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1 Experiments with ensemble prediction with the Eta Model for a heavy rain event

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Numerical experiment on short-range ensemble forecasting based on physics perturbation was carried out using the mesoscale Eta Model for a case study. It was a heavy rainfall event that hit the central part of State of São Paulo and accumulated over 80 mm on the 1200 UTC 15 February 2004, during the Troccibras field campaign. The mesoscale Eta Model was configured with 10 km horizontal resolution and 38 layers, in the hydrostatic mode. The domain covered was from about 15^o S and 30^o S and 57^o W and 42^o W. A set of forecasts from 48 hours and 72 hours were produced from different initial conditions. The 10-km Eta was nested into the 40-km Eta Operational Model. The latter was nested into the CPTEC GCM at T126L28 resolution. The boundary conditions were updated every 6 hours, in a one-way fashion. The Meso Eta used the Betts-Miller-Janjic convection parameterization scheme. The ensemble of forecasts was generated by perturbing the convective relaxation time and the deficit of saturation pressure that controls the moisture reference profile. The combination produced a set of about 15 short-range runs for the case study. Small spread can be noticed among the forecast members. The large scale pattern was well represented in the forecasts, however, all members showed an underestimate of the maximum rains and a small displacement of those rains. Evaluation of the forecasts against observations based on rmse and bias will be shown.