## ABSTRACT

The knowledge about sediment distribution in irrigation system under different flow conditions helps for better understanding of water resources problems, such as sedimentation problem in irrigation system, channel enhancement, designing of diversion structures, placement of Sediment control structures. This studywill also contribute to a better understanding of the sediment movement processes in irrigation canals.

The aim of this Physical model study for sediment distribution is to present some new developments in the behavior of sediment and associated sediment distribution in irrigation network under changing flow conditions, as well as the deposition and/or entrainment rate in time and place for various flow conditions and sediment Inputs.

This study deals with the effect of suspended sediment on flow resistance for different flow conditions in an open channel. Suspended sediment creates resistance forces that slow down the movement of water in the channel, directly influencing the channel capacity. A representation of suspended sediment effects on flow resistance, in term of parameter describing flow depth, is need to improve numerical accuracy of channel design and modeling technique for surface water flow.

The study was conducted in a physical model of channel network which is fabricated by Acrylic sheet placed in Axial Flume of Hydraulics laboratory. The sediment was scaled down by relating the density and flow conditions of natural condition in the irrigation network this sediment executed at different scenarios. The suspended sediments were introduced by a sediment feeding device at the head of the channel and samples were collected with DH-48 Sampler.

The results showed that by reducing the discharge the sediment caring capacity is reduced. The flow depth had a direct relation with the suspended sediment. Wood saw should be used for suspended sediments which give the best results in physical modeling. This physical model study proves that suspended sediments can be scale down for physical model study according to the flow condition.