

## **High-resolution ammonia emission inventory in Belarus**

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### **Abstract**

The development of high-resolution ammonia emission inventory is an important step towards emission reduction. Such assessment can help policymakers to gain better understanding of the spatial variability of emissions and to implement mitigation measures in high emission areas to propose optimal strategies. Ammonia emissions from livestock production are characterized by spatial variability on local scale due to nature of this source. Last decades ammonia emissions have been being calculated using Nflow approach, which assumes dividing of emissions in 4 stages: livestock housing, manure storage, manure application and grazing. Emissions from these stages are separated by time and distance. For this reason, it is more difficult to receive spatial distributed emissions from livestock production. Spatial ammonia emission inventory was calculated for Belarus with a grid resolution of 10 km in 2017 (the assessment was made for 2012). It was made with EMEP methodology using proxy files (such as livestock population, population density etc.). This article is devoted to solve the problem of spatial distribution of ammonia emissions from the livestock on the example of one of the administrative regions of Belarus with grid resolution of 1 km. The methodology used for high-resolution ammonia emission estimation allows to take such factors as the distribution of different landcover types, ammonia losses on different stages of manure management, differences in the density of emissions depending on the farm category and animal type into account. The results of the emissions calculation for the year 2015 were analysed. It was shown that the main source of ammonia is the landspreading of manure. Emissions from manure application occur in 55% of the grid cells and vary from 0.01 to 1 t/year per grid cell. At the same time the highest emissions values are associated with livestock housing (from 3.3 to 58.9 t/year per grid cell).

Keywords: ammonia emission, livestock, mapping.