Geophysical Research Abstracts, Vol. 9, 08800, 2007
SRef-ID: 1607-7962/gra/EGU2007-A-08800

On the mechanisms of the enhancement observed by ISUAL at the OH nightglow altitude

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Observations of OH nightglow emissions by the ISUAL's broadband filter onboard FORMOSAT-II have sometimes shown an enhancement accompanied by lightning activity. There have been two mechanisms proposed to explain the observed brightness enhancement. The most accepted view on the enhancement has been that the brightness is due to the heating of EMPs created by elves. Recently, another mechanism has been proposed to explain the enhancement seen at the OH nightglow altitude in the event of lightning. The simulations of sprite-induced OH nightglow emission by Huang [2006] have indicated that the column-integrated OH intensity could be enhanced quite significantly when sprites occur. It was demonstrated that OH nightglow emissions can be used as a thermometer of sprites, from which we can estimate the thermal energy of sprites. The ISUAL nightglow observations from the broadband cannot be used to deduce which mechanism is at work for the enhancement due to too much overlapping of OH spectrum with the N2 one. Observations using a filter of 630 nm have been conducted for such investigations. This talk will focus on the analysis of the observations from both the broadband and the 630 nm filter to help us investigate the causes for the enhancement.