

Seasonal variability of Mercury's sodium

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Interplanetary dust distribution near Mercury remains unclear 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. Mercury's atmospheric density is higher than averaged when Mercury is close to the ecliptic plane, 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 reported 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. Our result also shows a correlation between ecliptic altitude and the observed sodium density.