

Early Miocene Sedimentation, Sample Preparation and Strontium Isotope Geochronology in Northwestern Egypt and the Gulf of Suez

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Early Miocene eustatic (global sea-level) changes are well known from deep-sea oxygen isotopic studies along with the results of backstripping of the New Jersey margin boreholes (Miller et al., 2002). We processed samples collected in 2005 and 2006 from the lower Miocene Moghra Formation in Egypt's Western Desert in order to pick foraminifers. Finer grained material broke down more easily with KOH, while coarser-grained samples responded better to multiple rounds of a Calgon solution. Samples thought to be abundant in foraminifers did not actually contain a sufficient amount microfossils for Sr isotope dating nor paleoecology studies, so we shifted focus toward macrofossils. Whole shell samples from multiple locations in the Gulf of Suez collected in 2008 were run for Sr isotopes. These samples yielded isotope ratios that corresponded to a reasonable age range of about 21.8 Ma to 24.7 Ma. Replicates of different leaches of the same sample produced ages that were resolved well within a million-year time scale. Thus, the reproducibility for these samples seems excellent. There is great potential for sampling of new shell material in both the Western Desert and the Gulf of Suez, which suggests that future work with samples from these areas would be a promising undertaking. These preliminary results should lead to future comparison of the timing between the lower Miocene Moghra formation, which has been affected by subsidence and eustasy, and Wadi Baba, where subsidence has not altered the stratigraphy. Additionally, this would be a useful way to compare sedimentary cyclicity in two distinct locations (New Jersey and Egypt).