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Pacific Array

KAWAKATSU, Hitoshi[1*] ; TAKEO, Akiko[2] ; ISSE, Takehi[1] ; NISHIDA, Kiwamu[1] ; SHIOBARA, Hajime[1] ; SUETSUGU, Daisuke[3] ; SUGIOKA, Hiroko[3]

[1]Earthquake Research Institute, University of Tokyo, [2]Department of Natural History Sciences, Hokkaido University, [3]Institute of Research on Earth Evolution, Japan Agency for Marine-Earth Science and Technology

Based on our recent results on broadband ocean bottom seismometry, we propose a next generation large-scale array experiment in the ocean. Recent advances in ocean bottom broadband seismometry (e.g., Suetsugu & Shiobara, 2014, Annual Review EPS), together with advances in the seismic analysis methodology, have now enabled us to resolve the regional 1-D structure of the entire lithosphere/asthenosphere system, including seismic anisotropy (both radial and azimuthal), with deployments of ˜10-15 broadband ocean bottom seismometers (BBOBSs) (namely ”ocean-bottom broadband dispersion survey”; Takeo et al., 2013, JGR; Kawakatsu et al., 2013, AGU; Takeo, 2014, Ph.D. Thesis; Takeo et al., 2014, JpGU). Having ˜15 BBOBSs as an array unit for 2-year deployment, and repeating such deployments in a leap-frog way (an array of arrays) for a decade or so would enable us to cover a large portion of the Pacific basin. Such efforts, not only by giving regional constraints on the 1-D structure, but also by sharing waveform data for global scale waveform tomography, would drastically increase our knowledge of how plate tectonics works on this planet, as well as how it worked for the past 150 million years. International collaborations might be essential, as if three countries/institutions participate this endeavor together, Pacific Array may be completed within five or so years.

Keywords: OBS, seismic array, lithosphere, asthenospher