

## Author's response 1

We would like to thank the reviewer for reviewing our manuscript and for the positive feedback. Please find below our replies highlighted in blue.

Reviewer 1:

### **"The spatial distribution of convective precipitation - an evaluation of cloud microphysics schemes with polarimetric radar observations" by Köcher and Zinner**

This manuscript presents a statistical evaluation of five different cloud microphysics schemes within the Weather Research and Forecasting (WRF) model, focusing on their ability to simulate the spatial distribution of convective and stratiform precipitation. The study utilizes a 30-day dataset of precipitation events in the Munich region with 400m horizontal resolution, comparing WRF simulations with polarimetric radar observations. The authors employ a cell-tracking algorithm to differentiate between convective and stratiform regions and analyze reflectivity and differential reflectivity histograms, as well as simulated rain drop size distributions. The integration of polarimetric radar observations is crucial, as these data are highly sensitive to microphysical properties and allow for a more in-depth assessment of the simulated precipitation characteristics. It is concluded that the differences in convective and stratiform precipitation between the 5 different microphysics are mainly attributed to the differences in rain drop size distribution. This is a well-structured and important study that makes a valuable contribution to the field of numerical weather prediction and cloud microphysics. The statistical evaluation using polarimetric radar observations is a robust approach for assessing and improving microphysics schemes. The findings provide clear insights into the strengths and weaknesses of different microphysics schemes in simulating convective precipitation, particularly concerning rain drop size distributions and their impact on precipitation partitioning. The manuscript is clearly written and the figures are informative. It is suggested to accept this manuscript after some minor revisions.

#### **Minor:**

1). Line 143: is shown in 1 → is shown in Figure 1?

Fixed.

2). Line 327: Figure 6c → Figure 6a?

Fixed.

3). Line 348: Figure 6d → Figure 6b?

Fixed.