

# Ensemble Random Analog Prediction (ERAP) method and testing ERAP using fake weather data

June 18, 2004

Understanding the weather system and forecasting its future state has been a challenge for many years. Historical distributions of weather variables play important role in comprehension of the weather dynamics and could be a valuable addition particularly when forecasts are not available or are not complete. Ensemble Random Analog Prediction(ERAP) method is a technique which constructs historical distribution by generating ensemble of the synthetic data, such that the statistics of the distribution constructed using ERAP is consistent with the statistics of the historical data.

In this talk we first discuss difficulties associated with the analysis of the dynamical system of the weather and the possible applications of the weather forecasts and the synthetic weather data in finance. Next, we consider how ERAP method works and what results it produces. In order to test method fairly fake weather data is generated using a non-linear process which contains: a periodic signal, two sources of noise and two added functions which imitate the behaviour of the weather fronts. Ensemble of the synthetic data produced using ERAP for the fake weather data is then compared to the ensemble of the synthetic data produced using ERAP for the real weather data. Finally, limitations of the method and still unanswered questions are explored.