Interactive comment on “How are NH$_3$ dry deposition estimates affected by combining the LOTOS-EUROS model with IASI-NH$_3$ satellite observations?” by Shelley C. van der Graaf et al.

Anonymous Referee #2

Received and published: 11 July 2018

The paper investigates the effects of using satellite-derived NH$_3$ levels in a chemistry transport model on the modeled NH$_3$ concentrations and deposition fluxes. The paper is interesting and easy to follow. I am in favor of its publication in ACP provided it address the points below.

General Comments

- Can the authors elaborate on why results are different in the two years? - Is meteorology playing a role here? Is it possible to validate the meteorology to enrich the discussions? - In addition, both the original and IASI inferred NH$_3$ concentrations are overestimated both years. Can the authors discus why? Is it overestimation in emis-
sions or underestimation in deposition? - Why are the deposition fluxes not evaluated against observations?

Technical comments

Page 1 Line 33: ...do not show strong improvements...

Page 2, Line 30: ...ALLOW us to ......

Section 2.2. needs some more explanation of how the uncertainty is calculated.

Section 2.4.1. needs more information on the temporal variation of emissions, in particular NH3.

Page 8, Line 16: Erisman (1993) estimated...

Page 9, Line 16: ...dry deposition fluxes IN Eq. (3):