

Distributions and controls of sediment organic carbon in hadal trenches

WENJIE XIAO¹, YUNPING XU², JIASONG FANG² AND
RONNIE N GLUD³

¹Southern University of Science and Technology

²Shanghai Ocean University

³University of Southern Denmark

Presenting Author: wjxiaocug@126.com

The hadal trenches having water depth of 6 to 11 km is the deepest realm of the ocean. Due to the challenges of sampling and observation at extremely deep environments, the biogeochemical process of sedimentary organic carbon (OC) in hadal trenches is poorly known. Here, we investigate in the geochemical and sedimentological compositions of multiple sediment cores from the New Britain Trench and Bougainville Trench varying in water depth of 1560 to 8900 m. The combination of our results and literature data reveals that the hadal trenches behave like a deep oceanic trap for OC. With the trench interior, sediment OC is heterogeneous, which is affected by terrestrial input, shelf width, sediment grain size, seismic activity and local topography. The proximity to land masses, relatively high sedimentation rate and abundant OC content lead us to propose that the hadal trenches may be a significant, currently undocumented sink for OC which is helpful for resolving the long-term unresolved puzzle on missing of terrestrial OC in the ocean.