Review for „**Hourly precipitation fields at 1 km resolution over Belgium from 1940 to 2016 based on the analog technique**" submitted to *Earth System Science Data* by Elke Debrie et al.

General comments:

This publication presents an analogue method to determine hourly rainfall patterns over Belgium for a 80-year period based on radar observation.

This method shows good potential for gridded precipitation fields over this period, but my main concern is that the training dataset is quite short. In addition, it is at the end of the time period (1940-now). Within this time period, climate change caused an increase of mean temperatures by about 1.5°C in central and Western Europe which also caused a change in circulation patterns. Please discuss this in the paper.

Why did you use 2006 as a target year for evaluation? It was a particular year with very different weather conditions (cold winter, hot and dry June/July, cold and wet August, very mild autumn). It would be interesting to compare the analogues for more than one year in section 3.2.1/3.2.2. Do the results (esp. about differences) change?

Specific comments:

Section 2.1.2: The RADCLIM product is based on a combination of radar data merged with ground-based precipitation observations? This is not entirely clearly written here.

Section 3, lines 108-112: How did you choose these parameters, especially concerning (4) – why did you use the geopotential at each level at different times of the day? Do you have a physical reasoning for this? Did you try other combinations?

Figure 3: Which unit does the "mean RMS distance" have? Precipitation (mm per day/hour)? Please explain the meaning of these numbers!

Figure 4, panel c: You write: "differences in geopotential height on analog days, real days and random days". What is the reference of the differences here? Is it compared to the smoothed yellow line?

Technical comments:

Line 201: I couldn't find the reference "Wil, 2019"

Figures 9-11: To me, it would make sense to merge these plots (9a+10a+11a in one plot with three lines, and correspondingly for the others)

Also Figures 12 a-c should be merged into one plot