

Applying Artificial Neural Networks to Calibrate the Precipitation Forecast of the CPTEC's Ensemble Prediction System

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***Abstract.** Ensemble prediction is currently the state of the art in weather prediction due to the fact that it provides means for computing probabilities of the occurrence of meteorological events in a quantitatively way. However it is not a fail-safe system and one major cause is due to the uncertainties of the Nature that are not modeled into the computational system, generating a deviation of the prediction from the actual state of the weather. To minimize this deviation (to calibrate) several post-processing techniques over the prediction data have been applied. This work is about applying of a feed-forward neural network to calibrate the precipitation forecast produced by the CPTEC's Ensemble Prediction System. The dataset is composed by forecasts of the rainy season from 2009 to 2011 over the La Plata Basin. The ensemble mean precipitation forecast and the neural network forecast are compared to the correspondent precipitation observations via Mean Absolute Error.*

Keywords: machine learning, artificial neural network, feed-forward neural network, back-propagation algorithm, numerical weather prediction system, ensemble prediction system.

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