

Day-to-day variations of the thermosphere simulated by an atmosphere-ionosphere coupled model

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The upper atmosphere consists of the ionosphere and the neutral atmosphere, and is influenced not only by variations of the solar radiation and the energy precipitation from the magnetosphere but also by variations of the atmospheric wave from the lower atmosphere. Hence, the ionosphere and the neutral atmosphere are strongly coupled each other, and spatial and temporal variations of the upper atmosphere are extremely complicated. In order to investigate the physical mechanism of these variations in the upper atmosphere, we have developed an atmosphere-ionosphere coupled model. In this study, we will report brief description of the coupled model and present preliminary results. In particular, we focus our attention on the effect of the upward propagating atmospheric wave, such as tides and Kelvin wave, on spatial and temporal variations in the thermosphere. Our analysis indicates that day-to-day variations of the neutral wind in the thermosphere associated with the upward propagating wave induce variations of the dynamo electric field and the ionosphere. We will also discuss the future development of the coupled model.