Geodetic observations at deep seafloor –New challenges in collaboration with physical oceanography

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Seafloor geodetic observations are critical for accurately understanding crustal deformation associated with phenomena such as transient fault slips. Among the seafloor geodetic instruments, the ocean bottom pressure gauge (OBP) is a sensor that can continuously monitor vertical crustal deformation of the seafloor and tsunamis over a broad range of time scales and has been the subject of many previous studies. However, the water-pressure time series obtained by the OBP includes various components such as tidal impacts, non-tidal oceanographic fluctuations, and crustal deformation, making it extremely important to address these influences for extracting objective crustal deformation components. These problems also apply to acoustic ranging from the sea surface, and their proper handling is an important issue. On the other hand, these components that appear to be noise from geodetic observations are, from the perspective of physical oceanography, the data themselves. The relationship between the two is similar to the relationship between weather-induced noise in GPS geodetic observations on land, which has become important data in the field of meteorology. In the presentation, we will show how what is noise from one perspective can be data from another and discuss how we should promote interdisciplinary fusion research.

