New Zealand national seismometer network – Hikurangi margin

Geonet

Grey=strong motion

Passive Seismic Studies
Donna Eberhart-Phillips & Stephen Bannister

NZ-wide velocity field: Eberhart-Phillips et al., SRL 81,6 (2010)

NZ-wide Q: poster AGU S43B-4547 (on wall here)

Megathrust interface, 12-15 km depth above SSEs
- Onshore 2011-2014 targeted broadband seismometer array

(Offshore: HOBITTS current OBS)
Subduction zone structure – seismology recent progress

D.Eberhart-Phillips, S.Bannister. 3-D Imaging of the northern Hikurangi subduction zone: variations in subducted sediment, slab fluids and slow slip, submitted to Geophysical Journal Int.,
March 2010 SSE: synchronous seismicity (ML1 to ML4)

Very similar to Boso seismicity in 2007-08 (Hirose et al, GRL 2014)
Overview

- Both upper and lower plate heterogeneity influence Plate Interface behaviour (seismic, aseismic, slow slip events)

- Synchronous seismicity during SSEs occurs close to (or on) the megathrust interface

- Diverse seismicity behaviour and properties ($V_p$, $V_p/V_s$, $Q_p$, $Q_s$) associated with SSEs