



Evaluation of circulation type classifications for the eastern Mediterranean region

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The performance skill of several circulation and weather type classifications (CTCs) which have been considered within the COST733 Action (<http://www.cost733.org>), and implemented in the COSTCLASS733 software is assessed against a supervised classification (KJ) developed by Kostopoulou and Jones (2007). This classification is considered as a reference for the purpose of this work, since the resulting circulation patterns have been evaluated against real-time synoptic charts and were found to adequately represent the most important atmospheric features of the study region. The KJ is an automated eigenvector-based map-pattern classification, utilising gridded reanalysis daily MSLP from the global NCEP/NCAR dataset. The grid resolution is 2.5° and the study window extends from 5° to 35°E and 25° to 55°N. The dataset has been divided into seasons to prevent the results from being biased by different seasonal signals. A different number of classes have been assigned to each season in order to improve the distinctiveness of the derived patterns. Using the COSTCLASS733 software daily catalogues were generated for all available classification schemes using NCEP/NCAR MSLP data at 2.5° horizontal resolution for the period 1958-2000 and the area used in KJ. The CTCs under evaluation were forced to reproduce the number of seasonal circulation patterns of the reference classification. To quantify the strengths and weaknesses of the examined classification schemes several indices have been estimated to assess their similarity to the one considered as reference, whereas a further step was to examine the correspondence between the derived composites. Finally, the evaluation has been directed towards the ability of the various schemes to describe the variability not only of the parameter used for the classification (MSLP in this case) but for relevant surface climate parameters namely precipitation.