

# **Investigations of the Observed Lightning Induced enhancements at the OH nightglow altitude during the ISUAL January 2007 Campaign**

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## **Abstract**

Observations of TLEs by ISUAL broadband filter onboard FORMOSAT-II have sometimes shown an enhancement accompanied by lightning activity at the OH nightglow altitude. Due to too much overlapping of OH and N<sub>2</sub> spectrum within the bandwidth of the broadband filter, it was not possible to determine whether the enhancements were elves or lightning induced sudden OH brightness. Simulations of the spectrum of elves (Kuo et al., 2006) reveal that N<sub>2</sub> 1P makes very small contribution to the intensity at 630 nm wavelength. The simulations of sprite-induced OH nightglow emission (Huang, 2006) have indicated that the column-integrated OH intensity could be enhanced quite significantly when lightning occurs. In response to the need to discern the causes for such enhancements, ISUAL conducted a 9-day campaign in January 2007, with an orbit devoted exclusively to observing TLEs with the 630 nm filter for such an investigation. Some of the observations did show some enhancement in the images, however, the enhancements were not as strong as those observed by the broadband filter. We will present the analysis of the observations and discuss the implications of the results.