



Characterization of sastrugi fields with TLS (Terrestrial Laser Scan) and simple digital photos

Hervé BELLOT (1,2), Florence NAAIM-BOUVET (1,2), Yoichi ITO (1,2), Michael DESCHATRES (1,2), Charles AMORY (1,2,3)

(1) Irstea, UR ETGR, centre de Grenoble, 2 rue de la Papeterie-BP 76, F-38402 St-Martin-d'Hères, France, (2) Univ. Grenoble Alpes, F-38041 Grenoble, France, (3) LGGE, Saint-Martin d'Hères, France

Wind driven snow continually alters the snow surface and determines the surface roughness through the formation of obstacles such as sastrugi, barcans, ripples... In turn, surface roughness is responsible for a decrease in the kinetic energy available for snow erosion. It is therefore important to know the relationship between the complex geometry of sastrugi-like roughness elements and the aerodynamic roughness. Some relationships, based for example on geometrical characteristics of sastrugi fields, are available in the literature.

In the present paper, two different methods for exploring snow surface morphology on a limited area (around 10 m²) are introduced. These are the well-known high-accuracy TLS (Terrestrial Laser Scan) and a low-cost method consisting in 3D reconstruction software using simple digital photos of the scene. Preliminary results obtained at Lac Blanc Pass, in the French Alps, during winter 2013-2014 are introduced. Raw data and geometrical characteristics extracted from the DEM are compared.