Atmos. Meas. Tech. Discuss., 1, S115–S118, 2009
www.atmos-meas-tech-discuss.net/1/S115/2009/

Atmospheric Measurement Techniques Discussions

Interactive comment on "Methodology and calibration for continuous measurements of biogeochemical trace gas and O_2 concentrations from a 300-m tall tower in central Siberia" *by* E. A. Kozlova et al.

Anonymous Referee #2

Received and published: 7 January 2009

General comments:

The paper presents an overview over the measurement and calibration techniques used to determine ambient concentrations of several trace gases and oxygen. An integrated and automated system consisting of a NDIR CO2 analyser, paramagnetic O2 analyser and gas chromatograph was installed on a tall tower in central Siberia with samples lines at five different heights.

The paper is excellent. It is well written, clearly structured and contains all neces-

Full Screen / Esc
Printer-friendly Version
Interactive Discussion
Discussion Paper

sary information. Though the single techniques presented in this paper are all well established the combination into one system automated and adapted for the special requirements of this remote site makes it important, also in regard for measurements at other remote sites.

The paper should be published with some minor changes.

Specific comments:

The paper describes very thoroughly the careful and comprehensive calibration and data evaluation procedures that have been performed. I am impressed how critical the authors judged their own data and which measures they took to ensure that their data is of highest quality.

Below are a few questions that occurred to me during reading.

On page 284 isotopic measurements from flasks are mentioned. Is 14C-CO2 indeed analysed from flasks?

I assume that the authors have tested all parts of the equipment. They report repeatability of the Target Tank measurements (page 303/304), however I urge them to provide any additional information they have that shows that 40um filters, nylon unions and rotameters do not influence the measurements. (Page 286)

On page 289, the authors state that changes in ambient pressure only change the bypass flow, but not the flow through the analyser. I am a bit doubtful about this; I think that both flows would be affected.

Page 295: The long term stability of WSS tanks is assessed by analysis of long term secondary standards 3-4 times a year. Please provide information that regulators are well purged and 'seasoned' before analysis so that no 'old' gas sitting in the regulators will be analysed. Also, are 3-4 analysis per year enough to provide sufficient calibration points?

AMTD

1, S115–S118, 2009

Page 300 and 301: The authors suggest possible reasons for the poor performance of ND21972, possible a leak. A large leak should show up in the pressure measurements of tanks, does it?

The authors speculate that the stabilisation of the FID and ECD detectors took >2 months. Were these brand new, off the shelf detectors? I find it otherwise hard to imagine that it took so long for them to settle down.

P 319, Figure 3: Any explanation for the strong baseline shift of the O2 measurements, shown in Figure 3?

Technical corrections:

P 283, L 23: order of citations 1995, 1997, 1998

P 296, L 20: Is the height or the area used? What determines when which is used?

P302, L 9: Can you give a % value for these tolerances?

P 305, L 10/11: not clear what is meant by this

P 305, L 18-20: please can you rephrase this sentence, it is not clear

P 305, L 17: Comma behind 'is'

P 307, L 22: Comma after 'tubing'

P 314, L 17-21: I can't find the Zhou et al. reference in the text

P 316, Table 2: A suggested change for the headers of the table, "Repeatability achieved", "from Target Tanks", "from airlines"

P 317, Fig 1: Diagram is very detailed, could it be simplified? In the figure caption could you replace "in actuality" by "in reality"?

P 320, Figure 4: Could you please add a zero line in the top diagram "CO2 difference"

AMTD

1, S115–S118, 2009

Interactive comment on Atmos. Meas. Tech. Discuss., 1, 281, 2008.

AMTD

1, S115–S118, 2009

Interactive Comment