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SSS027-P03

Room:Convention Hall

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## Excitation and propagations of seismo-acoustic waves with an open boundary condition

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We developed an efficient numerical method to calculate normal modes of elasto-gravitational planetary bodies with atmosphere and any mechanical dissipation (Kobayashi 2007). Using the method, we can easily calculate eigenfunctions of a solid mode in the atmosphere and those of an atmospheric mode in the solid earth. To show the performance of the method, we calculated a million of acoustic modes including the solid earth and synthetic waveforms of acoustic waves excited by Iwate-Miyagi Nairiku Earthquake (Nagao et al. 2008). We also discussed an effect of zonal winds on the acoustic wave propagations and their waveforms (Kobayashi 2009).

In such a medium, seismic wave energy can escape through the atmosphere and an eigenfrequency of a mode is inevitably a complex number, and any two normal modes are never orthogonal each other even if we use a perfect elastic earth model in calculations. In this presentation, we discussed about excitation problem of normal modes of one dimensional acoustic system as such a dissipative system in the 2010 SSJ fall meeting (Kobayashi 2010). In this presentation, we apply the theory to a realistic coupled system of the solid earth and the atmosphere, and report effects of the open boundary conditions on wave propagations.

Keywords: seismoacoustic waves, excitation, wave propagation, coupling, open boundary, zonal winds