World Academy of Science, Engineering and Technology
International Journal of Mathematical and Computational Sciences
Vol:14, No:12, 2020

Satellite Derived Snow Cover Status and Trends in the Indus Basin Reservoir

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Abstract : Snow constitutes an important component of the cryosphere, characterized by high temporal and spatial variability. Because of the contribution of snow melt to water availability, snow is an important focus for research on climate change and adaptation. MODIS satellite data have been used to identify spatial-temporal trends in snow cover in the upper Indus basin. For this research MODIS satellite 8 day composite data of medium resolution (250m) have been analysed from 2001-2005.Pixel based supervised classification have been performed and extent of snow have been calculated of all the images. Results show large variation in snow cover between years while an increasing trend from west to east is observed. Temperature data for the Upper Indus Basin (UIB) have been analysed for seasonal and annual trends over the period 2001-2005 and calibrated with the results acquired by the research. From the analysis it is concluded that there are indications that regional warming is one of the factor that is affecting the hydrology of the upper Indus basin due to accelerated glacial melting during the simulation period, stream flow in the upper Indus basin can be predicted with a high degree of accuracy. This conclusion is also supported by the research of ICIMOD in which there is an observation that the average annual precipitation over a five year period is less than the observed stream flow and supported by positive temperature trends in all seasons.

Keywords : indus basin, MODIS, remote sensing, snow cover
Conference Title : ICSRD 2020 : International Conference on Scientific Research and Development
Conference Location : Chicago, United States
Conference Dates : December 12-13, 2020