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The latitudinal distributions of the airglow observed by the Reimei satellite

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The latitudinal structures of the O airglow (557.7-nm wavelength) and the OH airglow (670-nm wavelength) observed by the Reimei (INDEX) satellite were studied. Optical observations of the airglow emission by the ground-based imagers has been carried out for a few decades. There are observations by the satellites such as UARS in 1990s and TIMED in 2000s. The observational data of the O airglow and the OH airglow taken by the Multi-spectral Auroral Camera (MAC) on the Reimei satellite are used in this study. Data observed in more than 1,000 paths for each wavelengths taken from March 2008 to January 2011 are used in this study. The Reimei satellite observes the airglow emissions in the region from 45^{o}N to 15^{o}N. Maxima of the volume emission rate around 30^{o}N in the airglow observations are found from the statistical study. Observational data taken in the region from 90^{o}E to 180^{o}E where large number of observational data exists are used in these statistical studies. It can be said the number density of O and OH molecules are affected by the atmospheric tide from this study. Volume emission rate of the source is also affected by the atmospheric gravity wave.

Keywords: satellite observation, limb observation, airglow, latitudinal structure