



## *Corrigendum to* "Review of experimental studies of secondary ice production" published in Atmos. Chem. Phys., 20, 11767–11797, 2020

## Alexei Korolev<sup>1</sup> and Thomas Leisner<sup>2,3</sup>

<sup>1</sup>Environment and Climate Change Canada, Toronto, Canada
<sup>2</sup>Institute of Meteorology and Climate Research, Karlsruhe Institute of Technology, Karlsruhe, Germany
<sup>3</sup>Institut für Umweltphysik, University of Heidelberg, Heidelberg, Germany

Correspondence: Alexei Korolev (alexei.korolev@canada.ca)

Published: 14 December 2020

Several errors were inadvertently made in Korolev and Leisner (2020).

The reference to Phillips et al. (2018) in the following sentence: "Collisional ice fragmentation was also studied theoretically by Hobbs and Farber (1972), Vardiman (1978), and Phillips et al. (2018)." (p. 11781, left column, third paragraph) was misplaced and does not belong to this sentence. It should be read as "Collisional ice fragmentation was also studied theoretically by Hobbs and Farber (1972), Vardiman (1978)."

In the following sentence: "The theoretical considerations of collisional fragmentation in Yano and Phillips (2011), Yano et al. (2016), and Phillips et al. (2018) were based on the rate of ice production from Takahashi et al. (1995)" (p. 11781, right column, fourth paragraph). The reference of Phillips et al. (2018) was mistakenly indicated, and it should be replaced by Phillips et al. (2017). For an accurate reflection of the nature of the set of aforementioned theoretical works, the sentence should read as follows: "The theoretical framework of collisional fragmentation developed by Phillips et al. (2017), predicting numbers of fragments for all ice-microphysical species, was calibrated against experimental results of Vardiman (1978) and Takahashi et al. (1995). The theory of cloud glaciation by Yano and Phillips (2011, 2016) and Yano et al. (2016) applied an estimate of fragments per natural collision from Takahashi et al. (1995)."

In the lab work of Takahashi et al. (1995) discussed on p. 11781 (left column, fourth paragraph) one of the spheres was allowed to grow through deposition in still air, whereas the second one was grown by riming at a speed of  $4 \text{ m s}^{-1}$  in a cloud with 12 mm diameter droplets.

The authors would like to thank Vaughan Phillips and Jun-Ichi Yano for identifying the above errors.

## References

- Hobbs, P. V. and Farber, R.: Fragmentation of ice particles in clouds, Journal de Recherches atmosphériques, 6, 245–258, 1972.
- Phillips, V. T. J., Yano, J.-I., and Khain, A.: Ice multiplication by breakup in ice–ice collisions. Part I: Theoretical formulation. J. Atmos. Sci., 74, 1705–1719, 2017.
- Phillips, V. T. J., Patade, S., Gutierrez, J., and Bansemer, A.: Secondary Ice Production by Fragmentation of Freezing Drops: Formulation and Theory, J. Atmos. Sci., 75, 3031–3070, https://doi.org/10.1175/jas-d-17-0190.1, 2018.
- Takahashi, T., Nagao, Y., and Kushiyama, Y.: Possible High Ice Particle Production during Graupel–Graupel Collisions, J. Atmos. Sci., 52, 4523–4527, 1995.
- Vardiman, L.: The Generation of Secondary Ice Particles in Clouds by Crystal–Crystal Collision, J. Atmos. Sci., 35, 2168–2180, https://doi.org/10.1175/1520-0469(1978)035<2168:TGOSIP>2.0.CO;2, 1978.
- Yano, J.-I. and Phillips, V. T. J.: Ice–Ice Collisions: An Ice Multiplication Process in Atmospheric Clouds, J. Atmos. Sci., 68, 322–333, https://doi.org/10.1175/2010JAS3607.1, 2011.
- Yano, J.-I., Phillips, V. T. J., and Kanawade, V.: Explosive ice multiplication by mechanical break-up in ice–ice collisions: a dynamical system-based study, Q. J. Roy. Meteor. Soc., 142, 867–879, https://doi.org/10.1002/qj.2687, 2016.