

# Morphology and temporal variation of the polar oval of Venus revealed by Venus Express/VMC visible images

Keishiro Muto<sup>1</sup>, and Takeshi Imamura<sup>2</sup>

<sup>1</sup> Department of Earth and Planetary Science, The University of Tokyo, <sup>2</sup> ISAS/JAXA

The morphology of the dark polar oval seen at the Venus's cloud top and its variability have been unclear because the oval extends to the nightside where the feature is invisible. We revealed the whole shape of the oval for the first time by connecting Venus Express/VMC visible images taken on different days after shifting the images in zonal direction based on the estimated zonal advection. The shape of the oval was found to be changing over time between an elongated dipole-like shape and a near-circular shape. The dominant period of this variation changes with time in the range 100-350 Earth days, and does not seem to coincide with the orbital period, the rotation period, and the length of the day. This suggests that the variation of the oval shape is driven by some internal nonlinear process. We compared with Venus Express/VIRTIS infrared images in several orbit, and Polar oval seems to exist in high brightness temperature region outside the cold collar.