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Corrigendum to

"Atmospheric column-averaged mole fractions of carbon dioxide at 53 aircraft measurement sites" published in Atmos. Chem. Phys. 13, 5265–5275, 2013

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Errors occurred through the omission of a contribution and an acknowledgement for using the Department of Energy (DOE) data over the Southern Great Plains (SGP) site. The authors would like to correct the author list as described above; text in Sect. 1 Introduction, Sect. 2 Observation, Sect. 4 Results and discussion, Sect. 5 Conclusions and the Supplement; captions in Table 1, Fig. 4, and Fig. S2; corrects to Figs. 1 and 5; and the addition of text to Sect. 2 Observations, Acknowledgements, and References.

We apologize to readers for the inconvenience.

1 Introduction

In the first sentence of the last paragraph, the corrected sentence is as follows:

"In this study, we report the results of XCO_2 calculations carried out with data provided by CONTRAIL, measurements made by the US National Oceanic and Atmospheric Administration (NOAA), Department of Energy (DOE) and Japan's National Institute for Environmental Studies (NIES) at 53 sites between 2007 and 2009."

In the third sentence of the last paragraph, the corrected sentence is as follows:

"Section 2 briefly describes the measurements by CONTRAIL, NOAA, DOE, and NIES."

2 Observations

In the first sentence of the first paragraph, the corrected sentence is as follows:

"Aircraft measurements obtained by CONTRAIL, NOAA, DOE, and NIES between 2007 and 2009 were used in this study."

In the third sentence of the first paragraph, the corrected sentence is as follows:

"The locations of the CONTRAIL, NOAA, DOE, and NIES observations are shown in Fig. 1, and they are listed along with their three-letter site codes in Table 1."

In the fourth sentence of the second paragraph, the corrected sentence is as follows:

"These profiles differ from those obtained by the NOAA, DOE, and NIES aircraft because the commercial aircraft moves horizontally over a few hundred kilometers during their takeoff and landing."

After the third paragraph, the following paragraph should be added:

"The US DOE supports an aircraft-based observation program in the Southern Great Plains (SGP) as part of a joint effort between the Atmospheric Radiation Measurement (ARM) program, NOAA/ESRL, and the Lawrence Berkeley National Laboratory ARM Carbon project (Biraud et al., 2013). Flasks are collected approximately twice per week by

small aircraft (Cessna 172 initially, then Cessna 206) on a series of horizontal legs ranging in altitude from 460 m to 5.5 km and analyzed by NOAA/ESRL for a suite of carbon cycle gases and isotopes, thereby linking all flights to the global cooperative air-sampling network."

3 Results and discussion

In the sixth sentence of the sixth paragraph, the corrected sentence is as follows:

"The uncertainties at NOAA, DOE and NIES sites were basically uniform with values less than 1 ppm."

In seventh sentence of the sixth paragraph, the corrected sentence is as follows:

"At the NOAA and DOE sites with the largest uncertainties (AAO, LEF, SGP, and WGC), the uncertainties were nearly 1 ppm."

4 Conclusions

In the first sentence of the first paragraph, the corrected sentence is as follows:

"XCO_2 at 53 sites in the world was calculated from aircraft measurement data obtained by CONTRAIL, NOAA, DOE, and NIES between 2007 and 2009 along with tower data obtained at the surface and the ACTM simulated age of air to estimate profiles in the stratosphere."

5 Supplement

The authors would like to correct the author list as follows: "Y. Miyamoto, M. Inoue, I. Morino, O. Uchino, T. Yokota, T. Machida, Y. Sawa, H. Matsueda, C. Sweeney, P. P. Tans, A. E. Andrews, S. C. Biraud, P. K. Patra."

In the second sentence, the corrected sentence is as follows:

"Here, results for all the 53 sites are shown in Fig. S1 (CONTRAIL sites), S2 (NOAA and DOE sites) and S3 (NIES sites)."

The corrected caption in Fig. S2 is as follows:

"Figure S2. Same as Fig. S1 but showing the results at the NOAA and DOE sites."

Before the last sentence, one sentence should be added in the acknowledgement as follows:

Acknowledgements. DOE flights were supported by the Office of Biological and Environmental Research of the US Department of Energy under contract No. DE-AC02-05CH11231 as part of the Atmospheric Radiation Measurement Program (ARM), ARM Aerial Facility, and Terrestrial Ecosystem Science Program.

In the caption of Fig. 4, "NOAA" should be replaced by "NOAA and DOE".

The corrected Fig. 1 is as follows:

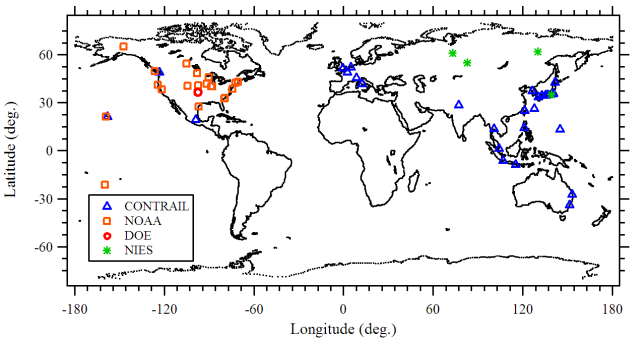

Fig. 1. Observation sites used in this study. Open triangles, open squares, an open circle, and asterisks indicate CONTRAIL, NOAA, DOE, and NIES sites, respectively.

A reference should be added as follows:

References

Biraud, S. C., Torn, M. S., Smith, J. R., Sweeney, C., Riley, W. J., and Tans, P. P.: A multi-year record of airborne CO_2 observations in the US Southern Great Plains, Atmos. Meas. Tech., 6, 751–763, doi:10.5194/amt-6-751-2013, 2013.

The corrected Table 1 is as follows:

Table 1. Locations of the sites where aircraft measurements were made.

(a) CONTRAIL			
CODE	Latitude (° N)	Longitude (° E)	
AMS	52.3	4.8	Schiphol Airport, the Netherlands
LHR	51.5	−0.5	Heathrow Airport, UK
YVR	49.2	−123.2	Vancouver International Airport, Canada
CDG	49.0	2.5	Charles de Gaulle International Airport, France
MXP	45.6	8.7	Milan Malpensa International Airport, Italy
CTS	42.8	141.7	New Chitose Airport, Japan
FCO	41.8	12.3	Fiumicino Airport, Italy
ICN	37.5	126.5	Incheon International Airport, South Korea
NRT	35.8	140.4	Narita International Airport, Japan
HND	35.6	139.8	Tokyo International Airport, Japan
NGO	34.9	136.8	Chubu Centrair International Airport, Japan
ITM	34.8	135.4	Osaka International Airport, Japan
HIJ	34.4	132.9	Hiroshima Airport, Japan
KIX	34.4	135.2	Kansai International Airport, Japan
FUK	33.6	130.5	Fukuoka Airport, Japan
DEL	28.6	77.1	Indira Gandhi International Airport, India
OKA	26.2	127.6	Naha Airport, Japan
TPE	25.1	121.2	Taiwan Taoyuan International Airport, Taiwan
HNL	21.3	−157.9	Honolulu International Airport, USA
MEX	19.4	−99.1	Mexico City International Airport, Mexico
MNL	14.5	121.0	Ninoy Aquino International Airport, Philippines
BKK	13.7	100.7	Suvarnabhumi International Airport, Thailand
GUM	13.5	144.8	Guam International Airport, USA
SIN	1.4	104.0	Singapore Changi International Airport, Singapore
CGK	−6.1	106.7	Jakarta International Soekarno-Hatta Airport, Indonesia
DPS	−8.7	115.2	Ngurah Rai Airport, Indonesia
BNE	−27.4	153.1	Brisbane Airport, Australia
SYD	−33.9	151.2	Kingsford Smith Airport, Australia
(b) NOAA			
CODE	Latitude (° N)	Longitude (°E)	
AAO	40.1	−88.6	Airborne Aerosol Observing, Illinois
BNE	40.8	−97.2	Beaver Crossing, Nebraska
BRM	54.3	−105.0	Berms, Saskatchewan
CAR	40.4	104.3	Briggsdale, Colorado
CMA	38.8	−74.3	Cape May, New Jersey
DND	48.4	−97.8	Dahlen, North Dakota
ESP	49.6	−126.4	Estevan Point, British Columbia
HAA	21.2	−159.0	Molokai Island, Hawaii
HFM	42.5	–72.2	Harvard Forest, Massachusetts
HIL	40.1	–87.9	Homer, Illinois
LEF	45.9	−90.3	Park Falls, Wisconsin
NHA	43.0	−70.6	Worcester, Massachusetts
PFA	65.1	−147.3	Poker Flat, Alaska
RTA	−21.3	−159.8	Rarotonga, Cook Islands
SCA	32.8	−79.6	Charleston, South Carolina
TGC	27.7	−96.9	Sinton, Texas
THD	41.1	−124.2	Trinidad Head, California
VAA	32.9	−79.4	Cartersville, Georgia
WBI	41.7	−91.4	West Branch, Iowa
WGC	38.3	−121.5	Walnut Grove, California
(c) DOE			
CODE	Latitude (°N)	Longitude (°E)	
SGP	36.8	−97.5	Southern Great Plains, Oklahoma
(d) NIES			
CODE	Latitude (°N)	Longitude (°E)	
SGM	35.1	139.3	Sagami Bay, Japan
YAK	62	130	Yakutsk, Russia
NOV	55	83	Novosibirsk, Russia
SUR	61	73	Surgut, Russia

The corrected Fig. 5 is as follows:

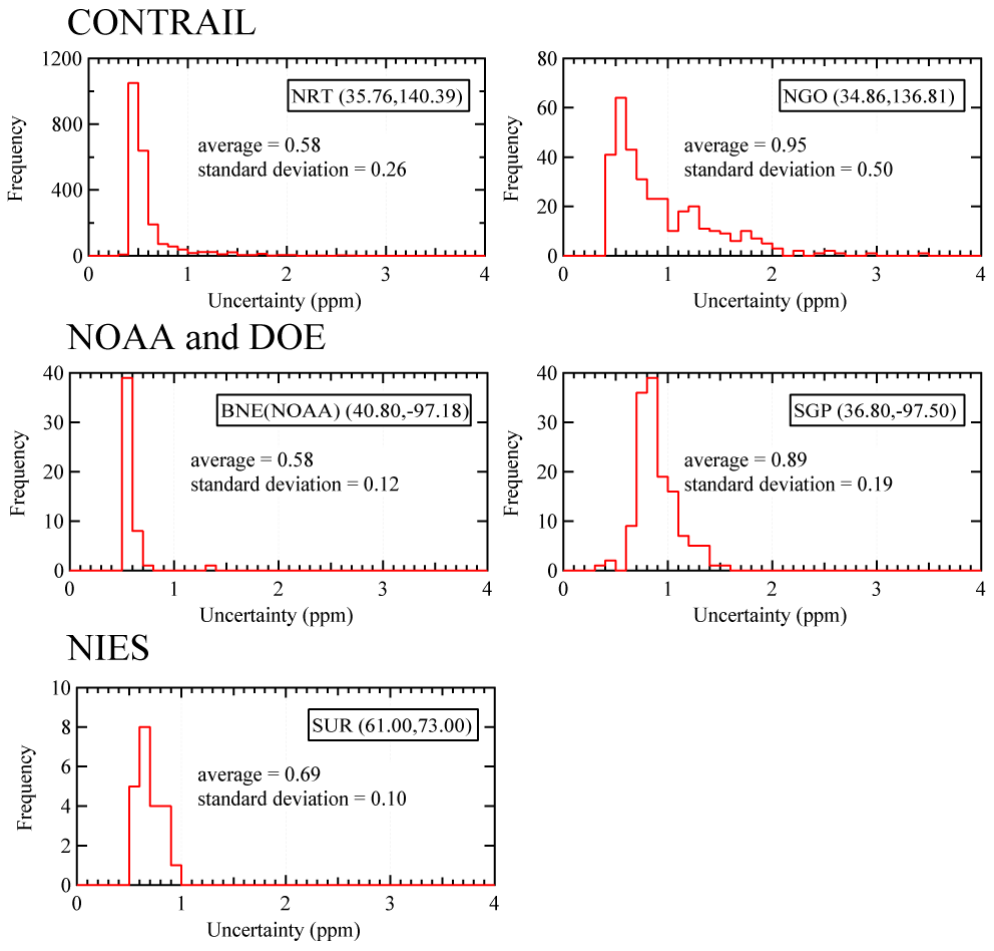

Fig. 5. Frequency distributions of the estimated uncertainties at five sites. The size of each frequency class is 0.1 ppm.