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Spatial and temporal variability of sediment and dissolved loads from two Zagros area watersheds in Iran

Khalil Rezaei (1), Reza Farajzade (2), and Nasim Sohrabi (3)

(1) TMU University, Geology, Tehran, Iran (khalil.rezaei@yahoo.com), (2) TMU University, Geology, Tehran, Iran , (3) Chamran University, Geology, Ahwaz, Iran

Estimation of sediment load from Zagros basins is of considerable importance for the planning, designing, installation and operation of hydro-power projects, including management of reservoirs. In the present study, an assessment of physical and chemical load, sediment yield has been undertaken at three different locations in the Bazoft and Kiar watersheds. Total dissolved solids (TDS) yields and sediment rating curves were measured concomitantly with channel morphometry measurements in each river. Chemical analyses were used to elucidate the sources of TDS in these 3 rivers. The analysis revealed that the maximum load was transferred during the monsoon season for 20 years. Both watersheds were eroding physically and chemically at a faster rate than that of the Iran average erosion rate. The flattish nature of the channels in some segments of these watersheds showed a lower transport of sediments, where as the constricted segments having steep bed slopes increased the velocity of flow and the sediment transport rate. Also, urban streams featured the lowest base flow concentrations, but sediment concentrations rose rapidly during storm flow in urban streams. These findings have important implications for water resource management in the context of sediments mobilization, erosion, channel management, ecological functions and operation of the hydro-power projects in the Zagros region.