

Pilot Study to Re-Examine the Feasibility of U-Series Dating in Mollusks

Rubenstone, James

I would like to request funding from the Climate Center for a pilot study to re-examine the feasibility of U-series dating in molluscs. This topic was first addressed more than 35 years ago at Lamont by Wally and his students, in the early days of U-series analysis, and was soon found wanting. After some debates over so-called “open system” models for extracting useful ages from the early results (principally between Szabo & Rosholt of the USGS and Kaufman & Broecker at Lamont), what should have been the epitaph for the technique (Kaufman et al in 1971) convincingly documented the diagenetic mobility of U and its daughters in fossil molluscs from raised shoreline deposits. Nonetheless, U-series dates (particularly using $^{230}\text{Th}/^{234}\text{U}$) on a variety of fossil molluscs keep appearing in the literature up to present day (e.g., Mixon et al., 1982; Ivanovich et al., 1983; Hillaire-Marcel et al., 1995; McLaren and Rowe, 1996). Apparently the overwhelming desire to obtain ages for Pleistocene-Recent deposits that contain no other suitable material has won out over the terrible track record of the U-series in molluscs. These repeated attempts continue to yield erratic results that don't substantially change the gloomy assessment of Kaufman et al. (1971).