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Creation and verification of a short term, multi-model ensemble forecast using the Quantum Weather mesonet.

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Ensemble forecasts have long been used to quantify model uncertainty and variability for synoptic scale phenomena. Though they have proven effective at these large scales, their ability to improve forecasts for mesoscale events has not been well tested. Here, a short term ensemble forecast system was created using the RUC and NAM models for lateral boundary conditions, with varying PBL physics options to create 16 ensemble members. Surface data was assimilated into these models from the Quantum Weather mesonet located in Missouri. Forecasts for dynamically and non-dynamically forced days with 0-12h lead times were run and analyzed to highlight the statistical integrity of the ensemble forecast in the short term temporal regime.