

Response to Anonymous Referee #1 comments to paper “Tropospheric vertical column densities of NO₂ over managed dryland ecosystems (Xinjiang, P. R. China): MAX-DOAS measurements vs. 3D dispersion model simulations based on laboratory derived NO emission from soil samples”

The authors would like to thank Anonymous Referee #1 for his/her constructive comments.

Specific comments:

- 1. Page 19361, line 15: please add “e.g.” in the list of references.**
 - *“e.g.” have been added in the revised MS.*
- 2. Page 19362, line 27: a more recent reference, if it is available, would be beneficial.**
 - *In the revised MS, the reference “World Map of the Koeppen-Geiger classification updated” by Kottek et al (2006) will be used.*
- 3. Page 19363, Line 26: add “nm” after “420-450”.**
 - *“nm” have been added.*
- 4. Page 19365, line 2: define what the “m a.gr.” stands for, is this meters above ground?**
 - *Yes*
- 5. Page 19366, line 16: Is the “59.8 dS m⁻¹” the right value for natural forests? Please check.**
 - *Yes, it is the right value for the natural forest. The natural forest in study area are associated with mainly Tamarix species and P. euphratica and they depends on groundwater. The plant species of Tamarix widespread in salty and sandy land in arid area. Natural forest, so called by the local people because the unique tree species makes it possible to reverse environmental degradation.*
- 6. Page 19366, line 17: what “TDR” and “FDR” stand for?**
 - *TDR (Time-Domain-Reflectometry) and FDR (Frequent Domain Reflectometry) have been added.*
- 7. Page 19366, line 25: please explain the “pF 4.2”.**
 - *The relation between soil moisture and soil moisture content expressed as pF curve (soil moisture retention curve). When the soil becomes dry the soil moisture content reached the minimum value then the soil is at permanent wilting point or has a pF=4.2. This means, that the theta min is equal to the permanent wilting point.*
- 8. Page 19378, section 3.3: what about the errors in both measured and simulated NO₂ VCDs? Please discuss further the results of Figure 5.**
 - *We would like to thank Anonymous Referee #1 for this suggestion. This sentence has been added in revised MS “Both measured and simulated NO₂ VSDs in Figure 5 have with an average root mean square (RMS) error between the measured and simulated values of approx. 5% ”*
- 9. Page 19380, Conclusions: I suggest rewriting the first paragraph. I found it too difficult to follow its structure.**
 - *We acknowledge the suggestions of Anonymous Referee #1.*
- 10. Page 19380, lines 22-24: please give a reference (or source) for the central European wheat field NO fluxes values.**
 - *The related references have been added in MS (Yamulki et al. 1995; Stohl et al. 1996; etc.)*
- 11. 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.**

- *The authors like to thank Anonymous Referee #1 for his comment concerning our typing mistake. There was a simple typo (“>” instead of “<”).*

Technical comments:

- 1. Abstract, line 15: please add “(3-D)” after the “three dimensional”**
 - *“three dimensional” has been added in revised MS.*
- 2. Page 19363, line 3: please add the word “is” after “mean wind speed”**
 - *“is” has been added in revised MS.*
- 3. Page 19366, line 28: please remove “there”**
 - *“there” has been removed in revised MS.*
- 4. Page 19376, line 6: please delete “net” before “NO”**
 - *“net” has been removed in revised MS.*
- 5. Page 19378, lines 15: please delete “the” after “NO”**
 - *“the” has been removed in revised MS.*