

VENUS LIGHTNING: MEASUREMENTS NEAR THE POLAR VORTEX. J.T.M. Daniels¹, C.T. Russell¹, R.J. Strangeway¹, and T.L. Zhang² ¹University of California, Los Angeles, Institute of Geophysics and Planetary Physics (603 Charles Young Drive, 3845 Slichter Hall, Los Angeles, CA 90095-1567), ²Austrian Academy of Sciences (Space Research Institute of Austrian Academy of Sciences, Graz, Austria).

The Venus Express spacecraft was inserted into a polar orbit about Venus in April 2006, with periapsis nearly over the north pole. In the seven Venus years since orbit insertion, the line of apsides has precessed first toward the pole and now away from the pole, but with closest approach always in the neighborhood of the pole. Beneath pericenter, the Venus atmosphere is very dynamic with the polar vortex resembling the eye of a terrestrial hurricane. The amount of data obtained to date allows us now to probe fine details of the spatial distribution of the electromagnetic signals detected by Venus Express that appear to be generated by electrical discharges in the Venus atmosphere. The occurrence rate of these signals depends on the background magnetic field strength and on the altitudes, as would be expected for a signal generated in the atmospheres and entering the magnetized ionosphere. The rate also varies with local time and latitude peaking at dawn and dusk, approximately over the edges of the polar vortex. This correlation gives further evidence for the atmospheric origin of these signals.