MedCLIVAR: Mediterranean Climate Variability. Intercomparison between cyclone climatologies in the Mediterranean region (MR) produced by two cyclone tracking algorithms.

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The present study aims at describing climatology and statistics of cyclones in the Mediterranean region that have been produced using two different algorithms for cyclone identification and tracking. The two algorithms are those used at the Salento University and Free Univeristy of Berlin and they have been applied to reanalysis (ERA-INTERIM) and ECHAM5 GCM (Global Climate Model) data. The results show that the computed distribution of cyclone frequencies and other properties of cyclones are sensitive to a variety of factors, such as interpolation procedures, grid resolution, criteria used in the definition of low pressure system, tracking errors, and so on . This is important also in the analysis of extremes events, such as explosive cyclones. Differences between the two algorithms are found in the number of cyclogenesis processes detected and in the magnitude of storm track within the MR because of different treatment of nearby but separate systems and merging of small systems in regions with high cyclone density, different treatment of open systems and quasi-stationary heat lows. However, the two algorithms agree on main cyclogenesis areas, on the path of most cyclones and produce similar results for strong North Atlantic cyclones around the time of maximum intensity. Both, when used as diagnostic tools, identify the same unrealistic features, that are present in the GCM simulations.