First characterisation of meiofauna in Puysegur Trench, southwest Pacific Ocean

Daniel Leduc[1], Owen Anderson[1], Caroline Chin[1], Sadie Mills[1], Ashley Rowden[1], Mengran Du[2], Xiaotong Peng[2]

[1]*National Institute of Water and Atmospheric Research, Wellington 6021, New Zealand*

[2]*Institute of Deep-Sea Science and Engineering, Chinese Academy of Sciences, Sanya 57200, China*

Puysegur Trench extends over 800 km south of New Zealand and reaches a maximum depth of 6200 m. Thirty-two submersible dives were recently conducted in the trench during a joint China-New Zealand voyage using the Institute of Deep-Sea Science and Engineering's human-occupied vehicle *Fen Dou Zhe*, collecting the first biological samples from this environment. Sediment core samples for meiofaunal analyses were obtained from the trench axis and slope (4000-6200 m depth) as well as from newly discovered cold seep habitats (~5000 m) and a whale fall (~5500 m). Preliminary analyses of the meiofauna samples show high variability in meiofaunal and nematode communities among habitats and depths in the trench. The meiofauna communities associated with the whale fall (including bone-associated and underlying sediment communities) are particularly distinct and provide a rare insight into the ecology of meiofauna associated with whale falls in trenches. Preliminary comparisons indicate that Puysegur Trench is more productive than Kermadec Trench north of New Zealand, with some shared species between the trenches.

Image caption: *Cephalochaetosoma tosopodum*, a new species inhabiting whale bone in the Puysegur Trench