

General Comments:

This paper is a welcomed addition to the literature as it provides a robust analysis of the comparison of multiple models to measured data on wet deposition. The fact that the analysis is supportive of past comparisons is an affirmation that there exists a pretty good understanding of what happens to S and N species once they are emitted to the atmosphere as a function of time and space.

That said, there are several areas where model results and measurements are not congruent. In addition, there are large regions of the earth where measurements are in short supply and thus there is a greater uncertainty whether the models are accurately estimating deposition.

The paper is generally descriptive and that in itself is extremely helpful to the community. What would also be helpful would be the addition of a section on 1) how models should be modified to make them more accurate, and 2) how measurement strategies should be changed to make them more useful to both the atmospheric modeling and the ecological communities.

In summary, the scientific quality and significance of this paper is excellent and the presentation quality of figures is such that it helps the reader identify the key points in each figure.

Specific Comments:

Page 6250, lines 16-17: "NO_y and NH_x are collectively identified as reactive Nitrogen (Nr)".

The common definition of reactive N is 'all species other than N₂' since 'reactive' includes N species that are biologically, chemically or radiatively active. Given this, it would be best not to use Nr to define NO_y and NH_x.

Pages 6254-5, Section 3: What about data from marine regions such as Bermuda or data from other remote or semi-remote locations?

Page 6255, line 6: "...qualified as 'good'."

How is 'good' defined?

Page 6262, line 26:

The equation $2 \cdot \text{SO}_x + \text{NO}_y - \text{NH}_x$ is correct if you are talking about atmospheric acidification. It is not correct if you are talking about potential ecosystem acidification because NH_x has the potential to be nitrified to NO₃ in the form of nitric acid. Thus the deposition of NH_x to soils is actually an acidifying process.

Page 6267, lines 16-19: For the Fowler et al. reference, the date needs to be changed to '2013' and the spelling of 'Leech' needs to be changed to 'Leach'.