

# Surface Analysis and Grain size Distribution of Flood Deposits in the Eastern Himalayas

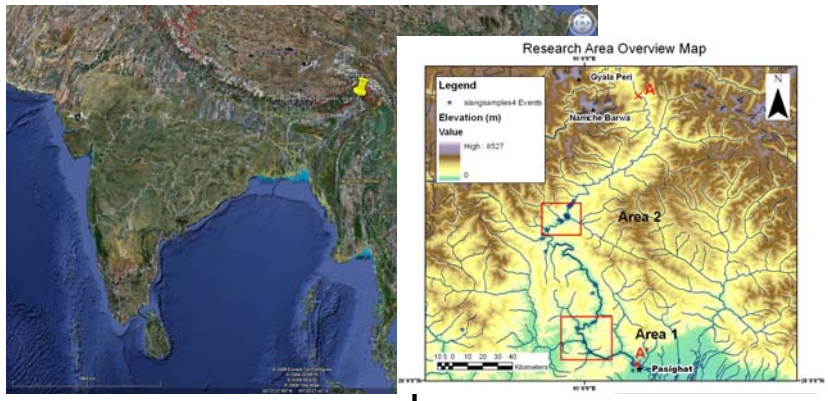
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## Introduction and Motivation

- The Siang River Valley in Northeast India preserves a record of Holocene floods, with deposits at elevations of ~150 m above the modern river elevation.
- There was a well documented flood from a landslide dam failure in 2000, with deposits at elevations from 30 - 40 m above the modern river elevation.
- To better interpret the ancient flood deposits I am characterizing the modern monsoon and 2000 flood deposits.
- To understand the implications for hazards and geomorphic evolution.

## Overview Maps

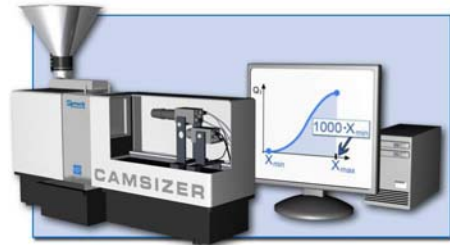


## Questions

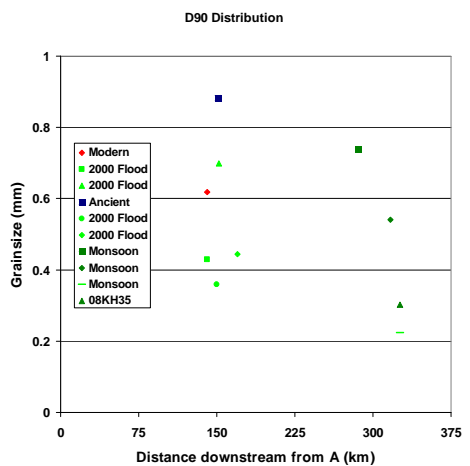
- What is the grain size distribution of the flood deposits? Is there a fining of grain size as downstream distance increases?
- What is the spatial distribution of flood deposits, ancient, 2000 flood, and the annual monsoon, in relation to the mean annual river elevation?
- What is the source of both the ancient and 2000 flood deposits?

## Methods

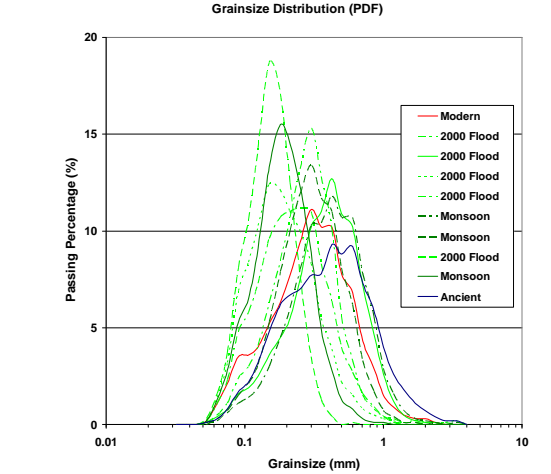
- Used Geographic Information Systems (GIS), like Google Earth, to determine spatial distribution of the flood deposits.
- Used Camsizer to determine the grain size distribution of the flood deposits.
- Work in Progress: Separating out 125 micron (0.125 mm) fraction and preparing thin sections for petrology.



## The Monsoon and 2000 Flood Deposits are similar, are the Ancient as well?

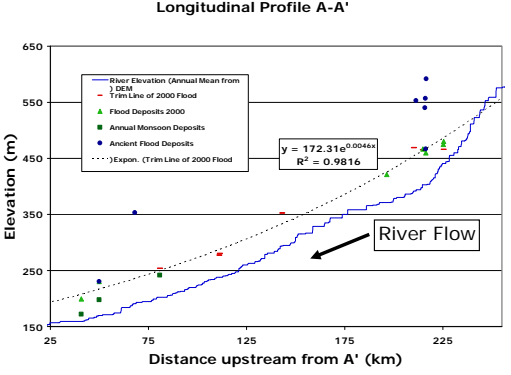


•One would expect fining as distance downstream increases due to decrease in flow velocity, this is seen in the above plot.



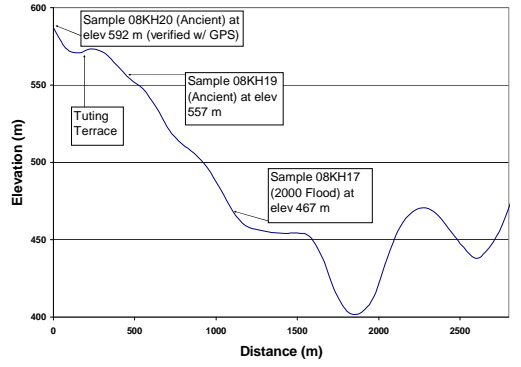
•Sand size samples tend to be unimodal in distribution, which is shown in the above plot.

## The Ancient Deposits are ~150 m above River for ~150 km:



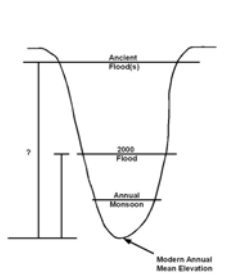
•The longitudinal profile shows the trim line caused by the 2000 flood; with an exponential trend line to interpolate the trim line for where data was not collected.

## Sample Elevation Above River



•This cross section shows that the ancient flood deposits were deposited > 150 m above the river.

## Where The Ancient Floods Bigger?



## So were the ancient floods bigger or did the river incise?

•Further work needs to be done to determine if the ancient flood deposits are at a higher elevation due to a larger flood(s) or due to incision of the river bed. However, we are talking about 100 - 150 meters of erosion which would require 10 - 15 mm/yr of erosion for ~10,000 years. This seems unreasonable to myself and others.

## Or Has the River Incised?

