Geophysical Research Abstracts,
Vol. 11, EGU2009-3857, 2009
EGU General Assembly 2009


# Interplanetary dust at Mercury orbit and its exospheric sodium

S. Kameda (1), G. Ogawa (2), H. Watanabe (2), and I. Yoshikawa (2)

(1) Institute of Space and Astronautical Science, Kanagawa, Japan (kameda@stp.isas.jaxa.jp, +81 42 759 8756), (2) The University of Tokyo, Tokyo, Japan

Distribution of interplanetary dust remains unknown mainly because it is difficult to observe zodiacal light from inner solar system. Meanwhile, Mercury has a thin and unstable atmosphere and its source process is also unclear though many observations have been done for more than 20 years. In past studies, the observed atmospheric sodium density seems to have no correlation with the solar flux, heliocentric distance, etc. Here we show a relationship of Mercury's atmospheric density and ecliptic altitude, i.e., the average density is low when the distance between Mercury and ecliptic plane is large and vice versa. Assuming that the interplanetary dust should be concentrated around the ecliptic plane, it is suggested that Mercury's atmosphere is thin when the dust and meteoroid flux is low. Therefore, we can know the distribution of the interplanetary dust by observing the emission from Mercury's atmosphere. We conducted ground-based observation in August and October 2008. In this presentation, we report the results of our observations and discuss our hypothesis. In summary, from the result of our daytime observation, the variability in sodium density was less than 5 %, which suggests that solar wind sputtering was not the dominant source process. There is a weak correlation (0.4-0.5) between ecliptic altitude and the observed sodium density also in our result.