Carbon sequestration in the sediments of a self-regenerating mangrove in Can Gio mangrove biosphere reserve, Ho Chi Minh City

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Abstract

The surface sediments (0-15 cm) were collected from a self-regenerating mangrove in Can Gio Mangrove Biosphere Reserve to: 1/ assess the variation of the sedimentary C_{org} contents along with the regeneration (from 2008 to 2016) and 2/ assess the current potential of these sediments in carbon sequestration. The data was analyzed with STATGRAPHIC Centurion XVI as this is user-friendly software and a strong tool for statistical analysis in forestry. The C_{org} content tended to decrease with depth. Due to the presence of branches and trucks on the mangrove floor at the beginning of the self-regeneration, the average C_{org} content acquired in 2008 was higher than the other times of observation. The decomposition of these tough woody materials seemed to be facilitated by the exposure to heat. Moreover, the acidic pH and moderate salinity of the sediments probably ameliorated the activity of the sediment microbes in decomposing the organic matter, resulted in the lowest content of C_{org} in 2012. The C_{org} contents in the study area in 2014 and 2016 were comparable to other intact mangroves. The average amount of carbon sequestrated in the sediments in 2016 was 22.9 ton.m^{-2} and tended to increase with depth, probably related to the anoxic condition in the deep layers which might resulted from the deposition of fluvial sediments.

Keywords: Mangroves, carbon sequestration, Ho Chi Minh City