

Observation of volcanism on Venus

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A balloon mission will be suitable for the observation of the current volcanic activity on Venus. The main instrument will be a high-resolution near-infrared imager which observes the surface at a wavelength of 1 micron where the atmosphere is transparent. The balloon will float over the equatorial region to detect volcanic smokes in daytime and thermal emissions from hot lava flows in nighttime.

Most of the fundamental questions about the current state and the origin of the Venus environment have not yet been answered. A Venus orbiter mission is now being developed to obtain the clues to the problems. However, in the near future, we need further missions including entry probes to address the problems which cannot be solved by an orbiter.

One of the most uncertain parameters is the current state of volcanic activity. The distribution of craters indicates intermittent global modifications with a time scale of a few hundred million years and an inactive current state, while the secular variation of SO₂ abundance in the Venus upper atmosphere indicates recent volcanic eruptions. Both of the suggestions are based on various assumptions, thus definitive information is required.

A balloon mission will be suitable for the observation of volcanism. The main instrument will be a high-resolution near-infrared imager which observes the surface at a wavelength of 1 micron where the atmosphere is transparent. The balloon will float over the equatorial region to detect volcanic smokes in daytime and thermal emissions from hot lava flows in nighttime. The mission will strongly constrain the current volcanic activity on Venus.