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Ammonia emissions from the agriculture sector in Argentina; 2000–2012

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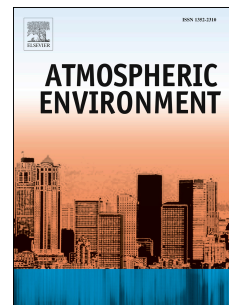
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1 **AMMONIA EMISSIONS FROM THE AGRICULTURE SECTOR IN ARGENTINA; 2000–2012**3 *P. Castesana^{a,b*}, L. Dawidowski^{a,c}, L. Finster^d, D. Gómez^c y M. Taboada^{d,e}*4 ^a Instituto de Investigación e Ingeniería Ambiental, Universidad Nacional de San Martín (3iA-UNSAM),
5 Buenos Aires, Argentina. pcastesana@unsam.edu.ar6 ^b Facultad Regional Buenos Aires, Universidad Tecnológica Nacional (UTN), CABA, Argentina.7 ^c Comisión Nacional de Energía Atómica (CNEA), Buenos Aires, Argentina.8 ^d Instituto Nacional de Tecnología Agropecuaria (INTA), Argentina.9 ^e Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET), Argentina.10 **Abstract**

11 Agriculture is one of the key economic sectors in Argentina and, in the last decades, the increase in prices and
12 competitiveness of some grains has imposed important changes. In this process, crop cultivation occupied
13 significant extensions of land areas previously dedicated to livestock farming, which in turn have experienced
14 intensification in terms of production through an increasing share of feedlot systems. The agriculture sector is
15 the main NH₃ emitter in Argentina, however no inventory developed locally has been thus far available. We
16 estimated the time series 2000–2012 of NH₃ emissions, both at national and spatially disaggregated levels.
17 National NH₃ emissions in 2012 amounted to 0.31±0.08 Tg, with the use of mineral fertilizers accounting for
18 43.0%, manure in pasture 32.5%, manure management 23.0% and agricultural waste burning 1.5%. Urea use
19 was the major source of NH₃ emissions and its application on wheat and corn crops dominated the trend.
20 Emissions from open biomass burning were estimated but not included in the national totals because of the
21 difficulties in differentiating between agricultural (i.e., prescribed burning of savannas) and non-agricultural
22 emission sources. Compared to this work, NH₃ emissions reported by EDGAR were 83% higher than our
23 estimates. The time series of spatially distributed NH₃ emission estimates clearly showed the effect of the
24 expansion of cropland, the displacement of planted areas of N-fertilizes crops by competing soybean
25 cultivation and the relocation and intensification of beef cattle production. This new inventory constitutes a
26 tool for policies concerning the impact of agricultural activities on air quality and contributes with more

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