NO\textsubscript{2} observations downside of a power plant

**Power Plant**
- Location: Wilhelmshaven
- NO\textsubscript{2} vertical column maximum reach up to 10\textsuperscript{10} molec/cm\textsuperscript{2}
- Distribution is strongly inhomogeneous
- Localised NO\textsubscript{2} maximum is probably observed twice in Pattern #1
- The plume evolution differs strongly from uniform Gaussian plume dispersion

**Spatial distribution of NO\textsubscript{2}**
- NO\textsubscript{2} enhancement downside of the power plant stack clearly visible
- NO\textsubscript{2} emission plume slightly broadens with increasing distance from the stack
- NO\textsubscript{2} amounts for the 9 individual overpasses

**NO\textsubscript{2} retrieval**
- Flux calculations at different distances from stack
- Approximation of source strength is achieved via discrete sum over the product of vertical columns
- The emission fluxes vary between 1.8 and 5.5\textsuperscript{10} molec/s

**Summary and Outlook**
- Large differences in integral NO\textsubscript{2} amounts are observed between the viewing directions, i.e. for only slightly different distances from the exhaust stack
- With increasing distance from the stack, the plume slightly broadens
- NO\textsubscript{2} fluxes are different for the 9 viewing directions
- Possible reasons for the non-uniform distributions and plume evolution include source variability, chemical transformations and local meteorology

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