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Improvement of Short-Range Rainfall Forecasting Using Multi-Layer CAPPI and Wind Field Data

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The TREC(Tracking Radar Echoes by Correlation) model is a short-range rainfall forecasting model using simple cross-correlation between successive two CAPPI scenes. The model accounts for the motion of the convective weather system by finding the maximum cross-correlation coefficient. The TREC vector has some drawbacks that the vector cannot consider the vertical motion of convective clouds since it uses CAPPI data at the same altitude, and can predict only linear motion estimated by a statistical extrapolation method. The existing TREC model was improved using multi-layer CAPPI and wind field data. The motion of convective weather system was illustrated using not only TREC vector but also the physical behavior from wind field data. Also the evolution and vertical motion of weather systems was considered using multi-layer CAPPI data. The developed model was applied to the Jindo S-band Doppler radar in Korea. Results using the developed model showed better agreement than that of the existing TREC model.