

## ***Interactive comment on “Zonal-mean data set of global atmospheric reanalyses on pressure levels” by Patrick Martineau et al.***

### **Anonymous Referee #1**

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Review of the paper:

“Zonal-mean data set of global atmospheric...”

written by Patrick Martineau et al.,

### **General:**

The paper presents a very comprehensive analysis comparing different re-analysis products with respect to their representation of the zonally-averaged basic dynamical quantities as well as to their representation of more sophisticated parameters like wave-forcing (EP flux and its divergence) or the diabatic 2d residual circulation. This

C1

comparison was performed within the SPARC-Reanalysis Intercomparison Project (S-RIP) and the provided results are archived and available for the scientific community. The presented analysis is very clean and covers the issue from all different angles. Thus, I would like to recommend this paper for publishing in Earth System Science Data (ESSD) with only some minor points listed below.

### **Minor comments:**

- Captions of figures 3-6  
It looks for me that solid lines are denoted with “o” and dashed lines with “x”, i.e. vice versa than the explanation in the manuscript
- P15 L2  
“this is especially evident for ERA-20C at 300 hPa” - little bit difficult to see it
- P15 L6  
“EP flux divergence also varies substantially amongst reanalyses” - maybe you should add “(not shown)”
- P18 Figure 7  
It would be also nice to plot the difference between Fig 7b and Fig 7a measuring the strength of the influence of the assimilation procedure. I.e. before during and after the sudden warming, the strongest assimilation increments are necessary to “keep the model on track”.
- P 17, Data usage  
It would be also great to get zonally-resolved monthly means of some of quantities discussed here like temperature, wind, GPH, but also the zonally resolved EP flux divergence as described in Plumb, JAS, 1985.