

The Study of Seabed and Subsurface Channels Using High Resolution 2D Seismic Data, Indus Fan, Pakistan

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Abstract

The present day study is based on high resolution 2D seismic data from the offshore Indus Fan, Pakistan. The Indus fan has received a high flux of sediment load after the collision between Indian and Eurasian plates and the Himalaya orogeny since Eocene. The area lies in one of the tectonically active regions of the world with Makranaccretionary complex lying at the convergent margin between the Arabian and Eurasian plates.

Seismic data obtained from the upper part of the Indus fan reveals Holocene channel system on the sea bed. These data are evaluated along with the GLORIA sidescan sonar data to identify the channel migration, channel avulsion patterns and the position of the channels. Six seabed channels of different length and width are identified on the seabed. The flow direction of the channels is from north to south west. These channels are recognised on the basis of their incision of the previously deposited sediments and their meandering and straight plan form. Knickpoint (reaches of anomalously steep gradient) evaluation was carried out for all the channels observed on the sea bed to describe major changes occurred during the Holocene times, hence providing important information about the prevailing channel environments in the region.