General comments:

The paper is well written, clear, and of interest. I recommend publication with a few comments.

Specific comments:

- Eq. (1): When measuring the total intensity I with a polarization camera, I think it is preferable to use $I = (I_0 + I_{45} + I_{90} + I_{135})/2$ rather than $I = I_0 + I_{90}$. Ideally of course, it should be that $I_0 + I_{90} = I_{45} + I_{135}$. Nevertheless, I think it is preferable to take the information of all four pixels into account.

- Section 4.5.2 Laboratory polarization calibration:
  I think this section could be improved. I am not sure I fully understand the calibration procedure. Some additional step-by-step explanations with equations and/or a figure explaining the three reference systems and how they relate would help me. To be a bit more specific:
  - In Step 1 (Line 326-331): Did you compute Transfer matrix Eq. (8) by means of Eq. (9) with the camera being in the camera reference frame? Is the result a transfer matrix from laboratory frame (linear polarizer) to camera frame that contains a rotation matrix that still needs to be determined? Or are camera and linear polarizer in the same laboratory reference system?
  - Line 332-345: I assume the problem that is being solved here is finding the rotation induced by the window. So if the Stokes vector is rotated beforehand, does Eq. (9) become something like this,
    $$I_n - d_n = A \cdot R \cdot S_n,$$
    with R being the rotation matrix we are looking for?
    If so, why could you not simply fit a misalignment factor dphi similar to Eq. (13) in Lane et al. (2022) (This misalignment factor is also merely a rotation of angle dphi). I understand the sentence spanned from line 333-335, but couldn't you still optimize for the rotation by rotating the linear polarizer? How are the EURECA measurements polarized with respect to the camera reference system (or the scattering plane)? I think it is worth giving more details.

- The statements in Line 279 "a single matrix …. To all pixels" and Line 294 "the camera lens has only little influence" citing Lane et al. are slight oversimplifications. Lane et al. used a 105m lens set to f/22 (fairly straight rays) to show that the super-pixels on the sensor are generally consistent. When they compare the lenses, they merely focus on the central pixels. However, and presumably particularly important for wide-angle lenses, lenses can show an effect called polarization aberration of lenses. This is nicely explained in the reference [1], section 1.7.2, page 22 ff. (also note the effect of high numerical aperture wavefronts described in section 1.7.3). The effect is particularly high at the edges (see Fig. 1.38 in [1]), which might explain your larger differences in the corners (mentioned in line 482). My suggestion would be: it is fair to assume one transfer matrix for all pixels, as the superpixels should generally be consistent across the entire sensor. However, this will probably not fully correct the entire lens (as you already concluded yourselves in line 486). I do not see a need to change any data / results. But it is worth to correct the statements and to mention the potential effect of polarization aberration of lenses.

Technical corrections:

- Eq. (1): It should be $I_{right} - I_{left}$ and not $I_{left} - I_{right}$, see [1], page 64, Eq. (3.1)
- Line 137, 142: altitude instead of attitude

[1]: Chipman, Russell, Wai Sze Tiffany Lam, and Garam Young. *Polarized light and optical systems*. CRC press, 2018.