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Evaluation of Ecosystem Greenhouse Gas Emission over Rice Paddy by integrating Eddy Covariance and Cavity Ring-Down Laser Spectroscopy(CRDS)

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Agriculture ecosystems in Asia play an important role on the green-house gases (GHG) emission due to its geographic spread covering a large climate gradient and the diversity of crop and management practices. The GHG emission from the agriculture ecosystems, however, has been some of the least well quantified compared to other ecosystems in Asia. Due to the Asian monsoon, the gaps in yearlong measurement are unavoidable with a typical open-path eddy covariance (EC) system. In order to fill the gaps during the monsoon, we employed a cavity ring-down spectroscopy (CRDS) used by Korea Research Institute of Standards and Sciences (KRISS) in conjunction with a close-path EC technique used by KoFlux and AsiaFlux community. In this presentation, we present a preliminary result from our pilot field experiment and report the current progress in uncertainty estimation, data processing and quality control, and challenges in employing such techniques in the long-term measurement in monsoon climate. In 2011, this system will be deployed along with chamber systems in Gimje plain that yields the largest rice production in Korea as one of the long-term GHG monitoring sites.
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