NICT real-time thermosphere-ionosphere simulator: Initial result

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Disturbances in the upper atmosphere could affect various communication and broadcasting systems, GPS positioning systems, and satellite orbits. In order to understand present state of the upper atmosphere and to predict disturbances, it is necessary to develop a real-time numerical model of the upper atmosphere in order to predict such disturbances. Recently, a real-time global MHD model of the solar wind interaction with the earth's magnetosphere has been developed at National Institute of Information and Communications Technology (NICT) in collaboration with Kyushu University and the Meteorological College. The model is now operated at the space weather forecast center of NICT. The real-time magnetospheric simulation model is also able to give ionospheric parameters such as conductivities and the electric potential in the high-latitude region. We have started to develop a real-time ionosphere-thermosphere simulation model using the ionospheric parameters given by the magnetospheric model. We will describe the current status and future prospects of the real-time ionosphere-thermosphere model. Preliminary results will be also presented and compared with observations.