

# 4300 km<sup>2</sup> iceberg calves in the Antarctica

Sentinel-3 SRAL LAND acquired on 09 May 2021 at 10:52:42 UTC

Sentinel-1 CSAR IW acquired on 10 May 2021 at 06:26:02 UTC

Sentinel-3 SLSTR RBT acquired on 10 May 2021 at 10:11:50 UTC

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Sentinel-1 CSAR EW acquired on 07 June 2021 at 01:51:05 UTC

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[3D Layerstack](#)

Fig. 1 - S1 (10.05.2021) - Two days before the calving, a long fissure is visible, wider at the top-left, it narrows and ends at the bottom right. [3D view](#)

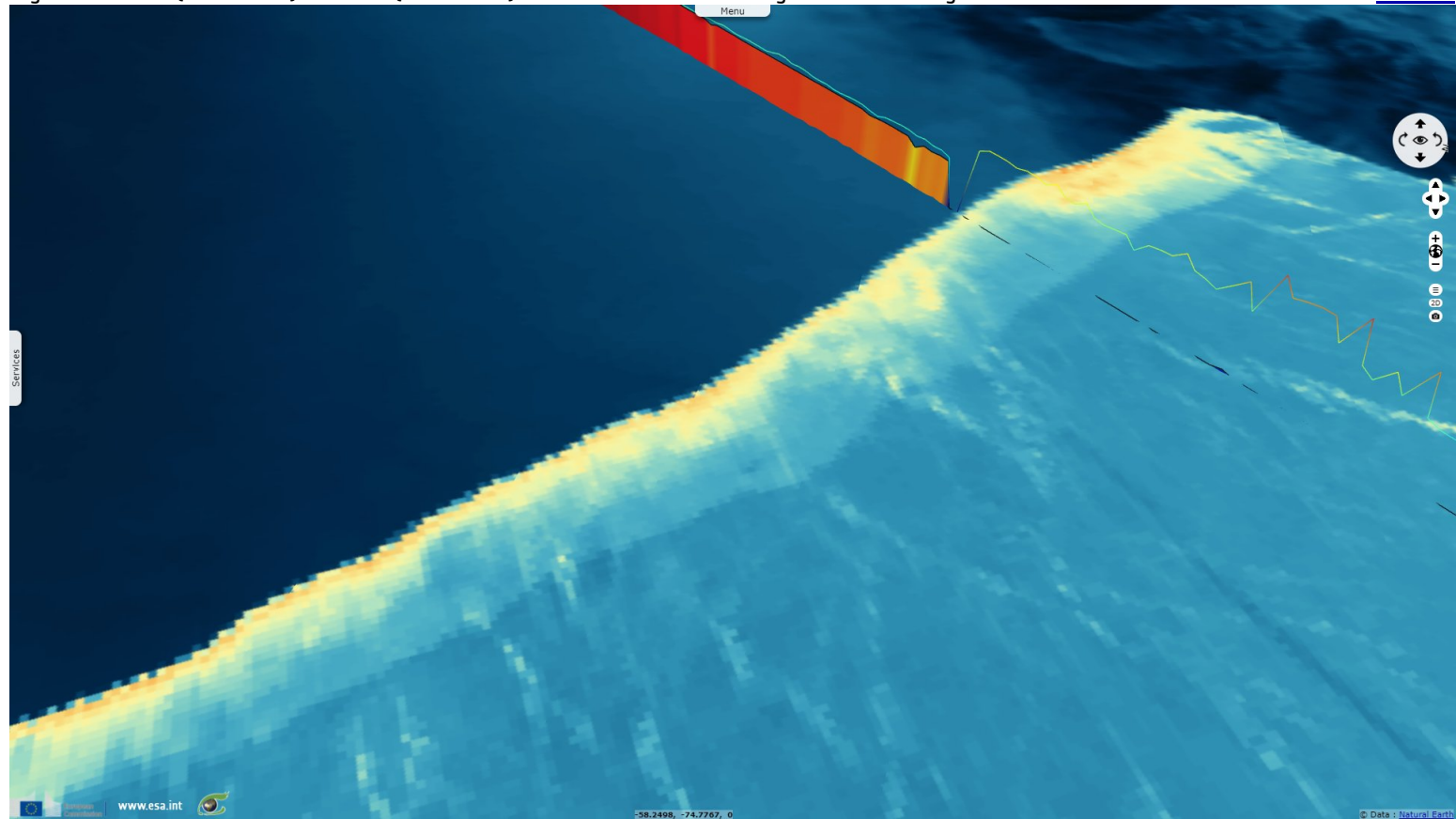


Fig. 2 - S1 (16.05.2021) - 6 days later, the fissure had lengthened, completing the separation. The iceberg had drifted few kilometres then. [3D view](#)



Fig. 3 - S3 SRAL (09.05.2021) & SLSTR (10.05.2021) - View of the future iceberg before its calving.

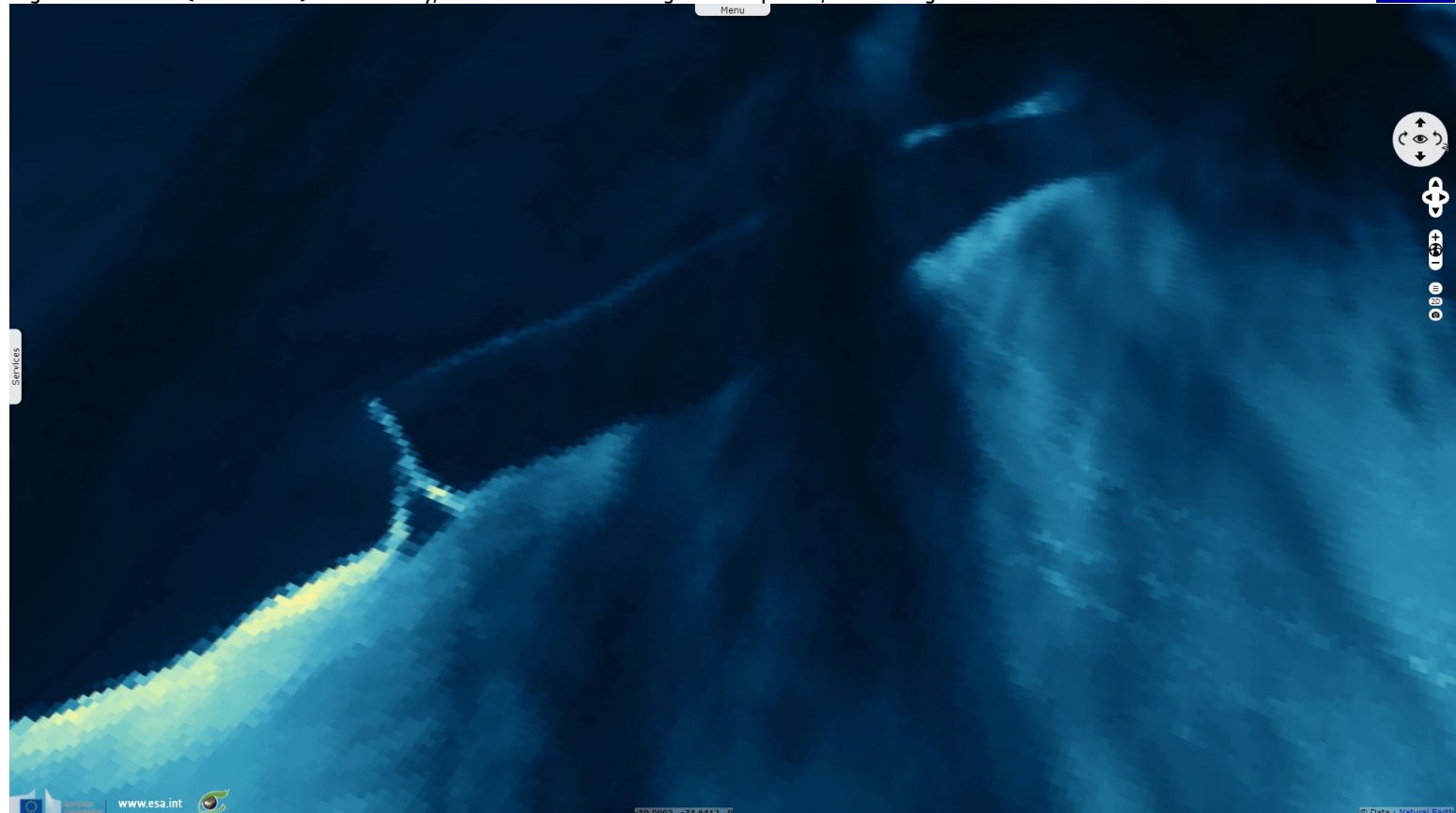
[3D view](#)



The filled profile shows the OCOG surface height in 20Hz Ku band, the line profile shows the OCOG backscattering in 20Hz Ku band. Before the iceberg separated, there was an increase in the backscattering at the sea level due to the higher roughness of the pack ice below the cliff compared to that of the ice covering the cliff.

Fig. 4 - S3 SLSTR (12.05.2021) - On 12 May, the fissure visible on fig.1 is completed, the calving is finished

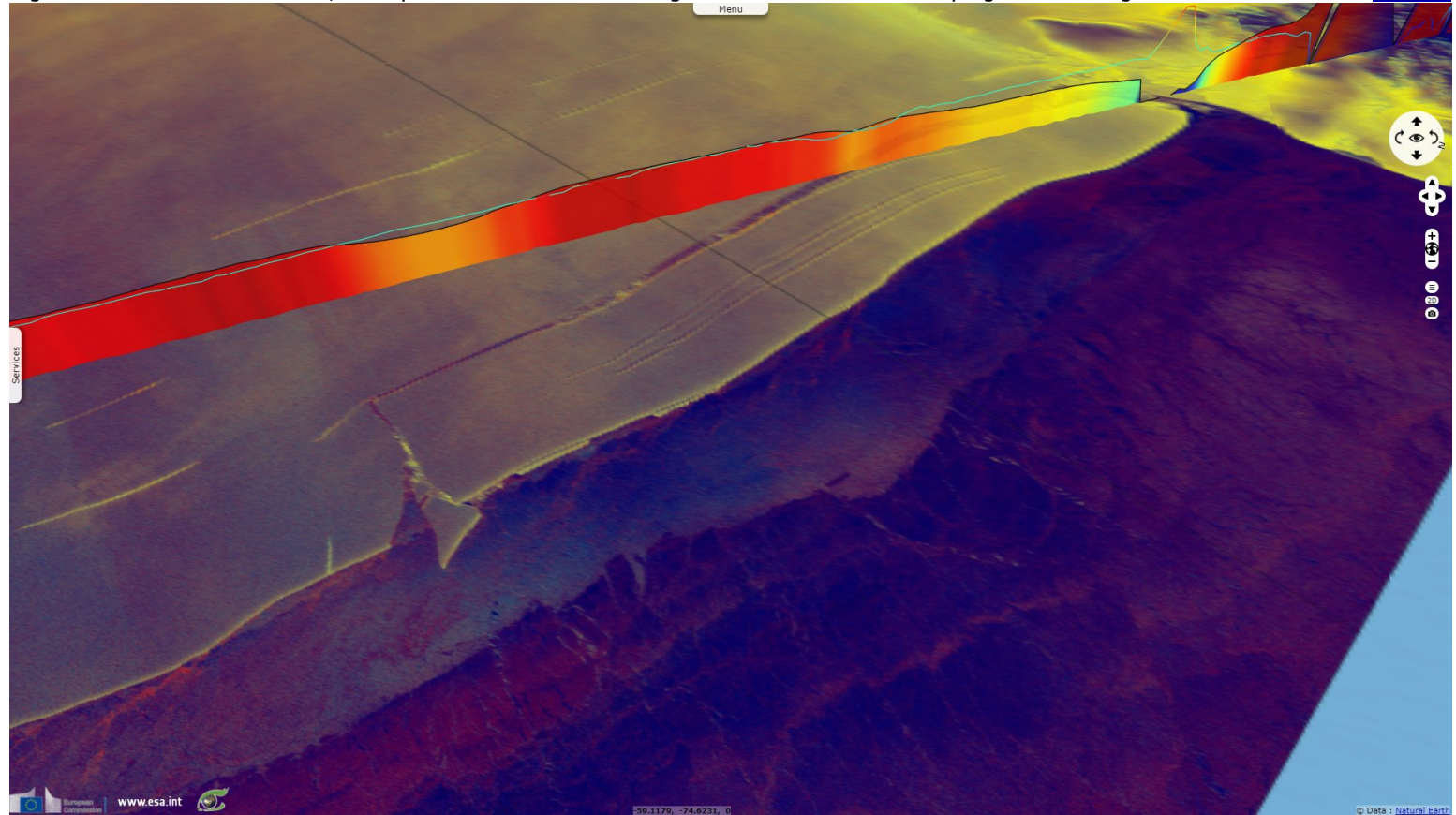
[3D view](#)



The British Antarctic Survey [revealed](#) the calving of a very large iceberg in the Weddell Sea: "An enormous iceberg has calved from the western side of the Ronne Ice Shelf, in Antarctica. The iceberg, newly named A-76, measures around 4320 sq km in size and is floating in the Weddell Sea – currently making it the largest iceberg in the world. The calving is considered a natural event and not attributed to climate warming."

Fig. 5 - S1 (13.05.2021) - At first, the separation between the iceberg and the cliff increased at top right of the image.

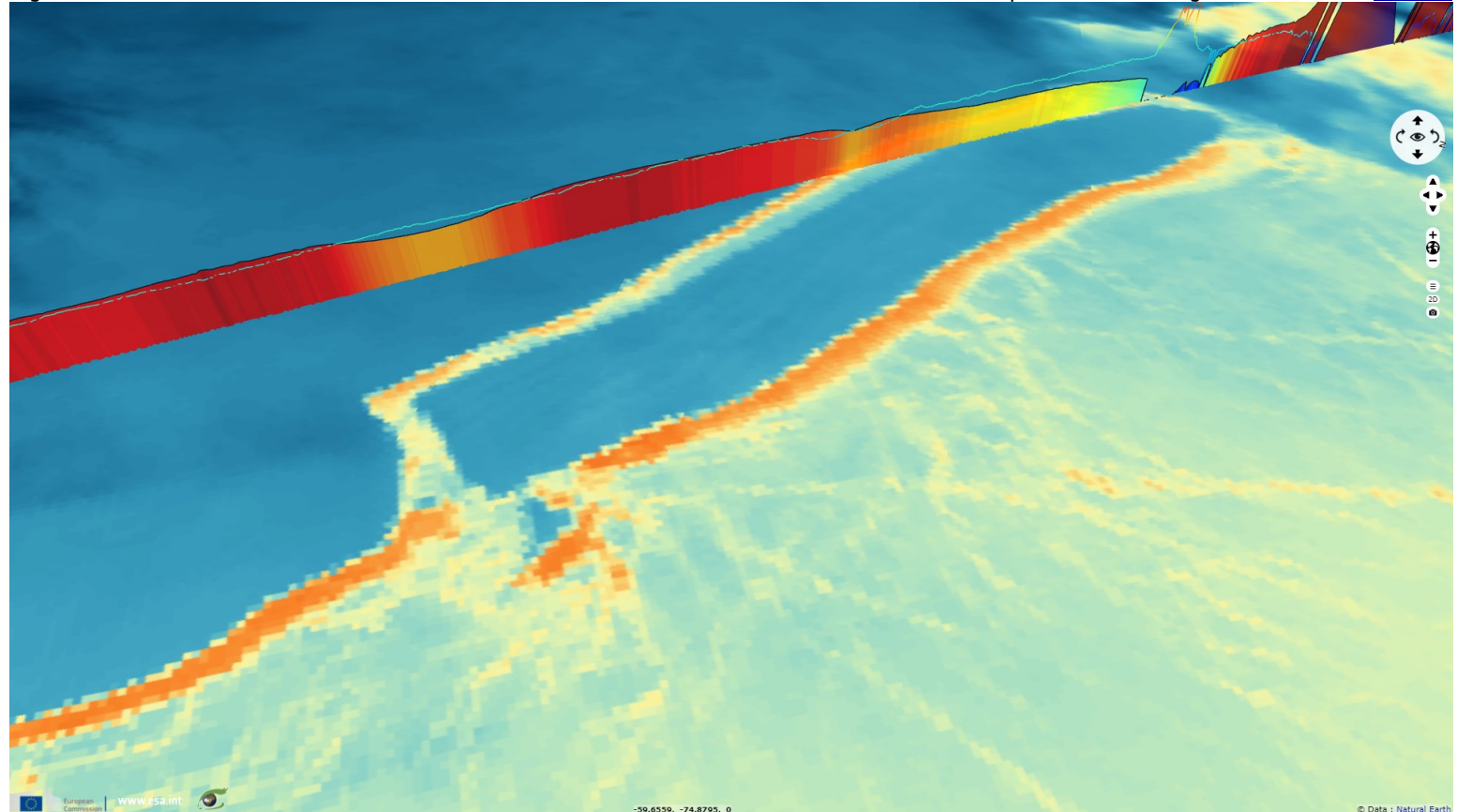
[3D view](#)



"The 'megaberg' was spotted by British Antarctic Survey (BAS) researchers in recent images captured by the Copernicus Sentinel-1 mission on the Polar View portal. The iceberg is around 170 km in length and 25 km wide, and is slightly larger than the Spanish island of Majorca or the UK county of Somerset."

Fig. 6 - S3 SRAL (16.05.2021) & SLSTR (17.05.2021) - The warmer sea is visible between the blocks of pack ice and icebergs.

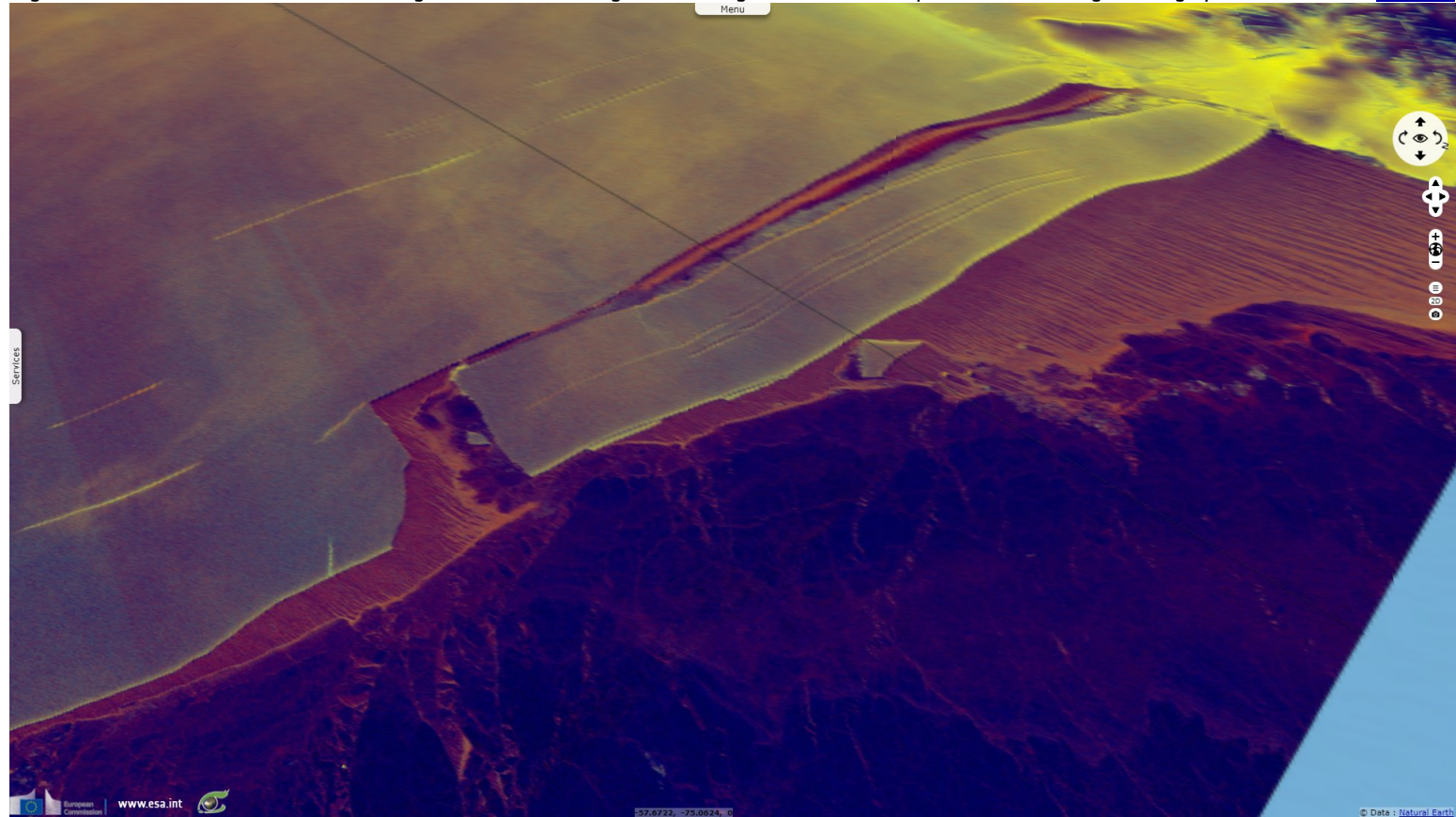
[3D view](#)



While the article deal with Sentinel-1 images, the wide swath of the SLSTR instrument carried by both Sentinel-3 satellites allows a very high repetition of observations, even during the polar winter. It also makes use of the radar based altimetre SRAL which narrow swath pierces through clouds.

Fig. 7 - S1 (25.05.2021) - The A-47 iceberg has started rotating and cracking while the small quadrilateral iceberg has largely drifted.

[3D view](#)



"The enormity of the iceberg makes it the largest in the world, taking first place from the A-23A iceberg (approximately 3880 sq km in size) which is also located in the Weddell Sea. In comparison, the A-74 iceberg that broke off the Brunt Ice Shelf, near Halley Research Station in February earlier this year, was only 1270 sq km."

Fig. 8 - S1 (26.05.2021) - The day after, two large blocks have broken from the main piece of A-47.

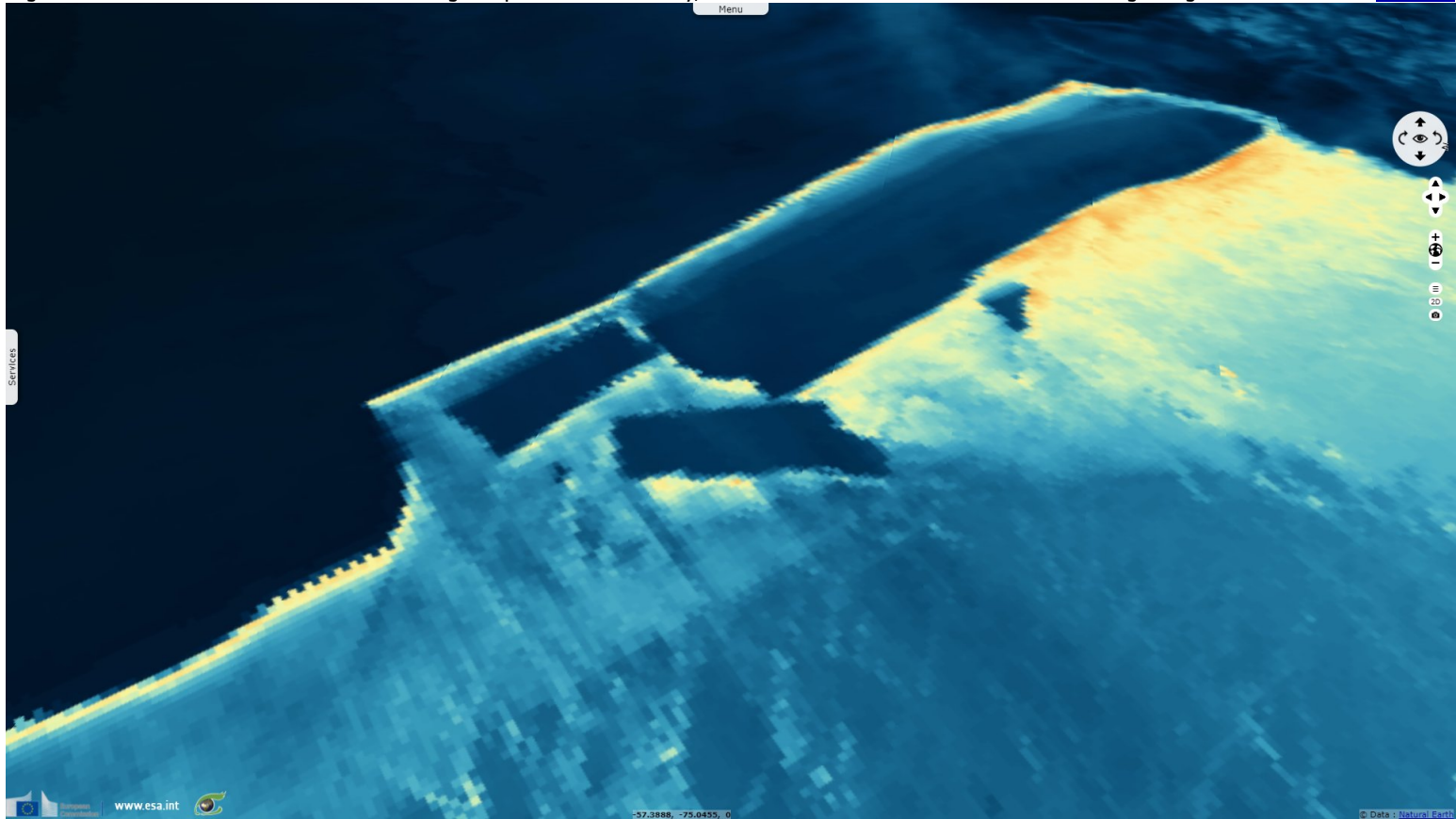
[3D view](#)



"Dr Kaitlin Naughten, an ocean modeller at British Antarctic Survey, explains: 'Calving is an essential way for ice shelves to stay in balance. Large calving events only occur occasionally, and they can be very dramatic, but they are not necessarily a sign that the system is changing. There is currently no evidence that the Ronne Ice Shelf is calving more often as a result of climate change.'"

Fig. 9 - S3 SLSTR (26.05.2021) - Thermal image acquired the same day, similar structures are visible to that showing using radar.

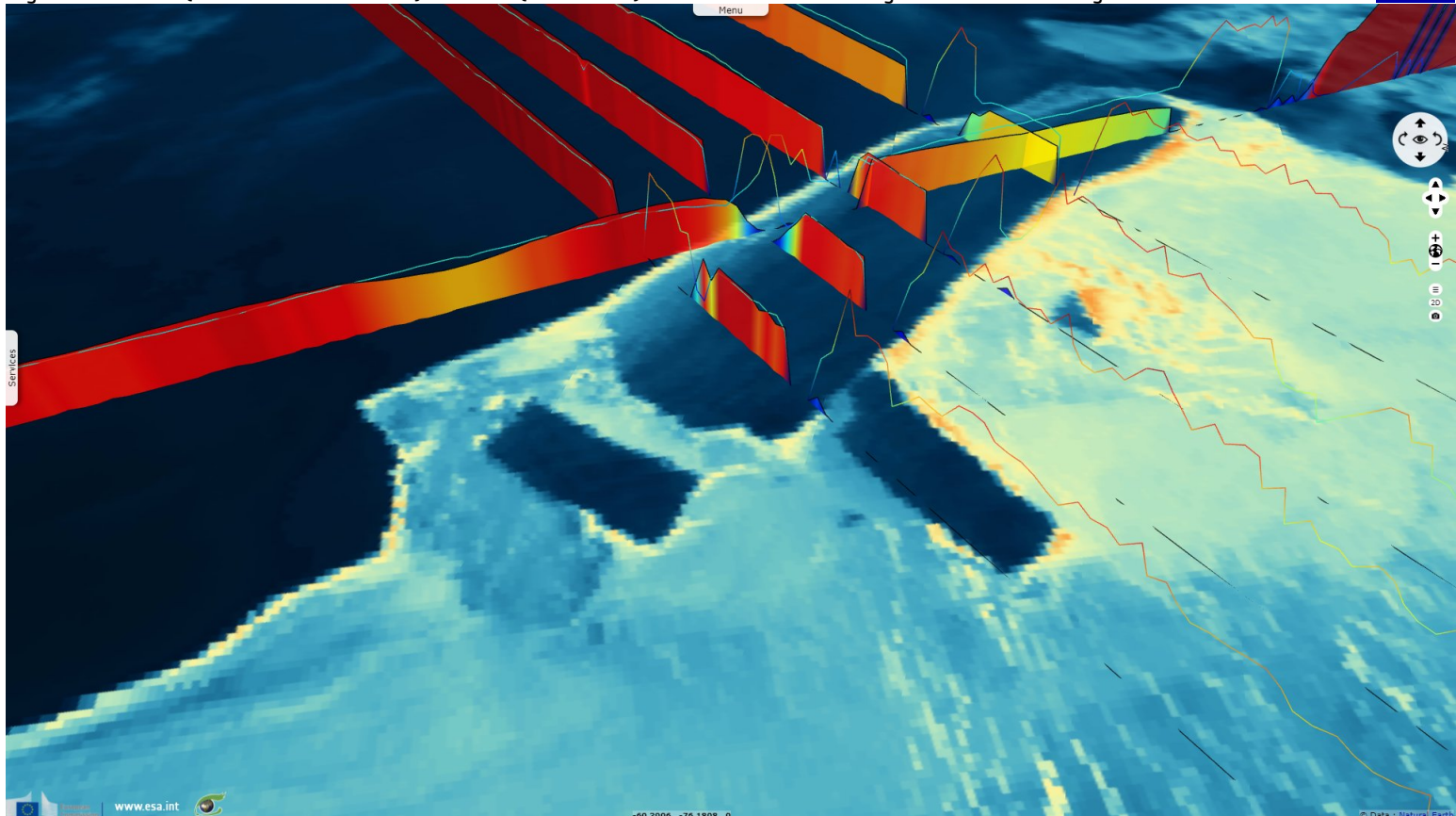
[3D view](#)



*"Dr Alex Brisbourne, a glaciologist at BAS, has worked on the Ronne Ice Shelf. He says: 'Iceberg A76 is huge, about the size of the county of Somerset in the UK. It wouldn't make the top 10 list of the biggest known icebergs of all time though. This calving is part of the natural cycle of the Ronne Ice Shelf. The ice shelf is constantly being fed ice from the Antarctic continent, and eventually chunks break off the ice shelf in this way, forming these big flat icebergs and maintaining a balance. Because they are already floating, as they melt, icebergs do not contribute to sea level rise in a significant way. They have been known to eventually get stuck in places like South Georgia in the South Atlantic, disrupting the feeding of seals and penguins.'"*

Fig. 10 - S3 SRAL (26.05.2021-03.06.2021) & SLSTR (30.05.2021) - The two smaller icebergs have started rotating around the main one.

[3D view](#)



*"We know that the ocean around Antarctica is warming as a result of global heating but the Weddell Sea, where iceberg A76 sits, is not currently experiencing this warming. Elsewhere around the Antarctic however, the warming ocean is melting other ice shelves and this is allowing the ice to drain more quickly off the continent, increasing the rate of sea level rise. Of course, this sea level rise isn't restricted to Antarctica, it affects sea level around the world, including here in the UK, increasing the frequency and severity of storm surges and coastal flooding."*

Fig. 11 - S3 SRAL (03.06.2021) & SLSTR (05.06.2021) - All icebergs are slowly drifting and rotating away from the ice cliff [3D animation](#) [3D view](#)

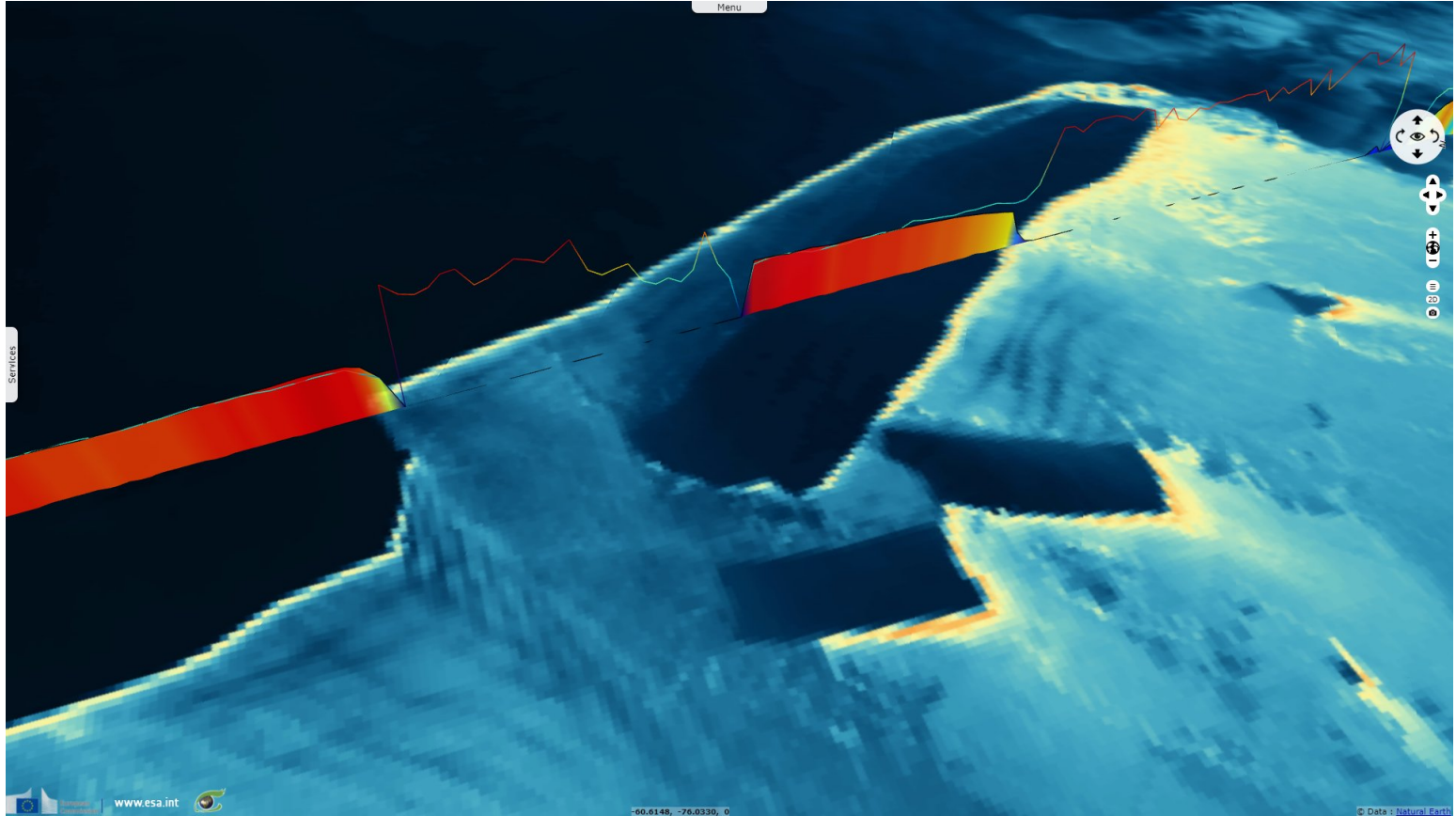


Fig. 12 - S1 (07.06.2021) - Other cracks are visible, potentially causing future calving and fragmentation. [3D animation](#) [3D view](#)



*The views expressed herein can in no way be taken to reflect the official opinion of the European Space Agency or the European Union.  
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