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Table 2. Summary of the four test experiments.

Forecast Tim / Experiment	Length of time slot	Time interval of thinning	Number of RS-AMVs assimilated
RSAMV10_10min	10 min	10 min	1640
RSAMV10_3h	10 min	3 h	838
RSAMV_1h	1 h	1 h	1624
RSAMV_3h	1 h	3 h	838

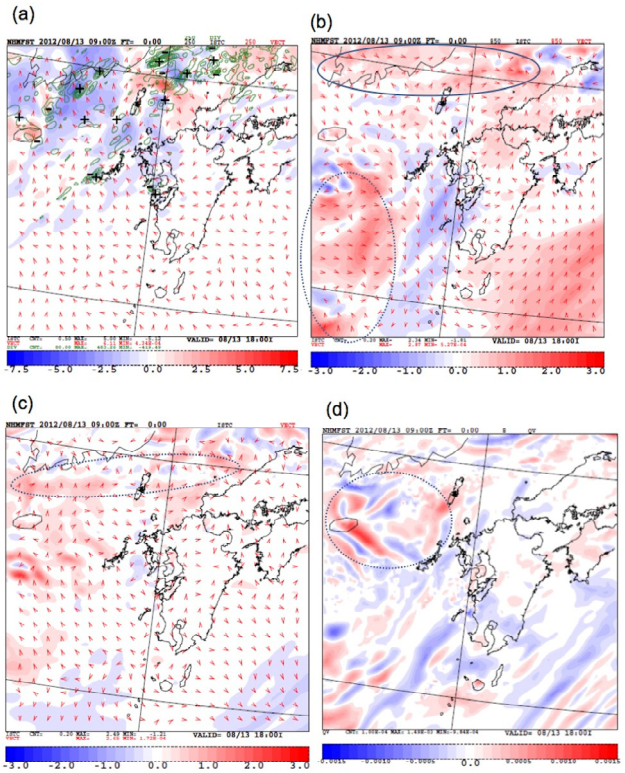
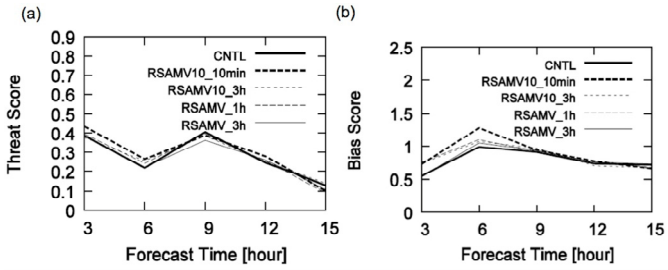


Figure 12. Differences in the analysis results between TEST and CNTL (TEST minus CNTL). Wind difference fields at (a) 250 hPa (green contours show areas of divergence using a 8.0 x 10^{-5} s^{-1} interval; plus and minus signs indicate increased and decreased divergence, respectively); (b) 850 hPa; and (c) the surface. In (a), (b), and (c), the color scale shows wind speed difference (m s^{-1}), and the arrows show wind direction difference. (d) The water vapor mixing ratio difference at 500 m above the surface (kg kg^{-1}).

Figure 11. Precipitation forecast scores for the precipitation threshold of 10 mm in 3 hours in the assimilation experiments. (a) Threat scores; (b) bias scores. ↓



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- The impact of atmospheric motion vectors derived from MTSAT-1R 5-min rapid scan imagery (RS-AMV) on numerical forecasting of a heavy rainfall near a stationary front was investigated by conducting assimilation experiments with the JMA's operational non-hydrostatic model with 4-dimensional variational data assimilation (JNoVA).
- Assimilation experiments covering a heavy rainfall event were conducted by using different lengths of assimilation time slot and time intervals of spatial thinning for the assimilation of the RS-AMV (Table 2).
- The assimilation of RS-AMVs caused the initial wind fields to enhance upper-level divergence and low-level convergence around the front (Fig. 12), and as a result, the forecast of the rainfall amount was increased near the front and the verification scores were slightly improved over the control experiment in the early forecast hours (Fig. 11).