

**Title :** Sentinel-2, Pléiades, Icesat-2, Trishna... Hijacking Earth observation satellites for snow science

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**Abstract**

Despite the efforts of the snow science community there is still no space-borne mission dedicated to the monitoring of the snow water equivalent. Waiting for a hypothetical "snow mission", we strive to utilize available remote sensing data to estimate SWE distribution in alpine regions. We focus on high resolution products to match the high spatial variability of the snowpack in complex terrain. With this in mind, we have developed tools to retrieve (i) the snow cover area from Sentinel-2, (ii) the snow depth from Pléiades, (iii) the snow depth from ICESat-2, and we aim to investigate if snow density could be inferred from the future thermal infrared missions (Trishna, LSTM, SBG). We will present the limitations of each method and how we estimate their uncertainties to prepare their assimilation into snowpack models to reconstruct the SWE.