

in erosion rate, exposure age, bulk density, and inheritance indicate an insensitivity of inheritance to these other parameters. The optimized inherited concentration corresponds to a basin-wide average erosion rate of $0.029 \pm 0.004 \text{ mm a}^{-1}$ for the Lissie surface. The single shielded sample in the Beaumont surface yields a basin-wide average erosion rate of $0.019 \pm 0.002 \text{ mm a}^{-1}$. Integrating these measurements with a digital elevation model of the Colorado River catchment returns sedimentation rates of $6.3 \pm 2.8 \text{ Mt a}^{-1}$ and $4.2 \pm 0.4 \text{ Mt a}^{-1}$ for the Lissie and Beaumont surfaces, respectively.

Variations in sedimentation rates to the western Gulf of Mexico over multiple glacial-interglacial cycles

ALAN J. HIDY AND JOHN C. GOSSE

*Department of Earth Sciences, Dalhousie University,
Halifax, NS, B3H 4R2 Canada <alanhidy@dal.ca>
<john.gosse@dal.ca>*

Terrestrial cosmogenic nuclides (TCN) are being used to measure sedimentation rates from two non-glaciated and tectonically quiescent river systems (Colorado and Trinity Rivers) draining into the western Gulf of Mexico. The goal of this study is to provide insight into the magnitude of sediment flux variability over the past 5 million years and to quantify the response of non-glaciated catchments to glacial-interglacial climate change.

Deposits already associated with specific glacial or interglacial intervals in the past 200 ka are the main focus of the climate-response portion of this study; however, older deposits are also being analyzed. Preliminary results have been acquired for one TCN depth profile in the Lissie surface (ca. ~640 ka), and a single shielded sample in the chronostratigraphically well-defined Beaumont surface (ca. ~155 ka) along the Colorado River. Each sample consists of 355–500 μm quartz grains derived from unmixed fluvial sediment. The depth profile consists of five regularly-spaced samples excavated from a gravel pit; the lone Beaumont sample was acquired from a cut bank along the present Colorado River. Cosmogenic ^{10}Be concentrations were measured with 2σ precisions of ~5% and were used to determine average inherited concentrations of $1.6 \pm 0.1 \times 10^5 \text{ atoms g}^{-1}$ for the Lissie surface, and $2.9 \pm 0.2 \times 10^5 \text{ atoms g}^{-1}$ for the Beaumont surface. Monte Carlo simulation of TCN concentration vs. depth allowing parallel variability