

## Balloon-Borne Telescope System for Optical Remote Sensing of Planetary Atmospheres and Plasmas

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This paper reports on the ongoing development of a balloon-borne telescope system for remote sensing of planetary atmospheres and plasmas. In this system, a Schmidt-Cassegrain telescope with a 300-mm clear aperture is mounted on a gondola whose attitude is controlled by control moment gyros, an active decoupling motor, and a Sun sensor. The gondola can float in the stratosphere for periods in excess of 1 week. A pointing stability of 10 arcsec/sec will be achieved via the cooperative operation of the following three-stage pointing devices: a gondola-attitude control system, two-axis telescope gimbals for coarse guiding, and a tip/tilt mirror mount for guiding error correction. The first target for the system is Venus. Wind vectors in the Venusian upper atmosphere will be derived from the tracking of cloud patterns observed in the ultraviolet and near-infrared regions. The first experiment was scheduled for May/June 2007 at Sanriku Balloon Center (SBC) of ISAS/JAXA, but it was cancelled due to delay of development of the system. The power supply system and onboard software have been brushed up by the second balloon experiment period in August/September 2007. The gondola was ready for launch on August 30 at SBC, but the experiment was not permitted due to an accident in the flight just before it. Then, it was decided on September 5 that the flight was postponed again, because the stratospheric wind condition became unsuitable for recovery operation. It is expected that the experiment will be performed in August /September season in 2008 at the new balloon experiment facility in Taikicho, Hokkaido. After confirming the performance of the system in the test experiment, it will be refurbished and placed into full-scale operation in the Arctic region in 2008.