

## Long-term observations of carbon budget in forest ecosystems at AIST stations and their data analyses

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Impacts of climate change on the activity of terrestrial biosphere have been predicted in recent studies. In East Asia and South-east Asia strongly influenced by Asian Monsoon, changes not only in temperature but also in amounts of precipitation and length of the rainy season associated with the climate change could have much influence on the carbon budget in the terrestrial biosphere. However, responses of the terrestrial biosphere to climate change are not yet fully understood. For the better understanding of the responses, further analyses using long-term measurement data of the carbon budget in terrestrial ecosystem are necessary.

National Institute of Advanced Industrial Science and Technology (AIST) has made long-term systematic measurements of CO<sub>2</sub> flux between the atmosphere and forest ecosystem and the related parameters in collaboration with some research groups, in a cool-temperate deciduous forest at Takayama (36.13degN, 137.42degE, 1420 m a.s.l.), Japan since 1993, and in seasonal tropical forests at Mae Klong (mixed deciduous forest, 14.58degN, 98.85degE, 231 m a.s.l.) and at Sakaerat (dry evergreen forest, 14.50degN, 101.92degE, 543 m a.s.l.), Thailand since 2001. Takayama is the longest monitoring site in the AsiaFlux network, while Mae Klong and Sakaerat are the longest AsiaFlux monitoring sites in Thailand. The CO<sub>2</sub> concentration data at Takayama have also been submitted to the World Data Centre for Greenhouse Gases of WMO. In this presentation, our research activities and some of the results obtained from the long-term measurements will be introduced. Some results of analyses of inter-annual variation of the carbon budget observed at our sites and environmental factors governing the variation will also be presented. Furthermore, improvement of methodology of measurement and data analyses will be discussed.

Keywords: Carbon budget, Forest ecosystem, AsiaFlux, Long-term measurement, Data analyses