SUPPLEMENTARY INFORMATION

Figure S1. NH₃ measurement locations of the LML network. 1. Vreedepeel-Vredeweg. 2. De Zilk-Vogelaarsdreef. 3. Wieringerwerf-Medemblikkerweg. 4. Zegveld-Oude Meije. 5. Wekerom-Riemterdijk. 6. Vathermond-Noorderdiep

Figure S2. NH₃ measurement locations of the MAN network
Figure S3 Monthly NOx emissions of HTAP and DECSO in Netherlands (a), Italy (b) and Greece (c).
Figure S4. Averaged monthly NH$_3$ surface concentration measured by the MAN network in 2020.

Figure S5. The amount of observations from CrIS on SNPP (left) and NOAA20 (right) used for deriving emissions per month in 2020.

Figure S6. The NH$_3$ emissions derived from CrIS on SNPP (left) and NOAA20 (right) over The Netherlands.
Figure S7. The difference of yearly averaged NH$_3$ column concentrations (left) measured by CrIS on NOAA20 and SNPP. The difference of days having observations per grid cell in 2020 (Right).

Figure S8. Number of days having observations from CrIS on NOAA20 (left) and SNPP (right) per grid cell in 2020.

Figure S9 Scatter plots of observations from the LML network with NH$_3$ surface concentrations from model simulations with NH$_3$ emissions from DECSO (left column), HTAP (middle column) and CAMS-GLOB-ANT (right column).
Figure S10. Time series of NH$_3$ surface concentrations of in-situ measurement and model simulations with DECSO, HTAP, CAMS-GLOB-ANT emissions at the 6 measurement locations of the LML network. The locations with their names are referred to Figure S1.