Nitrogen deposition on the Bourtanger Moor and Bargerveen – A transboundary N2000 area

Hans Kros

Karsten Mohr, Jan Wulkotte (Landwirtschaftskammer, Niedersachsen)

Jan Aben, Margreet van Zanten (RIVM)
Bourtanger Moor and Bargerveen

- Transboundary Natura 2000 site
- DE: Bourtanger Moor, ~140 km²
  NL: Bargerveen, ~1200 ha
Background

- The Naturpark is partly N2000 area
- Some parts in DE peat is excavated
- Located in a region with a lot of intensive agriculture:
  - NL: Dairy farms
  - DE: Intensive Poultry farms
- Critical N load range: 7–22 kg N ha\(^{-1}\) yr\(^{-1}\)
- Current N deposition range: 21-28 kg N ha\(^{-1}\) yr\(^{-1}\)
- No integrated analysis exists on the fate of N deposition on the entire Naturpark
Background deposition

- No consistent detailed deposition information exists to quantify the background deposition.
- Background deposition was recalculated with Dutch (1 km × 1 km) and German emissions (5 km × 5 km).
- Local emissions based on inventoried NH$_3$ emissions from housing and storage systems in the 5 km zone.

DE: UBA map (MAPESI map)
NL: GCN-map, RIVM, Velders et al., (2011)
NH₃ Emission in 2009/2010

NH₃ emission housing
(kg NH₃-N)

NH₃ emission application
(kg NH₃-N ha⁻¹)
Modelled NH$_3$ deposition

NH$_3$ Background (kg ha$^{-1}$ a$^{-1}$)

Total N deposition (NH$_3$ + NO$_x$)

- Tausendschritt-Moor: 29 kg ha$^{-1}$ a$^{-1}$
- Rühler-Moor: 22 kg ha$^{-1}$ a$^{-1}$
- Bargerveen: 20 kg ha$^{-1}$ a$^{-1}$

Contribution of NH$_3$ emission from farms in the 5km zone to the total N deposition:
- DE: 21%
- NL: 2.5%
Effect of measures

- Low prot. cattle
- Low em. Appl.
- Cov. Man. st.
- Air scrubbers
- Summe DE
- Low prot. cattle
- Low em. Hous.
- Air scrubbers
- Summe NL
- Summe NL

NH₃-N deposition (kg/ha)

- 41%
- 19%
- 62%
- 66%
Conclusions

- No consistent high resolution background deposition available for transboundary N2000 areas

- No consistent high resolution \((\text{NH}_3)\) emissions available for transboundary N2000 areas

- Contribution of \(\text{NH}_3\) emission from farms in the 5km zone to the total deposition differs: DE: 21%  NL: 2.5%

- Effect of measures seriously differs per country
Thank you