

Estimation of glacier mass balance, glacier dynamics and surface flow using UAV's
(Unmanned Aerial Vehicles) in Baspa Basin, Himachal Pradesh

Abstract:

The project proposes to apply a new and promising technology of Unmanned Aerial Vehicles (UAV's) in monitoring of some of the glaciers in Indian Himalayan Region. The main constraint in monitoring the high altitude glaciers is the difficult terrain and extreme weather condition which makes these areas inaccessible for research studies. This has created a gap in the database and understanding of snow/glacier behavior of these areas in response to changing climate and water availability. This project proposes to fill this gap using UAV's equipped with high resolution camera and precise GPS for monitoring these inaccessible debris covered glaciers. The UAV will be used to map two glaciers in Baspa basin viz. Naradu glacier and Shaune Garang glacier and create high resolution stereo image to be used for creating accurate and high resolution Digital Elevation Model (DEM). These stereo images and DEM will be used to estimate mass balance, glacier dynamics and contribution of avalanche to glacier's accumulation zone. It will also give an opportunity to develop algorithm for accurately mapping glacier features.