Lightning and TLEs and their effects on the lower and middle atmosphere

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Lightning is the energetic phenomena of electrical breakdown, occurring after charge separation processes operating on micro and macro-scales, leading to strong electric fields within thunderstorms. Lightning has severe impact on the lower and middle atmosphere and can excite transient luminous events (TLEs) occurring at the stratosphere and mesosphere. In addition to this, lightning is always associated with severe weather and tropical storms like typhoons and hurricanes, often accompanied by torrential rains and flash floods. It has significant chemical and physical effects on the troposphere and mesosphere and drives the fair-weather electric field. In this session, new results derived from the recent satellite observations of lightning and TLEs (JEM-GLIMS mission) will be presented. This session also seeks contributions on the meteorology of thunderstorms, the detection of thunderstorms from space and ground networks, using lightning data as proxy for severe weather, the climatic effects of thunderstorms and their impact on the global circuit.

5:15 PM - 5:30 PM

Preliminary results of global lightning study by the DEMETER satellite

3-min talk in an oral session
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We investigate statistical property of global lightning activity by means of the DEMETER satellite. The DEMETER satellite which was launch by CNES, France, was operated from 2004 to 2010. In the study, we use electric field data to measure Whistler waves generated by lightning. In this presentation, we show preliminary results of this study.