**TLS observations of the cryosphere in the Central Pyrenees: data acquisition and research applications**

J. Revuelto, J. I. López-Moreno, E. Alonso-Gónzalez, A. Sanmiguel-Vallelado

High spatial resolution information of the cryosphere is of high importance to understand the evolution of its different components such as the seasonal snowpack and glaciers. Till the date, in a spatial scale from the meter to the kilometer, the LiDAR technology used by Terrestrial Laser Scanners (TLS) has demonstrated to be the best technique to obtain high spatial resolution of surface changes.

This work describes the recently acquired TLS database in four experimental sites in the Pyrenees and the climatic dataset obtained in the Automatic Weather Stations (AWS) placed in these sites during the same time period. The study areas are all located in Central Pyrenees, covering zones with different altitudinal ranges and also different mountain ambients (forested area, subalpine area, alpine area and a glacier). In these sites, from two to ten TLS surveys have been acquired each season during the last five years. Since the four experimental sites have marked differences and also are covering different spatial scales, the processes that can be observed and analyzed are not the same. Here it is presented the available database of high spatial resolution snow depth maps and ice thickness changes. Also are described the main researches already accomplished in these sites. Moreover three of these sites are still supported and TLS acquisitions will be maintained in time, what represents an added value to the work.