



# Pléiades Glacier Observatory : DEM

Date : 2019-11-21  
Site : Heard\_SAN

## DEM information

<b>Coordinate system</b>	UTM 43 south - EPSG 32743
<b>Correlation algorithm</b>	Semi Global Matching (SGM)
<b>DEM resolution</b>	2 m and 20 m
<b>Reference for height</b>	Ellipsoidal Height (WGS84)
<b>Shift vector to Copernicus GLO-30 (m)</b>	dx=-0.04; dy=+9.32; dz=-3.86
<b>Base-to-Height ratio (B/H)</b>	0.20

## Source images

**PHR** DS\_PHR1A\_201911210448016\_FR1\_PX\_E073S54\_0624\_01418  
**PHR** DS\_PHR1A\_201911210448210\_FR1\_PX\_E073S54\_0624\_01406

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## Archive structure

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├─ 2019-11-21_0448386_Heard_SAN
│   ├── BM
│   ├── 2019-11-21_0448386_Heard_SAN_footprint.shp
│   ├── 2019-11-21_0448386_Heard_SAN_footprint.dbf
│   ├── 2019-11-21_0448386_Heard_SAN_footprint.prj
│   ├── 2019-11-21_0448386_Heard_SAN_footprint.shx
│   └── SGM
│       ├── 2019-11-21_0448386_Heard_SAN_DEM_SGM_2m.tif
│       ├── 2019-11-21_0448386_Heard_SAN_DEM_SGM_20m.tif
│       ├── README_SGM_DEM.pdf
│       ├── PREVIEW_2019-11-21_0448386_Heard_SAN_DEM_SGM_20m.png
│       └── COREGISTRATION_RESULT_2019-11-21_0448386_Heard_SAN_DEM_SGM_20m.png

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## Description

DEMs and orthoimages were generated from raw Pléiades images using the Ames Stereo Pipeline [Beyer et al., 2018]. The set of processing parameters used for DEM generation are from [Marti et al., TC, 2016] for block matching -BM- and from [Deschamps-Berger et al., 2020] for semi global matching -SGM.

All DEMs and orthoimages are coregistered on the Copernicus GLO-30 DEM using the demcoreg tool [Shean et al., 2021].

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## References

Beyer et al.: The Ames Stereo Pipeline: NASA's Open Source Software for Deriving and Processing Terrain Data, Earth and Space Science, 5(9), 537–548, doi:10.1029/2018EA000409, 2018.

Shean et al.: dshean/demcoreg, Zenodo, v1.1.0, <https://doi.org/10.5281/zenodo.5733347>, 2021.

Deschamps-Berger et al.: Snow depth mapping from stereo satellite imagery in mountainous terrain: evaluation using airborne laser-scanning data, The Cryosphere, 14(9), 2925–2940, <https://doi.org/10.5194/tc-14-2925-2020>, 2020.

Marti et al.: Mapping snow depth in open alpine terrain from stereo satellite imagery, The Cryosphere, 10(4), 1361–1380, doi:10.5194/tc-10-1361-2016, 2016.