A dense seismic array observation across the central focal area of the 2015 Gorkha earthquake(Mw 7.8), Nepal

*Eiji Kurashimo[1], Hiroshi Sato[1], Shin'ichi Sakai[1], Naoshi Hirata[1], Hiroshi YAGI[2], Ananta Prasad Gajurel[3], Danda Pani Adhikari[3], Krishna Subedi[4], Bishal Nath Upreti[4]

1.Earthquake Research Institute, the University of Tokyo, 2.Yamagata University, 3.Tribhuvan University, 4.Nepal Academy of Science and Technology

On April 25, 2015, the Gorkha earthquake (Mw 7.8) struck central Nepal and resulted in nearly 9000 fatalities. This earthquake occurred in the India-Eurasia Plate Collision Zone. The focal mechanism showed a reverse fault with a compression axis in a NNE-SSW direction (USGS, 2015). The Himalayan seismogenic zone is located in a typical continental collision zone. Several geological cross sections through the central Himalaya have been proposed (e.g., Cattin and Avouac, 2000, JGR). However, little is known about the detailed geophysical structure of the India-Eurasia plate collision zone. Moreover, the 2015 Gorkha earthquake failed to rupture to the surface and hence a large earthquake appears to be inevitable (Bilham, 2015). Revealing the crustal structure of the India-Eurasia plate collision zone is important to constrain the process of earthquake occurrence and the crustal evolution process associated with the collision of the continents. To investigate aftershock distribution and crustal structure, we conducted a dense seismic array observation across the central focal area of the 2015 Gorkha earthquake. Thirty-five portable seismographs were deployed along a 90-km-long line between Shabru Besi and Hetauda. Each seismograph consisted of a 4.5 Hz 3-component seismometer and a digital data recorder (GSX-3). Waveforms were continuously recorded at a sampling rate of 250 Hz for one month. Recordings were started on August 15, 2015 and November 28, 2015. In this presentation, we present precise aftershock distribution and seismic velocity structure across the central focal area of the 2015 Gorkha earthquake.

Keywords: The 2015 Gorkha earthquake, India-Eurasia Plate Collision Zone, dense seismic array observation, aftershock distribution

