

## The features and mechanisms of ionospheric storms over Japan on 15 December 2006

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The main causes for ionospheric storms at mid-latitude are well known: electric field penetration from the magnetosphere, thermospheric composition changes, and neutral wind perturbations. It is said that 'new mechanisms are not required to understand the ionospheric storms' [Mendillo, 2006]. However, observations of actual storms showed very complicated ionospheric behaviors; several storm drivers seemed to affect simultaneously, and one of them may enhance the other storm effects, or may cancel them. It is not known very much what condition determines the relative dominance of the storm drivers and their mixed effects. Furthermore, each storm observation exhibited interesting phenomena which can lead to new findings or to better understanding of ionospheric storms. For example, an SED (storm enhanced density), which has been reported only in the American sector so far occurred at the longitude of Japan [Maruyama, 2006]. On other positive storm events, TEC was observed to increase, while the F2 peak electron density once decreased before it increased [Jin and Maruyama]. The storm event on 15 December 2006, which we will report, also included some interesting features which differ from those of normal positive storms.