

Characteristics of sediments cored from the South Shetland Trench

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Sediment incoming subduction zones plays important roles both in global geochemical cycle and fault property of subduction megathrust (Sobolev and Brown, 2019; Ikari et al., 2018). Property of sediments accumulated in trenches in polar regions would be a key to understand geochemical cycle and fault dynamics of subduction zones at ice ages. However, the nature of deep sea sediments in such regions has been poorly understood, because of inaccessibility. In this presentation we report initial results of sediment property at the South Shetland Trench, where Phoenix Plate subducts beneath the Antarctic Plate (DeMets et al., 2010).

Nine piston cores (PC01 to PC09) were retrieved during Hakuohmaru KH-19-6 cruise Leg 4 (Fig. 1). Among these cores, PC02 to PC05 were sampled from the South Shetland Trench region (Fig. 2). Settings of PC02, PC03, PC04, PC05 are western trench bottom, small basin in a channel located at landward trench slope, eastern trench bottom, and terrace at seaward trench slope, respectively. Physical property analyses (X-ray CT, MSCL and color analyses) and visual core descriptions were conducted at Kochi Core Center. PC02 and PC05 shows rhythmic deposition of sandy turbidite, whereas PC05 is characterized by slump deposits. Iceberg rafted debris (IBRD) are not commonly observed in these cores. Coarse sands and gravels occur at the bottom of PC02 and PC03.

Geochemical, paleontological, chronological, and paleomagnetic analyses on these cores are still on-going. Upcoming results of these analyses would provide important information in sediment transport system across the South Shetland Trench and the nature of sediments incoming trenches at polar regions.

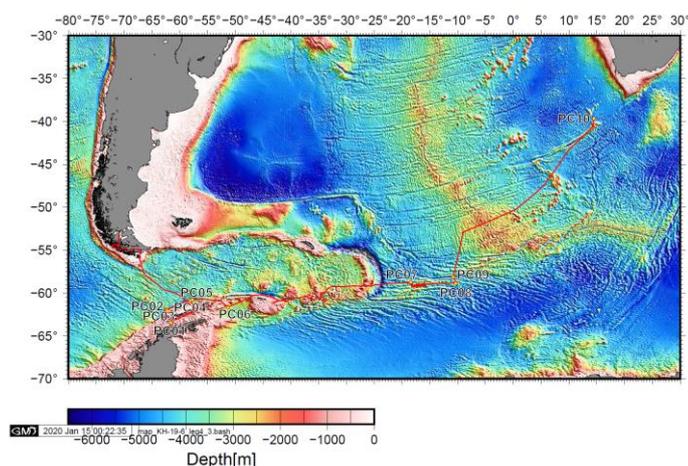


Figure 1. Locality of piston core sites during KH-19-6 Leg 4.

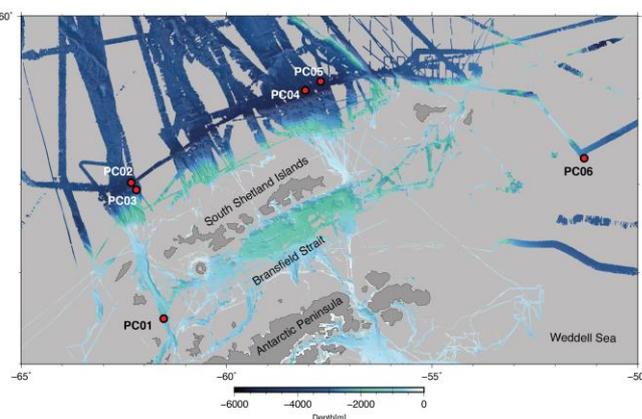


Figure 2. Locality of PC01 to PC06.

References

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