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Interactive comment on “Tropospheric vertical column densities of NO₂ over managed dryland ecosystems (Xinjiang, China): MAX-DOAS measurements vs. 3-D dispersion model simulations based on laboratory derived NO emission from soil samples” by B. Mamtimin et al.

Anonymous Referee #1

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The authors present a study of field measurements by a MAX-DOAS system of slant (SCD) and vertical (VCD) NO₂ column densities over the Taklimakan desert, focusing on an oasis-ecosystem in NW-China “Milan”. Moreover they computed simulated SCDs and VCDs through laboratory experiments and the use of a Lagrangian dispersion model. The objectives of this manuscript are clear, the methodology is well described and the results showed that the chosen approach to up-scale laboratory de-

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rived biogenic NO fluxes to ecosystem field conditions is effective. The manuscript is generally well written with high scientific interest. Consequently, I recommend the acceptance of this manuscript for publication in ACP after addressing a couple of minor issues and replying to some comments listed below.

Specific comments:

Page 19360, first paragraph: please insert an estimated value for the global NO_x emissions according to the literature as reference to compare the individual sources mentioned.

Page 19361, line 15: please add “e.g.” in the list of references.

Page 19362, line 27: a more recent reference, if it is available, would be beneficial.

Page 19363, Line 26: add “nm” after “420-450”.

Page 19365, line 2: define what the “m a.gr.” stands for, is this meters above ground?

Page 19366, line 16: Is the “59.8 dS m⁻¹” the right value for natural forests? Please check.

Page 19366, line 17: what “TDR” and “FDR” stand for?

Page 19366, line 25: please explain the “pF 4.2”.

Page 19378, section 3.3: what about the errors in both measured and simulated NO₂ VCDs? Please discuss further the results of Figure 5.

Page 19380, Conclusions: I suggest rewriting the first paragraph. I found it too difficult to follow its structure.

Page 19380, lines 22-24: please give a reference (or source) for the central European wheat field NO fluxes values.

Page 19393, Figure 6: at the color scale the white box corresponds to values greater than 10000. Shouldn't it be less than 10000? Please check it.

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Technical comments:

Abstract, line 15: please add “(3-D)” after the “three dimensional”.

Page 19363, line 3: please add the word “is” after ”mean wind speed”.

Page 19366, line 28: please remove “there”.

Page 19376, line 6: please delete “net” before “NO”.

Page 19378, lines 15: please delete “the” after “NO”.

Interactive comment on Atmos. Chem. Phys. Discuss., 14, 19357, 2014.

ACPD

14, C6182–C6184, 2014

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