



Climatological aspects of convective parameters over Europe: a comparison of ERA-Interim and sounding data

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ERA-Interim reanalysis and over 1 million atmospheric soundings from years 1979-2016 are used to present climatological aspects of convective parameters in Europe. The most important differences regarding these two datasets are also discussed. ERA-Interim samples well temperature lapse rates and low-level moisture with correlation for both exceeding 0.94. Instability parameters present higher scatter and are generally worse represented. ML CAPE is on average underestimated by 14% while MU CAPE is overestimated by 25%. Vertical shear parameters are better correlated but on average underestimated by 1-2 m/s. The highest ratio of underestimation is observed with 0-1 km shear (27%) and decreases along with increasing height for 15% with 0-3 km and 7% with 0-6 km. Regional analysis indicate that instability in ERA-Interim is overestimated in southern Europe and considerably underestimated over eastern Europe. Results regarding climatological aspects of storm ingredients indicate that well pronounced period with enhanced instability extends from May to August. Climatological pattern of wind shear is reversed to instability. Peak values are observed during winter while minimum fall on warm months. The highest annual number of days with environmental conditions favorable for thunderstorms cover Italy, Austria and Balkan Peninsula. Enhanced values are also observed in the corridor from southern Germany to western Russia. From September to April, favorable conditions for thunderstorms occur mainly over southern and western Europe. From May to August (peak in July) the best environments shift to eastern and central Europe with Balkans. For southern Europe peak frequency falls on September while in July and August, thunderstorm activity is suppressed due to high values of CIN.