Page 7, lines 3 and 4: "This ensures a minimum level of attenuation of the signal from the surface." I believe the authors want an adequate level of attenuation of the surface return, rather than a minimum (i.e. low) level of attenuation, otherwise the following statement that "The intent of this threshold is the same as the previous criteria" is not coherent.

Equation (2)

$$\gamma'_{water,calc} = (2\eta_c S_c)^{-1}$$

Equation (3)

$$\eta_c = \left(\frac{1-\delta'}{1+\delta'}\right)^2$$

The calibration of SODA is not very well explained. Presumably η_c comes from Eq. (3) and provides a way to estimate η_{calibr} when there are aerosols above clouds using the layer integrated depol. The implication of Eq.(8), that the global mean value of S_c is assumed to be 19 sr should be stated. How the binning by latitude is done should also be stated since otherwise substituting equation (8) into (9), at face value, suggests that $S_{c,lat}$=19. Providing ranges for A, B and $S_{c,lat}$ if not figures, would be helpful to the reader to understand how much the data is being corrected for potential calibration and other issues.

This is also relevant to p.16 lines 25,26 where it is stated that "The DRM algorithm assumes a constant lidar ratio of 19 sr, independent of the cloud droplet effective radius." It was previously stated that the latitudinal dependence in S_c,lat allowed for calibration and actual variations in S_c. What is true?

p.18, line 20: "The background reaches 0.09 in AOT at 532 nm." Is this the extrapolated POLDER optical depth for the undetermined cases? If so, say so.

p.20, line 9, 10: "imaginary part of 0.0001", the authors should really provide an estimate of the volume mixing ratio of black carbon needed to provide such an imaginary index. It seems unlikely that such an imaginary index is plausible for droplets of 10 μm or more given the required mass of carbon.