

Development of a prediction system of the sporadic E layer occurrence

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Prediction of ionospheric disturbances is one of the most important issues in the space weather forecast. For the prediction of ionospheric storms, prediction information on conditions of the solar wind as well as the magnetosphere is necessary, but it is still difficult to make an accurate prediction of their conditions at the moment. In contrast, the sporadic E (Es) layer is little influenced by the solar wind and the magnetosphere, and it may be possible to predict the occurrence of the Es layer more accurately than other ionospheric disturbances. In order to study the possibility of the Es layer occurrence prediction, we analyzed the simulation data of the whole atmosphere-ionosphere coupled model GAIA, and compared the data with foEs data obtained by ionosonde observations. We found that variations in some parameters such as vertical ion convergence in 120 km altitude agree fairly well with variations in the observed foEs. This result suggests that the probability prediction of Es layer occurrence is possible using the parameter as an index of the occurrence. Our group has recently developed a real-time GAIA simulation system as well as a real-time ionosphere prediction system for a few days ahead. We will report the status of development of the prediction system of the Es layer occurrence, and experimental results of the prediction.

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