# Estimation of the charge moments of CGs inducing sprite events observed in Japan during 2001/2002 winter season

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In order to study the relationship between occurrences of sprites and transient electromagnetic waves in the ELF range, simultaneous optical and electromagnetic observations of sprites and parent lightning discharges have been carried out from December 2001 to February 2002. Using the II-CCD camera and Multi-Anode Array Photometer (MAP), optical observation of sprites has been performed at Iitate observatory (37.7N, 140.7E). On the other hand, using the two horizontal search coil magnetometers, continuous monitoring of ELF waveforms in the frequency range of 1-100 Hz has been carried out both at Syowa station (69.0S, 39.6E) in the Antarctic and Onagawa observatory (38.4N, 141.5E). During this period, 22 sprite events were detected at Iitate observatory. It was found that transient Schumann resonances characterized by a sharp impulse with damped oscillations have one-to-one correspondence with these sprite events. The polarization characteristics of these ELF transients indicated that the causative lightnings of sprites were positive cloud-to-ground discharges. Charge moments estimated from Syowa and Onagawa ELF data and their relationship to the occurrence mechanisms of sprites will be discussed.