High-resolution mapping of anthropogenic CO_2 emissions in Japan

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Fossil fuel combustion is a main contributor of increasing atmospheric carbon dioxide (CO_2) concentration. Fossil fuel CO_2 ($FFCO_2$) emission inventories have been usually compiled for global and national scales. However, evaluation of local climate action for global warming necessitates quantifying the $FFCO_2$ emissions from cities, which are responsible for more than 70% of the global $FFCO_2$, with more detailed information on temporospatial distribution of the emission at sub-city levels. This study proposes a new $FFCO_2$ emission inventory using a bottom-up approach for whole area in Japan. The emission inventory consists of the emissions from 3 sources: point (electricity generation, waste incineration, civil aviation, and waterborne navigation sectors); line (road transport sector); and area (industrial and commercial, residential, and agricultural machinery sectors) sources with 1 km spatial resolution and monthly temporal resolution. The emissions for each sector were calculated based on the census data and the national statistical data. We will present the calculation methodology for our emission inventory and the results with comparison with other emission estimates.

Keywords: Anthropogenic CO2 emissions, Fossil fuel, Inventory

