Toward in-situ Characterization of Lithosphere/Asthenosphere System of the "Normal Oceanic" Mantle: The NOMan Project

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Normal Oceanic Mantle (NOMan) Project

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The NOMAn Project (FY2010-2014):

(1) Lithosphere/asthenosphere system
(2) Water (volatiles) in the transition zone
Lithosphere/Asthenosphere system

Kawakatsu et al. (Science, 2009)

Deep Sea Borehole seismometer installed by OHP
What/where is normal?

(a) Normal crust (blue) by distance criterion

(b) Normal crust (blue) by correlation criterion

Korenaga & Korenaga (2008)
## Project schedule

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- **JAMSTEC cruise**
- **Private cruise**

- **Pilot dep**
- **Tohoku EQ**
- **1y-delay**
- **Present**
Pilot deployment
(2010/6~2012/8)
Main deployment
(2012/8-2014/8@A; 2011/11-2013/8-2014/8@B)
preliminary results: skipped
Summary: preliminary

- not all “normal mantle” look normal
- broadband surface wave dispersion
  - LID with ~constant velocity
  - depth dependent anisotropy (RA>AA?)
  - w/RF, SKS-splitting
- variability sedimentary noise in deep ocean

- final recovery++ cruise @ summer, 2014
- symposium @ Feb/March, 2015
- post-doc position
BB dispersion analysis of OBS data in PHS

Takeo et al. (2013, JGR)
BB dispersion analysis of OBS data in PHS

Takeo et al. (2013, JGR)

Rayleigh wave

Love wave

Misfit (%)
BB dispersion analysis of OBS data in PHS

Takeo et al. (2013, JGR)