Geophysical Research Abstracts
Vol. 21, EGU2019-8665, 2019
EGU General Assembly 2019

The VenSpec suite on the ESA EnVision mission to Venus

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The VenSpec instrument suite consists of three channels: VenSpec-M, VenSpec-H and VenSpec-U.
VenSpec-M will provide near-global compositional data on rock types, weathering, and crustal evolution by mapping the Venus surface in five atmospheric windows. The broadest window at 1·02 μm is mapped with two filters to obtain information on the shape of the window. Additional filters are used to remove clouds, water, and stray light.
VenSpec-M will use the methodology pioneered by VIRTIS on Venus Express but with more and wider spectral bands, the VenSAR-derived DEM, and EnVision's circular orbit to deliver near-global multichannel spectroscopy with wider spectral coverage and an order of magnitude improvement in sensitivity. It will obtain repeated imagery of surface thermal emission, constraining current rates of volcanic activity following earlier observations from Venus Express.
VenSpec-H will be dedicated to extremely high resolution atmospheric measurements. The main objective of the VenSpec-H instrument is to detect and quantify SO_2, H_2O and HDO in the lower atmosphere, to enable characterisation of volcanic plumes and other sources of gas exchange with the surface of Venus, complementing VenSAR and VenSpec-M surface and SRS subsurface observations. A nadir pointed high-resolution infrared spectrometer is the ideal instrument for these observations at the 1·0 μm, 1·7 μm, and 2·0 – 2·3 μm atmospheric windows that permit measurements of the lower atmosphere. Baseline observations will be performed on the night side but observations at all times of day are possible.
VenSpec-U will monitor sulphured minor species (mainly SO and SO_2) and the as yet unknown UV absorber in Venusian upper clouds and just above. It will therefore complement the two other channels by investigating how the upper atmosphere interacts with the lower atmosphere, and especially characterise to which extent outgassing processes such as volcanic plumes are able to disturb the atmosphere through the thick Venusian clouds. A twin channel (0.2 nm in high-resolution, 2 nm in low-resolution) spectral imager in the 190-380 nm range able to operate in nadir would be especially suited to such a task.
In combination, VenSpec will provide unprecedented insights into the current state of Venus and its past evolution. VenSpec will perform a comprehensive search for volcanic activity by targeting atmospheric signatures, thermal signatures and compositional signatures, as well as a global map of surface composition