



Comparison of sounding observations and reanalyses of thunderstorm environments

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For the development of severe thunderstorm proxies it is crucial to learn how well reanalysis datasets represent the atmospheric conditions. A natural approach is to compare selected reanalysis datasets with observed data. The aim of this study is to detect the strengths and weaknesses of the reanalysis datasets with respect to parameters relevant to convective storms. We analyzed 16421 soundings from 32 stations in Europe from 2007 to 2013 and compared them to ERA-Interim and CFSR reanalysis data.

Several parameters related to instability (e.g. CAPE), moisture and bulk wind shear were computed from the ERA-Interim global atmospheric reanalysis and from the Climate Forecast System Reanalysis (CFSR) data. ERA-Interim is available every six hours on a $0.75^\circ \times 0.75^\circ$ horizontal grid and on 60 vertical levels whereas CFSR is also available every six hours but on a horizontal resolution of $0.5^\circ \times 0.5^\circ$ with 40 vertical levels. If time allows we will study other reanalysis datasets as well.

We will compare severe storm parameters from soundings and reanalysis data in a statistical sense and highlight the differences. For example, it was found that sounding-CAPE is on average 36 J/kg higher than ERA-Interim-CAPE. A large difference of more than 4300 J/kg CAPE between the sounding and ERA-Interim reanalysis has been found to occur in Payerne on the 19th August 2009 at 12 UTC. We look into the reasons for such differences.