

An aerial photograph of a tropical river winding through a dense, lush green forest. The river is dark and reflects the surrounding trees. The forest is thick with various shades of green, indicating a diverse ecosystem. The text is overlaid on a semi-transparent white rounded rectangle in the center of the image.

Determining long term erosion rates in Panama

An application of ^{10}Be

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Introduction and Background

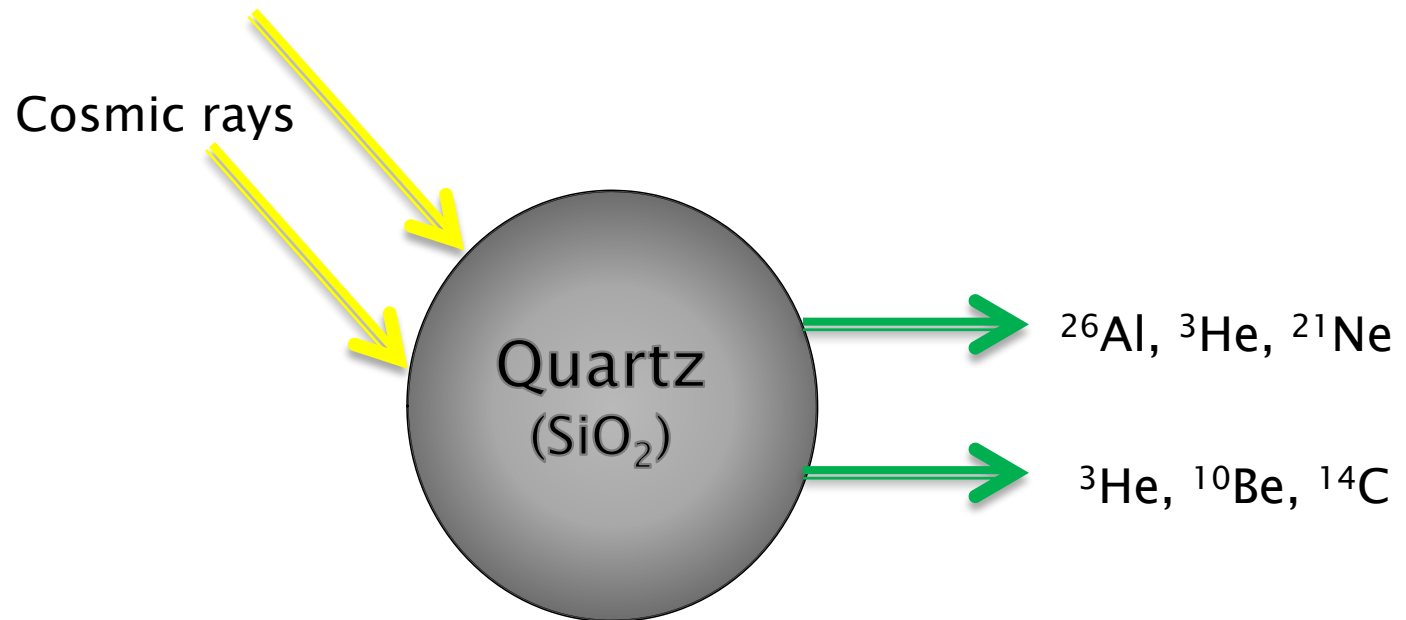
- ▶ Erosion effects on water resources
- ▶ Human influences on sediment generation



Photo credits: K. Nichols

Introduction and Background

- ▶ Cosmogenic isotopes
 - Near-surface residence time
 - Provide long-term data



Introduction and Background

- ▶ Avoid sediment increase in Panama
- ▶ Use of cosmogenic nuclides, as a proxy for erosion, in tropical climates



Photo credits: US Agency of International Development

Objectives

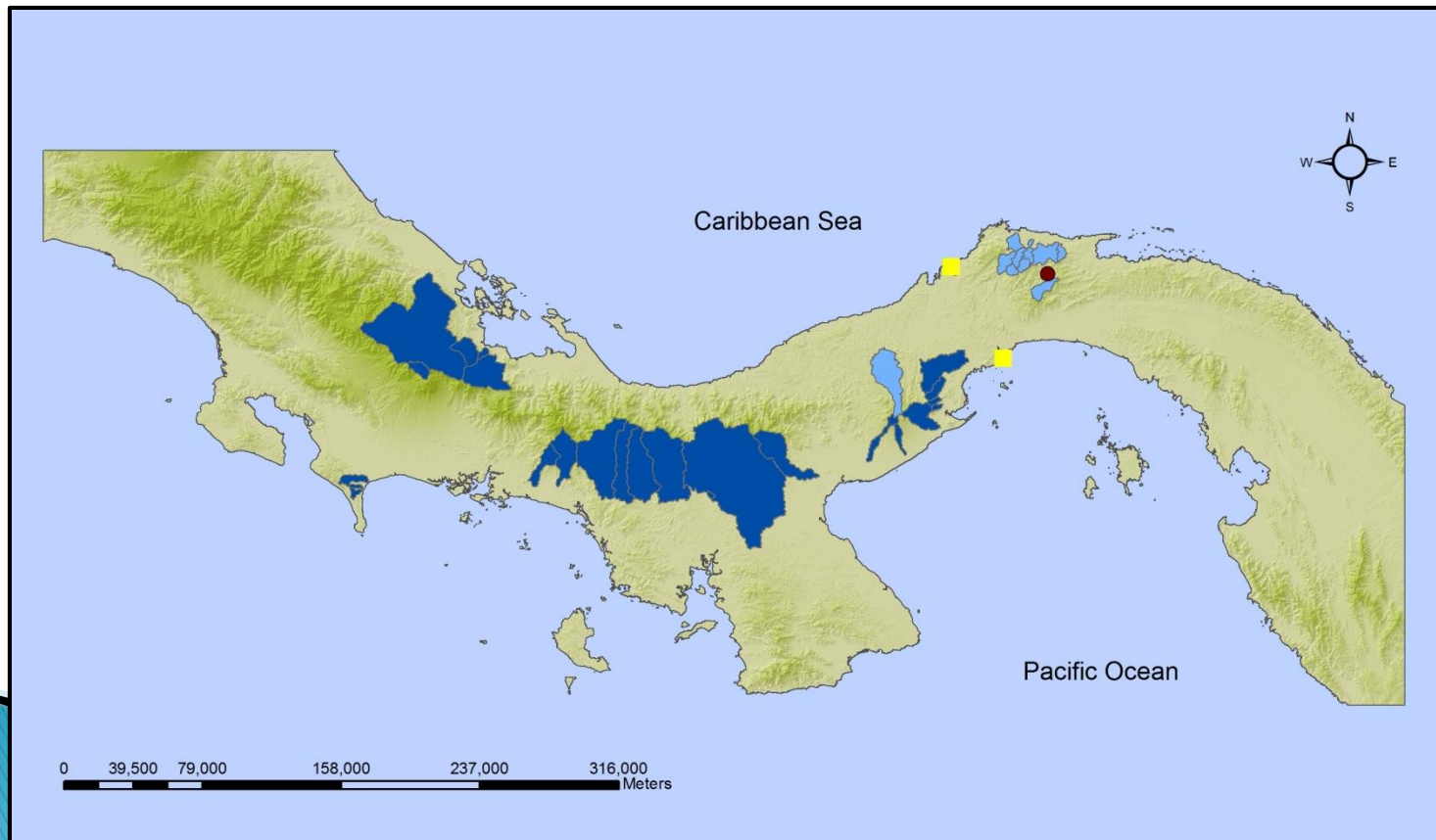
- ▶ Determine long-term background erosion rates in Panama using ^{10}Be
- ▶ Explore the physiographic controls on erosion in tropical climates
- ▶ Quantify the sediment input on rivers as an effect of landslides



Photo credits: K. Nichols

Methods

- ▶ Sampling
 - 2002– Rio Chagres
 - 2004– comparison to Rio Chagres
 - 2007– spatial variation of erosion rates



- ▶ ^{10}Be extraction and analysis
 - UVM Cosmolab
 - LLNL Center for Accelerator Mass Spectrometry
 - CRONUS Earth
- ▶ Analysis
 - Spatial
 - Statistical

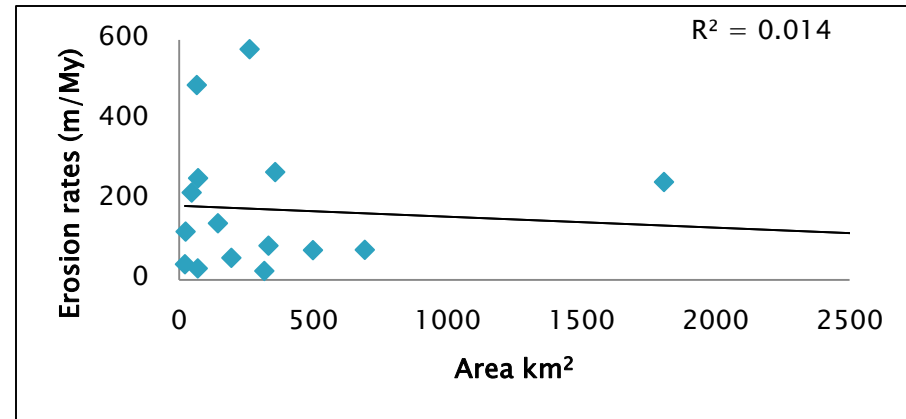
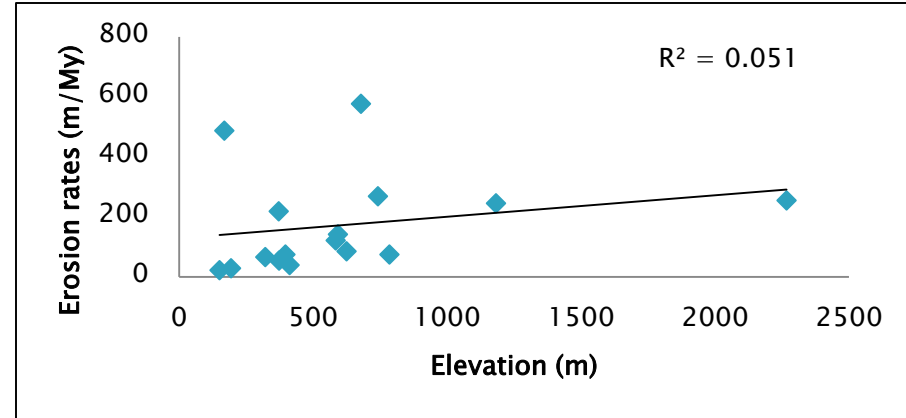
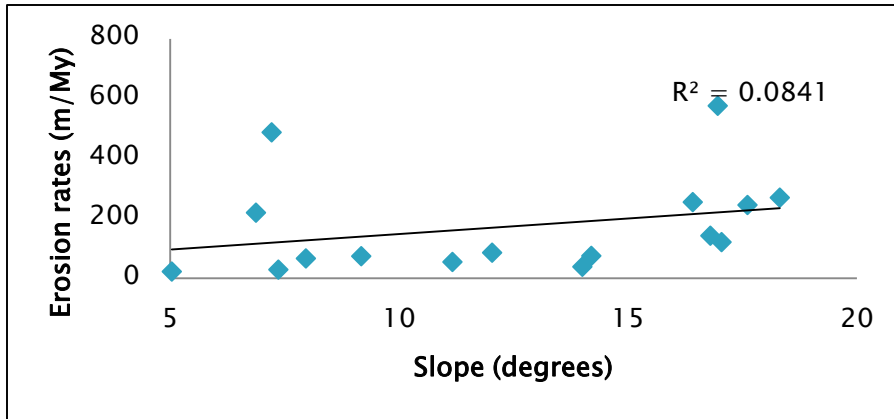


Photo credits: P. Bierman



Photo credits: L. Reusser

Preliminary Results



Thanks for your attention

