Dr. Koki Idehara got bachelor degree from Department of Earth Sciences, Ehime University in 2003, then he got master and doctor degrees from Graduate School of Science, Ehime University in 2005 and 2008, respectively. Since April 2008 he has been a post-doc research fellow in Earthquake Research Institute, University of Tokyo. His research field is seismology and he has been working on the seismic structure and dynamics of the lowermost mantle.

Detailed analyses of seismic reflected waves from the core-mantle boundary (CMB) indicate the existence of strong lateral heterogeneities in the D” layer right above the CMB, which are related to the birth of mantle plumes and the piling up of subducting slab materials as well as phase changes at the bottom of the mantle.

Dr. Koki Idehara showed his recent results on the seismic structure and dynamics of the core-mantle boundary region. He used the high-quality waveform data recorded by the High-sensitivity seismic network deployed on the Japan Islands. He adopted waveform modeling techniques to analyze the PcP and ScP waves reflected from the CMB, and found the existence of ultra-low velocity zones (ULVZ) in the D” layer above the CMB under the Philippine region. The features of ULVZ exhibit lateral variations and the ULVZ contain two or more layers with significant reductions of P and S wave velocities but with increase of density, suggesting that core materials (Fe) may exist in the ULVZ.

Over 30 faculty members and students in solid-Earth physics attended the seminar and asked many questions, and Dr. Idehara answered the questions pertinently. The discussion was very meaningful, and our faculty members and students understood the frontier studies in this field.