

# Global Distribution of Ion Temperature Observed by Rocsat-1 Satellite

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Ion temperature has been measured with the Ionospheric Plasma and Electrodynamics Instrument (IPEI) onboard the first satellite of Republic of China (ROCSAT-1) at 600 km altitude for 5.3 years. Global distributions of ion temperature have been constructed and investigated for different local times, seasons and solar variability. In general, ion temperature is usually distributed symmetrically in dip latitude during the equinoxes and asymmetrically during the solstices. The temperature is usually lower at the dip equator except for morning overshoot stage. The temperature is lower in the summer hemisphere and higher in the winter hemisphere. Significant longitudinal variations of the temperature crests in the winter hemisphere are also found. In the morning sector, the temperature maxima are located at longitudes of positive magnetic declination during the June solstice and at longitudes of negative magnetic declination during the December solstice. However, in the evening sector, the temperature maxima are located at longitudes of negative magnetic declination during the June solstice and at longitudes of positive magnetic declination during the December solstice. Such variations are attributed to the change in the field-aligned ion pattern, which can be identified through the ROCSAT measurement.