Seismicity associated with SSE in NZ

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SSE seismicity in NZ

• Tremor
  – ETS?

• Micro seismicity
  – Mahia example

• Macro seismicity
  – Gisborne example
What is tremor?

Where have we seen it in NZ?

Fry et al., 2011; Kim et al., 2011; Ide 2012; Wech et al., 2012); Fry (unpublished)
Hikurangi tremor

SSE from L. Wallace, tremor from Fry et al., 2011, Kim et al., 2011, Ide, 2012, and Fry (unpublished)
Qp from Eberhart-Phillips et al., 2008, tremor from Fry et al., 2011 and Ide, 2012.
Mahia-Gisborne: seismic activity synchronous with 2010-Feb SSE

SSE inversion from L. Wallace and seismicity from S. Bannister
Swarms of larger events

Events > M4

Regional moment tensor solutions from J. Ristau
Thoughts:

- Seismic association with SSE includes tremor, micro-, and macro-seismicity
- Some SSE have no obvious associated seismicity, some do
- Shallow nature of plate interface offshore Gisborne yields increased sensitivity of monitoring equipment -> maybe we can “fill-in” the continuum of seismic and aseismic observations with OBS
- Time scales of triggering (or interaction between SSE, tremor, earthquakes, and potential great earthquakes.