ENERGETICS-STATISTICS OF THE MEDITERRANEAN GENERAL CIRCULATION

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Energetical (volume averaged kinetic energy and available potential energy equations) and statistical analysis (3D EOF analysis) is applied to the global Mediterranean MERMAIDS GCM in order to understand the energy interactions (conversion between kinetic and available potential energy), the role played by each driving mechanism separataly (wind, heat fluxes, dissipative terms) and to extract the simulated space and time scales of variability occuring in the Mediterranean general circulation. Two model experiments (integrations) have been analyzed. In the first experiment (central) the model is drived using realistic monthly forcing (wind – heat fluxes) for the period 1980–1988 (NMC 1000mb analysis). Heat fluxes are calculated interactively by the model due to a sophisticated parameterization scheme. In the second experiment the wind forcing is kept constant to its annual average and only the heat fluxes vary interannually. The results of the central experiment have shown that the interannual variability of the basin has an event–like character followed by transition periods where anticyclonic features are mostly excited in the southern sector of the basin. The shape of variability centers is mainly gyre–like. Two major events have been identified occuring during the winters of 1981 and 1986 which are characterized by strong wind (mainly) and heat forcing. The mixed layer undergoes seasonal variations while the interannual signal (1981 and 1986 anomalies) is strong at the depth of the thermocline. Finally we discuss some topics concering the "memory" of the dynamical system which have been proved through our model experiments to be on the seasonal time scale (winter ocean conditions control the following summer behaviour).

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