

Development of Regional Downscaling System for Allocating Emission of Air Pollutants

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Local administration statistics, Allocation index, Emission Inventory*

1. INTRODUCTION

According to the result of recent researches, greenhouse gases and air pollutants have impacted on climate change. Recently, it is required to make the geographical distribution map of emission of greenhouse gases and air pollutants to evaluate countermeasures of climate change and reduction plans and to use input data of simulation of the diffusion of air pollutants.

In this research, downscaling system was developed to estimate the detail distribution from national level emissions, by using GIS. The system covers entire world and enable to create high-resolution map of those gases.

2. Method

Figure-1 shows the concept of the downscaling system. First, to estimate local administration emission data, national emissions from previous researches are allocated to local administration emissions by using the regional population and gross regional domestic product (GRDP). Secondly, 30"×30" resolution maps of emission of gas are made from detailed population and road distribution on GIS.

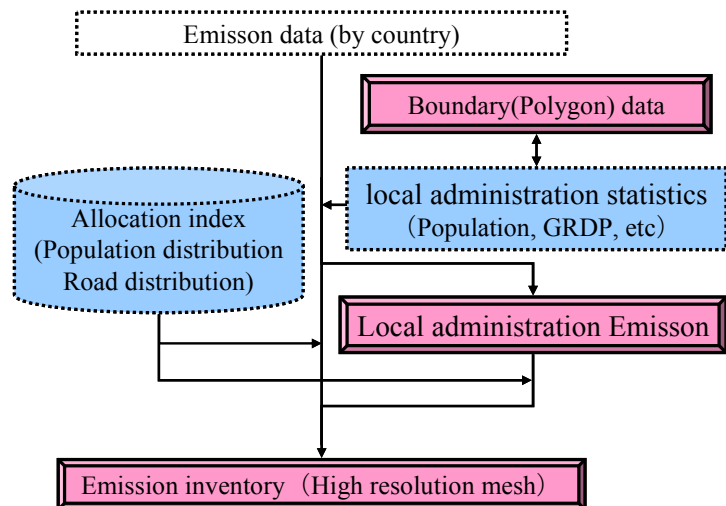


Figure-1 Downscaling system

3. Scenarios and results

Developing the downscaling system, Boundary data to make the emission distribution map and the local administration statistics in the world (population and GRDP, etc.) were arranged and integrated as GIS. In addition, the emission distribution map of greenhouse gases and air pollutants was developed using the maintained statistical data as a allocation index. Among these, the NO_x emission distribution in 2000 is shown in Figure-2.

This would be useful to estimate the emission distribution in the local administration and more detailed area by using activity data. Moreover, this would be used as a data when estimating the regional effects of air pollutants.

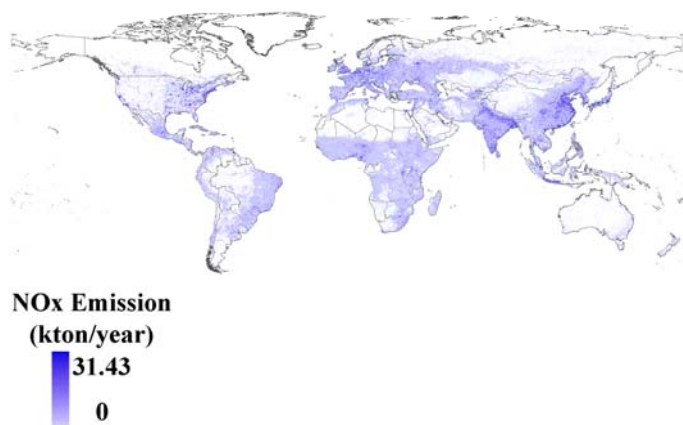


Figure-2 NO_x Emission Inventory