Appendix 16

"Dating" Landforms and Anomalous Results

Uniformitarian geologists have trouble dating the origin of landforms but, in some cases, they are able to make estimates using fossils or radiometric dating methods. This appendix will examine some of the connections to old dates and document some anomalous results.

"Very Old" Planation Surfaces

Jonathan Nott has found small valleys in the relatively high-altitude planation surfaces of north-central Australia that are filled with sediments. They were dated by fossils as "Cretaceous."[1,2] Since the valley was carved and filled with sediments after the planation surface formed, the fossil dates places the planation surface *older* than "Cretaceous." In addition there are low altitude planation surfaces that are claimed to be older than those at high altitude.[3] This is the opposite of what erosion should produce. The researchers were forced to conclude all the planation surfaces of northern Australia are well older than 100 million years. For instance, the Tindal Plain of the Northern Territory is cut on highly erodible soft limestone, still Twidale states it is at least 135 million years old.[4] It really looks youthful and must not be anywhere near this age. Amazingly one planation surface is considered a billion years old:

> The Koolpinyah [planation surface], which supposedly is still forming today, is in many localities such as Kakadu National Park pre-Mid Proterozoic [older than about one billion years] in age…[5]

At one time geologists considered William Morris Davis's "cycle of erosion" as dogma. The hypothesis states the planation surfaces of northern Australia represented multiple cycles of erosion in the Cenozoic era (see Chapter 50).

Ancient planation surfaces are a severe challenge to all uniformitarian erosional schemes. Nott is forced to make strange conclusions about the Yiyinti Range (Figure A16.1): "In short, the entire topography here appears to have experienced negligible erosion over the last 120 Ma [million years]."[6] The same deduction was made for other areas of northern-central Australia:

> Yet, the evidence presented here suggests that in many locations throughout the Northern Territory, the landscape has maintained its basic form since at least the late Mesozoic [about 100 million years ago].[7]

Nott and others consider these and other planation surfaces in Australia were formed well before 100 million years and were buried by a "Cretaceous sea" and later exhumed.[8] The burial would help preserve these surfaces for some of this time, but why would they lack erosional

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[1] Nott, J.,1995. The antiquity of landscapes on the north Australian craton and the implications for theories of long-term landscape evolution. *The Journal of Geology* 103:19–32.
[2] Nott, J., 1996. Long-term landscape evolution on Groote Eylandt, Northern Territory. *AGSO Journal of Australian Geology & Geophysics* 16(3):303–307.
[3] Nott, Ref. 2, p. 19.
[4] Twidale, C.R., 1984. The enigma of the Tindal Plain, Northern Territory. *Transactions of the Royal Ssociety of South Australia* 108(2):95–103.
[5] Nott, Ref. 2, p. 29.
[6] Nott, Ref. 2, p. 24.
[7] Nott, Ref. 2, p. 28.
[8] Twidale, C.R., 1994. Gondwanan (Late Jurassic and Cretaceous) palaeosurfaces of the Australian craton. *Palaeogeography, Palaeoclimatology, Palaeoecology* 112:157–186.

features (remain flat) after the protection of "Cretaceous" sediment was so completely removed that it is found only in isolated valleys? Even more unlikely, some think the Cretaceous sediment eroded away in the early Cenozoic, around 40 million years ago.[9]

The one-billion year old Koolpinyah planation surface remained exposed and changed very little for about 900 million years before it was covered by sediments of the "Cretaceous sea." The explanation of a Cretaceous sea cover is rather hollow when similar surfaces in the Hamersley and Gawler Ranges of Australia (Figure A16.1) apparently were not covered with a protective layer of sediment, yet they have survived almost untouched for many tens of millions of years.[10] So, a protective covering sediment is of little help when accounting for the origin of these planation surfaces.

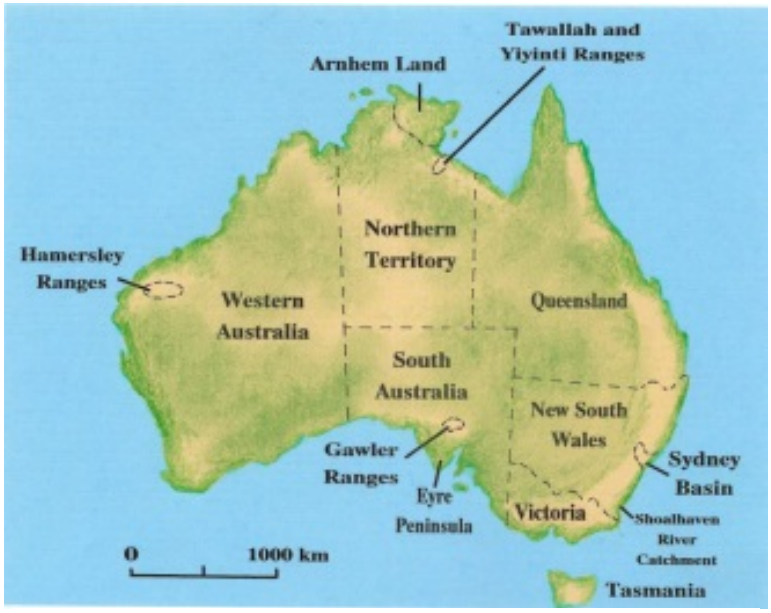

Figure A16.1. Map of Australia showing place names.

The much higher erosion measured today contradicts the contention that hardly any erosion took place in the past 100 million years. Today's rates of erosion would have destroyed the planation surfaces in a short time. Nott and Roberts claim a much slower erosion rate in the past and the current rate had increased by at least ten times.[11] They also mention an escarpment that eroded back at 1 to 8 inches (2 to 20 cm) per thousand years for 250 thousand years.[12] This is tremendously fast compared to erosion taking place over the past 100 million years. They really do not know why it was so slow long ago, or why it increased in the past half million years within their timescale. Happily they conclude man is not responsible, since according to them we were not on the scene until very much later. They weakly suggest climate change and sea level

[9] Belton, D.X., R.W. Brown, B.P. Kohn, D. Fink, and K.A. Farley, 2004. Quantitative resolution of the debate over antiquity of the central Australian landscape: implications for the tectonic and geomorphic stability of cratonic interiors. *Earth and Planetary Science Letters* 219:21–34.

[10] Twidale, C.R. and E.M. Campbell, 1995. Pre-Quaternary landforms in the low latitude context: the example of Australia. *Geomorphology* 12:31.

[11] Nott, J. and R.G. Roberts, 1996. Time and process rates of the past 100 m.y.: a case for dramatically increased landscape denudation rates during the late Quaternary in northern Australia. *Geology* 24:883-887.

[12] Nott and Roberts, Ref. 11, p. 884.

oscillations can account for the lack of erosion. This is a rubberstamp answer that gives no specifics as to how this is possible. It appears to be a dodge to explain the contradiction.

An extremely slow rate of erosion, over a hundred million years, especially up to a billion years, is unsupportable for both uniformitarian science and biblical science. Once again, the entire continent would be eroded in 10 to 50 million years at the present rate of erosion and considering modifying influences. As a result, the dates for these planation surfaces challenges the entire system of uniformitarian dating (see Chapter 35).[13,14]

Uniformitarianism Severely Challenged

Uniformitarianism does not seem to be helpful for solving the origin of landforms, as Nott and others maintain:

> The critical testing of these rival hypotheses has been thwarted by a lack of quantitative evidence. Short-term observations throw little light on the issue, for determining how landscapes have evolved over enormous periods of time [uniformitarianism] requires reliable chronological markers that are absent from many landscapes.[15]

In their response to criticisms of their paper on landscape evolution and tectonics in southeast Australia,[16] Ollier and Pain lament:

> The present is not the key to the past! Indeed, the present is very unusual (an interglacial in the largely glacial Quaternary, contrasting with the long periods of stability in Mesozoic and early Cainozoic [Cenozoic] times), and is a very poor guide to the past. … The literature on uniformitarianism is riddled with misconceptions, and Shea (1982) framed the most persuasive and pernicious ones into a set called *Twelve Fallacies of Uniformitarianism* (emphasis theirs).[17]

In fact they go on to comment that uniformitarianism seems to have been primarily invented as a club against believers in biblical creation and a global Flood:

> Uniformitarianism was an important plank in early geological arguments, against creationists and extreme catastrophists, but even in early days people like Conybeare and Sedgwick argued strongly and rationally against it.[18]

I get the distinct impression that within secular geology there is a significant body of evidence against uniformitarianism but strong pressure to ignore obvious evidence for youth and the Flood.

So much of what has been learned in the field of geomorphology goes against uniformitarianism, the foundation of secular geology. Uniformitarian scientists are compelled to accept erosion rates that are preposterously slow, considering the present rate, so they can fit in the long ages required for the theory of evolution. In fact, it is because of present day erosion rates that many geomorpholigists had previously contended all landforms must be younger than

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[13] Oard, M.J., 1996. Are those ‘old’ landforms in Australia really old? *Journal of Creation* 1092):174–175.
[14] Oard, M.J., 1998. Australian landforms: consistent with a young earth. *Journal of Creation* 12(3):253–254.
[15] Nott, J., R.W. Young, and I. McDougall, 1996. Wearing down, wearing back, and gorge extension in the long-term denudation of a highland mass: quantitative evidence from the Shoalhaven Catchment, south-east Australia. *The Journal of Geology* 104:224.
[16] Ollier, C.D. and C.F. Pain, 1994. Landscape evolution and tectonics in southeastern Australia. *AGSO Journal of Australian Geology & Geophysics* 15(3):335–345.
[17] Ollier, C.C. and C.F. Pain, 1995. Reply: Landscape evolution and tectonics in southeastern Australia (Ollier & Pain 1994). *AGSO Journal of Australian Geology & Geophysics* 1693):329– 330
[18] Ollier and Pain, Ref. 17, p. 329.

about 2 million years![19] Could it be that their dating system is in error, and the mechanism for forming landforms is not present processes over millions of years?

"Old" Landforms Dated by Radiometric Methods

Although fossil dating has often been used to date landforms, sometimes radiometric dating is also used to give an aura of accuracy. Uniformitarian scientists like radiometric dating not only because it gives old ages, but because they hope it will eventually help solve many of their problems. An example of this is in eastern Australia where radiometric dates of basalt lava flows are used to constrain the ages of landforms.[20] Unfortunately it has led to some absurdities. Consider the results for the erosion of the Shoalhaven River Catchment in southeast Australia (Figure A16.2).[21] The basalts are dated as Tertiary by the potassium-argon (K-Ar) dating method. In the Shoalhaven River gorge, several basalt flows flowed into the gorge when it was first cut. They were about 13 feet (4 m) thick, 330 feet (100 m) wide, and descended about 165 to 230 feet (50 to 70 m) below the rim of the gorge. Presently, the gorge is 1,640 feet (500 m) deep. The basalt was dated at about 30 million years.[22] Presumably, the basalt descended to the base of the gorge at that time. According to these calculations, the gorge deepened about 45 feet (14 m) per million years, and at the same time the river retreated at a rate of around 1.5 miles (2.5 km) per million years.

Figure A16.2. Map of Shoalhaven River catchment area south of Sydney, Australia (from Oard, Journal of Creation, 1996, 11(2), p. 299).

This kind of quantitative precision should cause uniformitarian scientists to celebrate, but alas the dates show the upper walls of the gorge receded laterally at only 33 feet (10 m) in that

[19] Twidale, C.R.,1976. On the survival of paleoforms. *American Journal of Science* 276:77–95.
[20] Wellman, P. and I. McDougall, 1974. Cainozoic igneous activity in eastern Australia. *Tectonophysics* 23:49–65.
[21] Oard, M.J., 1996. K-Ar dating results in major landform surprises. *Journal of Creation* 10(3):298–299.
[22] Nott *et al*., Ref. 15, pp. 224–232.

supposed 30 million years! This estimate is based on the difference between the width of the gorge when the lava flowed over the top and the width of the present canyon.

This is an unreasonably slow erosion rate for the walls of a gorge. Vertical canyon walls erode rapidly by rockfall and other denudation processes. Furthermore, the gorge was unusually wide at the beginning of the lava flows, meaning that in well less than 30 million years the gorge widened by 1.5 miles (2.5km). Nott and others are mystified:

> …over the same 30 m.y. period there has been remarkably little retreat of the upper gorge walls. In comparison to its present width and depth…the gorge at 30 Ma [million years] was remarkably wide (approximately 2.5 km). We have no definitive explanation for the dominance of vertical incision of the gorge over lateral retreat of the upper gorge walls since 30 Ma.[23]

At the rate of change supposedly measured by K-Ar dating, "…it will take well over 100 m.y. before the entire [Shoalhaven] catchment develops a so-called *youthful* landscape (emphasis mine."[24]

So, the radiometric dates result in many geomorphological contradictions, which for a skeptical mind should cause them to doubt the "old ages," the radiometric dating methods, the uniformitarian timescale, and uniformitarianism, itself.

The radiometric dating of eastern Australian lava flows has produced other contradictory results. Young and McDougall dated basalts at about 45 million years and discovered very little down cutting was done by streams in the Shoalhaven catchment in all that time.[25] Nott supposedly corroborated this slow rate of stream incision.[26] These slow incision rates are in spite of the current high rates of erosion.[27]

It is radiometric dating that gives the surface of Kangaroo Island many millions of years, when there has been very little erosion.[28] It is radiometric dating that should be challenged instead of trying to suspend normal erosion over millions of years.

Cosmogenic Radioisotopes Reinforce Little Erosion of Landforms

Uniformitarian geologists have been using another system of dating, one that uses cosmogenic radioisotopes of surfaces and had the same result: these surfaces are very old and have hardly eroded in many millions of years.[29]

Carbon-14 is formed by cosmic rays from nitrogen-14. Sometimes, they interact with solid surfaces forming the following radioactive isotopes: beryllium-10 with a half-life of 1.5 million years, aluminum-26 with a half-life of 0.7 million years, and chlorine-36 with a half-life of 0.3 million years. Very low quantities of these isotopes can now be measured by accelerator mass spectrometry, and the supposed age of a planation surface or other landform can be found.

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[23] Nott *et al*., Ref. 15, p. 228.
[24] Nott *et al.*, Ref. 15, p. 231.
[25] Young, R.W. and I. McDougall, I., 1985. The age, extent and geomorphological significance of the Sassafras Basalt, southeastern New South Wales. *Australian Journal of earth Sciences* 32:323–333.
[26] Nott, J.F., 1992. Long-term drainage evolution in the Shoalhaven catchment, southeast highlands, Australia. *Earth Surface Processes and Landforms* 17:361–374.
[27] Young, R.W., 1983. The tempo of geomorphologyical change: evidence from southeastern Australia. *The Journal of Geology* 91:221–230.
[28] Twidale, C.R., 2000. Early Mesozoic (?Triassic) landscapes in Australia: evidence, arguments ,and implications. *The Journal of Geology* 108:537–552.
[29] Oard, M.J., 1997. New dating method calculates unreasonably low rates of granite erosion in Australia. *Journal of Creation* 11(2):128–130.

Physicists do not totally understand the formation of *in situ* of cosmogenic radioisotopes. This has resulted in uncertainties.[30,31] Moreover, the absorbing material should maintain the same geometry and never have been covered by shielding material. These radioisotopes have been calibrated with glacially polished surfaces in the Sierra Nevada Mountains of "known" age.[32] This kind of calibration automatically makes the dating method a measure of old ages. They simply fit them into the old age uniformitarian chronology. In fact, none of the so-called independent dating methods are truly independent, despite claims to the contrary. They simply fit them into the fossil chronology that was worked out long before radiometric dating methods came on the scene.[33]

Cosmogenic radioisotopes have been employed to date granite inselbergs on the semi-arid Eyre Peninsula of south-central Australia (Figure A16.1).[34] Like planation surfaces, they have extremely low erosion rates:

> Rates of denudation as low as those we measured have no precedent in terrestrial environments or other temperature [sic. temperate] continents (Bierman, 1994) and have previously been measured only in the polar Antarctic desert…[35]

Erosional estimates made using other methods show a considerably greater discrepancy.[36,37,38] The semi-arid climate of the Eyre Peninsula is not the reason for the discrepancy, since its climate has relatively large denudation rates: "Total denudation brought about mainly by surface wash, reaches a maximum in the semi-arid and probably also the tropical savanna zones."[39] For such climates, Summerfield estimates denudation rates (see Chapter 35), the vertical decrease in the land surface, around 16 to 115 feet (5 to 35 m) per million years.[40] However, since vertical faces erode much faster than horizontal surfaces (see Part XI), inselbergs should not exist at all. Such an erosion rate is 10 to 70 times the erosion rate calculated for inselbergs on the Eyre Peninsula from the cosmogenic radioisotopes.

The low rate of erosion for inselbergs is unreasonable and should cause the investigators to question the dating method and old ages. Unfortunately the pressure is on them to ignore the problem. Twidale strongly criticized the results and claimed that dates *must* be consistent with

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[30] Bierman, P.R., 1994. Using *in situ* produced cosmogenic isotopes to estimate rates of landscale evolution: a review from the geomorphic perspective. *Journal of Geophysical Research* 99(B7):13,885–13,896.
[31] Lal, D., 1991. Cosmic ray labelling of erosion surfaces: *in situ* nuclide production rates and erosion models. *Earth and Planetary Science Letters* 104:424–439.
[32] Nishiizumi, K., E.L. Winterer, C.P. Kohl, and J. Klein, 1989. Cosmic ray production rates of ^{10}Be and ^{26}Al in quartz from glacially polished rocks. *Journal of Geophysical Research* 94(B12):17,907–17,915.
[33] McKee, B., 1972. *Cascadia: The Geologic Evolution of the Pacific Northwest*, McGraw-Hill book Company, pp. 24–30.
[34] Bierman, P. and J. Turner, 1995. ^{10}Be and ^{26}Al evidence for exceptionally low rates of Australian bedrock erosion and the likely existence of pre-Pleistocene landscapes. *Quaternary Research* 44:378–382.
[35] Bierman and turner, Ref. 34, p. 378.
[36] Bierman, Ref. 30, p. 13,892.
[37] Saunders, I. and A. Young, 1983. Rates of surface processes on slopes, slope retreat and denudation. *Earth Surface Processes and Landforms* 8:473–501.
[38] Summerfield, M.A., 1991. *Global Geomorphology*. Longman Scientific and Technical, New York, NY, pp. 379–400.
[39] Summerfield, Ref. 38, p. 473.
[40] Summerfield, Ref. 38, p. 396.

stratigraphy and geomorphology,[41] which is interesting since Twidale has championed extremely low erosion rates for Australia in general (see Chapter 35).

[41] Twidale, C.R., 1997. Comment on "^{10}Be and ^{26}Al evidence for exceptionally low rates of Australian bedrock erosion and the likely existence of pre-Pleistocene landscapes." (Bierman and Turner, 1995). *Quaternary Research* 48:381–385.