VENUS EXPRESS EVIDENCE FOR ACTIVE VENUSIAN VOLCANOES

EVIDENCE FOR ACTIVE VOLCANOES ON VENUS

ATMOSPHERIC CHANGES

The rise and fall of sulphur dioxide (SO₂) in the upper atmosphere of Venus over the last 40 years, seen by NASA's Pioneer Venus and other spacecraft between 1978 and 1995, and ESA's Venus Express between 2006 and 2012. A possible explanation is the injection of SO₂ into the atmosphere by volcanic eruptions.

Credit: E. Mouyé et al (2012)

TRANSIENT HOT SPOTS

Four transient hotspots were detected by Venus Express in the Gorila Chasma rift zone in Atla Regio (labelled Objects A-D in the radar map, right). Changes in relative brightness (top row) and temperature (bottom row) are shown for Object A. Some changes due to clouds are also visible in the top row. The bottom row shows the temperature excess compared with the average surface background temperature. Taking into account atmospheric effects, hotspot A is likely only 3 square km with a temperature of 830°C.


VENUS EXPRESS found that the area around Tiuann Mens in Imdr Regio was unusually dark compared with its surrounds, suggesting a different, younger composition, pointing to lava flows within the last 2.5 million years. The map shows near-infrared emissivity; red-orange is high emissivity (darkest), purple is the lowest emissivity.


Left: False-colour image of Venus cloud tops (credits: ESA/MPIS/UA/IDM); right: Multi-beam radar map of Venus (credit: NASA/JPL). The cloud tops image is a mosaic view over high southern latitudes whereas the radar image is a global view centred on the equator.