Geophysical Research Abstracts,
Vol. 10, EGU2008-A-12265, 2008
SRef-ID: 1607-7962/gra/EGU2008-A-12265
EGU General Assembly 2008

An investigation on the application of conditional nonlinear optimal perturbation to ensemble prediction

J. Zhina (1) and M. Mu (2)
(1) LaSW, (2) LASG

This study is concerned with the application of conditional nonlinear optimal perturbation (CNOP) to ensemble prediction. CNOP is a natural extension of singular vector (SV) into the nonlinear category. The work is done under a perfect model scenario. SVs and CNOPs of a barotropic quasi-geostrophic (QG) and a T21L3 QG models have been utilized to generate the initial perturbations for ensemble prediction experiments. The results are compared for forecast lengths of up to 14 days. It is found that the forecast skill of samples in which the first SV is replaced by CNOP is comparatively higher than that composed of only SVs in the medium range (day 6 ˜ day 14) using the barotropic model. This conclusion is valid under the condition that analysis error is a kind of fast-growing errors regardless of its magnitude, whose nonlinear growth is faster than that of SV in the later part of the forecast. By using the T21L3 QG model, anomaly correlation coefficient (ACC) is adopted as a tool to measure the quality of the predicted ensembles on the North Hemisphere 500 hPa geopotential height. The results confirm and extend those obtained with the barotropic QG model.