Review: "Purely light-scattering aerosols could induce positive shortwave radiative forcing over high-albedo surfaces" by Longrui Zhang et al.

The authors demonstrated that stratospheric aerosol injections using purely scattering particles can produce positive shortwave radiative forcing over high-albedo surfaces at low solar zenith angles. The authors perform radiative transfer simulations using libRadtran (discrete-ordinate method) and the two-stream approximation.
Overall, I think it is an interesting and timely study that fits the scope of ACP. I suggest minor revisions.
Below are some general and specific comments intended to improve the manuscript.

General comments

1. Why is the number of ordinates 16 (discrete ordinates method)? It would be good to explain this in the manuscript. The DISORT accuracy depends critically on the number of discrete ordinates, particularly for phase functions with a pronounced forward peak. Furthermore, the relationship to Legendre moment truncation (here nnom = 17) is crucial. In DISORT, the number of Legendre moments of the phase function expansion must correspond at least to the number of streams/ the number of ordinates. With 16 streams and 17 moments, the minimum requirement is met only just, with a buffer of one moment. Was a delta-M scaling used to correctly cover the forward peak of the phase function despite the small number of moments? 17 = 16 + 1 is a limit that is just accepted by DISORT, but is it also based on a convergence analysis (with nnom = 17, 32, 64, . . .) to ensure that the phase function resolution is not an additional factor (for ϕ values)?

2. All results rely on a single particle size distribution. Since the authors explicitly generalise to "any optically thin scattering layer" (Abstract, l. 21) and specifically to reentry-derived alumina, whose PSD likely differs from the SAI-optimised configuration used here, a sensitivity analysis across particle size would be valuable to confirm that the quantitative results are not strongly dependent on the chosen PSD. At minimum, the transferability to other PSD should be discussed.

3. What is the assumed particle shape of the alumina particles (spherical, fractal aggregates, ...). Please explain. Furthermore, it should be discussed whether the assumed shape of the particles has an impact on the results.

4. The R↑ values derived from Eq. 11 in the manuscript can be cross-checked using a theoretically exact, independent method. According to the classical relationships of the radiative transfer theory, R↑ should be the flux-weighted integral of R↓ (ϕ) over all angles of incidence. Since R↓ (ϕ) is already available from the DISORT simulations, would this be a method independent of the functional form of the adding model? Perhaps I have missed an obvious point.

5. L. 347 - 349: Non-Lambertian effects are already being discussed here in relation to clouds. Does

the same limitation apply to snow and ice? Particularly for small solar zenith angles, and especially where fresh snow exhibits a pronounced forward peak?

6. It would be helpful to have a comment on the neglect of polarisation, as well as a brief assessment of the order of magnitude of the effect. To what extent does this affect the results.

7. Since the central mechanism (ϕ) explicitly relies on very oblique optical paths of the diffuse upwelling radiation within the layer, a brief comment would be helpful as to whether plane-parallel approximation remains unproblematic for these path components (near 90° local zenith angles) given the layer geometry used here (18 - 23 km). A comparison with the pseudo-spherical DISORT option in libRadtran could quantitatively substantiate this.

Specific comments

1. It would be a good to include the chemical formula for alumina at some point in the manuscript.

2. L. 84: The abbreviation of ADRF was already introduced before.

3. L. 96: The abbreviation of RTE was already introduced before.

4. Figure 1: There is a full stop missing after 'Figure 1' in the figure caption. In addition, after '430 nm' and '18 km to 23 km', there are spaces missing between the numbers and the unit.

5. Caption Figure 2: Incorrect panel assignment. Panel (a) shows the diurnal SZA trend (not ARDF).

6. L. 177: ')' is missing after '(Fig. 2.'.

7. L. 179: ')' is missing after '(Fig. 2,'.

8. L. 183: ')' is missing after '(Fig. 2,'.

9. L. 188: '...is non-absorbing...' → are non absorbing

10. L. 234: Please use the abbreviation for SZA, as previously introduced.

11. L. 258: Please correct the reference (add the year).

12. Figure 4: Y-axis labelling: A different symbol to the one used in the text?

13. L. 341: Two full stops have been used at the end of the sentence here. Please correct this.

14. L. 351: 'PyMisScatt' → PyMieScatt?

15. L. 352: Please correct the reference.