral in a variety of igneous, metamorphic and sedimentary rocks. It is the most commonly used mineral phase in U-Pb geochronology.”

“On the one hand, **it is known to survive and remain chemically closed under extreme geological conditions** whereas on the other hand, **it is also known to lose radiogenic Pb under low Pressure–Temperature conditions**, resulting in **discordant** U-Pb ages.”

"[T]he most remarkable chemical alteration is a **severe U and Th loss**, which contradicts with the observed stability of these species in experiments at higher temperatures."

"**[S]elf-induced radiation damage of zircon**, resulting from the radioactive decay of U and Th (known as metamictization), is an important parameter controlling its resistance to dissolution or selective leaching. [M]etamict zircon **dissolves incongruently** [the components at different rates] in low-temperature, acidic solutions under static conditions."

"[T]he fast transport of chemical species from and into the metamict network **can be well explained** by the microstructure of a partially metamict zircon, i.e., by the existence of percolating domain boundaries or areas of low atomic density, which act as fast diffusion pathways."

"…volume diffusion in metamict zircon can cause **significant** loss of U, Th, and especially loss of radiogenic Pb over geological time scales, even at temperatures **as low as 175 °C.** Our results show that recent Pb loss discordias can be generated (1) by predominate Pb loss from metamict zircon through volume diffusion at **low temperatures** where thermal healing of the structure is insignificant, and (2) by leaching of Pb (and U and Th) from metamict zircon through an external fluid." (emphasis added) - Geisler, T., R.T. Pidgeon, W. van Bronswijk, R. Kurtz. 2002. Transport of uranium, thorium, and lead in metamict zircon under low-temperature hydrothermal conditions. Chemical Geology, Vol. 191, pp. 141 – 154.

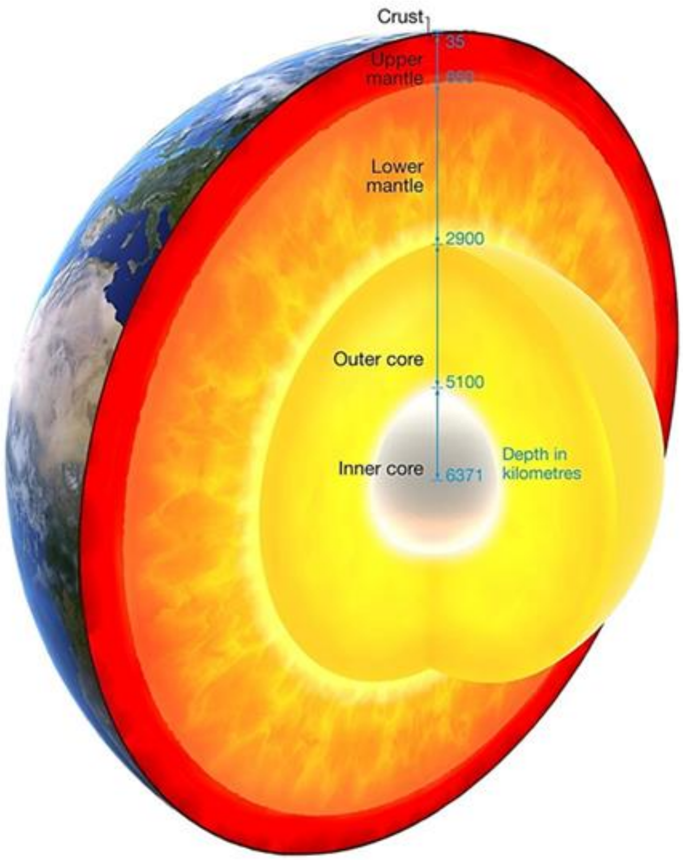
"Natural zircons are **intrinsically heterogeneous**. This heterogeneity has a chemical and radiation damage origin. The volumic distribution of impurities in the crystal is non-uniform due to the events that occurred during zircon genesis and radiation damage by alpha rays and recoil nuclei follows the distribution of Uranium and Thorium."

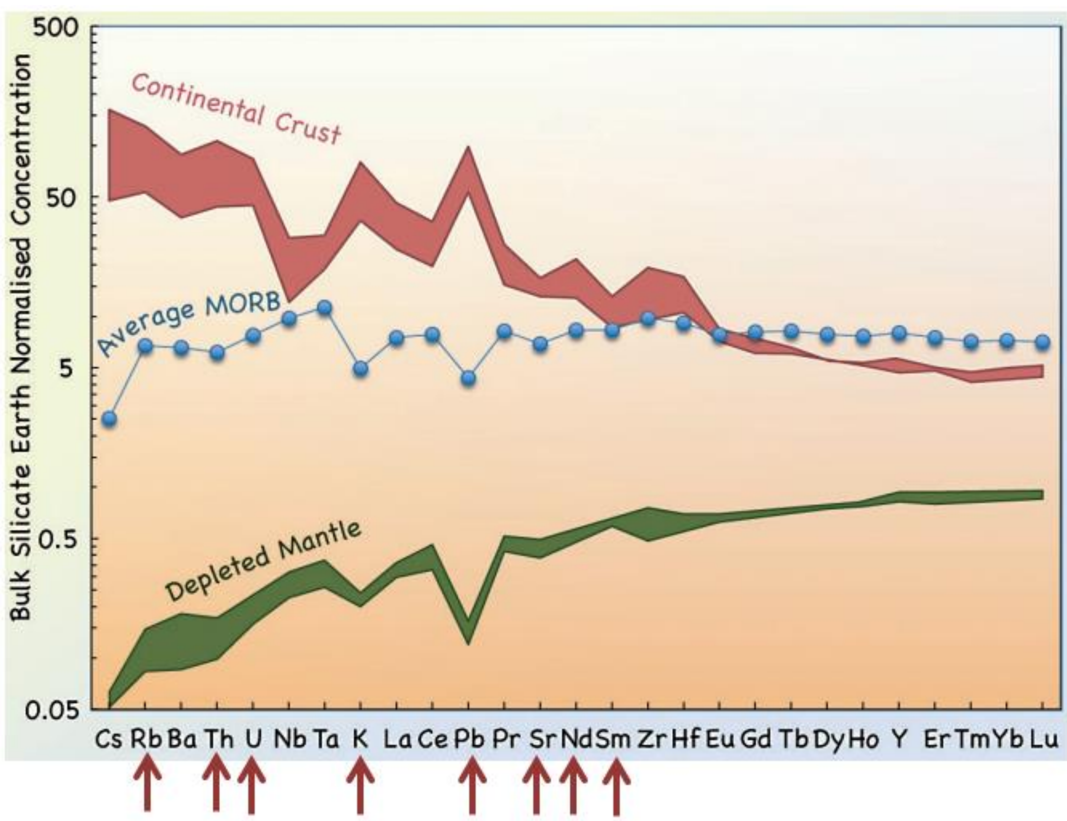
"Irradiation induces **amorphization** of the crystalline structure (the metamictization process) and thus may **decrease** the chemical durability of the material." (emphasis added) - Trocellier, Patrick, Robert Delmas. 2001. Chemical durability of zircon. Nuclear Instruments and Methods in Physics Research B, Vol. 181, pp. 408-412.

"…given sufficient time, **even weakly radiation-damaged zircon**, with little point defect concentration and a few isolated amorphous domains, may suffer marginal leaching especially in the presence of a highly reactive fluid, resulting in **recrystallization** and the formation of transgressive reaction rims." (emphasis added) - Geisler, Thorsten, Marcus Ulonska, Helmut Schleicher, Robert T. Pidgeon, Wilhelm van Bronswijk. 2001. Leaching and differential recrystallization of metamict zircon under experimental hydrothermal conditions. Contributions to Mineral Petrology, Vol. 141, pp. 53-65 DOI:10.1007/s004100000202

Where did radiometrically dated rocks come from?

Radioactive elements have been decaying inside the Earth from its beginning. Melting throughout the upper mantle caused many elements to rise and concentrate at the surface, forming the thin continental crust we live on.



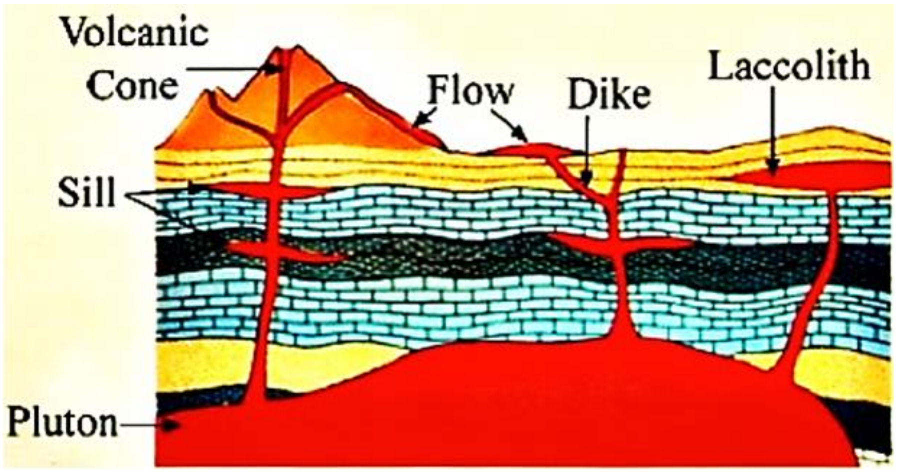


You can see that the concentration of elements in continental crust matches the depletion in upper mantle. The thickness of the bands in this chart shows the range of published estimates. The red arrows indicate elements used in radiometric dating of rocks. Argon, being a gas, is not shown.

“MORB” is mid-ocean ridge basalt, representing Earth’s seafloor basalt shell. The left scale is exponential (logarithmic), so the concentrations vary even more than they appear.

Everything is lumped together in the continental crust, including the non-radiogenic, radioactive, and decay product elements used in the failed radiometric dating system.

Pockets of magma forced their way through cracks in the crust after it solidified. Cooling within a pluton changes the concentration of elements as they crystallize. In all the red features below, magma exchanges elements with the surrounding crust, changing its composition.



Hot liquids are an important factor in mixing and transport.

“…the coexistence of two different phases, either a silicate melt and a fluid phase, or a hydrous liquid (or brine) and a vapor phase, provides the opportunity to concentrate dissolved elements in one of these phases”. p. 287

“Pegmatitic **liquids and hydrous fluids** (here regarded as ‘late-magmatic fluids’) **are able to percolate through the granite** along local anisotropies (foliations, shear zones or other planes of weakness), and then are channeled via extensional fractures”.

“At water saturation of the magma, formation of a water-rich, low-density fluid is responsible for a local overpressure, eventually causing brittle fractures.” p. 290

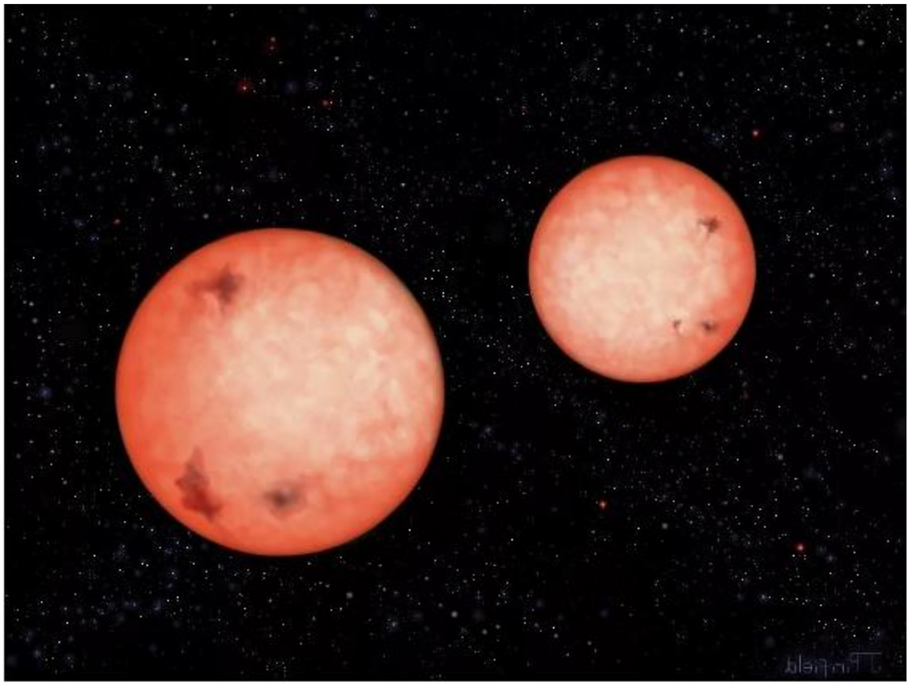
“Late-magmatic **fluids react with their country rocks and modify them** as long as the water/rock ratio is high (open system). Consequently, **the fluid physical and chemical properties are also modified**, providing new opportunities for element concentrations, possibly leading to **precipitation** of elements that have become insoluble in these new conditions. **A decrease of pressure and especially of temperature influences the element solubility** and explains the well-known zonal distribution of mineral deposits in the roof cupola or in the vicinity of a granitic pluton.”

“The role of meteoric **(rain) water is most efficient in the brittle upper crust** and, especially, in extensional tectonic settings, where it can enter deep into the crust due to the development of normal faults. This external fluid contributes to enhancing the duration of hydrothermal convection cells that were active in the roof zone of shallow plutons.”

“Elemental (re)mobilization and concentration by hydrothermal fluids sometimes occur well after granite crystallization.” p. 292 (emphasis added)

Nedelec, Anne, Jean-Luc Bouchez. 2015. Granites – Petrology, Structure, Geological Setting, and Metallogeny. Oxford University Press, Croydon, UK.

Freed from the misleading ages given by radiometric dating of rocks, we can see Earth and its past as they really are



For example, an age of 1.2 or 1.3 billion years for the Moon means that it would have been orbiting very close to Earth while the magma ocean in the upper mantle was differentiating and cooling. We can calculate the height of the tides on Earth while that was going on. **Earth and water tides would have been colossal for millions of years, enhancing differential mass diffusion.**

The equation for the tidal force is based upon the difference between the acceleration due to the orbiting object, and the gravity of the body itself, i.e. the difference between how hard the Moon pulls on you compared to how hard the Earth pulls. This results in an overall equation of:

$$|a_{tidal}| = 2\Delta r G \frac{M}{R^3}$$

where Δr is the radius of the Earth (6371 km), G is the gravitational constant (6.674 x $10^{-11} m^3 kg^{-1} s^{-2}$, M is the mass of the Moon (7.342 x 10^{22}kg), and R is the distance between the two (here either 22,500 km or 384,400 km). To check our equation we can calculate the current tidal acceleration: using 384,400km, we arrive at a value of 1.099 $\mu m/s^2$, which is close to the accepted value of 1.10 $\mu m/s^2$. Calculating the tidal force using the distance of 22,500km, we arrive at a value of 0.0055 m/s^2, or about 5,000 times the current tidal force.

As the average tide is about 0.6m, a tide 5,000 times higher would be almost 3 km high.

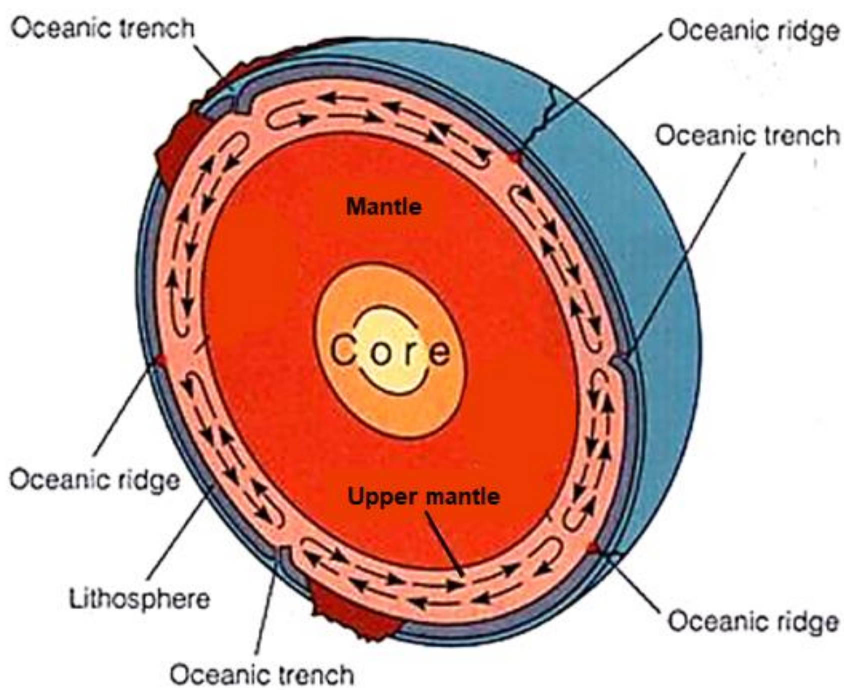
https://astronomy.stackexchange.com/questions/39109/how-high-were-the-tides-back-when-the-moon-was-much-closer-to-earth

Homogeneous means a nice even blend. Heterogeneous means the opposite: jumbled and unsorted.

“Much of mantle geochemistry is based on the assumption of chemical and mineralogical homogeneity of the shallow mantle”, but “[i]t is increasingly clear that **the upper mantle is heterogeneous in all parameters at all scales**. The evidence includes seismic scattering, anisotropy, mineralogy, major- and trace-element chemistry, isotopes, melting point and temperature. An isothermal, homogenous upper mantle, however, has been the underlying assumption in much of mantle geochemistry for the past 35 [now 45] years."

"The upper mantle is often regarded as being extremely homogenous". "**The intrinsic chemical heterogeneity of the shallow mantle,** however**, is now being recognized**. This **heterogeneity contributes to the isotope diversity of magmas**". (emphasis added) - Anderson, Don L. (California Institute of Technology) Chapter 24 - The nature and cause of mantle heterogeneity. *In* New Theory of the Earth. Published online by Cambridge University Press: 05 June 2012. https://authors.library.caltech.edu/25038/259/Chapter%2024.%20The%20nature%20and%20cause%20of%20mantle%20heterogeneity.pdf

According to Plate Tectonics theory,



"At an average circulation rate of 4 cm per year [a low estimate], in 4.3 billion years a section of upper mantle may have moved about 100,000 km since the original creation of the earth. If a large convection cell is about half the diameter of the earth, the mantle section may have turned over about four to six times". "**Why do we not see the results of this**?" - Bernie M. Gunn. *in* Geokem - Geochemistry of Igneous Rocks, an eText of Geochemical Data Interpretation http://www.geokem.com/homogen.html

That's a good question. Moreover, the mechanisms of Plate Tectonics are too weak to split continental crust, initiate subduction, and raise mountain chains. Its timeline places large dinosaur populations near the North and South Poles in freezing darkness for millions of years. https://www.newgeology.us/

We are so familiar with scientific theories that they seem like facts to us, but they are just models. When conspicuous evidence such as global heterogeneity etc. doesn't fit a theory such as Plate Tectonics, it is time to replace it with a theory that fits all the evidence.

For example, what if the Earth coalesced and cooled with a thickening “stagnant lid” of thick basalt, like oceanic crust.

Then a Mars-size planetesimal collided with Earth 1.3 billion years ago, and material that spun off coalesced to form the Moon. That collision also melted Earth’s upper mantle down to 410 km and combined with the basalt shell and water to form Earth’s continental crust in one large mass, rather than in slivers as Plate Tectonics theory advocates, over the collision zone (40% of Earth’s surface). Without the mantle churning in Plate Tectonics, Earth would remain heterogeneous.
https://www.newgeology.us/presentation44.html

A meteorite swarm impacted the Moon and Earth somewhere between 30,000 and 3500 years ago, causing global flooding that buried the dinosaurs. https://www.newgeology.us/prese ntation48.html

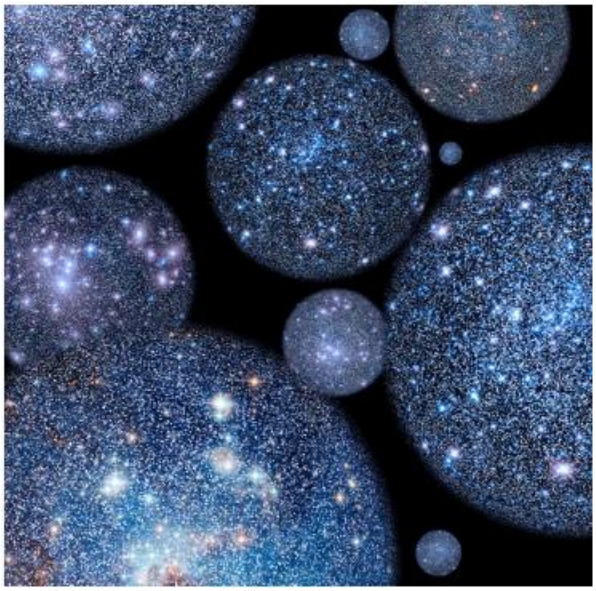
A giant meteorite struck Earth east of what is now Tanzania after the previous event, splitting and moving the continental crust into the configuration we see today and initiating Plate Tectonics subduction zones; gravitational interaction between Earth and its Moon give the appearance of Plate Tectonics today. https://www.newgeology.us/presentation1.html#Slow%20motion

Science and Creation

Creation science, which uncovered the truth about radiometric rock dating, has a strong connection to the words of the Bible. To those holding the most popular creationist views (Young Earth Creation and Old Earth Creation), some of the numbers displayed here will not be acceptable. There is, however, a third creationist view that fits both the evidence and Scripture without compromise. It is the Young Biosphere Creation view authored by Gorman Gray. We hold that view and recommend it to readers. http://creationwiki.org/Young_Biosphere_Creation_(YBC)

Young Biosphere Creation (YBC) is open to the Universe being older than the Sun, which could be older than the Earth. After the Earth cooled, it retained the six days of creation as normal 24 hour consecutive days. YBC allows for something like the Big Bang as the ultimate beginning of the Universe, and for the arrival of distant star light. This emphasis acknowledges observations about the universe to highlight the magnificence of design. In fact, design is built into the universal balance of particles and forces that allow life to exist.

That is the unsettling reality facing scientists, and the choices are stark:



Atomic forces and masses are so precisely balanced, so "finely tuned", that either the universe was designed by an infinitely intelligent and powerful being or there are an infinite number of universes ("**multiverse**") and we just happen to be in one where everything is perfect for life to exist.

"I believe we exist in a multiverse of universes." - Celebrity theoretical physicist Michio Kaku, from his book *The Future of the Mind*

"This is the anthropic principle, the fact that the fundamental constants seem to be finely tuned to allow for life. Changing them even slightly makes life impossible." - Celebrity theoretical physicist Michio Kaku
https://www.discovermagazine.com/the-sciences/expert-forum-with-michio-kaku

Consider these facts:

For the universe to form, the force of gravity had to match precisely the explosive force of the Big Bang. If the explosive force were just one part in 10^{55} higher, there would be only gas without stars or planets. If the rate of expansion was lower by just one part in 10^{15}, all matter would have collapsed back to a point in a few million years.

The strength of the force of gravity precisely matches the strength of the electromagnetic force. Gravity is roughly 10^{39} times weaker than electromagnetism. If the force of gravity was changed by one part in 10^{40}, all stars would be either hot blue giants or cool red dwarfs. Stars like the sun would not exist. If the electromagnetic force were slightly stronger, all stars would be red, and they would collapse more easily into white dwarfs, neutron stars, or black holes. If it were slightly weaker, all stars would be blue, and burn out relatively quickly.

The weak nuclear force affects photons, electrons, and neutrinos. If it were slightly greater, neutrons would decay more quickly and not be available to form helium. If it were significantly greater, hydrogen would quickly burn, and only helium would be available to make stars. Without hydrogen, the universe would not contain water. On the other hand, if it were slightly weaker, hydrogen would become helium, leaving no hydrogen. The weak force also affects beta decay, in which neutrons decay to protons, electrons, and neutrinos. There are about a billion neutrinos for each proton and electron, or about a billion per cubic meter of space throughout the universe. Total neutrino mass could exceed the mass of all stars. So even a miniscule increase in a neutrino's mass (5×10^{-35} kg) would cause the universe to contract instead of expand. Stars are made of hydrogen and helium, and heavier elements are made in the compressed interiors of stars. Supernova explosions of stars spread the heavy elements around their galaxies. These explosions depend on a very precise value of the weak nuclear force. If it were much weaker, neutrinos could not exert enough pressure inside a star to cause a supernova explosion. But if it were much stronger, neutrinos would remain stuck inside a star’s core.

The strong nuclear force binds the particles in an atom's nucleus and is the strongest of the forces, about 100 times as strong as the electromagnetic force which in turn is 10,000 times stronger than the weak nuclear force. The weak nuclear force is about 10^{31} times stronger than the force of gravity. Considering these enormous differences in strength, you can appreciate the remarkable precision required to balance these forces to one part in 10^{60}.

If the strong nuclear force were any weaker, nuclei of atoms would not hold together. The universe would have only one element – hydrogen. Deuterium (hydrogen with an added neutron) would not exist. Deuterium is crucial to the nuclear reaction that keeps stars like the sun burning. If the strong nuclear force were only 2% stronger, two protons could bind despite their natural repulsion, and hydrogen would be rare in the universe. Hydrogen was necessary to form both the sun and liquid water. Combined protons would also make hydrogen catastrophically explosive. Heavier elements would be rare as well, and prevent quarks from forming protons. A 2% decrease in the strong nuclear force would make some heavy elements unstable. The weak force controls the sun's burning of hydrogen in a slow and steady way. Deuterium would put the strong nuclear force in control, and burn hydrogen at a rate 10^{18} times faster. That would quickly consume most or all of the hydrogen, leaving helium as the only element in the universe.

The electromagnetic force binds protons and electrons in atoms. If the electromagnetic force were slightly stronger, an atom would not share an electron with other atoms, and molecules would not form. If the force were slightly weaker, electrons would not stay in their paths around an atom's nucleus. And the electromagnetic force must be precisely balanced with the ratio of electron-to-proton mass. If this ratio were not precisely balanced, the chemical bonding required for life would not occur. As it is, the proton is 1,836 times heavier than the electron. Also, the difference in mass between the proton and neutron (neutron mass minus proton mass) allows stable nuclides to exist. The neutron is more massive than the proton by about one part in a thousand. If the difference were greater, neutrons would decay into protons, and electromagnetic repulsion would blow atomic nuclei apart. This would result in a universe of only protons, with hydrogen the only possible element. Neutrons are needed to form all the other elements because they have the strong nuclear force to hold nuclei together without the electromagnetic repulsion to disintegrate a nucleus. If the difference in masses were slightly less, free neutrons would not decay into protons, and hydrogen would not exist. If the neutron mass failed to exceed the proton mass by a little more than the electron mass, then atoms would collapse, with electrons combining with protons to make neutrons. As it is now, there are about 7 protons for every neutron, allowing other elements to be made.

The number of electrons must be balanced to the number of protons to one part in 10^{37}. Without this balance, the force of gravity, which is essential to forming stars and planets, would be overwhelmed by the electromagnetic force.

Because of the precise requirements for its existence, the carbon atom should be very rare. If the resonance level (energy level) of carbon were 4% lower, there would be essentially no carbon. If the level in oxygen were ½% higher, virtually all carbon would have been converted to oxygen. Without carbon, life could not exist.

From: Overman, Dean L. A Case Against Accident and Self-Organization. 1997. 244 pages. Rowman & Littlefield Publishers, Lanham, Maryland. See pages 130 – 142.

No one has detected other universes, let alone an infinite number of them (the "multiverse"). Frankly, to us this notion looks like a childish cop out to avoid the obvious conclusion that the universe is designed by an infinitely intelligent and powerful being, which we do believe.

Conclusions

Applying the major radioisotope dating methods to four different types of igneous rocks from the Grand Canyon yielded widely different “ages” in every case, clearly showing that radiometric dating of rocks does not work. Testing columns of two kinds of igneous rocks from the Grand Canyon, one 96 meters deep, the other 300 meters deep and interlaced with mostly sandstone layers, demonstrated mixing and the dominance of source magma in radiometric dating. Analysis of rocks erupted around 1950 from a New Zealand volcano confirmed that source magma provides most of the radiometric “age”. The favored “isochron” technique for dating rocks is shown to have fatal flaws in both the whole rock and mineral versions. While zircon crystals are protected from extreme geologic conditions, they are subject to self-induced radiation damage and leaking at low temperature and pressure conditions. Orbital mechanics of the receding Moon give an age drastically younger than radiometric dating, as does radiocarbon dating of intact (unpetrified) dinosaur bones. Scientific theories based on such a flawed system lead to unrealistic conclusions. Once we discard the false ages of radiometric dating, we can advance the truth about Earth’s past.

Overall, radiometric dating (excepting Carbon-14 dating for recent events) cannot be trusted because

- Different radiometric rock dating methods do not yield identical age determinations.
- Isochron dating methodology requires the use of flawed assumptions.
- Most isochron dating (90%) is of the highly suspect whole rock method versus mineral method.
- Differential thermal or mass diffusion cannot be eliminated in the case of a mineral isochron.
- Any disturbance of the crust interferes with the elements of radiometric rock dating.
- Isotopes cannot be assumed to be free from contamination, crystal destruction, differential mass diffusion, and leakage caused by pressure, temperature, salinity, pH, etc.
- The compelling age limit of the Earth-Moon system precludes Moon-rock ages beyond 1.3 Ga.
- Dinosaur bones found with soft tissue, biomolecules, and even fragments of DNA challenge radiometric rock dating by both their survival and their Carbon-14 dates.