

Observation of the O₂ (0-0) atmospheric band nightglow by the IMAP/VISI

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The Visible and near-Infrared Spectral Imager (VISI) of the IMAP mission has been developed, and scheduled to be launched onto the International Space Station (ISS) on July 21, 2012. VISI will be operated in the nightside hemisphere with a range of +/- 51 deg. GLAT, and will be measured the airglow emissions of OI at 630 nm, the OH Meinel band at 730 nm and the O₂ (0-0) atmospheric band at 762 nm at an altitude of ~400 km with typical spatial resolution of 16-50 km. The O₂ (0-0) atmospheric band is one of the strongest airglow emissions in the visible/near IR region when viewed from space. Because of the self-absorption by molecular Oxygen at altitudes below 60 km, this O₂ (0-0) atmospheric band can only be seen from high altitude measurement platforms. The previous observation by the HRDI (High Resolution Doppler Imager) suggested that the brightness of this O₂ (0-0) atmospheric band is likely affected by tidal motion and upward gravity waves. But there were also unexplained wave phenomena, such as the longitudinal stationary structure observed by HRDI that could be a good new study topic. Therefore, the new data that will be obtained from IMAP/VISI is expected to support or even bring a new perspective of the global view of molecular Oxygen nightglow. In this presentation, we report the initial result of VISI, when the launch will be successful, and its current status. In addition, the simulation results of airglow emissions measured with VISI are given.