Japan Geoscience Union Meeting 2011
(May 22-27 2011 at Makuhari, Chiba, Japan)


SIT002-10 会場:301B 時間:5 月 27 日 11:15-11:30

# Attenuation and anisotropy structure at the lateral edge of the Okinawa trough
Attenuation and anisotropy structure at the lateral edge of the Okinawa trough

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The Ryukyu subduction zone and its associated back-arc basin, the Okinawa trough, terminate laterally against the Eurasian lithosphere at northeast Taiwan. The mantle wedge shows a factor of 10 increase in Q values from the segment with significant rifting to NE Taiwan where rifting has just begun. The high Q values beneath central northern Taiwan are probably affiliated to the colder Eurasian lithosphere, but the lithospheres eastern boundary is unknown. Shear-wave splitting pattern helps to resolve this issue. We found a rotation of the polarization direction of the fast split wave from nearly NS (trench normal) at the southwest OT to roughly EW beneath northern Taiwan in alignment with the orogenic structure. Because the lateral edge of the mantle wedge is blocked by the thick Eurasian lithosphere, trench-parallel flow is suppressed and the trench-normal flow dominates. The western boundary of the trench-normal fast direction is used to mark the western boundary of the mantle wedge, which can be drawn roughly at 121.8E. If this is the boundary, the attenuation pattern suggests that the mantle wedge against the Eurasian lithosphere is cooled by 100-200 degrees.

キーワード: mantle wedge, attenuation, anisotropy, mantle flow
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