

電離圏に於け入反射 Alfven 波の分離 Walen Separation in the ionosphere

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Global ionospheric current and convection system couples to the magnetospheric dynamics. Transmission of electromagnetic energy, momentum and current from the magnetosphere to the ionosphere for driving and maintaining the ionospheric current system against to the Joule dissipation should be mediated via shear Alfven wave. Fundamentally, the above fact won't be changed even for quasi-static state. This means that the ionospheric current and convection system is formed as a result of incident and reflection process of shear Alfven wave at the ionosphere.

Applying the concept of Walen relation of incompressible MHD disturbances to the ionospheric current and convection system, we develop the methodology that describes the ionospheric current and convection system as a superposition of incident and reflected components of shear Alfven wave. Extracted incident component corresponds to the driving force of ionospheric current system, while reflected component corresponds to the feed back component to the magnetosphere that is excited as a result of magnetosphere ionosphere coupling process. The Walen separation also enables to extract the Cowling channel from the ionospheric current and convection system.

In this presentation we will discuss about how the Walen-separation technique can be applied to the realistic ionospheric data and show a specific result of separation analysis.

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