Biogeography of hydrothermal vent communities of western Pacific Ocean back-arc basins and volcanoes

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Since the first published biogeography of hydrothermal vent communities of back-arc basins in the western Pacific Ocean in 2006, there has been a substantial increase in the amount of data available for the region. Recent investigations of hydrothermal vent communities have involved scientists and resources from a number of countries (e.g. Japan, USA, Germany, Canada, South Korea, New Zealand). Perhaps the most significant addition of data is from hydrothermal vents on volcanoes, in particular for the Kermadec Volcanic Arc, north of New Zealand. Data from past and the most recent expeditions were compiled and a meta-analysis conducted using multivariate statistical techniques to identify and describe community composition, and propose new biogeographic provinces for vent fauna in the western Pacific Ocean. The results of this analysis were compared with recent analysis of the genetic population structure of bathymodiolid mussel species in the New Zealand area (from vents and seeps). Both sets of results will be discussed with respect to the identification of a distinct biogeographic province for the Kermadec area, and the management implications for protecting biodiversity from the potential impacts of seabed mining in the wider region.