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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Aircraft-based observation of meteoric material in lower stratospheric aerosol particles between 15 and 68° N" *by* Johannes Schneider et al.

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This interesting paper presents a nice analysis of the solid material collected in the stratosphere and assumed to originate from meteorites. Nevertheless, I have some troubles with the content of the paper:

1) How can the authors be sure that the analyzed particles have a non-terrestrial origin? Solid particles originated from Earth during various process, or even produced inside the atmosphere, can have the same chemical elements. Some dynamical processes can lift these particles in the stratosphere.

2) Confusion is made by the author all along the paper between meteoritic disintegration and interplanetary dust (IDP). Some of the particles of such size (1-300 μm) could be interplanetary dust grains mainly coming from comets, not particles coming from meteorite disintegration. Also, some of these (large) particles can survive the atmospheric entry, as those found in the Antarctica ices. The author must consider the works done by the teams that collect such particles. Also, interplanetary dust and grains coming from meteorites do not have the same composition as cometary grains. The authors must consider the works done on the composition of cometary grains and interplanetary grains, and not only on the composition of meteorites.

3) Since the authors have collected a large number of such grains, they can calculate the total concentration and even the total mass-concentration, and they must verify that these values are consistent with the expected flux of solid material (coming from comets and meteorites) that entry the Earth atmosphere. The author must also consider the concentration of interplanetary dust at Earth level.

4) We have discussed the problem of the various origins of solid material in the stratosphere, and of the vertical transport of the particles, in the paper now published in "Atmosphere": J.âĂŘB. Renard, G. Berthet, A.âĂŘC. LevasseurâĂŘRegourd, S. Beresnev, A. Miffre, P. Rairoux, D. Vignelles, Fabrice Jégou, Origins and Spatial Distribution of NonâĂŘPure Sulfate Particles (NSPs) in the Stratosphere Detected by the BalloonâĂŘBorne Light Optical Aerosols Counter (LOAC), Atmosphere 2020, 11, 1031; doi:10.3390/atmos11101031. We discuss the IDP and meteoritic material confusion done in many papers; we present a summary of the properties of the IDP and of cometary material. The authors must be advised that we had submitted a few month ago in ACP a previous version of our paper, but it was rejected by an associated editor that is in the same laboratory as one author of this Schneider et al. paper. Obviously, we are sure this is just a coincidence. Nevertheless, we encourage the authors to consider our work and to clarify their analysis considering the various sources that can exist for the material they have identified.

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