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VIRTIS: the imaging spectrometer aboard the Venus Express Mission

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VIRTIS is the imaging spectrometer for the ESA mission Venus Express. The Venus Express spacecraft will be launched by a Soyuz-Fregat on October 26 2005 and it will arrive at Venus on April 2006 for a 500 days of nominal science operations. First attempts of imaging spectrometry on the Venus night side from space in the near infrared were made by NIMS/Galileo in 1990 and VIMS/Cassini in 1999. These fast fly-bys demonstrated the powerful of this method of investigation. Unfortunately their glimpses limited the possible investigations, in particular on the meteorological evolution of the clouds. Observations of Venus with the a new generation of imaging spectrometer like VIRTIS will provide a unique opportunity to continue these investigations on an extended basis. VIRTIS consists of VIRTIS-M, an imaging spectrometer with moderate spectral resolution and VIRTIS-H, an high spectral resolution spectrometer having its field of view within the field of view of –M. The spectral range of VIRTIS-M is 0.25-5μm with a resolving power of 100-500. The spectral range of VIRTIS-H is 2-5μm with resolving power of about 1500. The main scientific objectives of VIRTIS at Venus are: study of the lower atmosphere composition and its variations; study of the cloud structure, composition, and scattering properties; cloud tracking in the UV and IR; measurements of the temperature field and the zonal wind in the altitude range 60-100km; lightning search; mesospheric sounding; search for variations related to surface/atmosphere interaction, dynamics, meteorology, and volcanism; temperature mapping of the surface, search for hot spots related to volcanic activity; search for seismic waves from propagation of acoustic waves amplified in the mesosphere.

References

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