

## Geomagnetic Sudden Commencement (SC) analyzed by using data of Kakioka Geomagnetic Observatory

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(1) A peculiar sudden commencement occurred in March 24, 1991. It was characterized by a large and short duration positive pulse in the very beginning part of the SC. The 1 sec H-component data at Kakioka showed 202 nT amplitude and about 1 min duration for this pulse. This is an abnormally large SC because the amplitude of usual SCs is less than 50 nT at Kakioka. The SC also produced instantaneously the strong inner radiation belt which lasted more than one year and clarified the importance of magnetospheric compression for acceleration of high energy particles. Being stimulated by this SC, we examined all SCs at Kakioka since 1924 and made a list of large amplitude SCs. The list showed that the March 24, 1991 SC is second largest and the largest SC occurred in March 24 (the same day!), 1940. The H-component amplitude was 273 nT. This SC seems to be the historically largest SC since 1867.

(2) Most of people believed that the SC amplitude is larger in daytime than night time in low and middle latitude stations. Looking at the list of the large SCs, however, we noticed that the large SCs occur more frequently in nighttime than daytime. We made statistical analyses of diurnal variation of amplitude of SCs observed at Memambetsu (35.4 deg. geomag. lat.), Kakioka (27.4) and Kanoya (21.9) and confirmed that the SC amplitude at these stations really larger in night time than day time. We could interpret it in terms of geomagnetic effects of the field aligned current used in our SC model.

Keywords: geomagnetic sudden commencement(SC), SC diurnal variation, largest SC, field aligned current, Kakioka geomagnetic observatory