

Data assimilation experiments of refractivity distribution observed by an operational Doppler Radar of JMA

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Because low-level convergence of water vapor generates the convections, accuracy of local heavy rainfall forecasts is expected to be improved when horizontal distribution of low-level water vapor is observed. We focused on radio waves of Doppler Radars that are returned from fixed structures. Because the radio waves are delayed by water vapor while passing atmosphere, we can estimate refractivity, which is a function of temperature and water vapor, from the delay of radio waves. If radio waves of many Doppler Radars that have been deployed in Japan are used in producing initial conditions of numerical forecasts, the forecast accuracy of thunderstorms is expected to be improved through improvement of water vapor fields by using this technique.

In this presentation, temporal variations of refractivity observed by Tokyo Radar and the impacts of refractivity on the rainfall forecasts will be presented.

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