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CV

Education

PhD in Hydrosciences – Impact of climate change on the snow covers and glaciers in the Upper Indus River Basin and its consequences on Hydraulic Reservoir (Tarbela). University of Science and Technology, MONTPELLIER 2, FRANCE. 2008-2011.

M2 in Hydrology – Flood forecasting at short and large lead times: How to choose the best adapted model?. Universite Pierre et marie Curie (Paris 6), FRANCE. 2007-2008

M.Sc. (Hons.) Agriculture Engineering – University of Agriculture, Faisalabad, PAKISTAN. 2004-2006

B.Sc. Agriculture Engineering – University of Agriculture, Faisalabad, PAKISTAN. 1999-2003

Publications

1) Tahir, A.A., Chevallier, P., Arnaud, Y. and Ahmad, B., 2011. Snow cover dynamics and hydrological regime of the Hunza River basin, Karakoram Range, Northern Pakistan. Hydrol. Earth Syst. Sci. (HESS), 15(7): 2275-2290. (Impact Factor: 3.148)

2) Tahir, A.A., Chevallier, P., Arnaud, Y., Neppel, L. and Ahmad, B., 2011. Modeling snowmelt-runoff under climate scenarios in the Hunza River basin, Karakoram Range, Northern Pakistan. Journal of Hydrology, 409(1-2): 104-117. doi: 10.1016/j.jhydrol.2011.08.035. (Impact Factor: 2.656)

3) Tahir, A. A., Chevallier, P., Arnaud, Y., and Neppel, L.: Hydro-meteorological investigations in the central Karakoram range (Northern Pakistan), Water in mountain areas. Better observations for better forecasting. Lyon, France, 2011, 57-62.

Research Interests & Expertise:

• Snow and glacier dynamics;
• Mountain hydrology;
• Snowmelt-runoff modeling;
• Application of GIS & RS in water resources and cryosphere monitoring;
• Climate change impacts on water resources;
• Water resources management

Cryosphere dynamics in the Karakoram and western Himalayan sub-catchments of Upper Indus River Basin using MODIS data

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Major inflow of Pakistan's irrigation water supply is taken from the Upper Indus River Basin (UIB) situated in the Himalaya-Karakoram-Hindukush ranges. More than 50% of the annual flow in the UIB is contributed by its snow and glacier fed sub-catchments including Astore (Western Himalaya – south latitude of UIB) and Hunza (Central Karakoram – north latitude of UIB) River basins. It is, therefore, necessary to study the cryosphere (snow and glacier cover) dynamics and hydrological behavior of these sub-basins for the better management of water resources. Cryosphere dynamics is studied for the Astore and Hunza River basins using MODIS satellite snow cover images from 2000-2012. These two sub-catchments were selected because of the fact that these have two different climatic regimes within the UIB. The results suggest that the UIB is a region going under the slight increasing trend of cryosphere extent at south (Western Himalaya) and north (Central Karakoram) latitudes. However, these trends must be verified with a series of ground observations from some largest glaciers of the valley e.g. Batura glacier, Baltoro glacier and Biafo glacier etc. Moreover, the discharge from the UIB seems a combination of cryosphere melt and the rainfall-runoff at southern latitudes but the snow and glacier melt is dominant at the northern latitudes.

Keywords
Cryosphere dynamics; Upper Indus River Basin; Central Karakoram & Western Himalaya; MODIS; Ground observations