

Interactive comment on “The Outdoor Dust Information Node (ODIN) – development and performance assessment of a low cost ambient dust sensor” by G. Olivares and S. Edwards

Anonymous Referee #2

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The authors here address a relevant and timely subject, namely the performance of low cost particulate matter sensors. Thorough investigation of potential and limitations of these sensors for air quality monitoring is important work taking place in the community. However, the level of investigation and analysis in the current form of the manuscript is insufficient for publication in AMT.

While some of the work here is interesting (in particular demonstrating that temperature dependence in a controlled clean environment is different than in an environment with more variable meteorology and particulate matter content) the authors have not gone into a sufficient level of technical detail, clear, thorough explanation and scientific

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analysis for AMT and have produced what appears to be more along the lines of a conference paper, showing only very preliminary results. Consider the level of detail, for example, of Holstius et al 2014, which the current authors cited, and also consider where exactly the scientific novelty lies to distinguish this paper from that one. It is not clear that enough has been done to satisfy either of the two primary criteria of sufficient investigation or emphasis on novel components. Note that due to the large efforts in citizen science, commercial developments and research efforts (as captured for example in Holstius et al 2014 or in the AirBeam sensor), introducing the instrument platform described in the manuscript is insufficient in terms of novelty, therefore, the emphasis must be on exhaustive performance analysis not yet developed in the current manuscript.

However, to reiterate, the topic is highly relevant and worth pursuing. The potentially interesting science, suitable for a journal the quality of AMT, is to do a study along the lines of what is proposed in the “further work” section of the conclusion, while also describing and evaluating in detail the underlying detection technique of the sensors.

“The next steps in understanding the response of the ODIN to urban aerosols are to explore more in detail the performance of the Sharp dust sensor to specific aerosol populations (size and composition), explore the inter-instrument variability and the drivers for the baseline drift and temperature interference found here. We also expect to explore the transferability of correction coefficients with data currently being captured in Auckland and Christchurch and it is expected to generate results by September 2015.”

It is recommended that the authors complete this proposed work, expand the manuscript and resubmit.

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