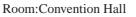
Japan Geoscience Union Meeting 2012

(May 20-25 2012 at Makuhari, Chiba, Japan)

©2012. Japan Geoscience Union. All Rights Reserved.

SCG65-P19



Time:May 20 17:15-18:30

## Numerical analyses of water content and melting regimes in the NE Japan arc

HORIUCHI, Shyunsuke<sup>1\*</sup>, Iwamori Hikaru<sup>2</sup>

<sup>1</sup>Earthquake Research Institute, The University of Tokyo, <sup>2</sup>Tokyo Institute of Technology

Melting and seismic structure beneath the northeast Japan arc considering upon the uncertainties of H<sub>2</sub>O content is modeled to estimate the relation between melting region and H<sub>2</sub>O content, and restrict water content distributed in mantle wedge. This model results show that increasing water content, a weak melting starts to occur beyond  $C_{H2O}$ = 0.07 wt%, and the calculated P-wave and S-wave velocity structures between  $C_{H2O} = 0.10$  wt% and 0.40 wt% can explain tomographic low velocity zones. The distribution of melt production rate ( $C_{H2O} = 0.15$  wt%) shows that all three mechanism (Flux, decompression, and compression melting) are necessary to explain volcanic activity at back arc, volcanic front, and intermediate region in the Northeast Japan arc. In the case of  $C_{H2O} = 0.15 \cdot 0.34$  wt%, the model results of volcanic eruption rate can explain observed across-arc features in terms of relative intensities (i.e., spatial location and pattern). Considering into the comparison with tomographic data, melting mechanism, and the comparison with volcanic eruption data, this model results for  $C_{H2O} = 0.15 - 0.34$  wt% can explain volcanic activity in the Northeast Japan arc.

Keywords: water, melting, subduction zone