

Paleoenvironmental reconstruction through geochemical analysis of long-lived bivalve shells (*Mercenaria stimpsoni*)

*Kaoru Kubota^{1,2,3,4}, Kotaro Shirai³, Naoko Sugihara-Murakami³, Koji Seike⁵, Masayo Minami⁴, Toshio Nakamura⁴, Kazushige Tanabe⁶

1. Research Institute for Marine Geodynamics, Japan Agency for Marine-Earth Science and Technology, 2. Graduate School of Human Development and Environment, Kobe University, 3. Atmosphere and Ocean Research Institute, The University of Tokyo, 4. Institute for Space-Earth Environmental Research, Nagoya University, 5. Geological Survey of Japan, National Institute of Advanced Industrial Science and Technology, 6. University Museum, The University of Tokyo

Bivalve shell is one of the most important archives of past environmental changes because some species can live more than several decades and distribute broadly (e.g., from high to low latitude, fresh/brackish/sea water). We have investigated potential of long-lived cold water bivalve, *Mercenaria stimpsoni* (Stimpson's hard clam) living in the western North Pacific (especially, coastal area of North East Japan). In this presentation we will show sclerochronological and geochemical records (e.g., oxygen isotopes and radiocarbon) of both live-caught and dead specimens collected from the seafloor of NE Japan (5–20 m). From both sclerochronology and nuclear bomb-derived radiocarbon (bomb-¹⁴C), it was found that this animal can live for more than 100 years, thus very useful for paleoceanographic studies. It was also found that a lot of *M. stimpsoni* were killed by huge tsunami that hit NE Japan in March 2011, which is likely caused by disturbance of marine sediment, including seabed liquefaction.

Keywords: bivalve, radiocarbon, oxygen isotope, tsunami, geochemistry