

## Comment on amt-2022-209

Anonymous Referee #1

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Referee comment on "Raindrop size distribution (DSD) during the passage of tropical cyclone Nivar: effect of measuring principle and wind on DSDs and retrieved rain integral and polarimetric parameters from impact and laser disdrometers" by Basivi Radhakrishna, Atmos. Meas. Tech. Discuss., <https://doi.org/10.5194/amt-2022-209-RC1>, 2022

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This manuscript describes the observations collected by three surface disdrometers (i.e., JWD, LM, and PARSIVEL) during the passage of a Tropical Cyclone. There are a few confusing sentences that need to be clarified before publishing.

1. Abstract. Lines 10-12 state, "Raindrops greater than 3 mm in size are infrequent in the JWD recordings while frequent in the LPM and PARSIVEL indicating JWD underestimates the size of the raindrops than LPM and PARSIVEL due to canting of raindrops in the presence of wind." This sentence suggests the JWD underestimates raindrops greater than 3 mm diameter because the raindrops are canted in the presence of wind. This is inconsistent with conclusion #1 (lines 345-348) that states "The canting of raindrops in the presence of large horizontal winds results in more residing time in the laser beam resulting in an additional reduction in the beam intensity at the receiver. Thus, the conclusion suggests the laser disdrometers overestimate the size of the raindrops in the presence of horizontal winds." I believe the abstract needs to be corrected to match the conclusion.

2. Lines 10-12 (abstract), 233-236 (body) and 345-348 (conclusion). The word "canting" only occurs in the abstract and conclusion. The body (lines 233-236) discusses why the laser disdrometers observe larger raindrops in high wind cases because the raindrops have a longer path through the laser beam. This longer path is not a raindrop canting. The three disdrometers cannot measure canting angle (the JWD measures momentum, and the two laser disdrometers only have one imaging dimension). Please clarify the manuscript and be consistent between abstract, body, and conclusions.

3. Equations (1) to (6). I am confused by what processing was performed by the disdrometer and what processing was performed by the author. Please clarify in the text which processing steps described in equations (1) to (6) produced  $N(D)$  as an output from the disdrometers and which processing steps were needed to calculate  $N(D)$  off-line.