

## ***Interactive comment on “Monitoring the differential reflectivity and receiver calibration for the German polarimetric weather radar network” by Michael Frech and John Hubbert***

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Differential reflectivity (Zdr) is a polarization moment used for clutter removal, hydrometeor classification, and for quantitative precipitation estimation (QPE). It is well-known that to limit uncertainties in QPEs, Zdr accuracy must be better than 0.2 dB. The paper illustrates Zdr techniques routinely implemented in the German weather radar network to keep Zdr unbiased and it investigates diurnal Zdr variations related to environmental temperature. The work is valuable, and the topic is relevant in particular for operational weather radar where data quality techniques are limited by continuous operational scans. The language is appropriate and clear.

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### Specific comments

The authors attribute Zdr variability according to environment temperature is due to the antenna assembly in agreement with Hubbert (2017) findings. The authors should add more technical information on DWD weather radar antenna assembly and add comments on their findings respect to Hubbert’s study. In fact, he investigated the same topic on S-Pol weather radar with different antenna assembly. How are the current results related with Hubbert (2017)? Do completely different antennas produce the same Zdr variations depending on temperature?

### Technical comments

Page 3 line 10: Holleman et al. (2010), → Holleman et al., 2010, Page 3 line 34: This analysis is based on a combined 87 years of radar operation ? Page 5 line 5: , i.e., 360° azimuth → , i.e. 360° azimuth Page 5 line 13: and at least ten valid range bins in a ray. How long is a range bin? Page 5 line 21:  $\Delta TX, RX, t_0$  →  $\Delta TX, RX$  Page 9 line 17: Since basic antenna parameters are fixed, the gain estimates cannot be viewed as true antenna gain estimates. Could do the authors specify better? Page 9 line 8: eq. → Eq. Page 9 line 22: 3dB → 3 dB Page 12 Figures: daytimes are in UTC or local time? Please, specify. Page 14 line 6: a 5th order polynomial → a 5th order polynomial Page 18 Table 1: although quite obvious, please add units (dB) in Table header. Page 24 line 3: Therefore the temperature → Therefore, the temperature Page 24 line 4: please move footnote 2 in the text to increase readability. Page 24 line 9: of 2013 → of 2013 Page 26 line 10: he Zdr bias as estimated from the birdbath measurement ie well approximated by S. Please correct typing errors in the sentence. The authors sometimes report “Eq. X” and sometimes “Eq. (X)”. Please correct Page 30 line 30: than 1 day → than one day

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