A reconstruction of temperature and $\delta^{18}$O data for the Chinese Loess Plateau at the Last Glacial Maximum using carbonate soils and snails

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The East Asian Monsoon, an important meteorological phenomenon, supplies a quarter of the world’s population with torrential summer rains. In order to investigate how it responds to insolation, deglaciation, and changing levels of greenhouse gases, we are reconstructing temperature and $\delta^{18}$O using paired clumped isotope and oxygen isotope analyses of carbonates. We are measuring a suite of soil carbonate nodules and gastropods—both modern and ancient—from the Last Glacial Maximum (LGM), around 18,000-23,000 years before the present. Samples are from the Chinese Loess Plateau (CLP), a large region in mid-China bordered by the Qinling and Lüliang Mountains that is on the northern boundary of the East Asian Monsoon. One study [Eagle et al., 2013] has already examined data for a single location on the CLP, which yielded encouraging results. We sampled soil nodules and gastropods from 15 sites in roughly gridded transects across the CLP, which will allow us to investigate spatial variations in temperature and $\delta^{18}$O and characterize the underlying causes of changes in East Asian Monsoon intensity since the LGM.