

Ngorongoro Conservation Area, wildlife reserve within World's largest crater

Sentinel-2 MSI acquired on 16 September 2018 at 07:36:09 UTC
Sentinel-2 MSI acquired on 24 September 2018 at 07:46:31 UTC
Sentinel-1 CSAR IW acquired on 28 December 2018 at 15:55:36 UTC

Author(s): Sentinel Vision team, VisioTerra, France - svp@visioterra.fr

Keyword(s): volcano caldera, canyon, UNESCO World heritage, biodiversity, Great African rift, Gregory rift, Tanzania

[2D Layerstack](#)

Fig. 1 - S2 (16 & 24.09.2018) - 4,3,2 natural colour - Ngorongoro Conservation Area is a green island within a drier landscape.

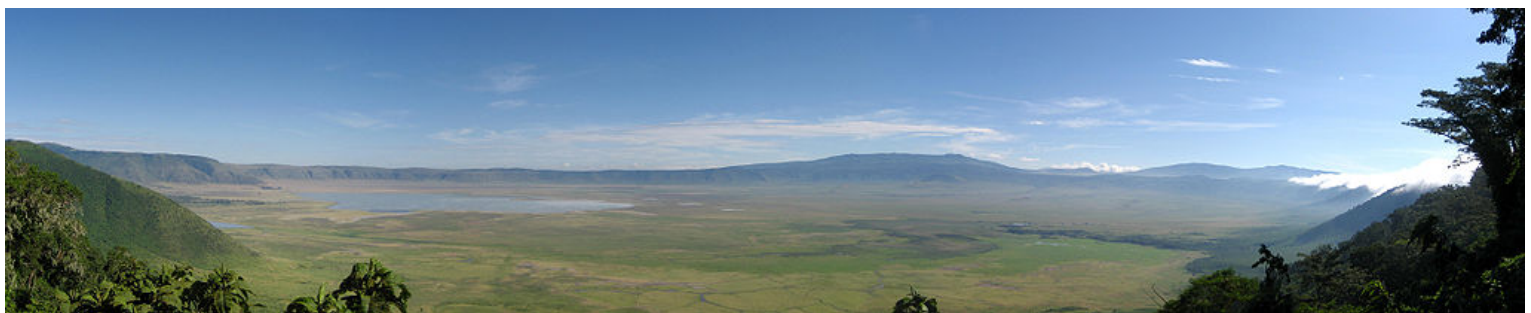
[2D view](#)



Ngorongoro Conservation Area is not only the spectacular landscape of several extensive volcano calderas nested along the Great African rift; it is also an oasis of life encompassing rare large mammals that sustains even during the dry season.

UNESCO [listed](#) this spectacular location as a World Heritage site, its sheet notes: "*The Ngorongoro Conservation Area (809,440 ha) spans vast expanses of highland plains, savanna, savanna woodlands and forests, from the plains of the Serengeti National Park in the north-west, to the eastern arm of the Great Rift Valley. The area was established in 1959 as a multiple land use area, with wildlife coexisting with semi-nomadic Maasai pastoralists practising traditional livestock grazing.*

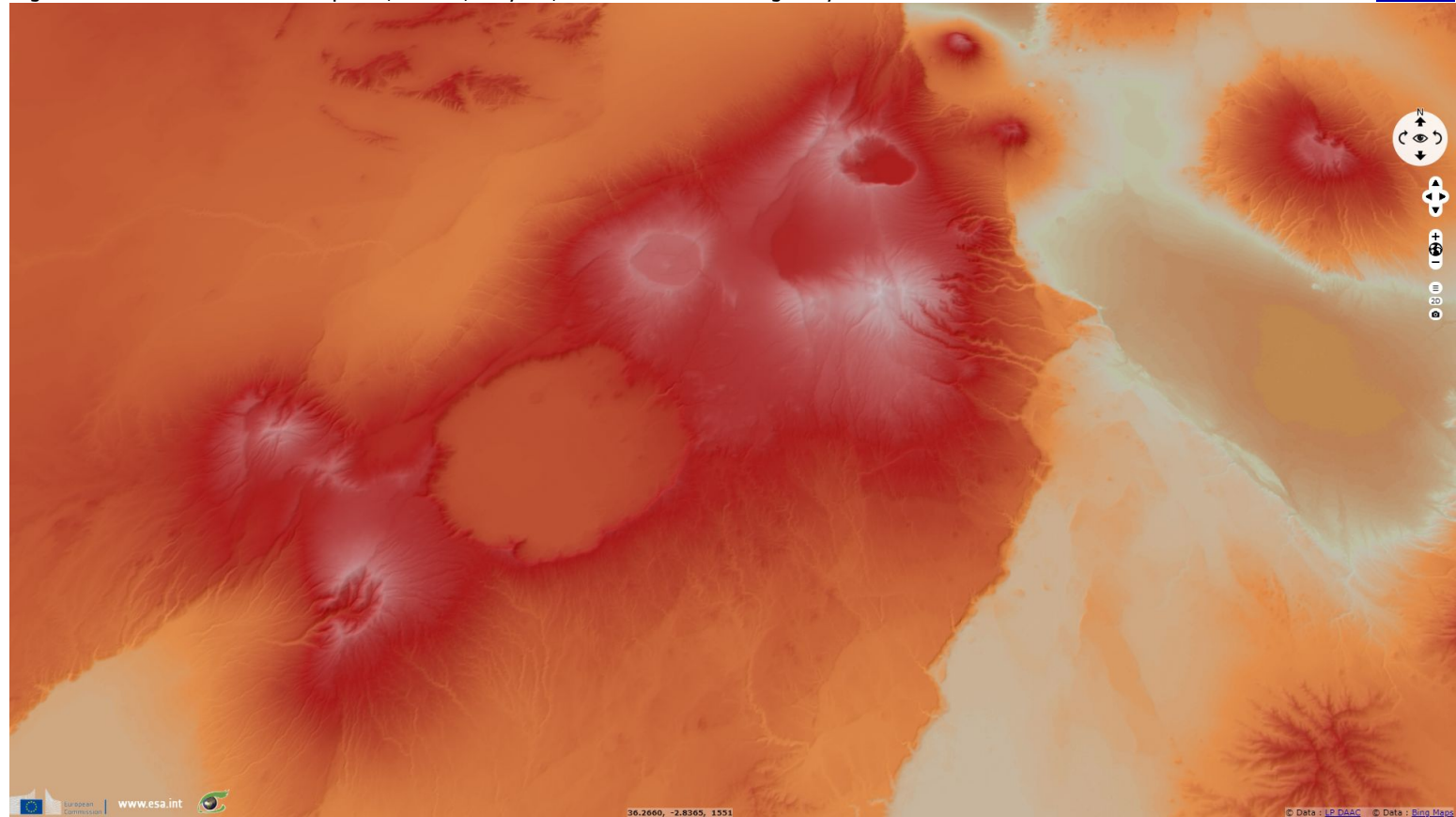
It includes the spectacular Ngorongoro Crater, the world's largest caldera, and Olduvai Gorge, a 14km long deep ravine. The property has global importance for biodiversity conservation in view of the presence of globally threatened species such as the black Rhino, the density of wildlife inhabiting the Ngorongoro Crater and surrounding areas throughout the year, and the annual migration of wildebeest, zebra, Thompson's and Grant's gazelles and other ungulates into the northern plains."



Overlook on the rim of Ngorongoro Crater, Tanzania - Source: [Thomas Huston](#).

Fig. 2 - SRTM - The DEM reveals peaks, craters, canyons, cliffs which are strategic keys to the movement & access of wildlife

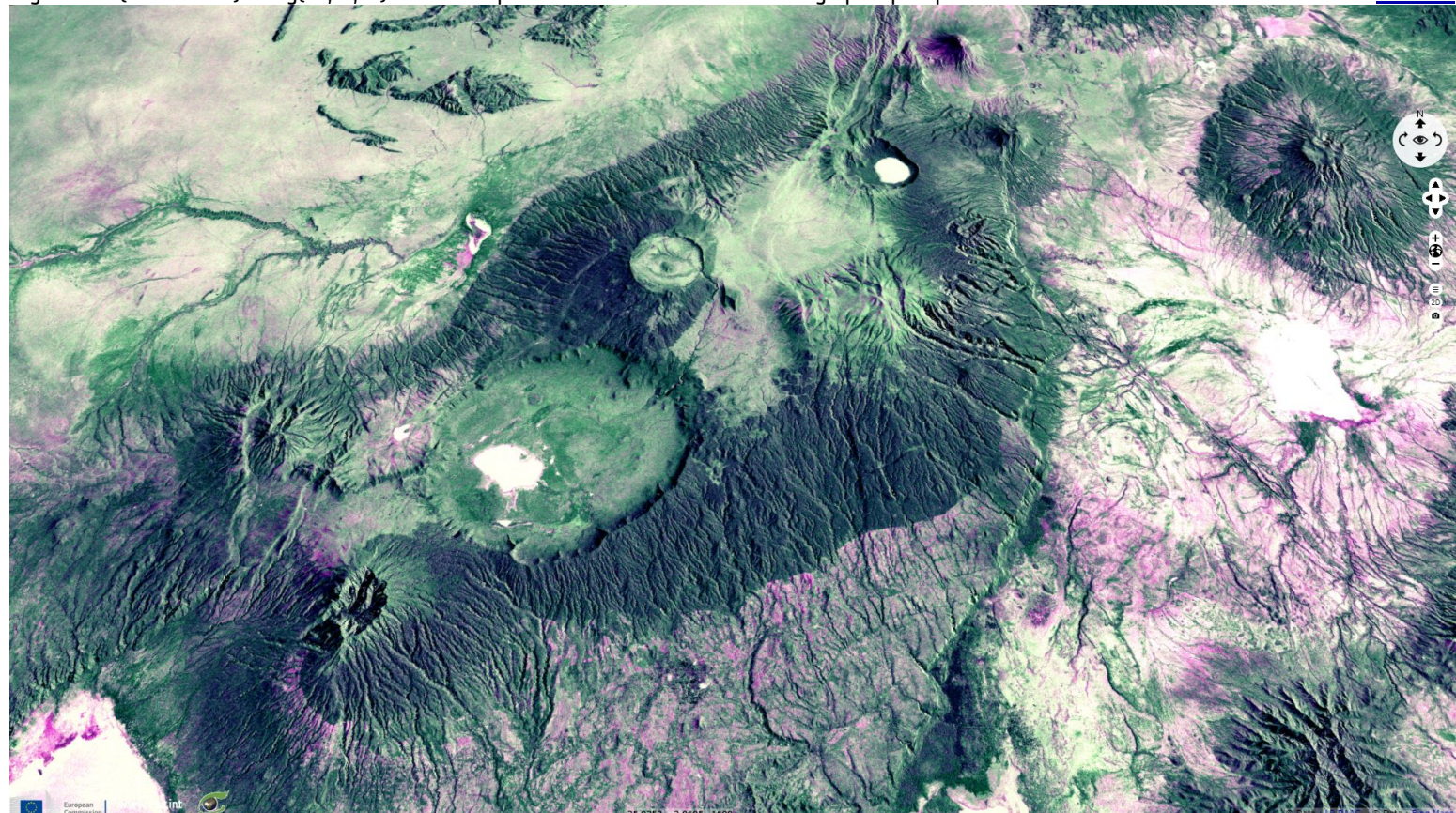
[3D view](#)



"The area has been subject to extensive archaeological research for over 80 years and has yielded a long sequence of evidence of human evolution and human-environment dynamics, collectively extending over a span of almost four million years to the early modern era. This evidence includes fossilized footprints at Laetoli, associated with the development of human bipedalism, a sequence of diverse, evolving hominin species within Olduvai gorge, which range from Australopiths such as Zinjanthropus boisei to the Homo lineage that includes Homo habilis, Homo erectus and Homo sapiens; an early form of Homo sapiens at Lake Ndutu; and, in the Ngorongoro crater, remains that document the development of stone technology and the transition to the use of iron. The overall landscape of the area is seen to have the potential to reveal much more evidence concerning the rise of anatomically modern humans, modern behavior and human ecology."

Fig. 3 - S1 (28.12.2018) - neg(vh,vv,vh) colour composite - The elevations cause orographic precipitations that accumulate in the calderas.

[3D view](#)



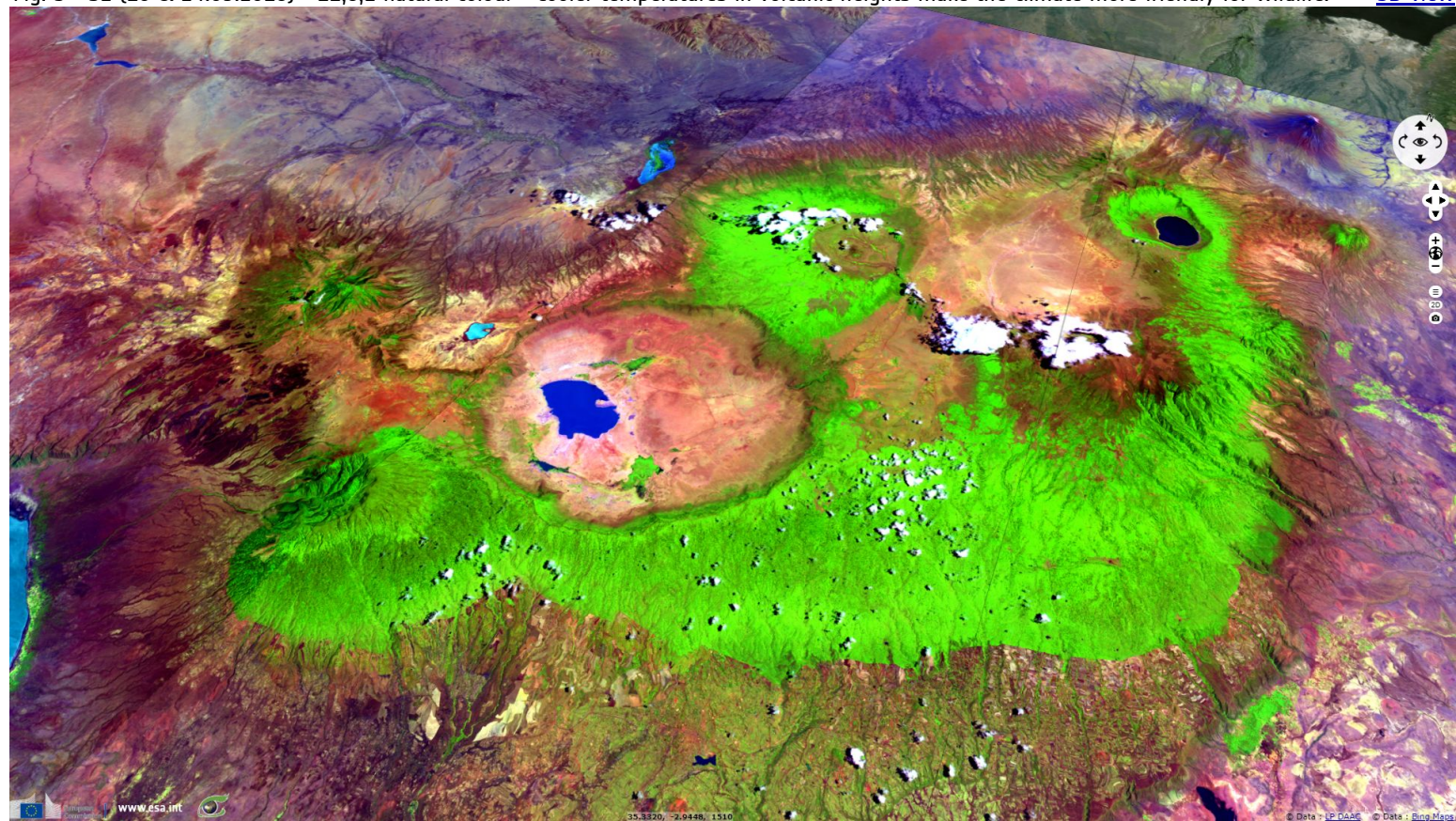
"The stunning landscape of Ngorongoro Crater combined with its spectacular concentration of wildlife is one of the greatest natural wonders of the planet. Spectacular wildebeest numbers (well over 1 million animals) pass through the property as part of the annual migration of wildebeest across the Serengeti ecosystem and calve in the short grass plains which straddle the Ngorongoro Conservation Area/Serengeti National Park boundary. This constitutes a truly superb natural phenomenon."



Ngorongoro Conservation Area (United Republic of Tanzania) - Source: [Chris Morton](#)

Fig. 5 - S2 (16 & 24.09.2018) - 11,8,2 natural colour - Cooler temperatures in volcanic heights make the climate more friendly for wildlife.

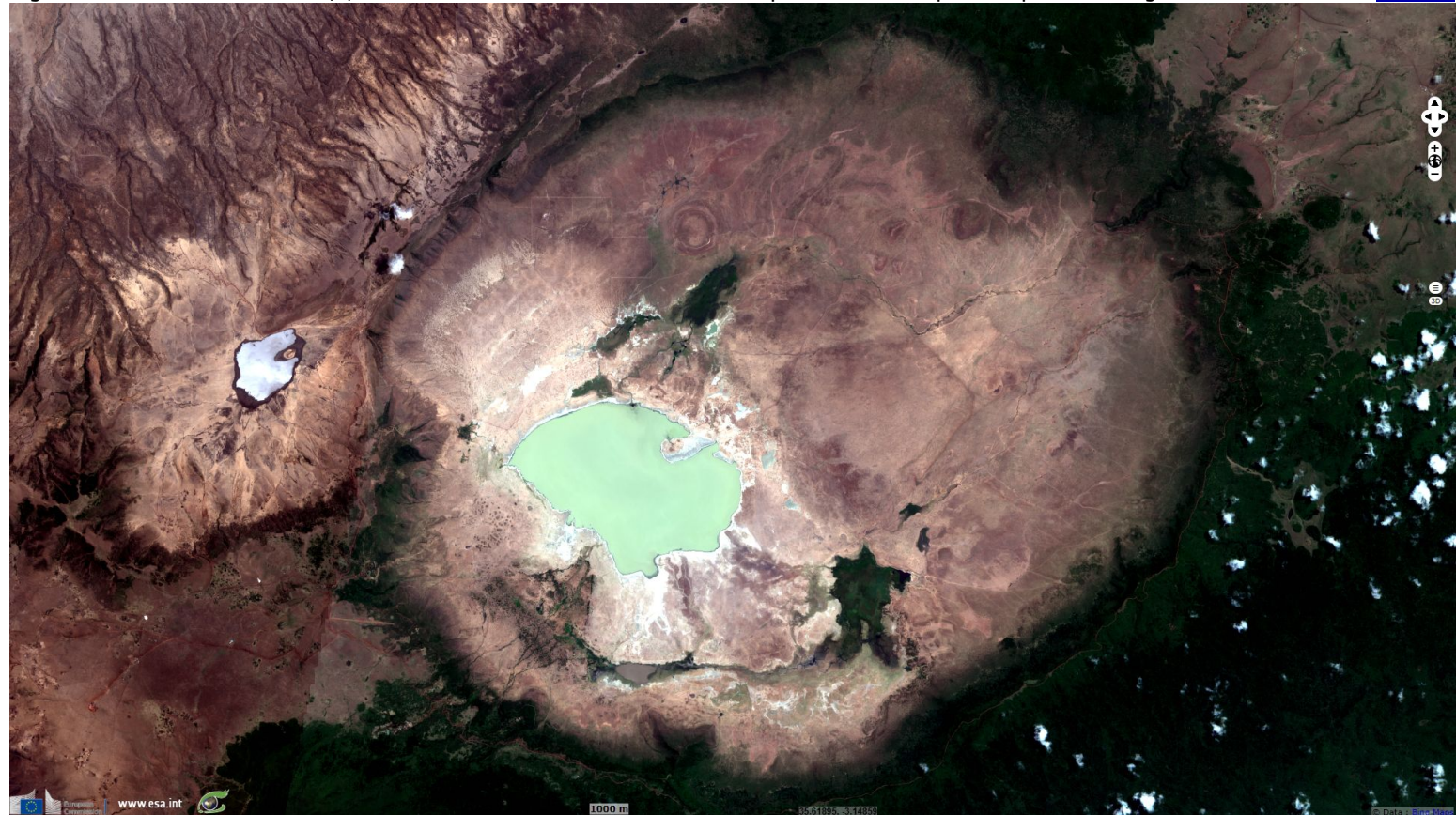
[3D view](#)



Ngorongoro Conservation Area (United Republic of Tanzania) - Source: [Ko Hon Chiu Vincent](#).

Fig. 6 - S2 (16 & 24.09.2018) - 4,3,2 natural colour - The 326 km² caldera collapsed after an eruption emptied the magma chamber.

[2D view](#)



"Ngorongoro crater is the largest unbroken caldera in the world. The crater, together with the Olmoti and Empakaai craters are part of the eastern Rift Valley, whose volcanism dates back to the late Mesozoic / early Tertiary periods and is famous for its geology. The property also includes Laetoli and Olduvai Gorge, which contain an important palaeontological record related to human evolution."

Fig. 7 - S1 (28.12.2018) - vv,vh,vv colour composite - Before its collapse, Ngorongoro may have topped neighbouring Kilimanjaro in height.

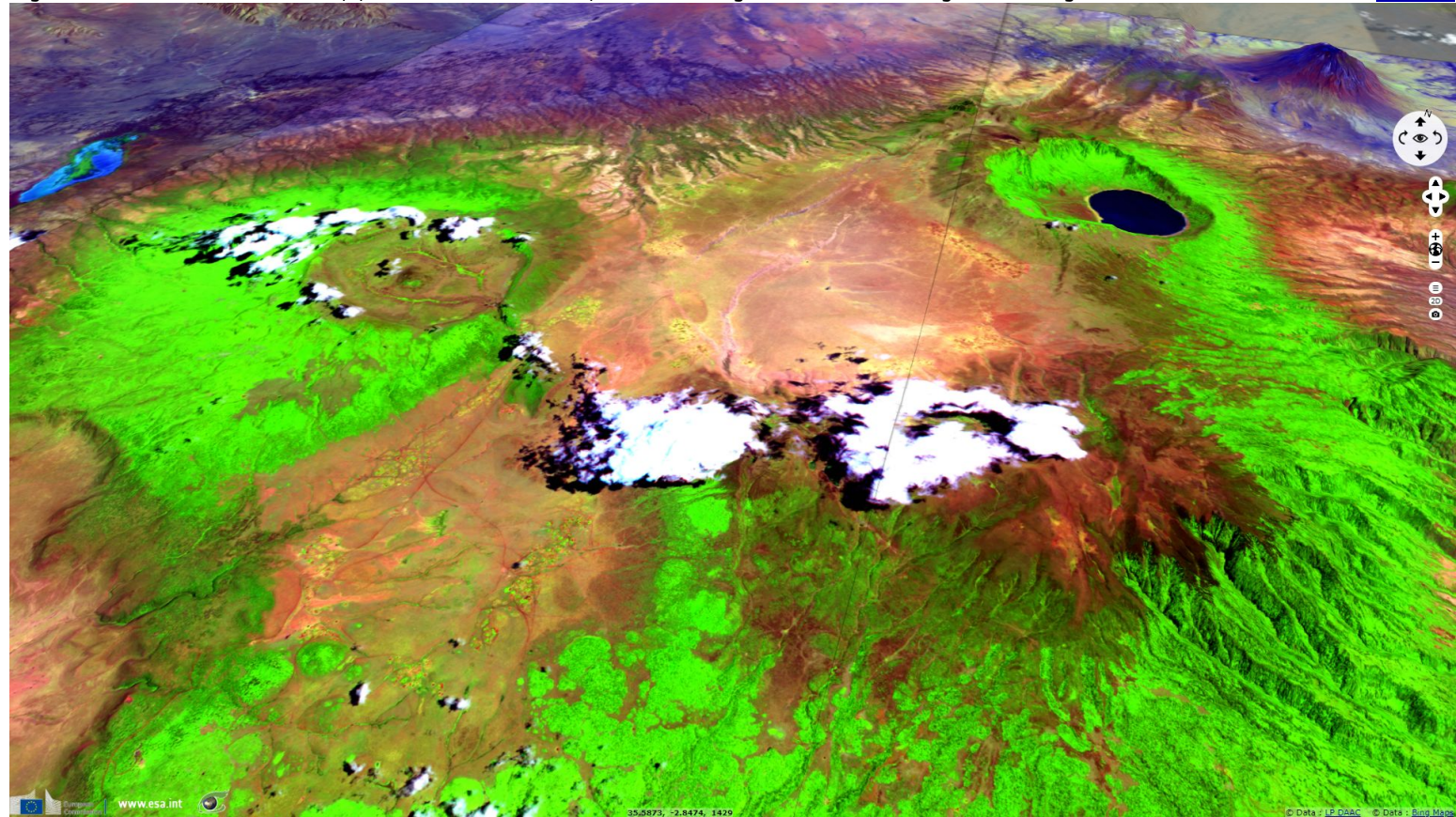
[3D view](#)



"The variations in climate, landforms and altitude have resulted in several overlapping ecosystems and distinct habitats, with short grass plains, highland catchment forests, savanna woodlands, montane long grass plains and high open moorlands. The property is part of the Serengeti ecosystem, one of the last intact ecosystems in the world which harbours large and spectacular animal migrations."

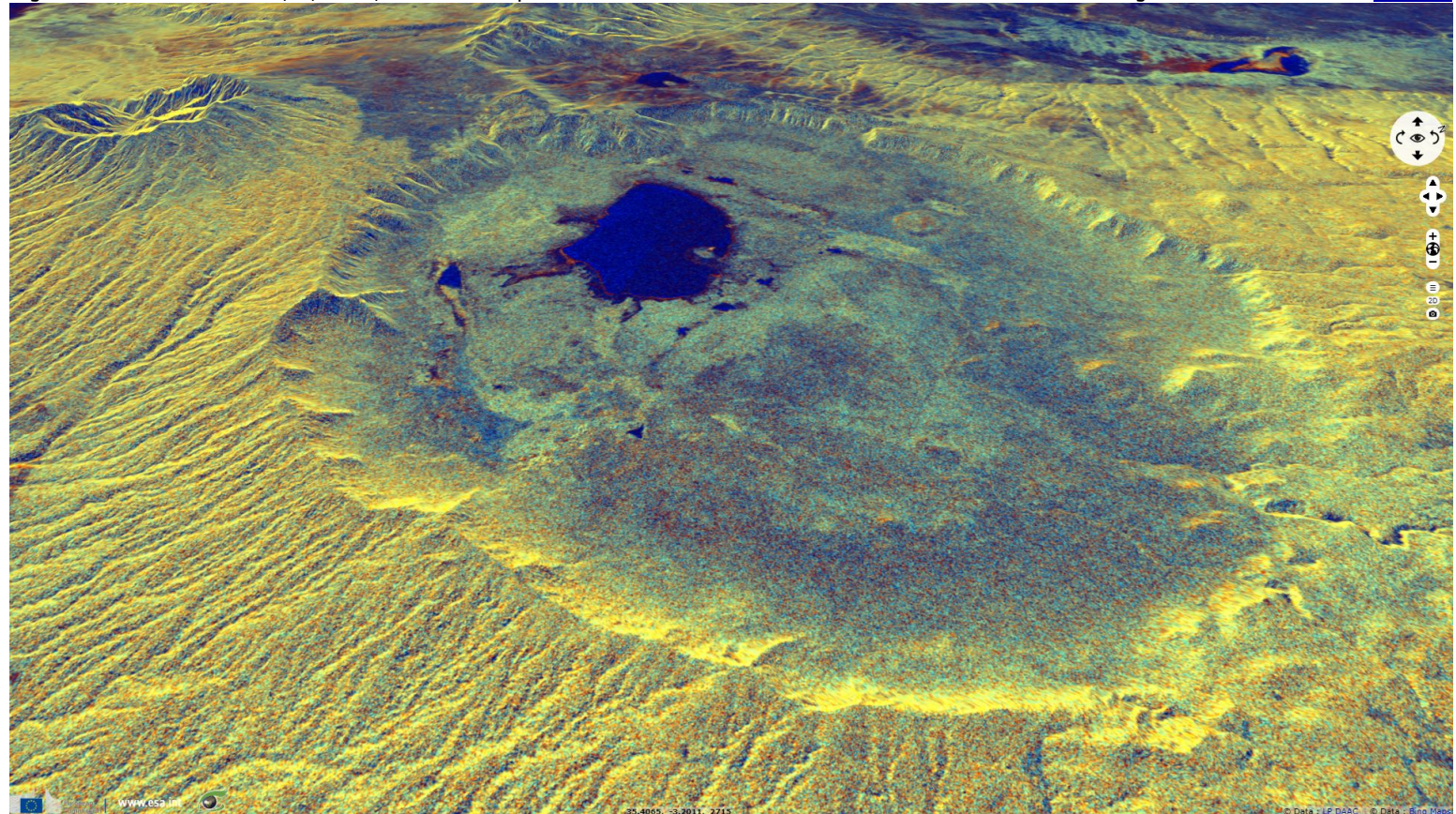
Fig. 8 - S2 (16 & 24.09.2018) - 11,8,2 natural colour - North, lies the Serengeti known for the migration of large herd of mammals.

[3D view](#)



Ngorongoro Conservation Area (United Republic of Tanzania) - Source: [Ko Hon Chiu Vincent](#).

Fig. 9 - S1 (28.12.2018) - vv,vh,ndi(vh,vv) colour composite - These herds benefit from monsoons rains when waters gather in the caldera. [3D view](#)



"Ngorongoro Conservation Area is home to a population of some 25,000 large animals, mostly ungulates, alongside the highest density of mammalian predators in Africa including the densest known population of lion (estimated 68 in 1987). The property harbours a range of endangered species, such as the Black Rhino, Wild hunting dog and Golden Cat and 500 species of birds. It also supports one of the largest animal migrations on earth, including over 1 million wildebeest, 72,000 zebras and c.350,000 Thompson and Grant gazelles."

Fig. 10 - S2 (16 & 24.09.2018) - 11,8,2 natural colour - Olduvai gorge is located in the conservation area, west of Crater Highlands. [3D view](#)

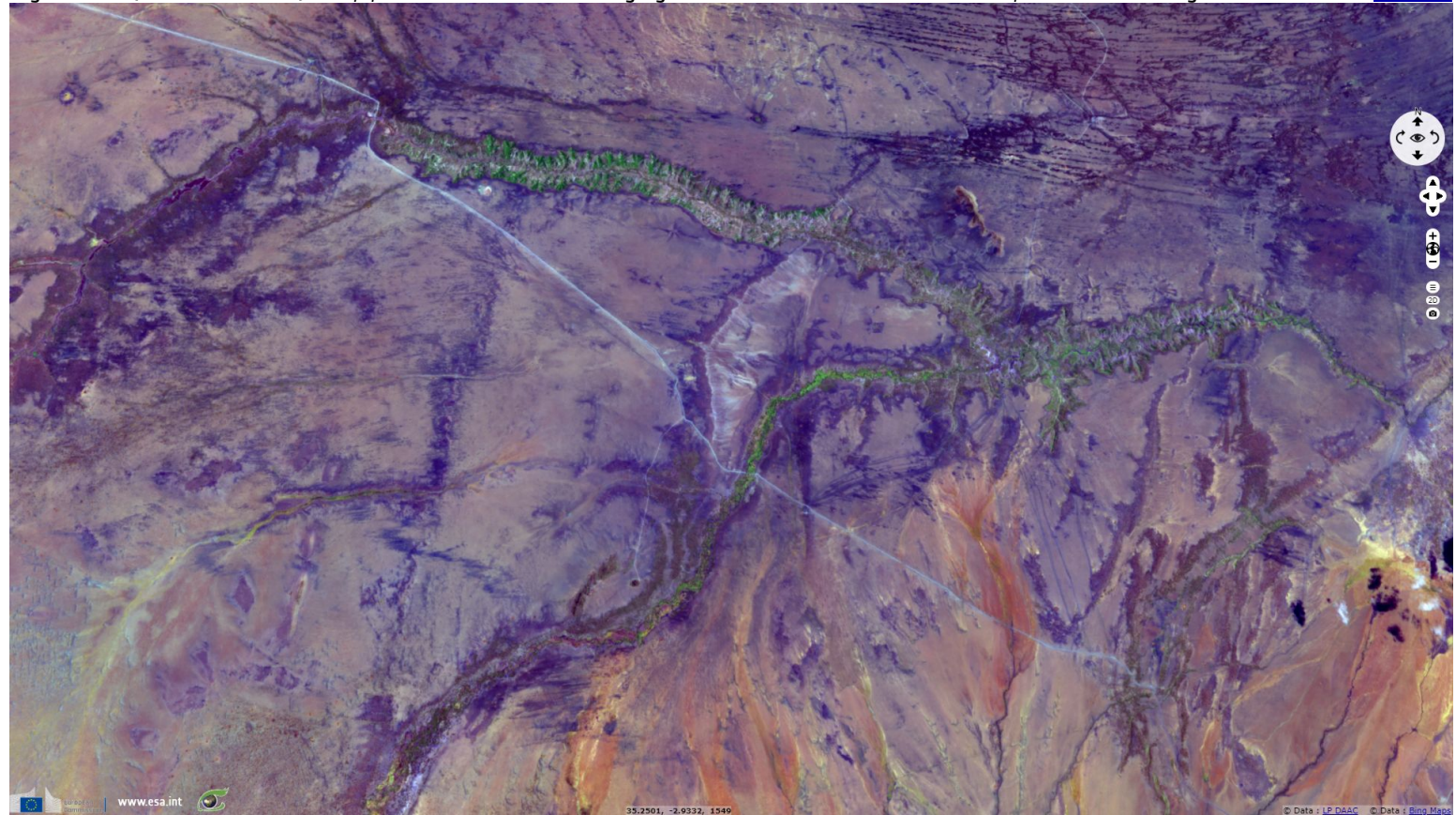
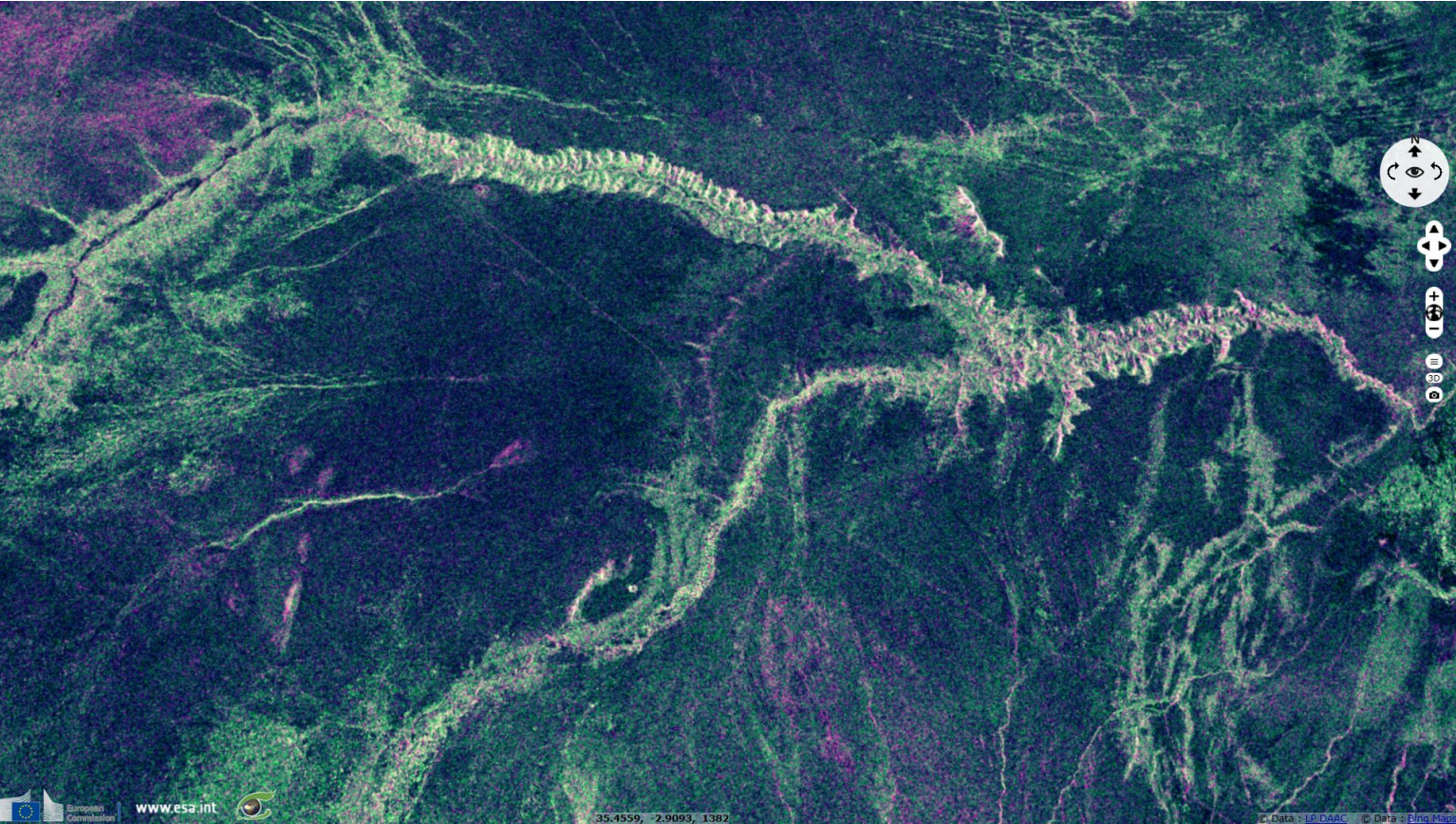


Fig. 11 - S1 (28.12.2018) - vv,vh,vv colour composite - It is important for archaeology as it likely played a significant role in human evolution. [3D view](#)



*The views expressed herein can in no way be taken to reflect the official opinion of the European Space Agency or the European Union.
Contains modified Copernicus Sentinel data 2019, processed by VisioTerra.*

More on European Commission space:							
More on ESA:				S-1 website	S-2 website	S-3 website	
More on Copernicus program:				SciHub portal	Cophub portal	Inthub portal	Colhub portal
More on VisioTerra:				Sentinel Vision Portal	Envisat+ERS portal	Swarm+GOCE portal	CryoSat portal