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Nd isotopic composition from seawater and sediments of the South China Sea and the Philippine Sea : implications for hydrology of the Pacific Ocean during the last 25 kyr

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Nd isotopic compositions (εNd) of foraminifera from one gravity core (MD05-2904; 19°27.32' 116°15.15', 2066 m water depth) and 10 seawater profiles from the northern South China Sea (SCS) and the Philippine Sea (western Pacific Ocean) were measured to (1) constrain the Nd isotopic composition of water masses along the western Pacific and the SCS that are still poorly documented ; (2) track hydrological exchange between the SCS and western Pacific trough the Luzon strait ; (3) to test the ability of foraminifera to establish seawater εNd ; (4) to establish past hydrological changes of deep-water circulation in the western Pacific Ocean during the last 25 kyr. Distribution of εNd seawater of the Northern SCS and west Pacific indicate that the SCS is dominated by three water masses, the South China Sea Tropical Water (SCSTW) ($\sim$-7.7), South China Sea Intermediate Water (SCSIW) ($\sim$-3.6) and the Pacific Deep Water (PDW) ($\sim$-4). Our results indicate that at present time εNd of deep and intermediate waters of the SCS is representative of the PDW. Different analytical procedures to extract seawater εNd from foraminiferas (benthic and planktonic) and Fe-Mn coatings precipitated on the sediments have been tested and permit to determine that only εNd obtained from foraminiferas are reliable to seawater εNd in the South China Sea. A first record of past seawater εNd obtained from foraminifera of the core MD05-2904 (northern part of the SCS) indicate major change of the hydrology of the West Pacific during the last 25 kyr. εNd values variations indicate two negative excursion during at Heinrich Stadial 1($\sim$16 kyr BP) and $\sim$10 kyr BP implying a reorganization of the deep circulation in the Pacific. Such results are compared with other proxies of deep-water circulation to propose new insight in the role of the southern deep-water pacific circulation on climate during the last deglaciation.