

## Evaluation of Erosion Rates on a Global Scale

HECHT, Hagar<sup>1\*</sup> ; OGUCHI, Takashi<sup>2</sup>

<sup>1</sup>Department of Natural Environmental Studies, The University of Tokyo, <sup>2</sup>Center for Spatial Information Science, The University of Tokyo

Understanding the mechanisms and controlling factors of erosion rates is of great importance as it is a vital component of both geochemical and sediment mass balance studies, and a deep understanding of these processes will enable us to develop accurate landscape evolution models. During the past decades scientists have been studying and measuring erosion rates using different methods. Some examples use sediment yield, measure the rates of active surface processes, and estimate exhumation rates through fission tracks, denudation rates using cosmogenic isotopes and even erosion rates through mass land wasting. A major objective of these studies is to try and discover what the controlling factors of erosion rates are. Although most scientists think that the two most important factors are climate and relief, no clear cut conclusion has been unanimously agreed upon in the scientific community.

Although erosion rates and sediment yield on a global scale have been studied before in relation to topographic conditions, due to lack of available data in the past, the analysis was relatively basic. Thanks to abundant newly obtained erosion rates data, mainly using cosmogenic isotopes, combined with new DEM data, a more complete and comprehensive analysis can be made, and a correlation of erosion rates with factors such as basin morphometry or tectonic plate movement can be made. This paper presents some results from the analysis.

Keywords: GIS, erosion rates, basin morphometry