

ISS-IMAP/VISI による O₂ 大気光の全球分布

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Global distribution of the mesospheric O₂ airglow from the ISS-IMAP/VISI measurements

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The visible-light and infrared spectrum imager (VISI) has made imaging measurements of the molecular oxygen nightglow in the mesopause region (~95 km) from the international space station as the ISS-IMAP mission. The emissions of the O₂ atmospheric bands are mainly produced by the recombination of the atomic oxygen. The atomic oxygen plays important roles in variations of plasma density profile and chemical reactions in the mesosphere, thermosphere, and ionosphere (MTI). On the other hand, the motion of the atomic oxygen layer is strongly modulated by atmospheric waves, such as tides and gravity waves. So, the O₂ airglow, especially its global view, is useful to deduce atmospheric compositions in the upper atmosphere and can monitor of dynamical coupling process between the lower atmosphere and MTI. Though a couple of previous papers report global distributions of the O₂ airglow from satellite remote-sensing techniques, it still leaves room for further studies. The VISI observations allow us to know a longterm variation of the global O₂ airglow with an exceptionally high spatial resolution imaging.

In the presentation, we will report a statistical view of the VISI O₂ airglow measurements since September 2012 (62-days in the winter months). The O₂ brightness show a strong hemispheric asymmetry, brighter (darker) in the southern (northern) hemisphere, and longitudinal variations in the midlatitude.