

Climate change causes water resources scarcity or mismanagement in Pakistan

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The present study provides an assessment of future water availability over the Upper Indus Basin (UIB) Pakistan, discussing the influencing factors of hydrology such as Monsoon & Winter Rainfall Changes and shift, Hydrological Cycle Changes, Temperature Changes and Glacier melting. All these factors are also affected by the teleconnection of oceanic phenomena like La Niña and Indian Ocean Dipole (IOD) etc. In Pakistan, mountain climates are changing, triggering changes in the headwater hydrology of the Indus River, necessitating research on the impacts of climate change on current and future water availability in the UIB. These factors are becoming increasingly important in the north of Pakistan in the future due to elevation dependent warming (the north warming faster than the south). The hydrological projections over UIB show likely increase the water availability in the future. However, changes in future flows show temporal variability. The results of the studies discussed in the study show that in summer, Pakistan will not face water scarcity in the future under the 21st century warming and Paris Agreement targets, given the efficient and timely management strategies in place of water storage in summer and use in winter. Hence, if not managed properly, such high flows at unexpected time of the year could pose a serious threat of flooding in downstream communities. Keeping this in view, the study provides good scientific evidence for policy makers to devise efficient policies to mitigate the threat of flooding/water scarcity and to ensure sustainable water management in the country.