



ELSEVIER

Contents lists available at ScienceDirect

## Data in brief

journal homepage: [www.elsevier.com/locate/dib](http://www.elsevier.com/locate/dib)

## Data Article

# Dataset supporting the estimation and analysis of high spatial resolution inventories of atmospheric emissions from several sectors in Argentina



Salvador Enrique Puliafito <sup>a, b, \*</sup>, Tomás Rafael Bolaño-Ortiz <sup>a, b</sup>,  
Lucas Luciano Berná Peña <sup>a, c</sup>, Romina María Pascual-Flores <sup>a, b</sup>

<sup>a</sup> GEAA - Grupo de Estudios Atmosféricos y Ambientales, UTN-FRM - Universidad Tecnológica Nacional - Facultad Regional Mendoza, Mendoza, Argentina

<sup>b</sup> CONICET - Consejo Nacional de Investigaciones Científicas y Técnicas, Buenos Aires, Argentina

<sup>c</sup> ANPCyT - Agencia Nacional de Promoción Científica y Tecnológica, Buenos Aires, Argentina

## ARTICLE INFO

## Article history:

Received 23 January 2020

Received in revised form 5 February 2020

Accepted 6 February 2020

Available online 13 February 2020

## Keywords:

Air quality model

High-resolution emissions inventory

Greenhouse gas

Methane

Energy

Livestock production

Agriculture

Biomass burning

## ABSTRACT

This data article provides an extensive and complete description of the high spatial resolution inventory (HSRI) estimation shown in the article “High resolution inventory of atmospheric emissions from livestock production, agriculture, and biomass burning sectors of Argentina” Puliafito et al. [1], and its comparison with several sectors in Argentina. The dataset provided are high-resolution inventories ( $0.025^\circ \times 0.025^\circ$  lat/long) for CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O and another 8 species from livestock, biomass burning, agriculture and another 12 sectors (based on 2016 year). In addition, we also provide the database for 2014 using the same methodology. The dataset presented are necessary to improve input inventories for air quality models. Also, they are better to inform and guide the stakeholders, in making decisions related to environmental protection and health promotion, as well as assessing the environmental performance in terms of atmospheric emissions of an activity, sector or region in Argentina.

© 2020 The Author(s). Published by Elsevier Inc. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

DOI of original article: <https://doi.org/10.1016/j.atmosenv.2019.117248>.

\* Corresponding author. GEAA - Grupo de Estudios Atmosféricos y Ambientales, UTN-FRM - Universidad Tecnológica Nacional - Facultad Regional Mendoza, Mendoza, Argentina.

E-mail address: [epuliafito@frm.utn.edu.ar](mailto:epuliafito@frm.utn.edu.ar) (S.E. Puliafito).

<https://doi.org/10.1016/j.dib.2020.105281>

2352-3409/© 2020 The Author(s). Published by Elsevier Inc. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).



**Table 2**

Total amount of atmospheric emissions (Gg) for various sectors (rows) and polluting species for each sector (columns).

	BC		SO <sub>2</sub>		N <sub>2</sub> O		PM <sub>10</sub>		PM <sub>2.5</sub>		NH <sub>3</sub>		NMVOC		NO <sub>x</sub>		CO		CH <sub>4</sub>		CO <sub>2</sub>	
	2014	2016	2014	2016	2014	2016	2014	2016	2014	2016	2014	2016	2014	2016	2014	2016	2014	2016	2014	2016	2014	2016
Airplanes	0.004	0.004	0.697	0.720	0.071	0.074	0.057	0.074	0.071	0.059	0.000	0.000	0.382	0.394	9.925	10.242	6.416	6.621	0.059	0.061	2223.906	2295.071
Ships	0.099	0.103	8.055	8.377	0.805	0.838	0.916	1.748	1.681	0.952	0.000	0.000	1.105	1.149	31.799	33.071	2.980	3.100	2.819	2.932	2530.383	2631.599
Trains	0.067	0.072	0.021	0.022	0.002	0.002	0.062	0.116	0.109	0.066	0.001	0.001	0.350	0.378	3.948	4.264	0.806	0.869	0.014	0.015	236.605	255.534
Road transport	0.522	0.551	12.626	13.255	3.561	3.736	5.797	10.142	9.661	6.087	3.259	3.419	368.533	386.959	436.297	458.111	1740.469	1827.492	16.518	17.342	48581.586	51010.666
Cement industry	0.240	0.229	3.029	2.892	0.000	0.000	0.377	0.624	0.654	0.360	0.000	0.000	0.150	0.143	10.063	9.610	11.823	11.291	0.000	0.000	4134.000	3947.970
Oil production refineries	0.004	0.004	0.253	0.269	0.008	0.008	0.034	0.068	0.065	0.036	0.000	0.000	0.344	0.365	10.401	11.025	1.370	1.452	0.072	0.076	3962.433	4200.179
Fugitives, venting, flares	17.704	18.589	0.027	0.028	0.023	0.024	44.336	77.727	74.021	46.554	0.028	0.030	77.721	81.814	41.272	43.366	2.328	2.491	272.135	293.553	3488.947	3663.394
Power plants	0.150	0.158	49.407	51.927	1.208	1.270	2.362	4.006	3.811	2.921	0.000	0.000	6.352	6.676	158.681	166.774	29.458	30.960	4.582	4.815	40329.848	42386.670
Residential	0.442	0.458	1.327	1.373	0.118	0.121	7.585	13.084	12.642	7.066	0.000	0.000	5.869	6.074	64.231	66.479	101.305	104.851	3.633	3.760	25678.576	26577.326
Commercial	0.026	0.027	0.419	0.433	0.045	0.046	0.450	0.777	0.751	0.420	0.000	0.000	0.496	0.513	13.015	13.470	8.604	8.905	0.140	0.145	5214.334	5396.836
Livestock production	0.390	0.392	0.000	0.000	79.444	82.645	11.136	26.270	23.862	11.024	180.507	189.604	294.180	199.071	6.845	6.915	0.000	0.000	2647.307	2679.129	0.000	0.000
Agriculture	0.000	0.000	0.000	0.000	34.036	33.163	1.135	76.137	2.064	8.969	159.478	101.714	13.758	17.473	10.317	8.254	0.000	0.000	32.522	48.429	349.373	2927.744
Biomass burning	2.854	2.825	1.282	1.475	0.629	0.763	52.847	104.326	15.639	52.364	6.155	8.065	5.649	7.662	5.521	14.850	498.396	590.782	112.289	33.357	6431.658	9517.696
Urban waste	0.000	0.000	0.000	0.000	0.000	0.244	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	581.352	120.340	0.000	30.201
Industry	4.480	4.615	34.586	35.623	0.463	0.477	45.633	85.458	82.969	47.002	3.694	3.805	13.967	14.386	57.379	59.100	380.301	391.710	3.335	3.435	21637.268	22286.386

amounts for the years considered for each sector and pollutants of Argentina [1] are shown in Table 2. Dataset is available in detail for a high resolution ( $0.025^\circ \times 0.025^\circ$  lat/long) in all sectors and their species respectively (see the repository).

## 2. Experimental design, materials, and methods

Data on HSRI for various Argentinians sectors management procedures was collected through primary and secondary sources of local accessible reports, literature and guidelines. The global methodology applied is based on the European regulations grouped on European Monitoring and Evaluation Program (EMEP) [4,5]. In addition, the used emission factors are those indicated by EMEP according to the adopted level of detail, which concerns level 2 in almost all cases. In some cases, the data on the activity and the use of specific national emission factors were used following the Third National Communication (TCNA) [6] of Argentina to the United Nations Convention on Climate Change. For specific subsectors, we used the recommendations (which are indicated in each case) of the Intergovernmental Panel on Climate Change (IPCC) [7]. With respect to the inventory of Livestock, Agriculture, and Biomass burning sectors they have been provided by Ref. [1]. Road transport sector was updated using the same resolution of this article following the steps from Ref. [3] and the other sectors by Refs. [2,8].

## Acknowledgments

The authors would like to thank Universidad Tecnológica Nacional (UTN) (National Technological University) and Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET) (National Council for Scientific and Technical Investigations) for supporting research activities. This work is granted by UTN IFI Projects PID 1799 and 1487, CONICET (PIP 112 201101 00673) and Agencia FONCYT (PICT 2016 1115). All data requests should be addressed to the first author.

## Conflict of Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

## Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.dib.2020.105281>.

## References

- [1] S.E. Puliafito, T.R. Bolaño-Ortiz, L.L. Berná, R.M. Pascual-Flores, High resolution inventory of atmospheric emissions from livestock production, agriculture, and biomass burning sectors of Argentina, *Atmos. Environ.* (2020), <https://doi.org/10.1016/j.atmosenv.2019.117248>.
- [2] S.E. Puliafito, D.G. Allende, P.S. Castesana, M.F. Ruggeri, High-resolution atmospheric emission inventory of the Argentine energy sector, *Heliyon* 19 (2017) 5564, <https://doi.org/10.1016/j.heliyon.2017.e00489>.
- [3] S.E. Puliafito, D.G. Allende, S. Pinto, P. Castesana, High resolution inventory of GHG emissions of the road transport sector in Argentina, *Atmos. Environ. Times* 101 (2015) 303–311, <https://doi.org/10.1016/j.atmosenv.2014.11.040>.
- [4] EMEP-European Monitoring and Evaluation Programme, EEA Air Pollutant Emission Inventory Guidebook 2013, European Environment Agency, Copenhagen, Denmark, 2016. <https://www.eea.europa.eu/publications/emep-eea-guidebook-2016>.
- [5] N. Hutchings, B. Amon, U. Dämmgen, J. Webb, J. Seedorf, T. Hinz, K. Van Der Hoek, S. Gyldenkerne, M. Hjorth, H.M. Mikelsen, et al., Agriculture, in: *EMEP/EEA Air Pollutant Emission Inventory Guidebook – 2013*, European Environment Agency, Copenhagen, Denmark, 2013.
- [6] TCNA- Argentina Third National Greenhouse Report to UNFCCC, 2016. [www.ambiente.gob.ar/tercera-comunicacion-nacional/](http://www.ambiente.gob.ar/tercera-comunicacion-nacional/).
- [7] The Intergovernmental Panel on Climate Change (IPCC), IPCC Guidelines for National Greenhouse Gas Inventories, Institute for Global Environmental Strategies (IGES), Hayama, Japan, 2006. <https://www.ipcc-nggip.iges.or.jp/public/2006gl/vol4.html>.
- [8] D. Allende, M.F. Ruggeri, B. Lana, K. Garro, J. Altamirano, S.E. Puliafito, Inventory of primary emissions of selected persistent organic pollutants to the atmosphere in the area of Great Mendoza, *Emerg. Contam.* 2 (2016) 14–25, <https://doi.org/10.1016/j.emcon.2015.12.001>.