Comment on "Rarely observed short-period (5–10 s) suboceanic Rayleigh waves propagating across the Tyrrhenian Sea" by A. Rovelli et al.

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[1] The letter by *Rovelli et al.* [2004] gives an example of a very interesting phenomenon: the propagation of very low-velocity Rayleigh waves at periods as short as 5s, across the Tyrrhenian. A similar phenomenon, dealing with waves with periods of 25s and above, was reported in the literature by *Panza and Calcagnile* [1979]. More recent studies [*Panza et al.*, 2003; *Panza and Pontevivo*, 2004] reach periods of 10s and confirm the presence of very low velocity material at relatively shallow depth in the Tyrrhenian, that can represent the deep magma reservoir of most of the active volcanic phenomena in Italy [*Panza et al.*, 2004; *Natale et al.*, 2005]. The merit of *Rovelli et al.* [2004] is to extend the analysis to shorter periods (5s) than earlier done. For these reasons the letter, extending to 5s the observations of very low-velocity Rayleigh waves, not only evidences the short period phenomenon as due to the interaction of the water layers with the underlying basalts, but could be a valuable contribution to the general assessment of volcanic and seismic hazards in the region. However the letter by *Rovelli et al.* [2004] contains a major error in their Figure 3, where the dispersion curves of the modes labeled 1 and 2 are far from the truth, probably due to overlooking of the mode following problem [*Panza and Suhadolc*, 1987]. I cannot supply the correct curves since in the paper the details of the structural model used for the computation of dispersion relations are not given, but this is an editorial problem, solved now in the reply [*Rovelli et al.*, 2006, Table 1 and Figure 1]. The lack of basic information that may allow the reproduction of the results, like the structural model used in the computation of the synthetic seismograms, makes these signals not so relevant with respect to the problem treated. This shortcoming is eliminated by the information supplied in the reply. Incidentally, I note that the structural models used by *Rovelli et al.* [2004] in the computations, now given in the reply, indicate the presence of very-low velocity material (Vs$\sim$3km/s) at depth of about 20 km, overlain by rocks with Vs > 4.km/s) similarly to *Panza and Pontevivo* [2004]. The pertinent models given by *Panza and Pontevivo* [2004, Table 5], if used to compute short period waves (down to 1s) give phase and group velocities of Rayleigh waves even lower than the ones reported by *Rovelli et al.* [2004]. A conclusion, consistent with independent investigations, that is reached notwithstanding a formal mistake [*Rovelli et al.*, 2004, Figure 3], greatly benefits from the due correction, and this is the spirit and probably the main contribution of my comment. The presence of very low-velocity rocks underneath the Tyrrhenian Sea is a well-known problem, related to severe hazard that requires the maximum possible care.

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