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Time variation of oxygen ions in the plasmasheet during storms

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Time variations of thermal oxygen ions in the earth plasmasheet during geomagnetic storms are being studied based on the data obtained by the Cluster satellites. It is shown that the averaged number density of oxygen ions keeps at a relatively low level before storms and soon after the storm commencements. With the development of storms, the value increases and reaches its peak value around the Dst maximum. On the contrary, density of protons shows a dramatic increase shortly before the storms, decreases after the storm commencements, and stay in a relatively low level through out the whole time period of storms. Higher energy ions show an increase after the storm begins and rapidly reach their peak value, slightly earlier than their low energy partner. There is no clear correlation between the number density of ions and the intensity of geomagnetic storms. Implications of the time variations of different ions will be discussed.