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# *Interactive comment on* "Seismic visibility of a deep subduction channel: insights from numerical simulation of high-frequency seismic waves emitted from intermediate depth earthquakes" *by* W. Friederich et al.

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This is an interesting and timely paper investigating numerically possible seismological effects of serpentinized subduction channel presence atop descending slabs. The paper is of general interest and opens an interesting new direction, which will hopefiully stimulate "modeling-inspired" seismic observations in subduction zones. The paper is generally well written but discussion of results could be improved by addressing two issues. Upper boundary of subduction channel is assumed to be planar whereas numerical thermomechanical simulations often suggest that upper boundary of the ser-



pentinized channel in the forearc mantle can be strongly corrugated (e.g., Gerya et al., 2006; Angiboust et al., 2012; Baitsch-Girardello et al., 2013). This may affect resulting seismograms in a significant way and needs short discussion. Would also be good to clearly indicate possible "channel features" on the seismograms from the Hellenic subduction zone – they are difficult to see for inexperienced readers.

Taras Gerya, Zurich 2.10.2013

Minor comments

P. 1464, section 10. Gerya & Stoeckhert, 2002 is not a numerical modeling study. More appropriate reference is Gerya, T.V., Stoeckhert, B., Perchuk, A.L. (2002) Exhumation of high-pressure metamorphic rocks in a subduction channel - a numerical simulation. Tectonics, 21, Article Number: 1056.

P. 1464, section 25. "turbulent flow". This term is typically used for describing inertia-driven flows in low-viscosity fluids. Better to use some other term, e.g. "chaotic flow" or "strongly perturbed flow".

P. 1471, section 5, should be "dry diamOnd eclogite"

References

S. Angiboust, S. Wolf, E. Burov, P. Agard, P. Yamato (2012) Effect of fluid circulation on subduction interface tectonic processes: Insights from thermo-mechanical numerical modeling. Earth and Planetary Science Letters, v. 357–358, 238-248

Baitsch-Ghirardello, B., Gerya, T.V., Burg, J.-P. (2012) Geodynamic regimes of intra-oceanic subduction: Implications forearc extension vs. shortening processes. Gondwana Research, DOI: http://dx.doi.org/10.1016/j.gr.2012.11.003

Gerya, T.V., Connolly, J.A.D., Yuen, D.A., Gorczyk, W., Capel, A.M. (2006) Sesmic implications of mantle wedge plumes. Physics of the Earth and Planetary Interiors, 156, 59-74.