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Comment

## ***Interactive comment on “Long-term observations of tropospheric particle number size distributions and equivalent black carbon mass concentrations in the German Ultrafine Aerosol Network (GUAN)” by W. Birmili et al.***

### **Anonymous Referee #2**

Received and published: 3 February 2016

General comments: This is a nice overview of the network, the contributing sites and instruments, the QA procedures and the data base and formats. It is highly refer-enceable, and creates a historical snapshot of the network which is surely to evolve. The descriptive paragraphs of the stations, the reasons for network inclusion or siting choices are particularly of interest and well presented. On first glance Figure 2 seems unnecessary, but in light of the essential need to understand the environment in which these aerosol measurement sites reside, this Figure is rather informative. Clever for-matting or layout of this could help to reduce the page requirements for this. The QA

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section is nicely detailed.

Comments on the database interface and data: The database is easy to browse, and the files are easy to download and read in ascii format. There is a wealth of material on formats, instruments, errors and contact information on the page. Seems complete and easy to use.

Specific Comments:

Section 3.6 Hohenpeissenberg: This description does not include the starting dates of the key instruments, or the start date of the observatory.

Section 3.11 Leipzig-West: The section mentions that the apartment blocks are heated by 'district heating'. What exactly does 'district heating' mean? Is the heat generated centrally (perhaps external to the area)? Is the purpose of the statement to indicate that the heat source is away from the measurement area, so not a contributor to this background measurement? If not, it may be of interest to know the fuel source for the heat.

Section 3.13 Mülheim-Styrum: The section states that this station is a 'regular' observation site in the LUQS network. What does that mean? Are there regular and irregular observation sites? Or is this simply a statement of membership in LUQS?

Sections 3.14 Neuglobsow and 3.16 Waldhof: Also use the phrase regular observation network. Same questions as above.

Section 4.1.2 SMPS (other designs): Two changes are discussed in this paragraph. Did these occur during the measurement period or in the design stage? If the instruments were changed mid-time series, was there an observable change in the measurements corresponding to the change, and how is this handled?

Page 953, line 13: Is there a need to name the internal format "scientific data format" if there is no description as to what that means? It is probably sufficient to say that it is stored internally. If this is important information, is it archived somewhere and therefore

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retrievable if necessary?

Section 5 Quality assurance: The statement is made that sometimes not all QA measures are possible because of funding and man-power issues. Are these periods noted in the data record?

Section 5: Quality assurance: This is a nice discussion of the procedures to ensure the measurement and maintenance of data quality standards. It might be nice to lead this with a note on what the tolerances are on the data quality in order for the results to have scientific merit.

Grammatical / word choice comments:

P937, line 8: Remove comma after 'both'.

P937, line 18: remove comma between 'atmosphere' and 'influencing'.

P 939 line 18: Remove comma after 'mass concentrations'.

P 942, line 24: use 'located along the roadside' or simply 'located roadside' instead of 'located at roadside'.

P 945 line1: Use 'located along the roadside' or simply 'located roadside' instead of 'located at roadside'.

P 945 line 15: Use 'construction work' instead of 'construction works'.

P945 line 20: Use 'high-traffic roads' instead of highly-trafficked roads'.

P946 line 22: Use 'in an easterly direction'; line 23: 'in a north-westerly direction'; line 24: 'in a westerly direction'.

P946 line 24: Use 'An account of the ...'

P 948 line 7: Change 'valleys' to 'valley's' (plural to possessive).

P 948 line 8: Remove the word 'been'.

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P948 line 15: Change ‘Measurements here can be taken representative...’ to ‘Measurements here are representative...’

P 949 line 3: Change ‘layer; especially’ to ‘layer, especially’.

P 950 line 11: Change ‘at the stations’ to ‘at stations’.

P 952 line 3: Remove the word ‘just’.

P 953 lines 20-21: Replace ‘configuration, and factually, inlets...’ with ‘configuration. Inlets...’

P 954 Lines 4-6: A better wording may be: ‘Quality assurance (QA) in GUAN consists of procedures to ensure both that measurements remain stable instrument-to-instrument (or site-to-site), but also instrument-to-standard.’

P 954 line 10: Replace ‘historic’ with ‘historical’.

P 954, line 17: Change personally to either ‘in person’ or ‘manually’.

P 956, line 5: Change ‘Check’ to ‘check’.

P 956, line 15: Remove the word ‘towards’.

P 957 line 23: Change ‘involves’ to ‘involve’.

P 958 lines 19 and 21: the word ‘procedure’ may be better than ‘measure’.

P 960 line 24-25: Change ‘diagnostics’ to ‘diagnostic’.

P 962, lines 25-26: ‘contact’ is preferable to ‘get in touch’.

P 963, line 24: include the word ‘the’: ‘through the EBAS...’

P 963, line 27: Here Ames is in all CAPS, whereas on subsequent lines it is Ames. Choose one.

P 963, line 28: The word ‘Formally’ is not necessary.

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