

Integrated Assessment of Methane Budget in East Asia

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Methane is a potent greenhouse gas, which has strong radiative forcing second to carbon dioxide, and so contributes to the ongoing global warming. Reducing the emissions of greenhouse gases including methane is critically important for mitigation of global warming. East Asia is thought to make a substantial contribution to the global methane budget, because this region contains major sources such as paddy field, mining of fossil fuel such as coals, landfill by wastes, and livestock. Because of spatial heterogeneity and temporal variability in these sources, it is difficult to elucidate the regional methane budget by a single method. We need to use various statistic data and inventory in terms of anthropogenic methane emissions, enabling us to conduct an integrated assessment. We are conducting a three-year project, "Development of a monitoring and evaluation system of the methane budget for different source categories in East Asia toward intended emission reduction", funded by the Ministry of the Environment, Japan. This project encompasses model-based estimation of biogeochemical sources such as wetland emission and sinks by upland soils, inventory analysis of anthropogenic emissions, measurement of atmospheric methane concentration and its isotopic composition, and evaluation of methane-climate feedback using an Earth system model. By using these multiple methods, it is expected that we can obtain a less biased, more reliable regional methane budget. This project will contribute to several satellite remote sensing programs for greenhouse gas monitoring and international programs on global greenhouse gas accounting.

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