About 600 bivalve specimens obtained during the SONNE 177 cruise from the northern area of the South China Sea were studied. The samples were collected together with abundant authigenic carbonates from the Jiu Long Methane Reef at 760 m water depth. This site is known to be an active cold seep with methane assumed to be generated from gas hydrate at depth. Samples were also collected from a diffuse methane seep area, Haiyang 4 Site, at 3000 m water depth.

A total of 19 species of 15 genera of 5 families were identified. They are belong to 3 cold seep assemblages: Late Pleistocene *Akebiconcha kawamurai* assemblage (age of 12-16 kyr) on Jiulong Methane Reef; the very late Pleistocene to early Holocene *Phreagena*?sp. assemblage located on the Jiulong Methane Reef; and the late Holocene Gen. et sp.2 (species and genus that is not surely identified) of the Family Vesicomyidae assemblage (with age of 1640±120BP) from “Haiyang 4” abyssal cold seep area. The majority of these species are related to cold seeps in other areas. For example, *Akebiconcha kawamurai* was reported from the Sagami Bay (Japan). These assemblages showed higher diversity than those founded in other cold seeps from Mediterranean Sea, Gulf of Mexico, Monterey Bay and the fossil cold seeps from Japan.