Geophysical Research Letters

Supporting Information for

Rapid formation of an ice doline on Amery Ice Shelf, East Antarctica

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Introduction

This Supporting Information provides details about the Landsat-8 and Sentinel-1 (SAR) satellite images cited in the paper, providing dates, image identifiers and the use made of that image. (Text S1)

It also provides information for locating and viewing Landsat-8, Sentinel-1 and MODIS imagery online (Text S2).

Text S1.

Sentinel-1 and Landsat 8 images.

Sentinel-1 C-band Synthetic Aperture Radar Images:

Used in Section 2 to constrain the winter drainage event to 7-11 June 2019.

Date: 2019-06-05T22:28:14.966Z
Identifier:
S1A_IW_GRDH_1SSH_20190605T222814_20190605T222839_027550_031BE1_528B
Instrument: SAR-C
Mode: IW

Date: 2019-06-11T22:27:33.648Z
Identifier:
S1A_IW_GRDH_1SSH_20190611T222733_20190611T222758_016654_01F588_DD69
Instrument: SAR-C
Mode: IW

Landsat 8 Images

Figure 1b Prior to drainage event
Date: 2019-03-31 Path/Row: 126/111
Landsat Scene Identifier: LC81261112019090LGN00

Figure 1c Post-drainage event
Date: 2019-09-14 Path/Row: 127/111
Landsat Scene Identifier: LC81271112019257LGN00

Figure 3 a-c 2019/2020 Section 5: Summer meltwater
Date: 2020-01-29 Path/Row: 126/111
Landsat Scene Identifier: LC81261122020029LGN00

Other 2020 Landsat 8 scenes mentioned in Section 5: Summer 2019/2020: first melt season in the disrupted hydrologic landscape.

Date: 2020-02-03 Path/Row: 129/111
Landsat Scene Identifier: LC81291112020034LGN00

Date: 2020-02-12 Path/Row: 128/111
Landsat Scene Identifier: LC81281122020043LGN00

Date: 2020-02-14 Path/Row: 126/111
Landsat Scene Identifier: LC81261112020045LGN00

Landsat Scene Identifier information from
https://lta.cr.usgs.gov/DD/landsat_c2_dictionary.html#landsat_scene_id

Format: LXSPPPRRRYYYYDDDGSIVV

L = Landsat	YYYY = Year of Acquisition
X = Sensor (T = TIRS, O = OLI, C = OLI_TIRS)	DDD = Day of Acquisition Year
S = Satellite (8=Landsat-8)	GSI = Ground Station Identifier
PPP = WRS Path	VV = Version
RRR = WRS Row	

Text S2.

Satellite imagery – sources and viewers

Satellite imagery is available from major repositories such as:

- USGS GloVis https://glovis.usgs.gov/
  which also provides easy viewing of imagery in a time-line viewer
  and
- USGS EarthExplorer https://earthexplorer.usgs.gov/
  both provide access to Landsat 8 (and more).

- sentinelhub's Playground and EO Browser https://www.sentinel-hub.com/
  for Sentinel-1 and Landsat 8, MODIS (and more).

- ESA's Copernicus Open Access Hub https://scihub.copernicus.eu/
  also provides free and open access to Sentinel-1, Sentinel-2 data (and more).

We also consulted MODIS imagery for the timing of the January 2020 meltwater events (Section 5). For that task we simply viewed the relevant periods using the online viewing tool:

- NASA WORLDVIEW https://worldview.earthdata.nasa.gov/
  which can display MODIS imagery from the Terra and Aqua satellites.

For browsing Landsat 8 imagery in time-line mode we also used:

- Antarctic REMA Explorer https://livingatlas2.arcgis.com/antarcticdemexplorer/
  which provides the facility to view imagery by date, with the REMA (Reference Elevation Model for Antarctica) mosaic also available for reference.