



## **Relation Between Sprite Distribution and Source Locations of VHF Pulses Derived From JEM- GLIMS Measurements**

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JEM-GLIMS is continuing the comprehensive nadir observations of lightning and TLEs using optical instruments and electromagnetic wave receivers since November 2012. For the period between November 20, 2012 and November 30, 2014, JEM-GLIMS succeeded in detecting 5,048 lightning events. A total of 567 events in 5,048 lightning events were TLEs, which were mostly elves events. To identify the sprite occurrences from the transient optical flash data, it is necessary to perform the following data analysis: (1) a subtraction of the appropriately scaled wide-band camera data from the narrowband camera data; (2) a calculation of intensity ratio between different spectrophotometer channels; and (3) an estimation of the polarization and CMC for the parent CG discharges using ground-based ELF measurement data. From a synthetic comparison of these results, it is confirmed that JEM-GLIMS succeeded in detecting sprite events. The VHF receiver (VITF) onboard JEM-GLIMS uses two patch-type antennas separated by a 1.6-m interval and can detect VHF pulses emitted by lightning discharges in the 70-100 MHz frequency range. Using both an interferometric technique and a group delay technique, we can estimate the source locations of VHF pulses excited by lightning discharges. In the event detected at 06:41:15.68565 UT on June 12, 2014 over central North America, sprite was distributed with a horizontal displacement of 20 km from the peak location of the parent lightning emission. In this event, a total of 180 VHF pulses were simultaneously detected by VITF. From the detailed data analysis of these VHF pulse data, it is found that the majority of the source locations were placed near the area of the dim lightning emission, which may imply that the VHF pulses were associated with the in-cloud lightning current. At the presentation, we will show detailed comparison between the spatiotemporal characteristics of sprite emission and source locations of VHF pulses excited by the parent lightning discharges of sprites.