REACHING NEW HEIGHTS

10 years of TanDEM-X

Orbiting Earth in close formation, the ‘twin’ satellites TerraSAR-X and TanDEM-X have worked together as a unique radar interferometer since December 2010. With the addition of TanDEM-X, a view of Earth that could only be captured in two dimensions prior to 2010 (as shown here in black and white) gained a new dimension. This image shows the Lena Delta in Russia. Here, after 4294 kilometres, the river flows into the Laptev Sea, a marginal sea of the Arctic Ocean. The 1500 small islands in the delta are constantly changing shape as new sediment is deposited which alters the flow of the water. In an atlas, the variations are so small that this entire area is depicted at a single, constant elevation. TanDEM-X can visualise these elevation differences in much greater detail, with a vertical accuracy of better than two metres. By mid-2016, scientists at DLR had created a precise three-dimensional elevation model of the entirety of Earth’s landmass using data acquired by the TanDEM-X mission. Since then, the twin satellites have been gathering data for a second global elevation model. This model, known as the ‘Change DEM’ (Digital Elevation Model), will document changes to Earth’s surface in three dimensions. Initial analyses have already revealed dramatic developments such as the melting of glaciers and ice sheets and the unrestrained deforestation of tropical rainforests.

Height above sea level

15 m

9 m

3 m