

This manuscript introduces a microwave scattering properties database of oriented ice crystal and aggregate particles focusing on radar applications. The main feature of this database is that it considers more than 3000 shapes to account for habit variations in ice microphysical schemes. The database will be very useful for radar remote sensing and data assimilation, and the manuscript is well-written. I have several suggestions as follows.

1. The current database covers four frequencies. Do you have plans to extend it to cover more higher frequencies and make it available to passive microwave remote sensing?

2. In the introduction section, only the DDA-based databases are mentioned. There are also microwave scattering property databases developed not based on the DDA method, such as: Ding, J., L. Bi, P. Yang, G. W. Kattawar, F. Weng, Q. Liu, and T. Greenwald, 2017: Single-scattering properties of ice particles in the microwave regime: temperature effect on the ice refractive index with implications in remote sensing, *J. Quant. Spectrosc. Radiat. Transfer*, 190, 26-27. The authors may consider also mention these studies.

3. In Eq. (1), the formulation of amplitude scattering matrix usually have two common forms:

$$\begin{bmatrix} S_2 & S_3 \\ S_4 & S_1 \end{bmatrix} \text{ or } \begin{bmatrix} S_{11} & S_{12} \\ S_{21} & S_{22} \end{bmatrix}$$

The form in Eq. (1) $\begin{bmatrix} S_1 & S_4 \\ S_3 & S_2 \end{bmatrix}$ is less common. The authors may consider modify the formulation.