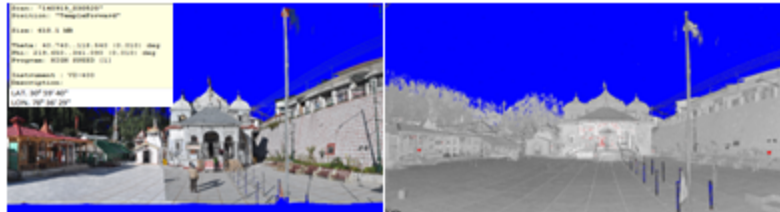


EOAM Title: Monitoring and Assessment of Mountain Ecosystem Services & Processes in North Western Himalaya (NWH) Sub-Theme – 4: Water Resources Status and Availability

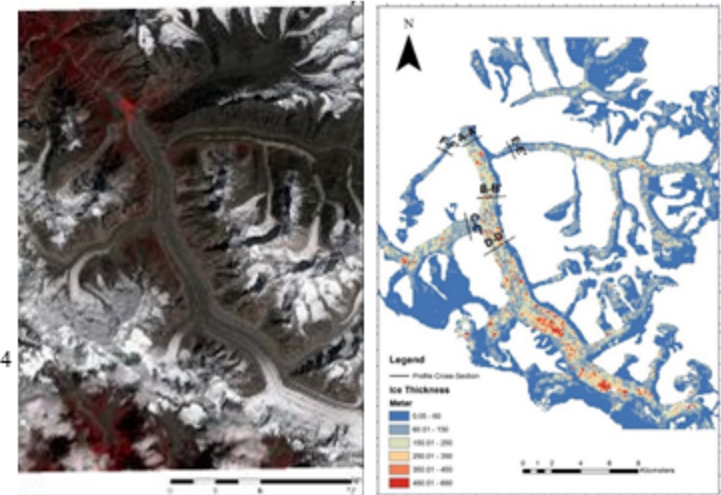
1. Completed field instrument installation SPA and SWE gauge in Manali ; 2. Estimated energy balance based snowmelt for Ganga & Beas river basins 3. Gangotri glacier survey using TLS & DGPS 5. Installation of AWSs in 2014-17; 4. Digital database creation for SCA, and hydro-data for NWH. Glacier ice depth estimation, SCA estimation in NWH



Survey of Gangotri area using differential GPS & Terrestrial Laser Scanner 13-19 Sep. 2014



Gangotri glacier snout on 29 Sep. 2008 and on 16 Sep. 2014 (Source: Praveen K. Thakur)

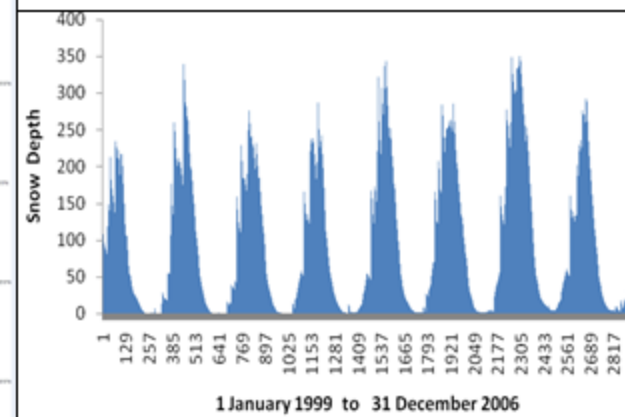
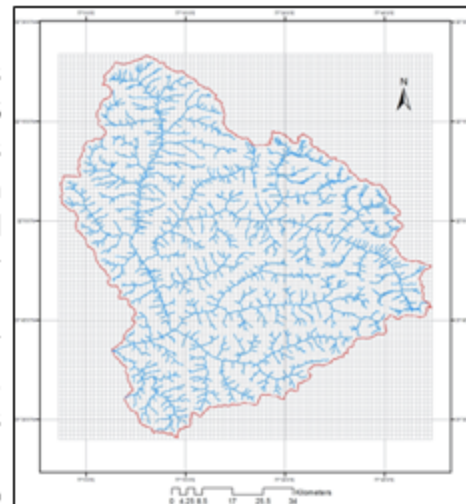


Laminar Ice flow Approximation

$$H = \sqrt[4]{\frac{1.5U_s}{Af^3(\rho g \sin \alpha)^3}}$$



Near-real time of AWS's data being received at IIRS from field stations, this data will be used in hydrological and hydrodynamic models for more accurate flood forecasting and other hydrological simulations. 22 AWS installed in various parts of HP and UK, two DWLR installed in Chenab basin



Mean SWE map and 3d): Mean snow depth map of Beas basin upto Devprayag for year 2005 using NCEP forcing data estimated by VIC snow module