## Ionospheric Control of the Magnetosphere-Ionosphere compound system

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Ionospheric control of the magnetosphere - ionosphere compound system is investigated by using a global MHD simulation under a quiet magnetosphere condition (a positive IMFBz case). We confirm that intensity of the region 1 (R1) current is proportional to the ionospheric conductivity, whereas the region 2 (R2) current exhibits its intensity not so dependent on the conductivity. This result is consistent with observational analyses done by Fujii and Iijima [1987], Haraguchi et al. [2004], and Ohtani et al. [2005]. At the same time, our simulation shows that ionospheric electric convection speed is anti-correlated with ionospheric conductivity variation. Therefore, the ionospheric conductivity affects the magnetospheric convection. Within a context of the magnetosphere - ionosphere compound system [Tanaka, 2003], this fact indicates that the magnetospheric plasma distribution is also influenced by the conductivity change. Indeed, we confirm that plasma pressure in the R1 current generator region is affected by the conductivity change. In the talk, we intend to discuss physical mechanism concerning to ionospheric control of the magnetosphere-ionosphere compound system.

References

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