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Predictability and Non-Gaussian Characteristics of the North Atlantic Oscillation

Thomas Önskog (1), Christian Franzke (2), and Abdel Hannachi (3)

(1) Department of Mathematics, KTH Royal Institute of Technology, Stockholm, Sweden, (2) Universität Hamburg, Meteorologisches Institut, KlimaCampus, Hamburg, Germany (christian.franzke@uni-hamburg.de), (3) Department of Meteorology, Stockholm University, Stockholm, Sweden

The North Atlantic Oscillation (NAO) is the dominant mode of climate variability over the North Atlantic basin and has a significant impact on seasonal climate and surface weather conditions. It is the result of complex and nonlinear interactions between many spatiotemporal scales. Here, the authors study the statistical properties of two time series of the daily NAO index. Previous NAO modeling attempts only considered Gaussian noise, which can be inconsistent with the system complexity. Here, it is found that an autoregressive model with non-Gaussian noise provides a better fit to the time series. This result holds also when considering time series for the four seasons separately. The usefulness of the proposed model is evaluated by means of an investigation of its forecast skill.