Geophysical Research Abstracts
Vol. 16, EGU2014-10930, 2014
EGU General Assembly 2014

Sediment transport and morphodynamic changes in Ziarat Estuary and Mond River Delta, the Persian Gulf

Azadeh Razavi Arab (1), S. Abbas Haghshenas (2), and Farzin Samsami (3)

(1) Islamic Azad University, Science and Research Branch, Iran, Islamic Republic Of (azadeh_razavi_1981@yahoo.com), (2) Institute of Geophysics, University of Tehran, Iran, (3) Heriot Watt University, UK

The Mond River, which is considered as one of the Major Iranian rivers discharging in to the Persian Gulf, is bounded within the region from 51°10' to 54°28' E and 27°20' to 29°51' N, flowing in two provinces of Fars and Boushehr. The latest part of the river is completely meandered and the river mouth has been migrating twice during the past 50 years. Total sediment discharge of the river is estimated as 12 million cubic meter per year. Analysis of meandering river phenomenon and river mouth migration as well as evolution of the down-stream sand spits has long been one of the challenges in hydrodynamic discussions. This natural process usually takes place in rivers to provide energy equilibrium and its integration with human desires has posed as a management issue.

The sediment discharging to the Persian Gulf plays an essential role in formation of Mond River Delta as well as a set of sand spits formed in downstream of the river mouth. The morpho-dynamic of entire environment of the Mond River – Mond Delta highly affects marine environment in the surrounding area.

The present study offers the results of a numerical and field investigation of various features of river-delta interaction on Ziarat Estuary and the Mond Delta area. A numerical model has been utilized to investigate cases of flow and sediment transport behaviour in the coastal Mond area and future migration patterns of the River Mouth is estimated. Sediment sources and relevant contributions in morphodynamic changes of the sand spits are widely investigated through sediment constituent analysis.

The results of the numerical model are compared with field observations and comprehensive GIS based analysis of historic shoreline changes from aerial photos and satellite imagery. It is concluded that the model achievements are capable to predict the observed phenomena.

Management guidelines and suggestions are deducted and drawn from the calibration and verification of the results with field observations and satellite image analysis.