**NH3 point source emissions and lifetimes derived from 15 years of IASI observations**

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**ABSTRACT**

Ammonia (NH3) is an important atmospheric pollutant affecting both air quality and the environment. To assess its impacts and implement effective legislative measures, it is critical to gain a better understanding of its diverse emission sources. NH3’s main anthropogenic sources include agriculture, waste management, industrial processes and biomass burning. Of particular interest are the so-called point-source emitters, which include large animal farms and industrial complexes.

Here, we present an overview of the world’s largest NH3 point sources, obtained by exploiting fifteen years of IASI measurements using a windrotated supersampling technique. This constitutes a major overhaul of our earlier work, with over 300 newly identified emitters, including several natural sources. By excluding specific periods of the year in the analysis of regions regularly affected by fires, we reveal sources that are particularly difficult to detect. For each of the identified sources, estimates of the yearly emission totals are derived using a variation of the exponentially modified Gaussian plume fitting method. We quantify the sensitivity of the emissions to the various input parameters and methodological choices, leading to robust uncertainty estimates. For a selection of strong and well-isolated point sources, we retrieve estimates of the atmospheric lifetime of NH3, which we analyse as a function of the source category and geographical location. Finally, we present a comparison of the derived fluxes with the emissions reported in the European Pollutant Release and Transfer Register (E-PRTR), and present avenues for future work.