



# Pléiades Glacier Observatory : DEM

**Date :** 2021-12-08  
**Site :** BallenyIsland2\_ANT

## DEM information

<b>Coordinate system</b>	UTM 58 south - EPSG 32758
<b>Correlation algorithm</b>	Block Matching (BM)
<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>	<b>dx=+0; dy=+0; dz=+0</b>
<b>△ No coregistration due to lack of stable terrain and/or poor quality of reference DEM</b>	
<b>Base-to-Height ratio (B/H)</b>	0.38

## Source images

**PHR** DS\_PHR1A\_202112082205469\_FR1\_PX\_E163S67\_0206\_02474  
**PHR** DS\_PHR1A\_202112082206229\_FR1\_PX\_E163S67\_0206\_02363

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## Archive structure

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└─ 2021-12-08_2206599_BallenysIsland2_ANT
    └─ BM
        ├── 2021-12-08_2206599_BallenysIsland2_ANT_1A_DEM_BM_2m.tif
        ├── 2021-12-08_2206599_BallenysIsland2_ANT_1A_DEM_BM_20m.tif
        ├── README_BM_DEM.pdf
        ├── PREVIEW_2021-12-08_2206599_BallenysIsland2_ANT_DEM_BM_20m.png
        └── Coreg_2021-12-08_2206599_BallenysIsland2_ANT_1A_DEM_BM_20m_vs_Cop30.png
    └─ SGM
        ├── 2021-12-08_2206599_BallenysIsland2_ANT_footprint.shp
        ├── 2021-12-08_2206599_BallenysIsland2_ANT_footprint.dbf
        ├── 2021-12-08_2206599_BallenysIsland2_ANT_footprint.prj
        └── 2021-12-08_2206599_BallenysIsland2_ANT_footprint.shx
    
```

## 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].

Acknowledgement statement: The Pléiades images/DEMs used in this study was provided by the Pléiades Glacier Observatory initiative of the French Space Agency (CNES) and Laboratoire d'Etudes en Géophysique et Océanographie Spatiales (LEGOS).

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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.