SWI Flux of CH_4 in the Gunsan Basin of the South-Eastern Yellow Sea, Off the Coast of Western Korea

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Fick's First Law of SWI and Methods

The sediment–water interface (SWI) flux of methane (CH_4) was investigated using Fick's first law of diffusion in box cores from eight stations in the Gunsan Basin, the south-eastern part of the Yellow Sea, in 2015 [1].

The dissolved CH_4 concentrations in the samples were measured using a gas chromatograph–semiconductor detector (EG Analyzer, model GS-23; Sensortec, Inc., Shiga, Japan) by injecting an aliquot of headspace gas [2].

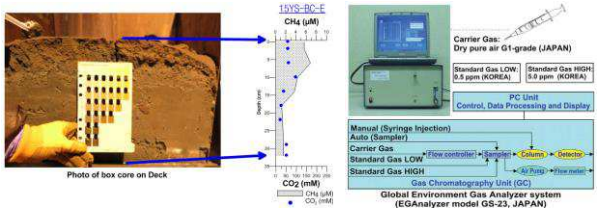

Figure 1: Procedure for SWI flux to analysis of sediments CH_4 concentrations using EG Analyzer .

Discussion of Results

The CH_4 flux of the SWI in the Gunsan Basin ranges from 0.002 to 0.029 (average 0.012) $mM \cdot m^{-2} \cdot day^{-1}$. The average CH_4 emission flux over the total area of the Gunsan Basin (60,000 km^2 [3]) is 11.8 $ton \cdot year^{-1}$. This value is lower compared with those in other parts of the world. The range of CH_4 flux is higher than the 0.007–0.01 $mM \cdot m^{-2} \cdot day^{-1}$ observed in Tomales Bay, New York, USA, but much lower than those in intertidal zones, estuaries, and lakes [4]. To clearly predict the SWI flux of CH_4, budget or modelling is recommended, together with more measurements of CH_4 emission rates during field monitoring approaches in the Gunsan Basin of the South-Eastern Yellow Sea are required.

[1] Martin *et al*. (2005) *J. Control Release* **102**, 123-133. [2] Lee *et al*. (2018) *J. Environ. Sci. Heal. A*. **53**, 457-466. [3] Wang *et al*. (2014) *Geology of the China Seas* **6,** 392-393. [4] Sansone *et al*. (1998) *Estuaries* **21,** 66-77.