

Interactive comment on “The Network for the Detection of Atmospheric Composition Change (NDACC): History, status and perspectives” by Martine De Mazière et al.

Anonymous Referee #2

Received and published: 19 September 2017

This paper by De Mazière et al., presents an overview of the long-term ground-based network for measurements of atmospheric composition on a global scale named NDSC (Network for the Detection of Stratospheric Change) at the beginning in 1991 then NDACC (Network for the Detection of Atmospheric Composition Change) since 2005. NDACC is focused on the chemical and physical state of the stratosphere and upper troposphere at global scale thanks to more than 80 stations distributed over the globe.

This paper is clear and well written. The introduction providing a brief history recalling the need for such international network is particularly pleasant to read. The following subsections aim to explain the organizational structure and workings as well as

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to highlight the scientific accomplishments of NDACC over the past 25 years, before presenting further developments and perspective. This paper is definitely of interest for the community of data providers, cooperating networks and the broad community of users. No doubt that such an overview paper deserves publication. I recommend publication of this manuscript after that some points are considered.

It is worth noting that this paper also aims at being the introductory paper for the special issue “Twenty-five years of operations of the Network for the Detection of Atmospheric Composition Change (NDACC)”. This way, the reader can expect to find here information on the other papers of the special issue or at least some highlights and context, but this is not exactly the case. This is actually my major concern with this manuscript. It misses a lot of references from the special issue and also from the past literature on topics where NDACC data set was definitely a major contributor. I give below four examples:

- Sub-section 3.1 “High-quality ozone datasets” does not mention the Steinbrecht et al., 2017 analysis (Atmos. Chem. Phys., 17, 10675-10690, <https://doi.org/10.5194/acp-17-10675-2017>) which is (i) part of the special issue and (ii) present the most recent results based on 14 NDACC stations measuring ozone profiles with different techniques.
- Sub-section 3.2 “Reference measurements for satellite validation” does not present any reference from the special issue. There is at least Zhou et al., 2016 (Atmos. Meas. Tech., 9, 5621-5636, <https://doi.org/10.5194/amt-9-5621-2016>), Khaykin et al., 2017 (Atmos. Chem. Phys., 17, 1829-1845, <https://doi.org/10.5194/acp-17-1829-2017>), Knepp et al., 2017 (Atmos. Meas. Tech. Discuss., <https://doi.org/10.5194/amt-2017-90>), etc. . .
- Sub-section 3.4 “Providing precise documentation of the multi-decadal trends of many tropospheric and stratospheric constituents” : At the end of the paragraph, Figure 12 and the reference Franco et al., 2016 illustrate the question of the Northern Hemisphere distribution and increase of ethane linked to oil and natural gas extraction. I think this

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part of the manuscript should also refer to recent analysis by Helmig et al., Nature Geoscience 2016 (see complete reference below). Besides, The NDACC special issue is also containing a paper on this subject by Hausman et al., 2016 (Atmos. Chem. Phys., 16, 3227-3244, <https://doi.org/10.5194/acp-16-3227-2016>, 2016). I suggest to refer to this companion paper in the present manuscript.

- Sub-section 3.7 “Evaluating coupled-chemistry-climate models” presents no reference at all, neither from the special issue nor from the past literature, although NDACC data have been extensively used in the CCMVal activities for example. At least a few key reference should be given in this paragraph. In the special issue, there is also at least one paper related to this activity not cited in this manuscript (Zeng et al., 2017, Atmos. Chem. Phys., 17, 10495-10513, <https://doi.org/10.5194/acp-17-10495-2017>)

Minor comments :

- page 4, line 14 : double dot after “lssue”.
- page 13, line 6 : Why not mentioning CAMS in this list ?
- page 13, line 13 : It is is ambiguous to start a sentence by “Figure 5 shows ...” and finishing it by “... ozonesondes (not included in Fig. 5...)”. This last part of the sentence should be removed. A better solution would be to propose another sentence to justify why ozonesondes are not included in this figure. Besides, readers may also miss information/highlights on the NDACC activities regarding these ozonesondes in such an overview paper.
- page 15, line 13 : Anton is misspelled.
- page 27, line 6 : Acronyms and reference (or web site) should be given for AGAGE, HATS, Earlinet and MPLnet.
- page 27, line 10 : I’m afraid “e-infrastructure needs” is not clear enough for the reader. Needs clarification.

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Reference :

Helmig, D., S. Rossabi, J. Hueber, P. Tans, S. Montzka, K. Masarie, K. Thoning, C. Plass-Duelmer, A. Claude, L. Carpenter, A.C. Lewis, S. Punjabi, S. Reimann, M. Vollmer, R. Steinbrecher, J. Hannigan, L. Emmons, E. Mahieu, B. Franco, D. Smale, and A. Pozzer, Reversal of global atmospheric ethane and propane trends largely due to US Oil and natural gas production. *Nature Geoscience*. *Nature Geoscience*, 2016. 9: p. 490–495.

Interactive comment on *Atmos. Chem. Phys. Discuss.*, <https://doi.org/10.5194/acp-2017-402>, 2017.

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