

Towards Decreasing the Uncertainty in Global Carbon Dioxide Emission Inventory

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Global carbon dioxide (CO₂) emission inventory are considered as containing large uncertainty. To decrease the uncertainty, we corrected the emissions reported by some famous organizations to make a new global CO₂ emission map by top-down approach and to analyze the temporary variation of emissions at global, regional, and national scale. For that purpose, 133 nations across 10 databases which included the values from 2000 to 2010 were picked up for analysis. Then, the emissions are corrected by averaging of the values in the range of 25% to 75% quartile. To visualize the temporary variation for the emissions, we linked the emissions for 133 nations with global boundary map of nations by Geographic Information System (GIS). As our summarization, the total CO₂ emissions for 133 nations in 2010 are about 31,595 Tg CO₂ yr⁻¹ which are inside the values reported by IEA (30,434 Tg only from fuel combustion) and CDIAC (33,469 Tg from fuel combustion, cement manufacture, and gas flaring), occupying about 94% of the emissions reported by EDGAR (33,588 Tg). In addition, we also combined the emissions with population, GDP, and area of each nation reported by world bank to summarize the emissions per capita and analyze the trends of them from 2000 to 2010.