

Implementation of photochemical process of NO_x and HO_x into a whole atmosphere GCM

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Photochemical process associated with NO_x and HO_x plays an important role on the energy budget and general circulation in the mesosphere and lower thermosphere (MLT). For example, NO is important for the infrared cooling in the MLT region. Photochemical process associated with HO_x is essential for accurate estimate of the O₃ distribution in the mesopause region. We implemented photochemical process of HO_x and NO_x into a whole atmosphere general circulation model (GCM). Using this GCM, effects of the solar activity on the general circulation in the MLT region are studied. Furthermore, this GCM can provide accurate estimate of the energy budget due to the global cooling due to the increase of CO₂. In this study, preliminary results will be shown, and further development of the GCM will be discussed.

Keywords: the general circulation of the atmosphere, photochemical process