

ESA delivers image from orbit via laser-based datalink

December 3 2014



This Sentinel-1A image shows the semi-arid border region between Uzbekistan (top) and Turkmenistan (bottom). The northern part of Sarygamysh Lake, which straddles the border, can be seen in the lower centre of the image. This image was captured by Sentinel-1A on 28 November and directly transmitted almost 36 000 km across space by laser to the Alphasat telecommunications satellite in geostationary orbit, which then downlinked the data to Earth. All of this happened in a matter of moments and formed part of a live demonstration at ESA's space operations centre in Germany. Credit: Copernicus data/ESA (2014)

On 28 November, teams at ESA's Space Operations Centre, ESOC, in Darmstadt, Germany, watched intently as the Agency's Sentinel-1 and Inmarsat's Alphasat linked up using laser signals stretching almost 36 000 km across space.

During the link up, Sentinel-1A delivered a high-resolution image (showing the semi-arid region between Uzbekistan and Turkmenistan) acquired just a short time before.

In the weeks before the live demonstration, the Sentinel-1A operations teams at ESOC and teams at

Inmarsat, Tesat and DLR worked intensively to prepare for this first-ever such laser link.

The data were transmitted at impressively speed: 1.8 Gbit/s – similar to the speed of a home fibre-optic Internet connection. The link is designed to scale up to 7.2 Gbit/s in the future.

It is the precursor to the future European Data Relay System (EDRS) – Europe's new [space](#) data highway – that will relay large volumes of data very quickly so that information from Earth-observing missions can be even more readily available.



Credit: ESA/J. Mai

Having timely access to imagery from the Sentinel-1 mission, for example, is essential for numerous applications such as maritime safety and helping to respond to [natural disasters](#).

Provided by European Space Agency

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