

## Response to editor for paper: “Exploring the sensitivity of atmospheric nitrate concentrations to nitric acid uptake rate using the Met Office’s Unified Model” by A C Jones et al.

We thank Dr Murphy for the suggestions. The following comments have been addressed:

- Lines 43, 599 – Jimenez is misspelled

This has been changed

- Lines 58, 61 McDuffie is misspelled

This has been changed

- Line 138 – Is it correct to say “...comprises fine NH<sub>4</sub> and NO<sub>3</sub> aerosol in the Aitken, accumulation and coarse soluble modes...”? Isn’t fine aerosol by definition not coarse?

We use ‘fine’ to describe NO<sub>3</sub> associated with NH<sub>4</sub> to be consistent with other papers (e.g. Hauglustaine et al., 2014). The actual amount of NO<sub>3</sub> and NH<sub>4</sub> that ends up in the coarse mode is negligible – it mostly evaporates before growing to this size – so it’s appropriate to call this aerosol fine. The following has been added to the text:

“NH<sub>4</sub>NO<sub>3</sub> mostly remains in the Aitken and accumulation modes and thus the moniker ‘fine’ is appropriate.”

- Line 170 – Do these effective Henry’s law constants have units?

The units have been added

- Lines 219, 278 – correct ‘forwards’ to ‘forward’

This has been changed

- Line 633 – I suggest replacing “imprecisions” with “differences”

This has been changed