

UC San Diego

UC San Diego Previously Published Works

Title

Corrigendum to "Gas transport in firn: multiple-tracer characterisation and model intercomparison for NEEM, Northern Greenland" published in Atmos. Chem. Phys., 12, 4259--4277, 2012

Permalink

<https://escholarship.org/uc/item/0hc483jz>

Journal

Atmospheric Chemistry and Physics, 14(7)

ISSN

1680-7316

Authors

Buizert, C
Martinerie, P
Petrenko, VV
[et al.](#)

Publication Date

2014

DOI

10.5194/acp-14-3571-2014

Peer reviewed



Corrigendum to

“Gas transport in firn: multiple-tracer characterisation and model intercomparison for NEEM, Northern Greenland” published in *Atmos. Chem. Phys.*, 12, 4259-4277, 2012

C. Buizert¹, P. Martinerie², V. V. Petrenko³, J. P. Severinghaus⁴, C. M. Trudinger⁵, E. Witrant⁶, J. L. Rosen⁷, A. J. Orsi⁴, M. Rubino^{1,5}, D. M. Etheridge^{1,5}, L. P. Steele⁵, C. Hogan⁸, J. C. Laube⁸, W. T. Sturges⁸, V. A. Levchenko⁹, A. M. Smith⁹, I. Levin¹⁰, T. J. Conway¹¹, E. J. Dlugokencky¹¹, P. M. Lang¹¹, K. Kawamura¹², T. M. Jenk¹, J. W. C. White³, T. Sowers¹³, J. Schwander¹⁴, and T. Blunier¹

¹Centre for Ice and Climate, Niels Bohr Institute, University of Copenhagen, Juliane Maries vej 30, 2100 Copenhagen Ø, Denmark

²Laboratoire de Glaciologie et Géophysique de l'Environnement, CNRS, Université Joseph Fourier-Grenoble, BP 96, 38 402 Saint Martin d'Hères, France

³Institute of Arctic and Alpine Research, University of Colorado, Boulder, CO 80309, USA

⁴Scripps Institution of Oceanography, Univ. of California, San Diego, La Jolla, CA 92093, USA

⁵Centre for Australian Weather and Climate Research/ CSIRO Marine and Atmospheric Research, Aspendale, Victoria, Australia

⁶Grenoble Image Parole Signal Automatique, Université Joseph Fourier/CNRS, Grenoble, France

⁷Department of Geosciences, Oregon State University, Corvallis, OR 97331-5506, USA

⁸School of Environmental Sciences, University of East Anglia, Norwich, NR4 7TJ, UK

⁹Australian Nuclear Science and Technology Organisation, Locked Bag 2001, Kirrawee DC NSW 2232, Australia

¹⁰Institut für Umweltphysik, University of Heidelberg, INF 229, 69120 Heidelberg, Germany

¹¹NOAA Earth System Research Laboratory, Boulder, Colorado, USA

¹²National Institute of Polar Research, 10-3 Midorichou, Tachikawa, Tokyo 190-8518, Japan

¹³The Earth and Environmental Systems Institute, Penn State University, 317B EESB Building, University Park, PA 16802, USA

¹⁴Climate and Environmental Physics, Physics Institute, University of Bern, Sidlerstrasse 5, 3012 Bern, Switzerland

Correspondence to: C. Buizert (buizert@science.oregonstate.edu)

It was kindly pointed out to us by M. Battle that Eq. (2) on p. 4263 contains a typo, and should instead be

$$[X]_{\text{corr}}(z) = \frac{[X]_{\text{meas}}(z)}{\Delta M \delta_{\text{grav}}(z)/1000 + 1}, \quad (2)$$

where $[X]_{\text{corr}}$ ($[X]_{\text{meas}}$) is the gravity-corrected (measured) mixing ratio of gas species X, $\Delta M = M_X - M_{\text{air}}$ is the molar mass difference between gas X and air, and $\delta_{\text{grav}}(z)$ is the gravitational fractionation per unit mass difference at depth z . All calculations in the study were done correctly, following Eq. (2) as given here.

Furthermore, the present-day Δage value for NEEM is incorrect in the original manuscript, and underestimates Δage by 6 years. The correct value is 188^{+3}_{-9} yr. In our original, incorrect calculation we used the ice age in years before 2000 CE (b2k), while we should have used the ice age relative to the surface ice age. In the updated Δage calculation we use the ice age found by annual layer counting of the shallow NEEM 2011 S1 core (Sigl et al., 2013). The NEEM chronology published in Rasmussen et al. (2013) uses the correct, updated Δage estimate.

Both errors addressed in this corrigendum affect neither the discussion nor the main conclusions of the original publication.

References

- Sigl, M., McConnell, J. R., Layman, L., Maselli, O., McGwire, K., Pasteris, D., Dahl-Jensen, D., Steffensen, J. P., Vinther, B., Edwards, R., Mulvaney, R. and Kipfstuhl, S.: A new bipolar ice core record of volcanism from WAIS Divide and NEEM and implications for climate forcing of the last 2000 years, *J. Geophys. Res.-Atmos.*, 118, 2169–8996, doi:10.1029/2012JD018603, 2013.
- Rasmussen, S. O., Abbott, P. M., Blunier, T., Bourne, A. J., Brook, E., Buchardt, S. L., Buizert, C., Chappellaz, J., Clausen, H. B., Cook, E., Dahl-Jensen, D., Davies, S. M., Guillevic, M., Kipfstuhl, S., Laepple, T., Seierstad, I. K., Severinghaus, J. P., Steffensen, J. P., Stowasser, C., Svensson, A., Vallelonga, P., Vinther, B. M., Wilhelms, F. and Winstrup, M.: A first chronology for the North Greenland Eemian Ice Drilling (NEEM) ice core, *Clim. Past.*, 9, 2713–2730, doi:10.5194/cp-9-2713-2013, 2013.