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# Precipitation nowcasting skill of numerical models and of Lagrangian persistence.

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The ability of numerical models to improve nowcasting of precipitation by some combination of numerical model outputs and heuristic techniques is determined the accuracy and the independence of the two sources of information. To investigate the latter we compare the short-term predictability of model outputs of precipitation to the skill of nowcasting by Lagrangian Persistence (LP).

Analysis of one year of radar data and model outputs over the US shows that there is a good correlation of model skill and MAPLE, our LP nowcasting algorithm. Not surprisingly, the correlation is stronger in wide spread situations than in convective cases. In fact, average correlation coefficient of CSI of 0.1 mm/h (threshold of rain-norain) for model and MAPLE is between 0.6 and 0.8 for the 1 to 12 hours lead time in the period January to March while it is between 0.4 and 0.6 for the period June to August.

On the other hand, the skill of both methods of forecasting is also correlated with the fractional area of precipitation coverage at a comparable correlation level, although model skill is more sensitive to coverage. Partial correlation analysis, that is the correlation between model and MAPLE skills holding coverage constant, shows lower but significant values of levels of correlation between MAPLE and model CSIs.

The ability of exploiting the independence of the two methods of forecasting by adaptively blending the two depends on the time correlation of the skill, which we also investigate.