

Interactive comment on “Changes in the simulation of instability indices over the Iberian Peninsula due to the use of 3DVAR data assimilation” by Santos J. González-Rojí et al.

Klemens Barfus

klemens.barfus@tu-dresden.de

Received and published: 30 March 2020

Dear authors,

I find this paper very interesting and well written. Nevertheless, from my point of view clarification about the vertical levels of ERA-Interim used as input to WRF is needed.

Authors write that they used 20 levels without providing further details. In González-Rojí et al, 2018 we find the information that levels range from 5 hPa to 1000 hPa. I conclude from this that authors work with data on pressure levels available from the ECMWF servers.

C1

Counting the available pressure levels between 5 hPa and 1000 hPa from ECMWF, I find 34 levels. When data on model levels are used, 60 levels are available (terrain following and thus with different pressure levels at each grid point).

The calculation of CAPE and CIN is sensitive to the vertical of resolution of the data.

If authors used pressure level data, information about the used levels and why they did not use all available pressure levels is needed. Furthermore, I would like to read why authors did not use model level data, since they provide much more information about the temperature and humidity profiles especially in regions with high topography.

If authors used model level data, I also would like to read information about the used levels and why not the full set of available levels have been used. From my point of view some information provided by the assimilation could already be enclosed when using all available model levels.

A minor issue: as far as I know, there is no quality control for the Wyoming radiosondes. Authors should provide information about their own QC routines. Waiving the high vertical resolution of Wyoming radiosondes (from my point of view not a good idea when analyzing CAPE and CIN), IGRA quality controlled radiosondes could be used.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2020-53>, 2020.

C2