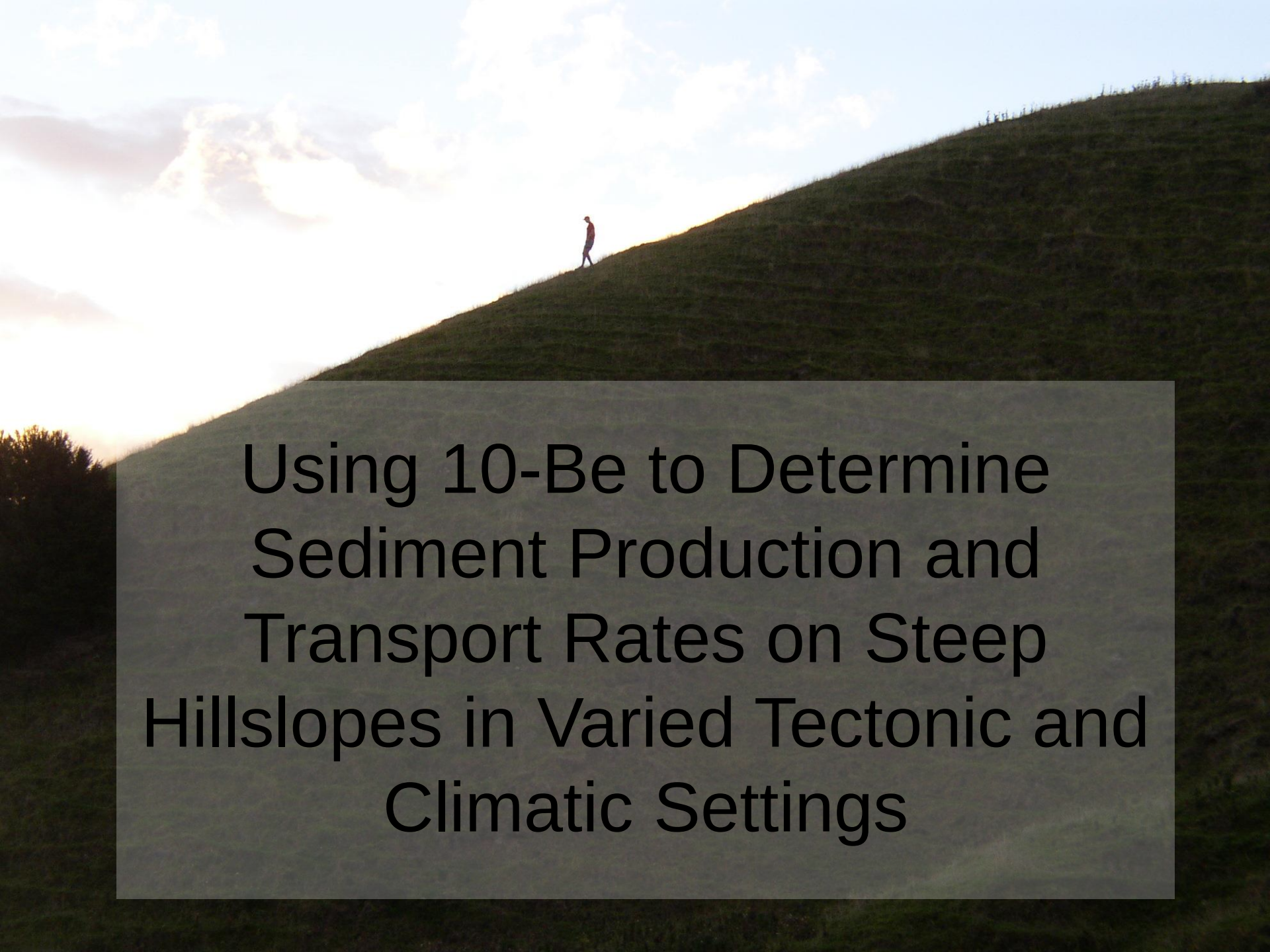


Using 10-Be to Determine Sediment Production and Transport Rates on Steep Hillslopes in Varied Tectonic and Climatic Settings

Objectives of this Project

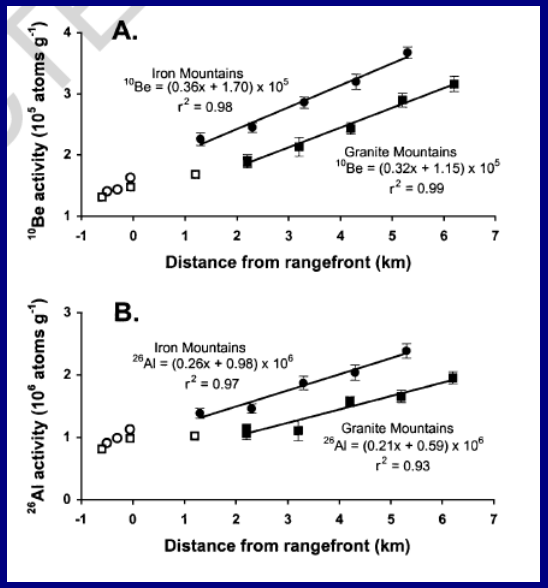
- Establish a new use of cosmogenic nuclides
- Determine nuclide activity in sediment as a function of depth and distance downslope
- Build simple box models of sediment production from rock and subsequent transport downslope
- Determine whether sediment is generated primarily at ridges or whether the rate of sediment production changes downslope
- Determine whether different grain sizes act differently within a hillslope's soil profile

Why?

Hillslopes are often cited as fundamental components of geomorphic systems, but their complexity has discouraged field-based studies.

How?

Quantifying Sediment Transport Rates with ^{10}Be



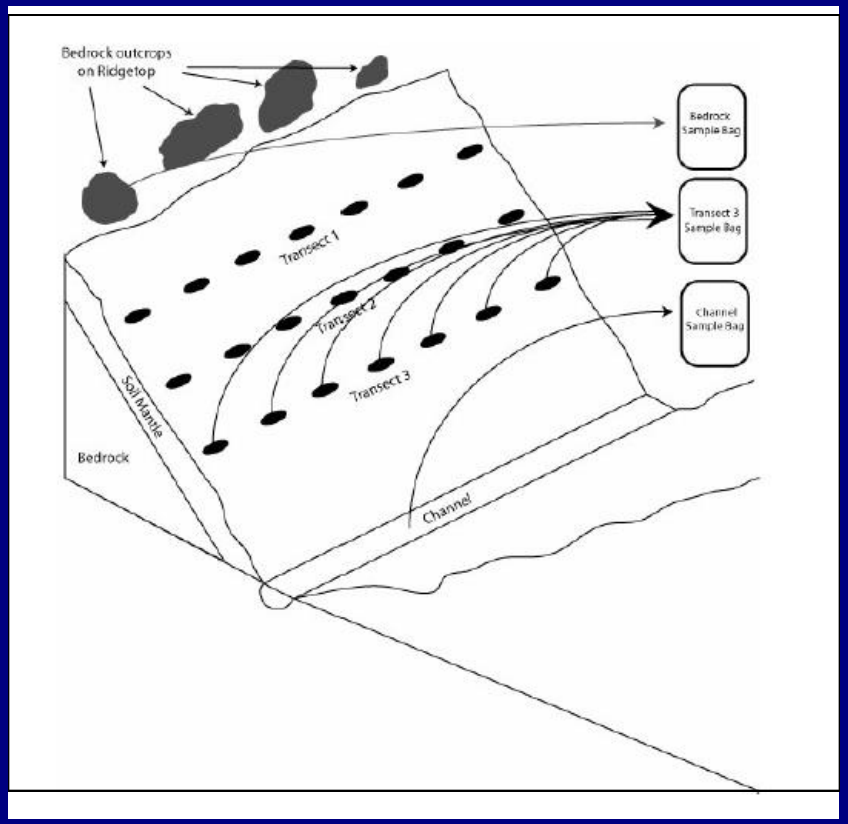
- Previous work done by Nichols et al. (2002) on desert piedmonts

-Common sense tells us that sediment should be generated at rangefronts, and subsequently march down piedmont from points of generation

-Concentrations of cosmogenic nuclides in piedmont sediment support this hypothesis showing a direct relationship between distance from rangefront and and nuclide concentrations

-Will sediment on steep hillslopes show this same relationship? *Stay tuned…*

Sample Collection

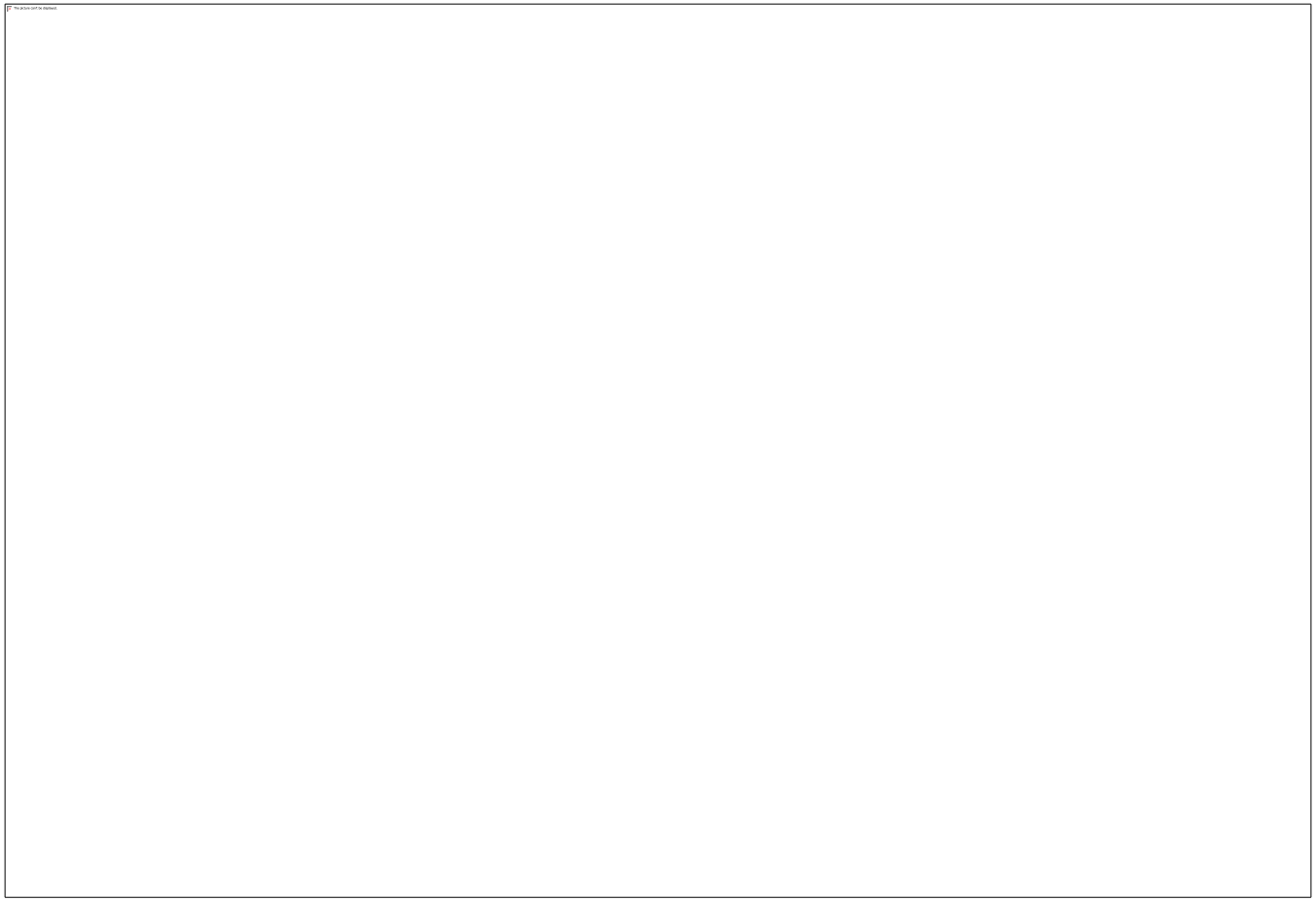


Where?

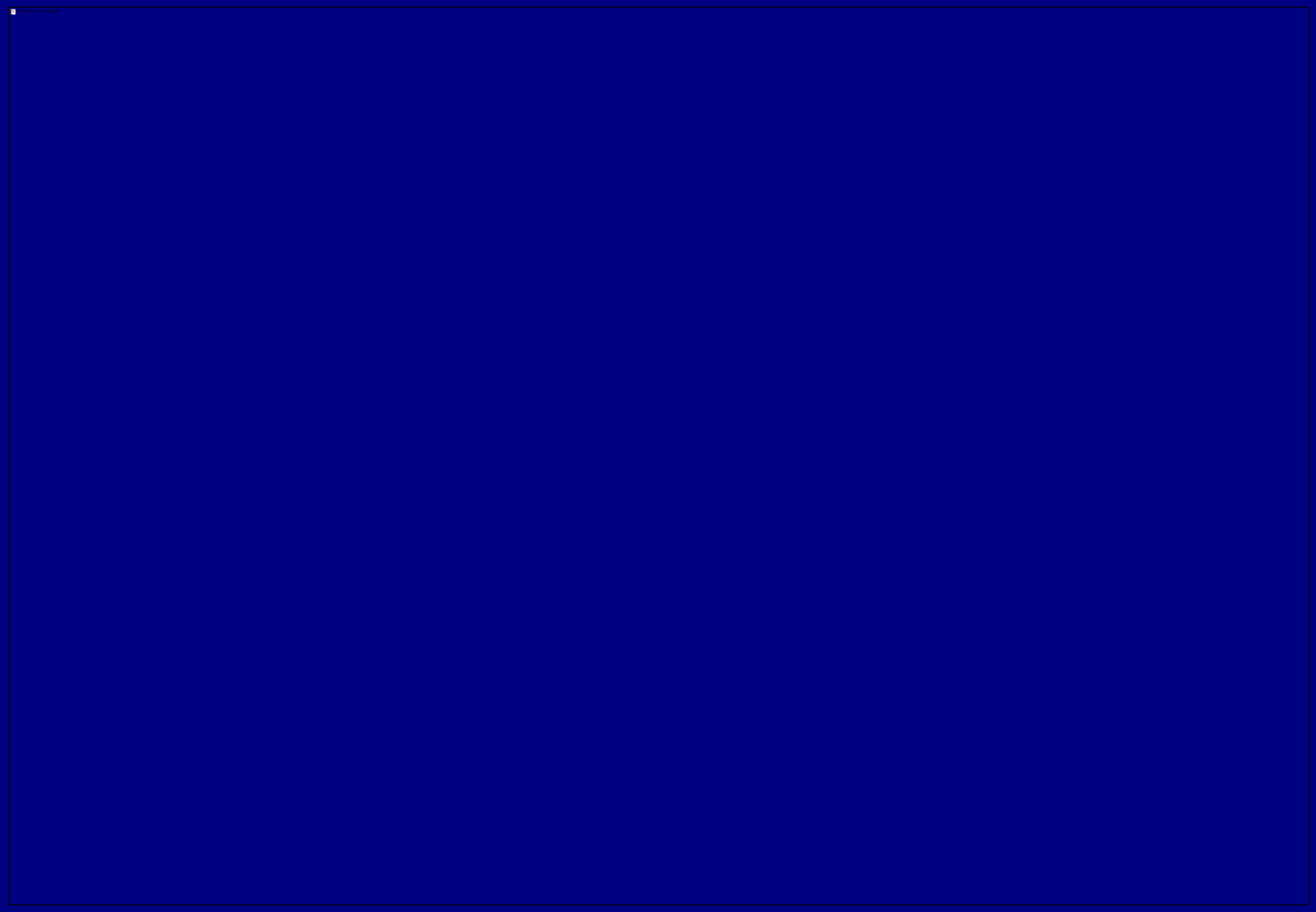
(but those all seem so different…)

Preliminary Results

[Be] x 10^6 v. Distance Downslope

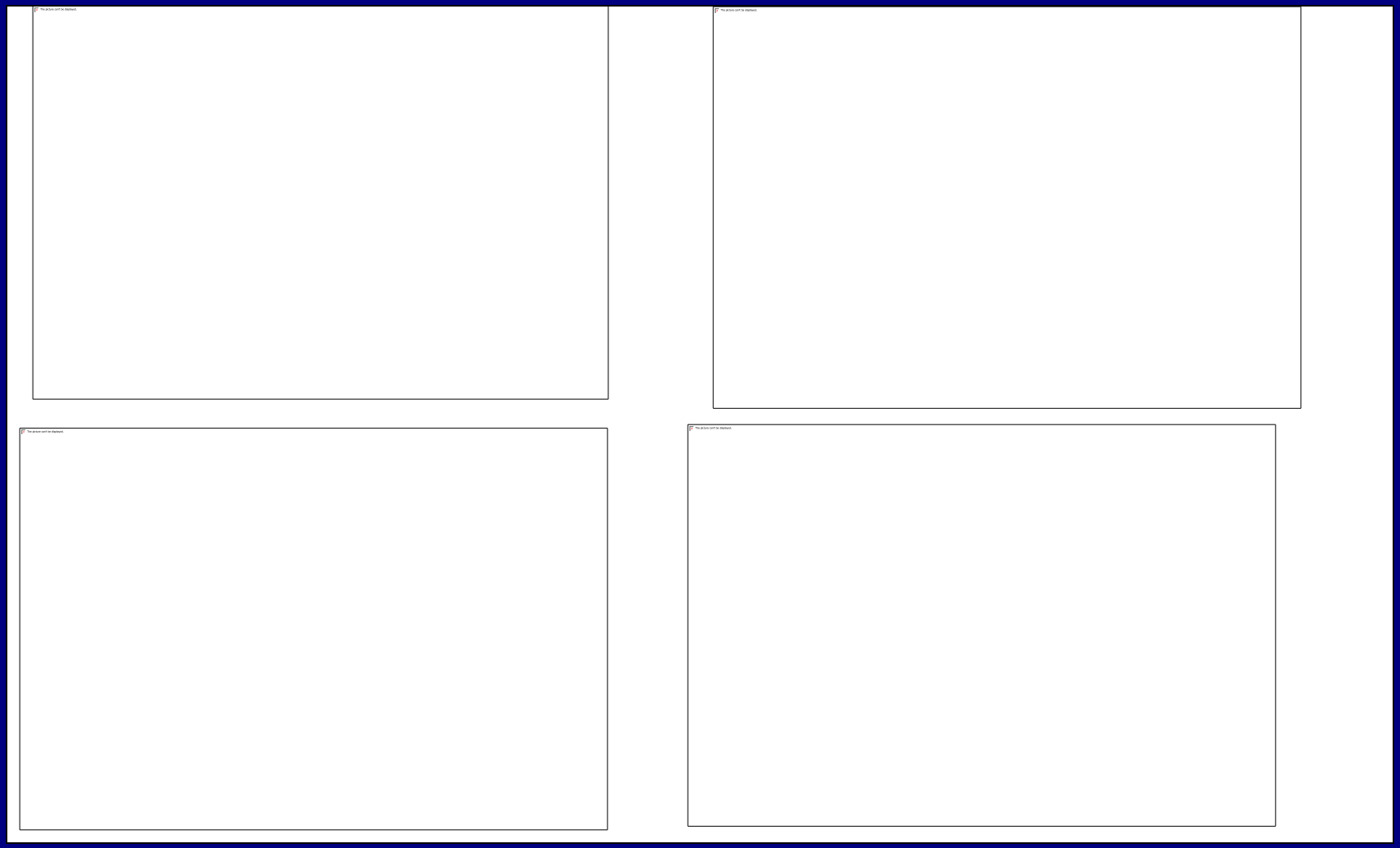


Preliminary Results

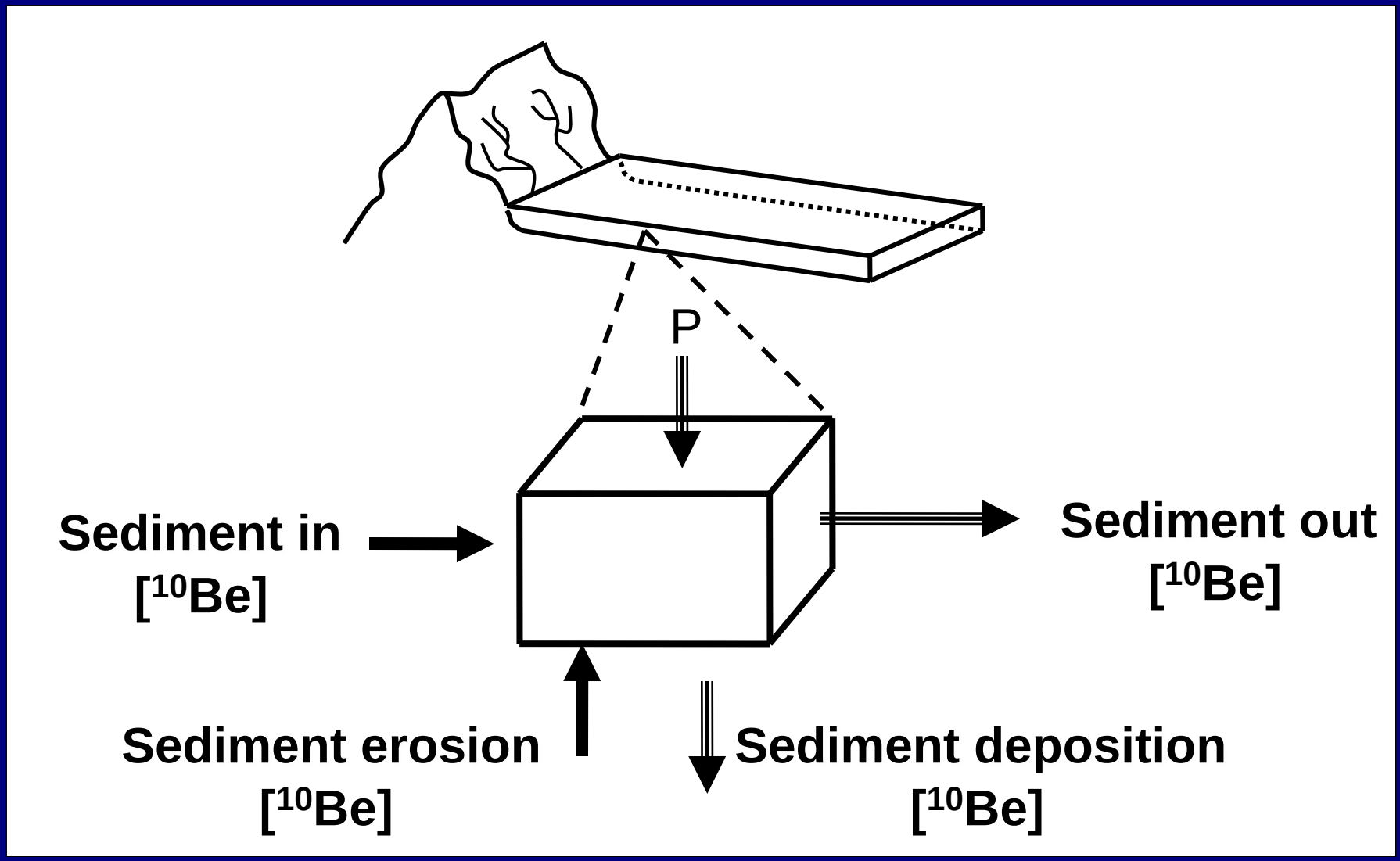


Preliminary Results

[Be] x 10^6 v. Depth



What's Next?



-sediment production and transport models
-ALSM (LIDAR) and topographic modeling
-comparison of in situ and meteoric Be

Thanks!