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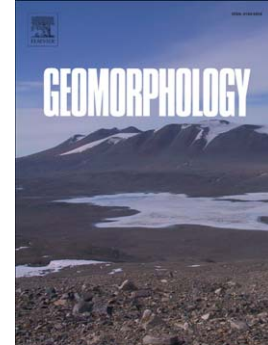
Sediment load trends in the Magdalena River basin (1980–2010): Anthropogenic and climate-induced causes

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Sediment load trends in the Magdalena River basin (1980-2010):**Anthropogenic and climate-induced causes**Juan D. Restrepo A^{*}, Heber A. Escobar*School of Sciences, Department of Earth Sciences, EAFIT University, Colombia***Abstract**

The Colombian Andes and its main river basin, the Magdalena, have witnessed dramatic changes in land cover and further forest loss during the last three decades. For the Magdalena River, human activities appear to have played a more prominent role compared to rainfall (climate change) to mobilize sediment. However, environmental authorities in Colombia argue that climate change is the main trigger of erosion and floods experienced during the last decade. Here we present the first regional exercise addressing the following: (1) what are the observed trends of sediment load in the northern Andes during the last three decades? and (2) are sediment load trends in agreement with tendencies in land use change and climate (e.g., precipitation)? We perform Mann-Kendall tests on sediment load series for 21 main tributary systems during the 1980-2010 period. These gauging stations represent 77% of the whole Magdalena basin area. The last decade has been a period of increased pulses in sediment transport as seen by the statistical significant trends in load. Overall, six subcatchments, representing 55% of the analyzed Magdalena basin area, have witnessed increasing trends in sediment load. Also, some major tributaries have experienced changes in their interannual mean sediment flux during the mid-1990s and 2005. Further analysis of land cover change (e.g., deforestation) indicates

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