

A review of numerical simulation by using non-hydrostatic Martian atmospheric model

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The Mars Global Surveyor (MGS) mission shows that dust devils and local dust storm occur frequently and suggests existence of convective carbon dioxide clouds around the polar region. These are mesoscale meteorological phenomena whose horizontal scale is comparable to its vertical scale. In recent years, in order to investigate mesoscale phenomena in terrestrial atmosphere, non-hydrostatic atmospheric model where the hydrostatic approximation is not adapted for vertical component of equation of motion was developed and direct numerical simulations by using the non-hydrostatic atmospheric model have been performed. Therefore, the mesoscale meteorological phenomena observed by MGS are now also simulated by using the non-hydrostatic atmospheric model which is based on the model for terrestrial atmosphere and includes physical process models appropriate for the Martian atmosphere. In this talk, the current non-hydrostatic Martian atmospheric model, its improvement and recent numerical simulation results are reviewed, and future scientific subjects are discussed.