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ESTIMATING NATIONAL WILDFIRE EMISSIONS FOR THE LAST DECADE IN TURKEY

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Abstract

Wildfire emissions are a major contributor of atmospheric gaseous and particulate pollutants for local air pollution levels. With respect to wildfires, Turkey faces one of Europe's most severe problems during summer. In this study, a database which holds data for wildfire emissions in Turkey for the last decade (between 2000 and 2009) was established in order to create a wildfire emissions inventory. The emissions of carbon dioxide (CO_2), carbon monoxide (CO), methane (CH_4), non-methane volatile organic compounds (NMVOC), nitrogen oxides (NO_x), ammonia (NH_3), nitrous oxide (N_2O) sulphur oxides (SO_x), total suspended particulate (TSP), particulate matter <10 µm diameter (PM_{10}) and particulate matter <2.5 µm diameter ($PM_{2.5}$) are estimated from wildfires in Turkey. European Monitoring and Evaluation Programme/European Environment Agency (EMEP/EEA) emission factors were used for different biomes of Turkey including temperate forest, Mediterranean forest and steppe. Total emissions from wildfires were estimated as 6,265,180 tons CO_2, 386,530 tons CO, 18,078 tons CH_4, 35,901 tons NMVOC, 13,444 tons NOx, 1,303 tons NH_3, 414 tons N_2O, 2,690 tons SOx, 63,974 tons TSP, 41,395 tons PM_{10} and 33,869 tons $PM_{2.5}$ for the last decade. Comparing the total emissions in Turkey for the year 2000, wildfire emissions constitute 2.78% of CO_2, 0.27% of PM (PM_{10}+$PM_{2.5}$), 0.02% of SO_x, 0.40% NO_x, 2.00% of VOC and 5.32% of CO emissions.

Key words: emission inventory, gaseous pollutants, particulate pollutants, Turkey, wildfire emission

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