

ORGANIC CARBON SEDIMENTATION RATES IN ASIAN MANGROVE COASTAL ECOSYSTEMS ESTIMATED BY ²¹⁰Pb CHRONOLOGY

TATEDA Y., WATTAYAKORN G., NHAN D.D. AND KASUYA Y.

Abiko Research Laboratory CRIEPI, Biology Department, 270-1194, Abiko, Chiba, Japan, tateda@criepi.denken.or.jp

Organic carbon balance estimation of mangrove coastal ecosystem is important for understanding of Asian coastal carbon budget/flux calculation in global carbon cycle modelling which is powerful tool for the prediction of future greenhouse gas effect and evaluation of countermeasure preference. Especially, the organic carbon accumulation rate in mangrove ecosystem was reported to be important sink of carbon as well as that in boreal peat accumulation. For the estimation of 10³ years scale organic carbon accumulation rates in mangrove coastal ecosystems, ¹⁴C was used as long term chronological tracer, being useful in pristine mangrove forest reserve area. While in case of mangrove plantation of in coastal area, the ²¹⁰Pb is suitable for the estimation of decades scale estimation by its half-life. Though it has possibility of bio-/physical- turbation effect in applying ²¹⁰Pb chronology that is offset in case of 10³ years scale estimation, especially in Asian mangrove ecosystem where the anthropogenic physical turbation by coastal fishery is vigorous. In this paper, we studied the organic carbon and ²¹⁰Pb accumulation rates in subtropical mangrove coastal ecosystems in Japan, Vietnam and Thailand with ⁷Be analyses to make sure the negligible effect of above turbation effects on organic carbon accumulation. We finally concluded that ²¹⁰Pb was applicable to estimate organic carbon accumulation rates in these ecosystems even though the physical-/bio-turbation is expected. The measured organic carbon accumulation rates using ²¹⁰Pb in mangrove coastal ecosystems of Japan, Vietnam and Thailand were 0.067 – 4.0 t-C ha⁻¹ y⁻¹.