Geophysical Research Abstracts
Vol. 13, EGU2011-10489, 2011
EGU General Assembly 2011

Hydrological Modelling: An essential tool to understand the impact of climate change on glaciers and water availability in the Indus Basin

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There is a growing recognition that countries of the Indus River Basin face major and changing threats to their future water security and thus to their peoples' critical food and energy needs. The recognized feature of the Indus basin is that the downstream areas are highly dependent on water resources originating in the upper catchments mountainous water sources. Indus River has one of highest dependence on melt water recharge and the generally semi-arid basin is naturally water stressed. Climate and socio-economic changes are further aggravating the situation. Therefore there is a need for in-depth study, thorough analysis and the consolidated study of the multiple factors that links climate change, glaciology and runoff hydrology. For this a robust analytical tool to understand the impacts and to plan effective adaptation is essential. A multi-stakeholder initiative undertook investigation of snow and glacier melt runoff modelling of a heavily glacierized sub-basin of upper Indus. A hydrological model with strong components on snow and glacier melt modelling was updated for the condition of upper Indus Basin. Present paper discusses the preliminary result and future prospective of the modelling. Further, lessons learnt from the capacity building of the stakeholders and issues related to data requirement for the modelling and their availability is discussed.