

Hiding the Numbers to Defame Radiometric Dating A Few Examples of the Many Misused References in Woodmorappe (1999)

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Woodmorappe (1999) presents numerous examples of what he claims are "discrepant" radiometric dates that contradict each other, fossil data, field structures and/or stratigraphic evidence. For example, Woodmorappe (1999, p. 41) quotes the following statement from Swisher et al. (1993, p. 1994) to "demonstrate" that dates from Evernden et al. (1964), which were once highly regarded and characterized as state-of-the-art, are now considered unreliable:

“The same unit was most likely the one dated by Evernden et al. (1964) at 66.4 Ma [Ma = millions of years]. These ages are most likely too old, owing to the inclusion of detrital grains in the mineral separates.”

Yet, how anomalously old are Evernden et al.'s results? We find the answer in the preceding sentences, which Woodmorappe (1999, p. 41) chooses to ignore. Here's a more complete quotation from Swisher et al. (1993, p. 1993-1994):

“Obradovich and Cobban (1975) and Obradovich (1984) dated biotite from dacitic pumice located approximately 22 [meters] above the K-P [Cretaceous-Tertiary (Paleocene)] boundary at 65.9 Ma by K-Ar and 65.8 +/- 0.3 Ma (2 sigma) by $^{40}\text{Ar}/^{39}\text{Ar}$ methods. The same unit was most likely the one dated by Evernden et al. (1964) at 66.4 Ma. These ages are most likely too old, owing to the inclusion of detrital grains in the mineral separates.”

Swisher et al. (1993, p. 1993-1994) are arguing over trivial errors of about 1% and Woodmorappe (1999, p. 41, 52) is misleading us into believing that these errors are huge and fatal to radiometric dating!

In another example, Woodmorappe (1999, p. 40-41) quotes Prothero (1994, p. 60) and argues that K-Ar dates from Evernden et al. (1964), which had been used to calibrate the Eocene-Oligocene boundary of the geologic time scale, were later shown to be "unreliable":

“When Carl Swisher of the Institute of Human Origins in Berkeley began to redate the Flagstaff Rim ashes in 1989, he discovered something shocking. Many of the K-Ar dates first run by Jack Evernden and Garniss Curtis in 1963 were drawn from contaminated samples. These dates (Evernden et al. 1964) had served as the basis for dating the North American mammalian chronology for over a quarter century, and everyone relied on them ...”

At face value, this quotation appears to be very bad news for the 1964 K-Ar dates and the ability to date the Eocene-Oligocene boundary. However, if subsequent sentences are quoted from Prothero (1994, p. 60), the situation changes:

“In some cases, the dates were off by as much as 2 million years. Flagstaff Rim Ash J, for example, had been K-Ar dated at 32.5 million years, but laser-fusion $^{40}\text{Ar}/^{39}\text{Ar}$ methods gave a date of 34.4 ...[reference to figure omitted].”

Clearly, this discrepancy is a serious challenge for geologists that want high resolution (less than 1% error) in the geologic time scale. However, Prothero's relatively minor adjustment of the 32.5 million year old date to 34.4 million years provides no comfort to young-Earth creationists that want to destroy the reliability of the geologic time scale and reduce all dates below 10,000 years. Again, Woodmorappe (1999, p. 40-41) fails to mention the magnitude of the discrepancies because they hardly undermine the reliability of radiometric dating and support young-Earth creationism.

Another example of Woodmorappe exaggerating trivial errors in radiometric dating can be seen in his use (1999, p. 52) of Muecke et al. (1994, p. 229). Muecke et al. (1994, p. 229) concluded that there were 2-5 million year errors associated with some Late Cretaceous samples. However, when it's considered that dates for the Cretaceous samples are at least 75 million years old (Campanian-Maastrichtian and older), errors of 2-5 million years are too trivial for Woodmorappe's creationist agenda.

In another attempt to undermine radiometric dating, Woodmorappe (1999, p. 42) cites Kerr (1995, p. 27-28), where Dalrymple, Renne and other scientists "cannot agree" about which dates are "real" and which are "spurious" for some Siberian basalts and associated rocks:

"Over time, Dalrymple concludes, some of the argon-40 had leaked out of the trap's rocks, making them look 1 or 2 million years younger than they are. Renne, however, says that he is 'very confident about the new data' ... they did extensive argon-argon analyses that contradict Dalrymple's conclusions about the alterations of the trap rock. It's not that the trap rocks lost argon, Renne believes; instead, the

intrusion carries extra argon-40 picked up before the minerals formed, giving a falsely older age."

So, how significant are the "discrepancies" in Kerr (1995)? Although Woodmorappe (1999, p. 42) is quick to tell his readers that the discrepancies involve 1-2 million years, which seem large, he does not tell us the ages of the samples. As discussed in Kerr (1995), Dalrymple and his colleagues are attempting to determine if massive 250 million year old volcanic eruptions in Siberia were synchronous with a severe extinction at the Permian-Triassic boundary. In other words, these scientists are arguing over errors of 1-2 million years for events that occurred 250 million years ago. Once more, Woodmorappe (1999, p. 42) is distorting arguments over errors of less than 1% just to make Dalrymple, other geochronologists and radiometric dating results look as bad as possible.

Woodmorappe (1999, p. 46) also cites the following statement from Baksi et al. (1993, p. 142) as an example of an unaltered rock that should be suitable for dating, but yet supposedly provided surprisingly "discrepant" dates:

"... we suggest the younger dates in the earlier study ... reflect partial loss of ^{40}Ar from some specimens. Since all specimens in the earlier K-Ar study passed detailed petrographic examination, it is apparent that rigorous thin-section examination cannot unequivocally eliminate whole-rock basalts that have suffered partial post-crystallization loss of ^{40}Ar ."

However, Woodmorappe (1999, p. 46) omits some critical information on the magnitude of the "discrepancy". In context, Baksi et al. (1993, p. 142) states:

"Our age of 2.14 ± 0.03 Ma (1 sigma error, including a term of $\pm 0.5\%$ to reflect uncertainty in the age of the monitor sample used) is $\sim 3.5\%$ older than the K-Ar date of 2.07 ± 0.02 Ma ...[reference omitted]. We note that the published K-Ar dates ... [reference omitted] fall primarily into two groups, ~ 2.15 Ma and ~ 2.05 Ma. Averaging the former set yields an age of 2.13 ± 0.02 Ma, and we suggest the younger dates in the earlier study ... [reference omitted], which average 2.04 ± 0.02 Ma, reflect partial loss of ^{40}Ar from some specimens. Since all specimens in the earlier K-Ar study passed detailed petrographic examination, it is apparent that rigorous thin-section examination cannot unequivocally eliminate whole-rock basalts that have suffered partial post-crystallization loss of ^{40}Ar ."

Once more, Woodmorappe (1999, p. 46) fails to mention that the "discrepancies" in Baksi et al. (1993, p. 142) are actually fairly minor from the perspective of the creation-evolution controversy.

Woodmorappe (1999, p. 74) also quotes the following section from Peterson (1994, p. 252) as an example of scientists "shopping around" for whichever dates best match their "preconceived notions":

"Bentonite beds are abundant in the upper part of Brushy Basin Member and have yielded 5 single-crystal $^{40}\text{Ar}/^{39}\text{Ar}$ dates ... A sixth date ... is almost certainly in error for several reasons. The age conflicts with another single-crystal $^{40}\text{Ar}/^{39}\text{Ar}$ age ... from the same unit ... , it does not agree with the other $^{40}\text{Ar}/^{39}\text{Ar}$ dates from southeastern Utah, and the stratigraphic relationships do not support the idea that the upper part of the Brushy Basin member is a diachronous unit that becomes markedly older progressing northward toward Dinosaur National Monument."

Despite Peterson's arguments, Woodmorappe (1999, p. 74) accuses Peterson (1994, p. 252) of "rationalizing away" the sixth date. However, Woodmorappe (1999, p. 74) liberally uses ellipses (...) in the Peterson (1994) quotation to blatantly hide the magnitudes of the dates. In context, the quotation from Peterson (1994, p. 252) reads:

"Bentonite beds are abundant in the upper part of Brushy Basin Member and have yielded 5 single-crystal $^{40}\text{Ar}/^{39}\text{Ar}$ dates ranging from 145.2 +/- 1.2 to 149.4 +/- 0.7 Ma from a measured section near Montezuma Creek in southeastern Utah...[reference omitted]. A sixth date in the same publication from Dinosaur National Monument gave 152.9 +/- 1.2 Ma, which is almost certainly in error for several reasons. The age conflicts with another single-crystal $^{40}\text{Ar}/^{39}\text{Ar}$ age of 148.3 +/- 0.3 Ma from the same unit at Dinosaur National Monument ... [reference omitted], it does not agree with the other $^{40}\text{Ar}/^{39}\text{Ar}$ dates from southeastern Utah, and the stratigraphic relationships do not support the idea that the upper part of the Brushy Basin member is a diachronous unit that becomes markedly older progressing northward toward Dinosaur National Monument."

The discrepant sixth date of 152.9 million years is not wildly different than the other five dates of 145-149 millions of years. As usual, Woodmorappe (1999, p. 74) is making a mountain out of a molehill.

CONCLUSIONS

Many more examples of Woodmorappe's (1999) misuse of the literature could be cited. Although a few of the dates mentioned in his book are significantly anomalous (e.g., Beakhouse et al., 1988), most of them are taken out of context. Frequently, Woodmorappe (1999) unjustifiably omits critical structural, geochemical, metamorphic, crystallographic, thin section, and other data from his citations that support and rationally demonstrate that the various dates really aren't mysterious anomalies that threaten to undermine the validity of radiometric dating (a few examples of the many references that

Woodmorappe, 1999 distorts are: Pigage and Anderson, 1985; Beyth and Reischmann, 1996; Evans et al., 1995; Lawlor et al., 1999; Tucker et al., 1998; Aleinikoff et al., 1995; Corfu and Easton, 1995; Tucker and Gower, 1994; Van de Wel et al., 1998; Dallmeyer and Hibbard, 1984).

Certainly, for scientists that want errors below 1%, the precision and accuracy of any analytical result (whether it's a radiometric date or a benzene analysis of polluted groundwater) may not always comply with these strict requirements. Nevertheless, despite Woodmorappe's best attempts to hide the numbers in the above quotations, the revealed errors of less than 1-7% are far too trivial to serve the needs of young-Earth creationism.

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