

Interactive comment on “TRANC – a novel fast-response converter to measure total reactive atmospheric nitrogen” by O. Marx et al.

Anonymous Referee #2

Received and published: 1 February 2012

The paper describes the development and characteristics of a novel fast-response converter to measure total reactive atmospheric nitrogen. Contrary to measurements of total reactive odd nitrogen (NO_y) this also includes reduced species like NH_3 . The paper is well written and deserves publication in AMT. My only criticism is, that the description of the instrument performance is often rather qualitatively. It would be nice if the authors could give some more quantitative information:

The converter is described in great detail, but dimensions (length of the individual sections, inner volume of the whole converter, flow through the converter and residence time inside the converter) would be quite helpful.

During the NO calibrations a low positive NO signal slightly different from 0 was observed.

served. Please be more quantitative by quoting the mean offset and its standard deviation. How does the offset change with time? Also associated to the NO calibrations: Does it really take approx. 15 min to reach a clearly stable signal? Why is this?

In Figure 4 please provide a linear regression analysis including standard deviations for the slope and the offset. Again a quantitative measure for the offset is not given. Although in the cited field experiment HNO_3 was only of limited importance, this might be different in other environments. Therefore, I think it is necessary to determine the conversion efficiency for HNO_3 in the lab. In addition, you state that N_2O will not be converted. Has this been tested? Due to its high mixing ratio even a small conversion of N_2O might be significant.

The description of the in-field intercomparison is again rather qualitative. It is only stated in the final section of the paper that the TRANC tends to measure slightly higher values compared to the sum of the individual measurements. Here again a quantitative regression analysis based on the data presented in Figure 7 would be helpful.

Interactive comment on Atmos. Meas. Tech. Discuss., 4, 7623, 2011.