

Interrelation between ELF transients, ionospheric disturbances in association with Sprites and Elves

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Mesospheric optical events especially Red Sprites and Elves were detected in Japan during winter lightning activity in Hokuriku region by Tohoku Univ. [personal communication (1998)]. Coordinated measurements were performed including the above-mentioned period when optical events were recorded, which were consisting of (1)ELF transient observation in Moshiri, Hokkaido, (2)ionospheric disturbances by means of VLF Trimp observation in Kasugai, Aichi,(3)lightning data (location, onset time, peak current) provided by JLDN. The interrelation between optical events and those parent lightning in the troposphere, perturbations in the ionosphere and electromagnetic radiation particularly in lower frequency range was deduced based on the quantitative information from each measurement.