Sentinel Vision
EVT-363
13 December 2018

2D Layerstack

Landslide causes temporary dam in Himalaya

Sentinel-2 MSI acquired on **08 June 2018** at 04:16:59 UTC
Sentinel-1 CSAR IW acquired on **01 October 2018** at 11:41:21 UTC
Sentinel-1 CSAR IW acquired on **13 October 2018** at 11:41:22 UTC
Sentinel-1 CSAR IW acquired on **25 October 2018** at 11:41:21 UTC
Sentinel-2 MSI acquired on **31 October 2018** at 04:19:11 UTC

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Fig. 1 - S1 (01.10.2018) - vv,vh,vv colour composite - Sedong Ri glacier before major landslides happened. 2D view

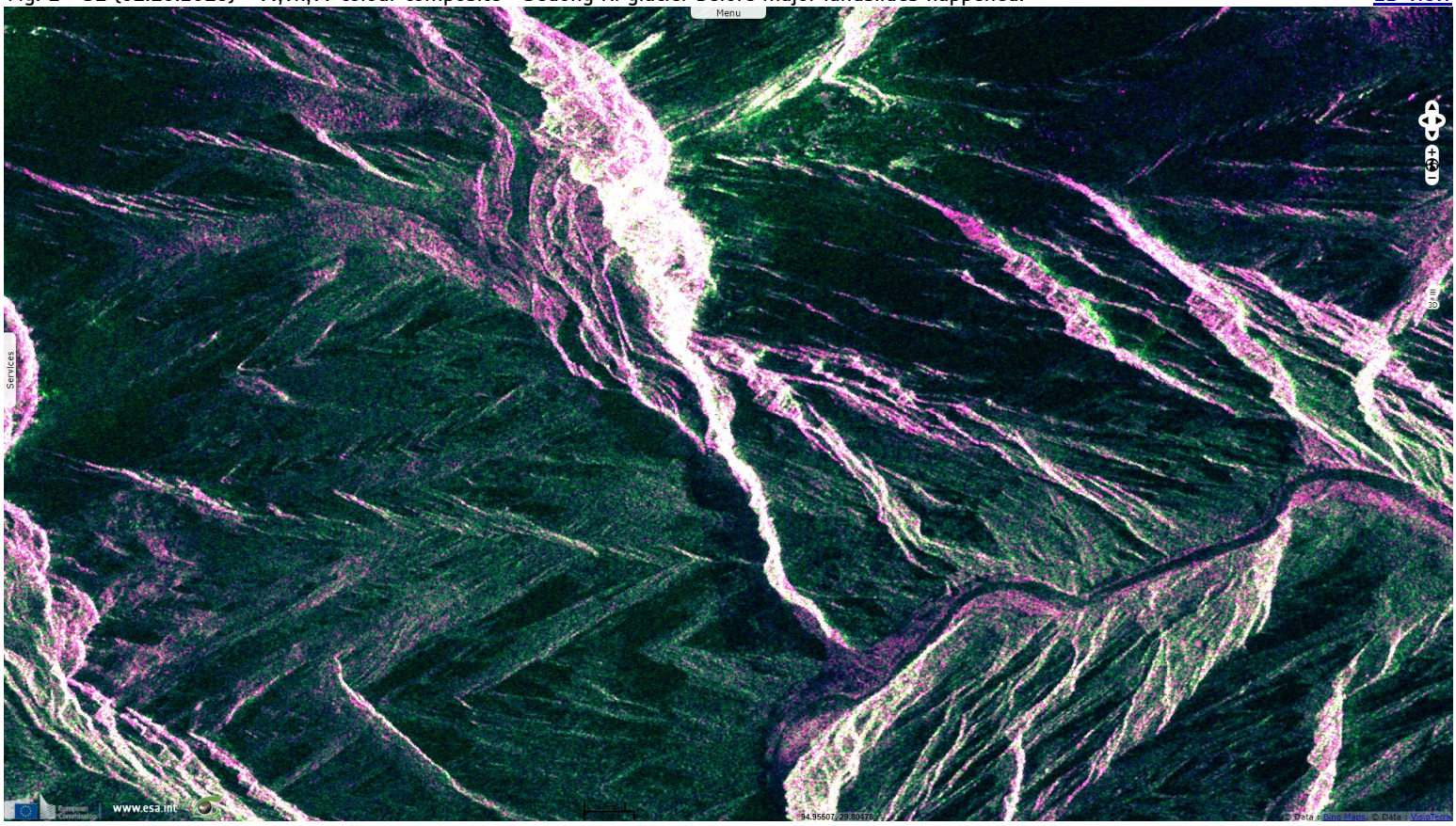


Fig. 2 - 13.10.2018 - Sedong Ri glacier after a first series of avalanches & landslides. 2D view

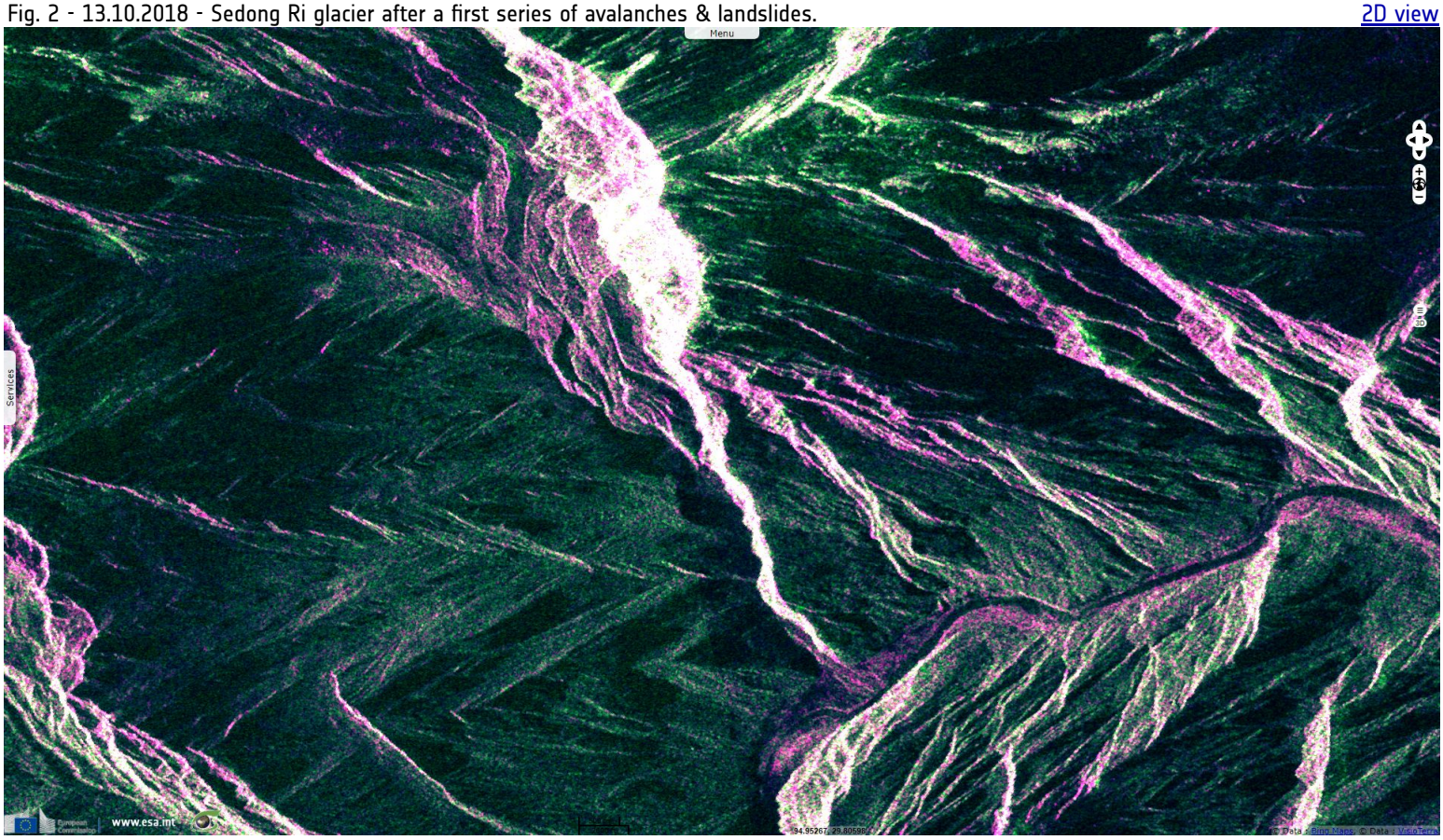
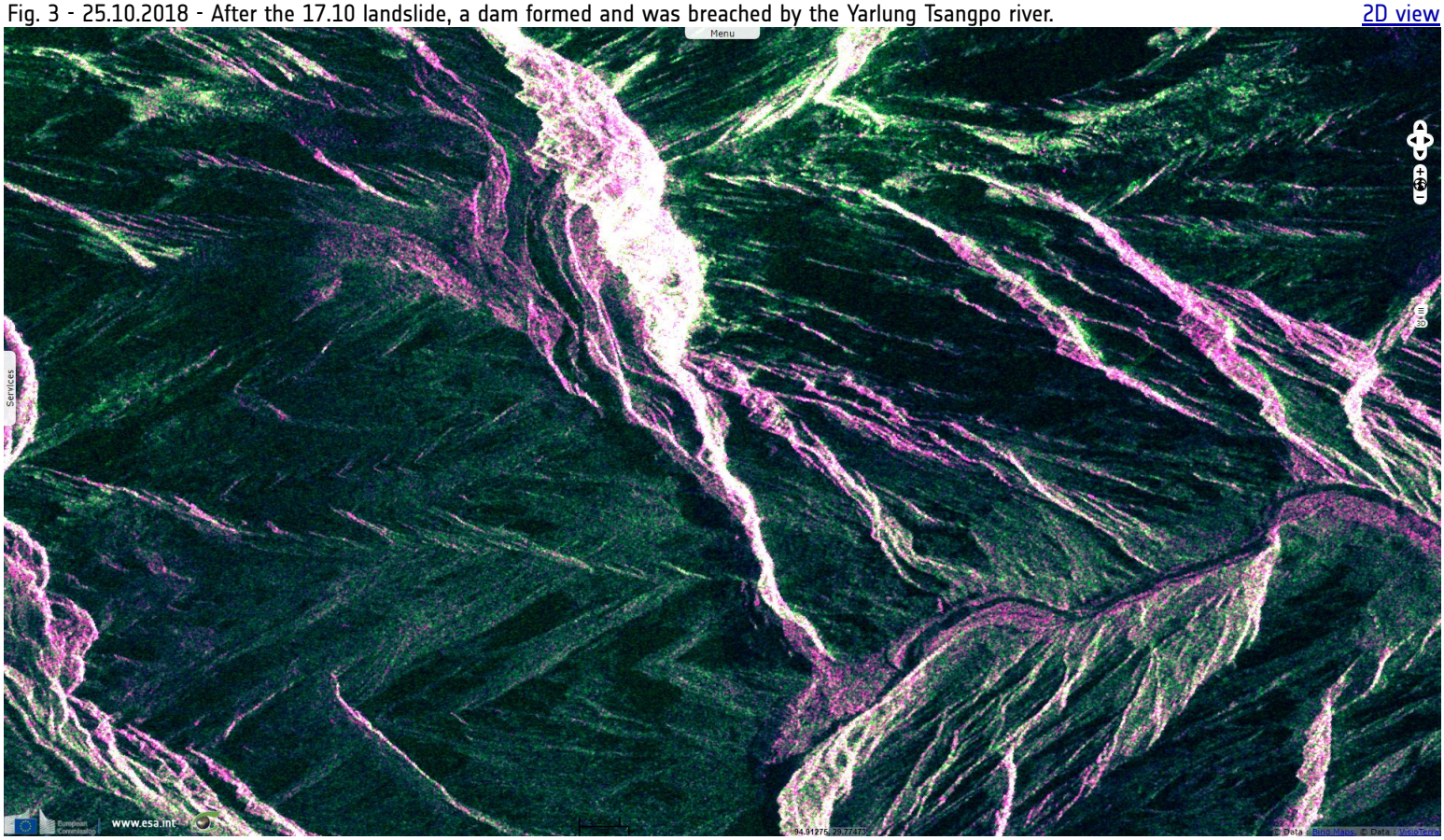


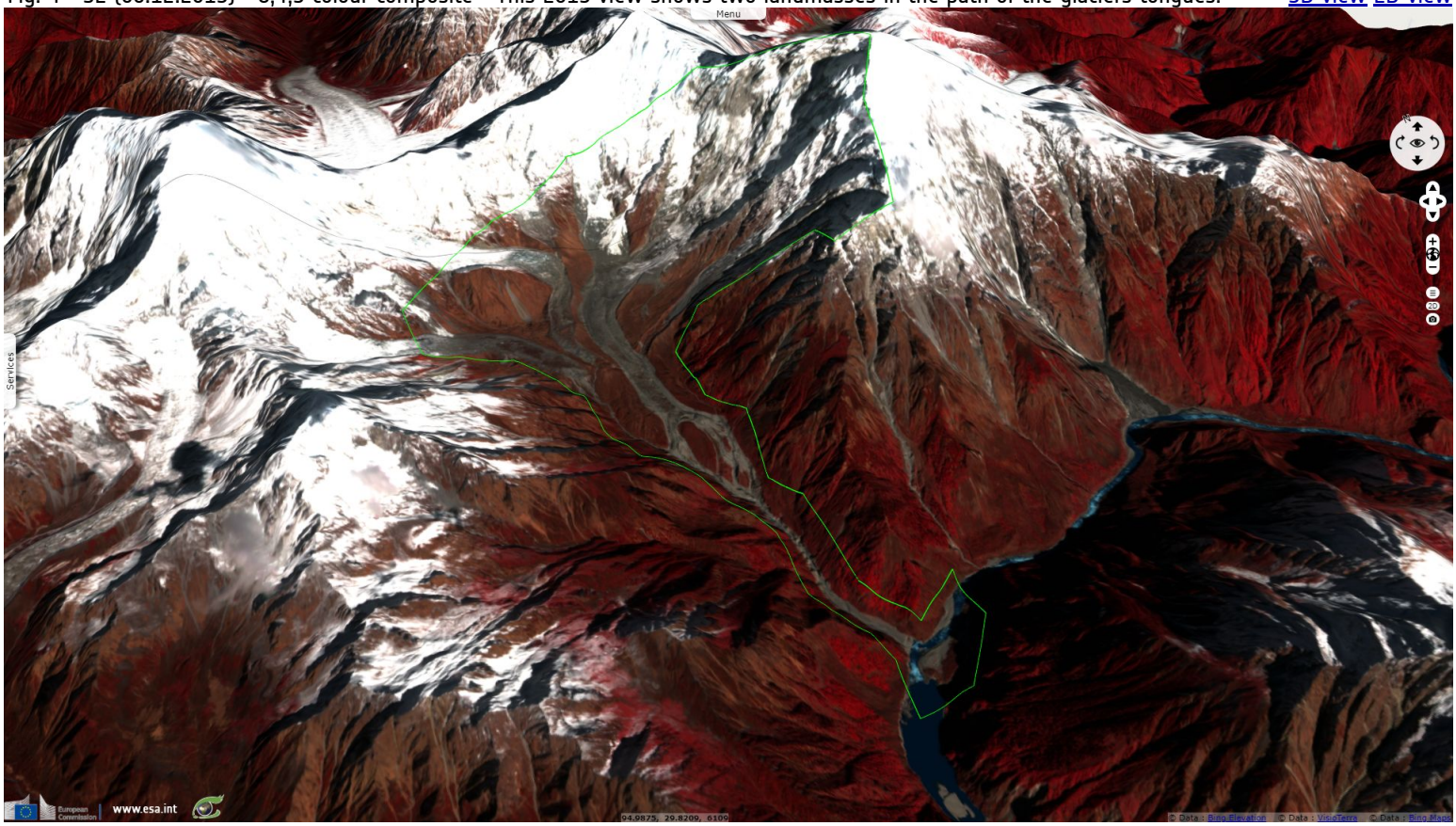
Fig. 3 - 25.10.2018 - After the 17.10 landslide, a dam formed and was breached by the Yarlung Tsangpo river. 2D view



A landslide in Sedong Ri glacier cause a dam on the Yarlung Tsangpo river. It temporarily caused a lack of water downstream, a flood upstream but also menaced to cause a catastrophic flood downstream if a bigger lake had formed in the canyon and the dam had breached too late.

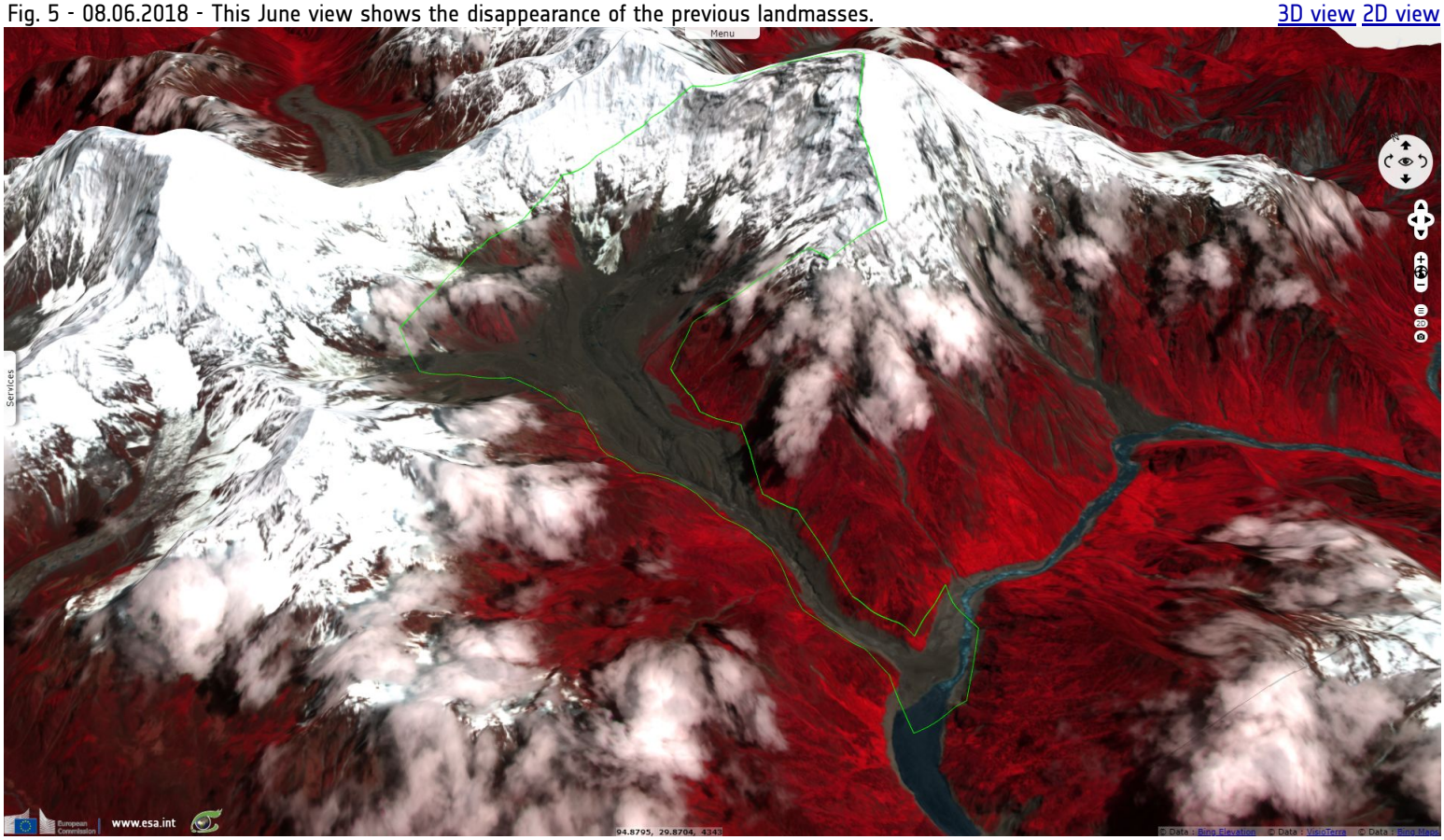
The phenomenon is explained by retired Colonel Vinayak Bhat who wrote on The Print: "*The longest and deepest canyon in the world is Brahmaputra Canyon between Mt Namcha Barwa and Mt Gyala Peri. Gyala Peri, along with Sedong Ri and Tiba Kangri, form a gorge southwards. The gorge has four glaciers, forming a funnel before their waters join the Brahmaputra.*"

Fig. 4 - S2 (06.12.2015) - 8,4,3 colour composite - This 2015 view shows two landmasses in the path of the glaciers tongues. 3D view 2D view



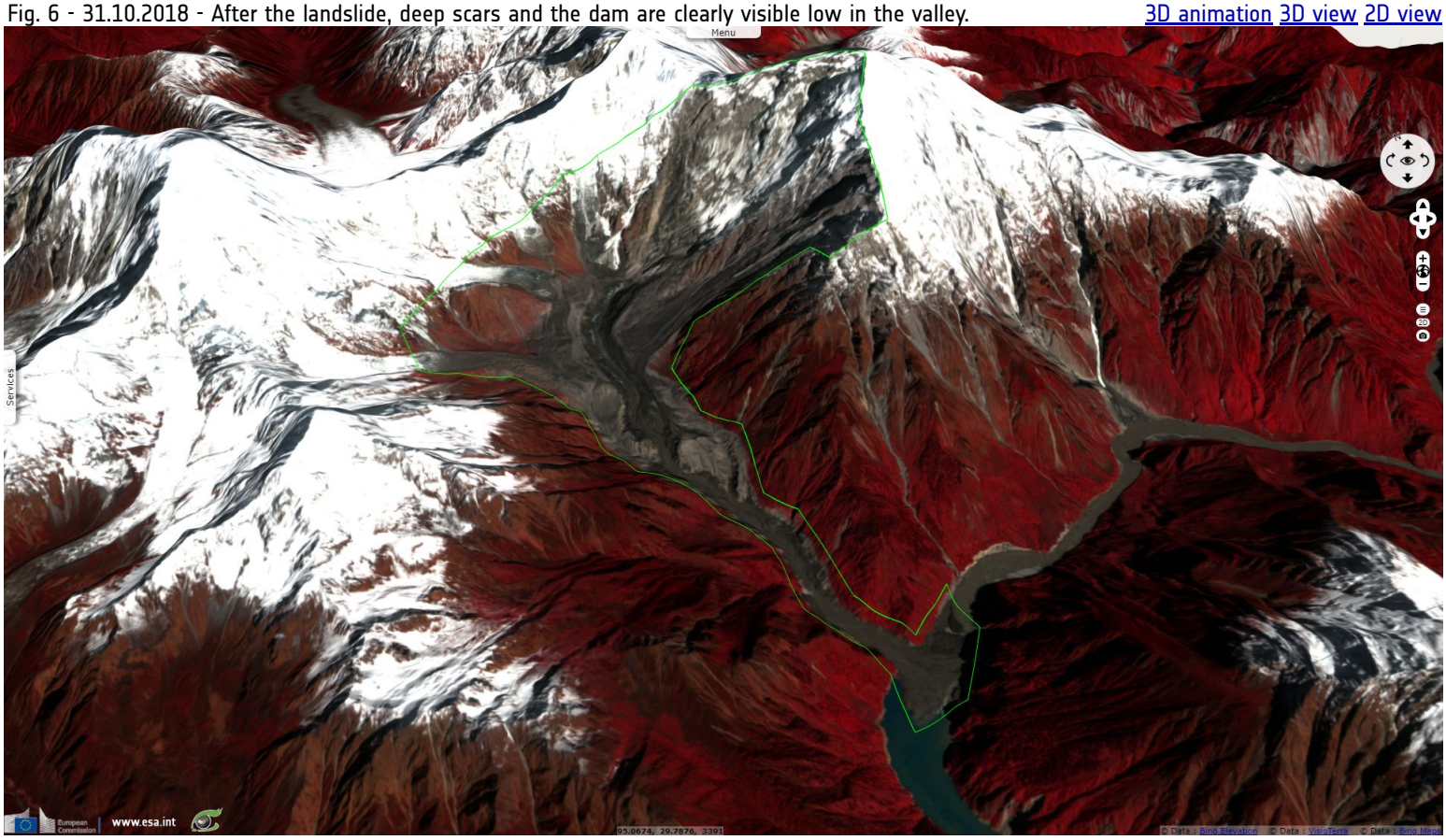
"*The mountains in this Himalayan region — being very brittle and seismically active — have faced many landslides, avalanches and combinations of both. As a result, the width of the Sedong Ri glacier was halved and its length shortened by almost a kilometre and a half.*"

Fig. 5 - 08.06.2018 - This June view shows the disappearance of the previous landmasses. 3D view 2D view



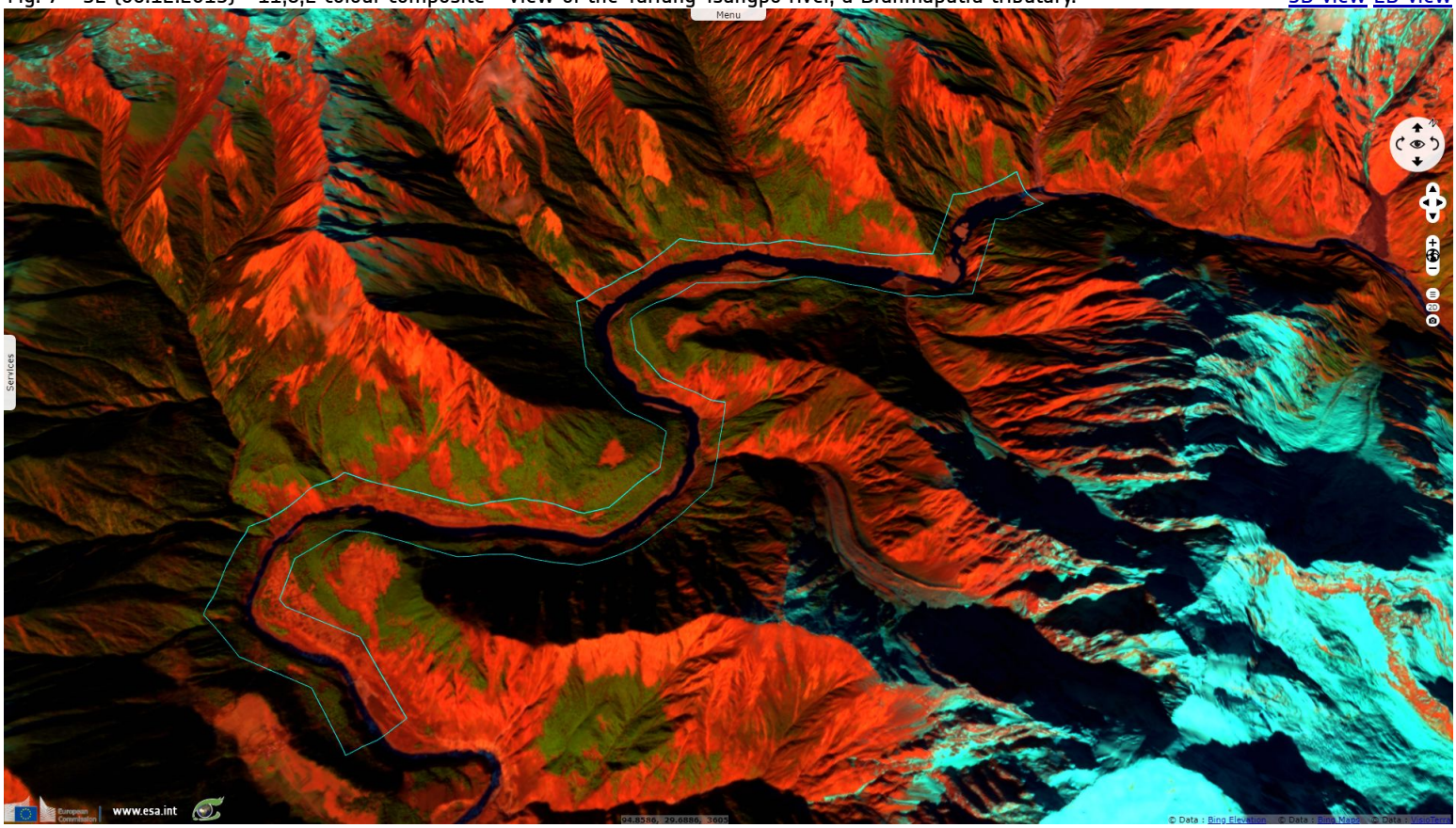
Dave Petley, Pro-Vice-Chancellor (Research and Innovation) at the University of Sheffield in the United Kingdom later published the following analysis the American Geophysical Union blog dedicated to landslides: "*On 17th October 2018 a major debris flow occurred on the Sedong Ri glacier above the Yarlung Tsangpo river in Tibet, one of the tributaries of the Brahmaputra.*"

Fig. 6 - 31.10.2018 - After the landslide, deep scars and the dam are clearly visible low in the valley. 3D animation 3D view 2D view



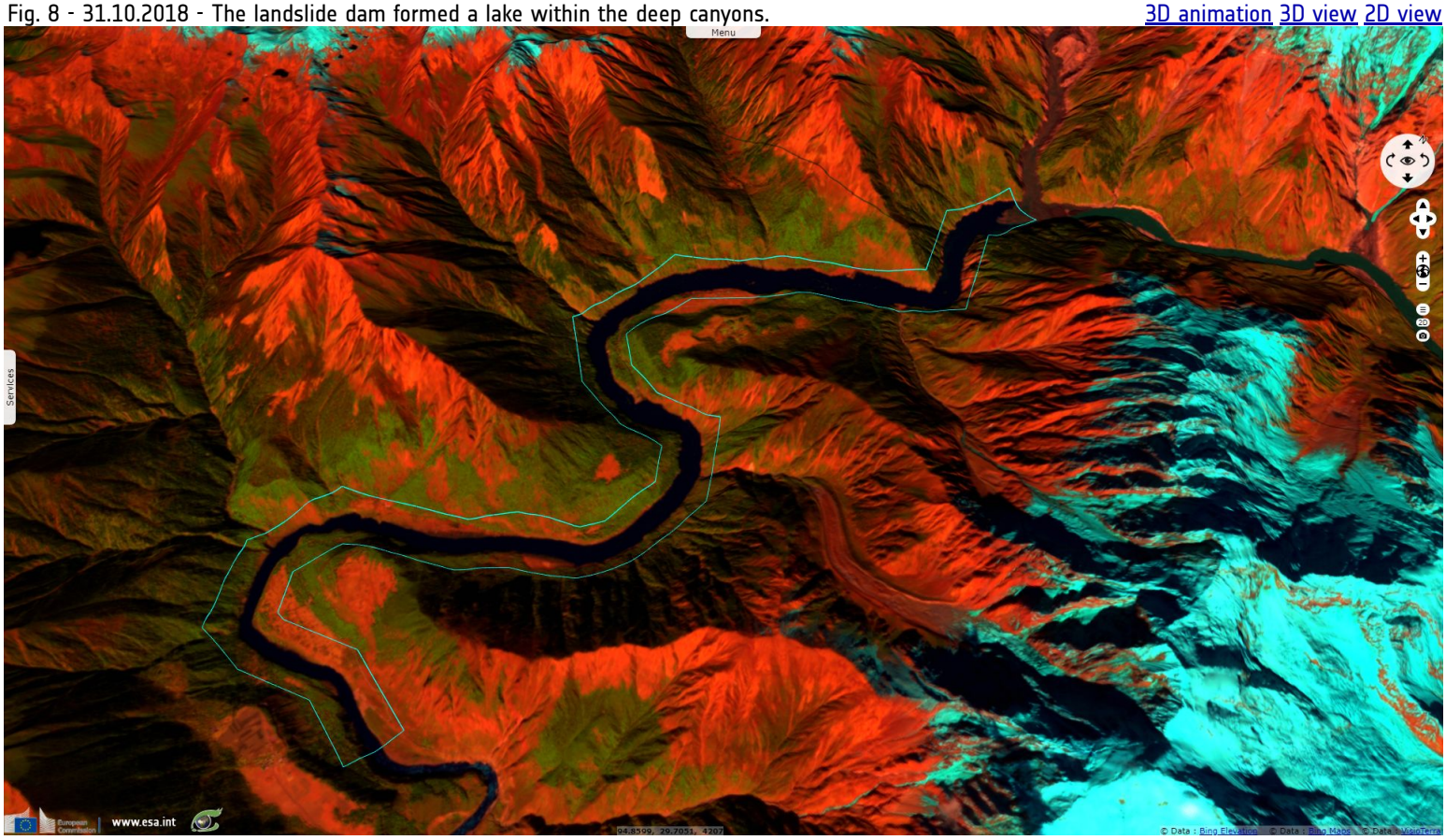
In another post, he added: "*The volume of the barrier lake quickly increased, reaching a reported 300 million m³, and thus presenting a substantial hazard.*"

Fig. 7 - S2 (06.12.2015) - 11,8,2 colour composite - View of the Yarlung Tsangpo river, a Brahmaputra tributary. 3D view 2D view



"*Interestingly, this is the second barrier lake to form in Tibet in a short period, as on 11th October 2018 a further large, valley blocking landslide occurred at Bolo township in Jomda County, also causing a substantial blockage.*"

Fig. 8 - 31.10.2018 - The landslide dam formed a lake within the deep canyons. 3D animation 3D view 2D view



He later detailed: "*Initially the landslide caused a complete blockage of the Yarlung Tsangpo river, but the blockage has now breached. There is some evidence that the overtopping event caused flood damage downstream, but prompt evacuation of the downstream communities appears to have ensured that no lives were lost.*"

Fig. 9 - 08.06.2018 - 8,4,3 colour composite - Yarlung Tsangpo river downstream of Sedong Ri glacier. [3D view](#) [2D view](#)

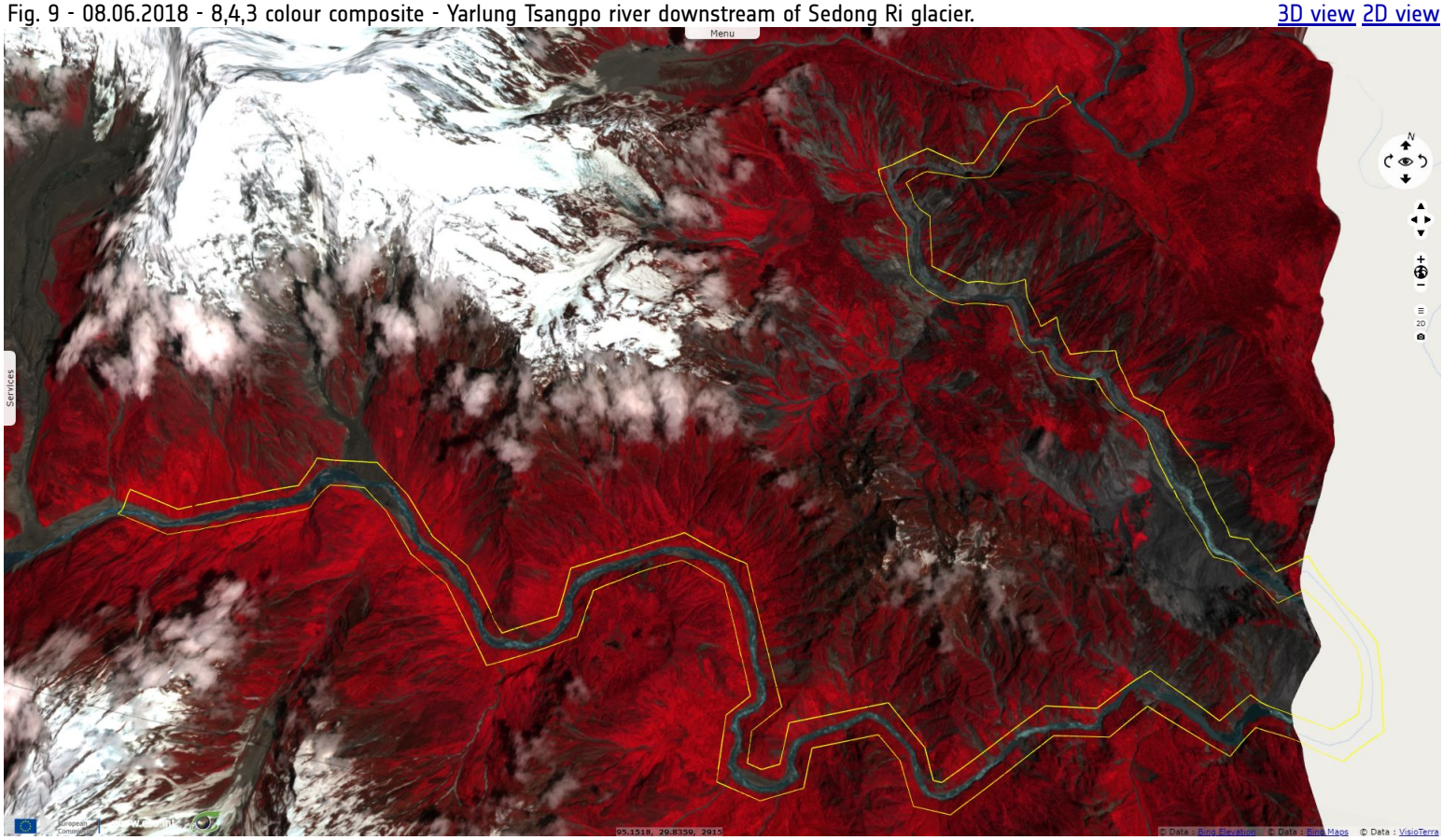
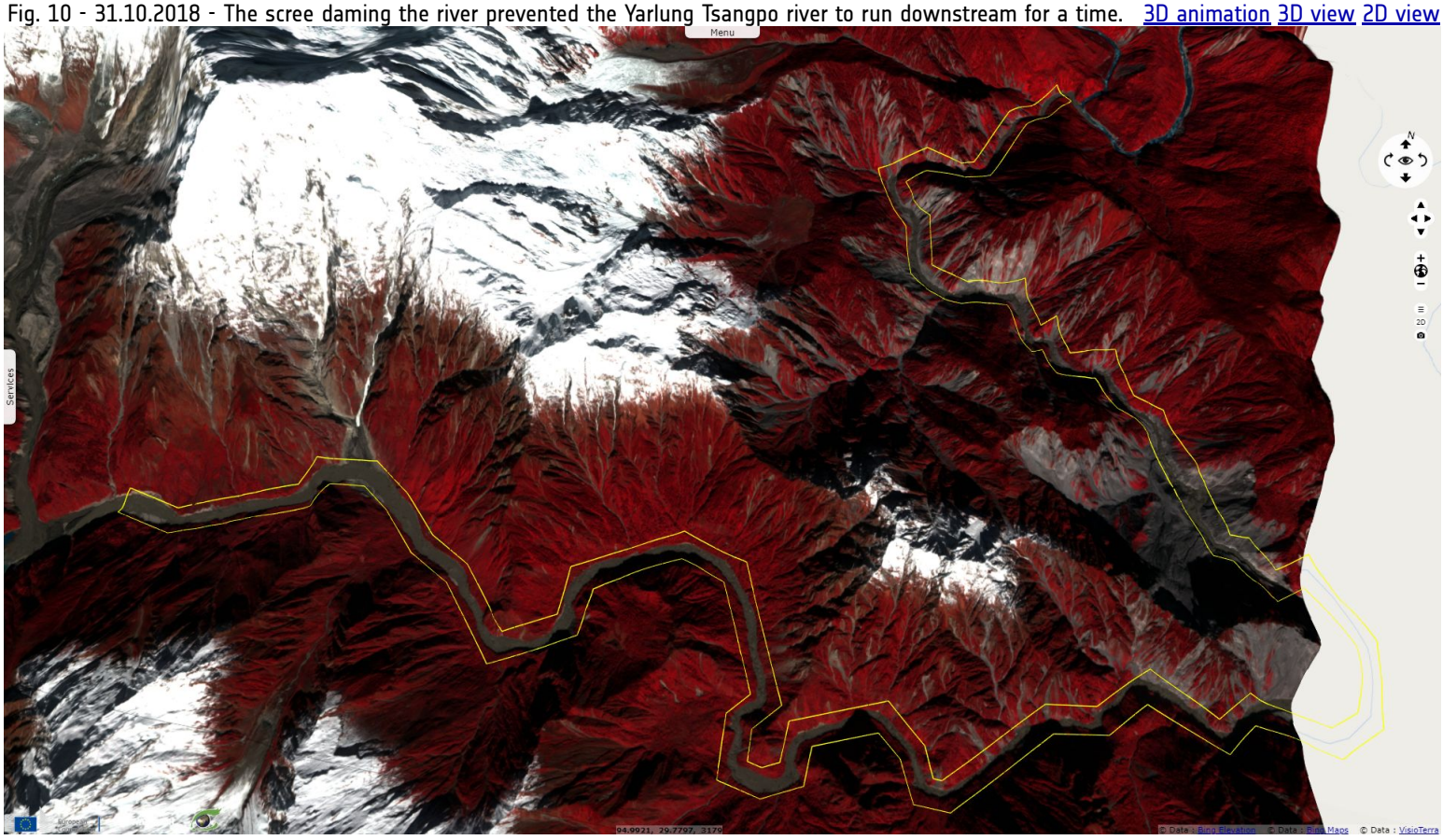


Fig. 10 - 31.10.2018 - The scree daming the river prevented the Yarlung Tsangpo river to run downstream for a time. [3D animation](#) [3D view](#) [2D view](#)



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