

김제 논에서 메탄 플럭스의 에디 공분산 관측

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Eddy Covariance Measurement of CH₄ Flux in a Rice Paddy in Gimje, Korea

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Abstract

We have been measuring CH₄ flux in a rice paddy in Gimje using the eddy covariance method since July 2011. In order to measure the fast fluctuations of CH₄ concentration, an innovative LI-7700 open-path laser spectrometer is used. This high-precision, low power, light weight, low maintenance sensor enables us to operate it on a continuous and long-term basis. One particular feature, among other things, is the self-cleaning lower mirror which decreases maintenance requirements while ensuring more robust, continuous, high-quality dataset. Its cleaning is initiated at user-specified time intervals or a signal strength threshold, and its status is recorded as a diagnostic index. We have noticed that the operation of LI-7700 at Gimje site is quite challenging particularly due to its frequent mirror cleaning requirement and the associated sensitivity of the instrument. In this presentation, we present some field observation data regarding the mirror cleaning and their analysis, thereby suggesting the pertinent operation options for high-quality, maximum data retrieval in the field.

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