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Diurnal variations in carbon isotope composition of dissolved inorganic carbon (DIC) in a freshwater dam reservoir

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Dissolved Inorganic Carbon (DIC) is a common inorganic component of freshwaters and the main source of carbon for primary producers. Availability of DIC decides on the development and activity of biological structure of ecosystems. Results of the first studies on diurnal variations in δ13C (DIC) value in a shallow dam reservoir presented in this paper, suggest that 1/ sediments can be important sink for dissolved inorganic carbon due to microbial reduction of CO_2 from the water column to methane and other organic compounds, 2/ large amplitude of diurnal variations of DIC concentration and δ13C (DIC) values due to daily fluctuations of phytoplankton and terrestrial plants photosynthetic activity, 3/ Many carbon cycling models based on seasonal observations of DIC may be biased with large error resulted from DIC diurnal variations, which amplitude appears to be comparable to those commonly interpreted as seasonal and spatial fluctuations.