Reviewer's report

Title: Air ions and mood outcomes: A review and meta-analysis

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Reviewer: Catherine Harmer

Reviewer's report:

This manuscript is a review and meta-analysis of the effect of negative ion exposure on depression and subjective measures. This is a novel review and makes a significant contribution to the literature on this topic. I have the following specific comments:

Minor Essential Revisions

1. The abstract concludes that negative ion exposure may improve depression at its 'highest' exposure level - this might be clearer for the reader if high and low density ion exposure was introduced earlier in the abstract.

2. The meta-analysis of depression scores is clear and well presented. However, I found the review section of the results difficult to follow. This is presented as a list of studies and results, but it would be more useful to provide a more critical analysis or way of sub-grouping these results - there are likely for example to be key differences between effects in an ill group compared to healthy controls. In addition, the effects of exposure duration and different scales was not raised in the results section but which may have affected outcome. I think this is important since the conclusion that negative ion exposure does not affect subjective state is based on these papers in the absence of a formal process of comparison and this needs therefore to be more compelling and organised.

3. The authors examine the effect of hours of exposure but I wonder if days of exposure might be more appropriate (i.e. all day for one day may have less effect than an hour a day for 24 days)?

4. The authors end by saying that the biological plausibility of the association needs further study. However, there are some studies which have examined potential mechanisms such as effects on the serotonin system and emotional processing which should be cited at this stage.

Level of interest: An article of outstanding merit and interest in its field

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:
I declare that I have no competing interests