Active volcanism on Venus: the young volcanic rises as a key science target for future orbiting and in-situ explorations

Dr. Piero D'Incecco
INAF - National Institute for Astrophysics, Astronomical Observatory of Abruzzo

The several recently selected missions to Venus will open a new era in the exploration of the Earth's twin planet. One of the key questions that the future missions need to address is whether Venus is volcanically active today. Indeed, the identification of active volcanism on Venus would help us to better understand volcanic and atmospheric processes on Earth. To this regard, the Roscosmos Venera-D mission will provide a unique contribution. Venera-D is indeed the only one among the recently selected mission to bring back a lander on the hellish surface of Venus and analyze its chemical composition, for the first time after the Soviet Venera missions.

The surface of Venus is dotted with volcanic structures. Some of these are comparable to those we can observe on Earth, while others are unique to Venus. The so called "young topographic rises" regions are probably among the most promising candidate areas for the identification of active volcanism on Venus. These regions are characterized by a swollen topography as they are thought to be formed by great quantities of underlying magma, extending like a plume under the surface of the planet. We will make a survey through the most recent scientific findings, indicating possibly ongoing volcanic activity over one of these areas. Finally, we will also show how active volcanoes on Earth can be used as suitable analogs for identifying active volcanism on Venus.