Geophysical Research Abstracts, Vol. 9, 10134, 2007
SRef-ID: 1607-7962/gra/EGU2007-A-10134

Analyzing Sakarya River Flume (Black Sea) and Hydrodynamic Features of the Sakarya River Mouth by Using Geoscience Technology

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In this study, aided by geosciences technology (Remote Sensing, GIS and DTM), an integrated research has been conducted on a river for understanding the fundamental properties of plume features and turbulent mixtures better. Sakarya River mouth which is chosen as the study area is located at the Black Sea coast of Turkey. Flow properties, in mostly horizontal dispersion coefficient, have been calculated by using satellite data taken in different times by several sensors (ASTER and LANDSAT).Furthermore, the effects of the plume on the morphology of neighboring beaches have also been examined by geomorphologically and geomorphometrically.

The parameters like density of seawater, current and wave conditions near the shore are required to discuss the movement of turbid freshwater in the seawater so as to reflect the most characteristic features of the mixture in a turbulent environment in terms of hydrodynamics. The concentration of the plume carried with freshwater gets reduced via horizontal and vertical dispersion.

Field data of the region gathered by Istanbul University-Institute of Marine Sciences and Management have been used together with ASTER and LANDSAT data. This study forms an example showing the utility of geosciences technologies that presents quantitative data and better defines the hydraulic behavior of a river with elevated plume and high turbidity.