



Discrepancies in southern hemisphere mid-latitude atmospheric variability of the NCEP-NCAR and ECMWF reanalyses

A. Dell'Aquila (1), V. Lucarini (2), P.M. Ruti (1) and S. Calmanti (1)

(1) Progetto Speciale Clima Globale, ENEA, Rome, Italy, (2) Dipartimento di Matematica ed Informatica, Università di Camerino, Camerino (MC), Italy (

alessandro.dellaquila@casaccia.enea.it / Fax: +39-06-30484264 / Phone: +39-06-30481072)

In this study we compare the representation of the southern hemisphere midlatitude winter variability in the NCEP-NCAR and ECMWF reanalyses. We use the classical Hayashi spectral technique, recently applied to compare the description of the atmospheric variability in the northern hemisphere on different spectral sub-domains as provided by the two reanalyses. We want to test principally the capability of the two reanalysis systems to simulate the right baroclinic activity, and the energy conversion. We find relevant discrepancies in the description of the variability at different spatial and temporal scales. ERA40 is generally characterised by a larger variance, especially in the high frequency spectral region. In the southern hemisphere, also in the satellite period, the assimilated data are relatively scarce, predominately over the oceans, and they provide a weaker constraint to the model dynamics. In the pre-satellite period the discrepancies between the two reanalyses are large and randomly distributed while after the 1979 the discrepancies are smaller but systematic. Moreover, a sudden jump in the VTPR period (1973-1978) is observed, mostly in the ERA40 reanalysis. Our result suggest some caveats in the utilization of reanalysis data for the description of the midlatitude southern hemisphere variability.