Forecast of AU/AL index with real time data assimilation

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The AU index is a proxy of substorm as well as auroral activity, so that the forecast of the index is important for the space weather research and forecast. In this study, we have developed a data-assimilation code to estimate variations of the AU index based on Goertz's model. In the Goertz's model, there are several parameters, and these parameters are related to the ionospheric conductivity. From the estimation of the developed data-assimilation code, we found a seasonal dependence of these parameters in the model. It is expected that these seasonal variations are caused by the seasonal variations of ionospheric conductivity as indicated by Goertz et al. The original Goerts model assumed the constant amplitude for these parameters, and seasonal dependence derived from our data assimilation may contribute the improve the forecast score.

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