SHEAR-WAVE ATTENUATION AND VELOCITY STUDIES IN SOUTHEASTERN ASIA

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Models of shear-wave Q (Q_μ) have been obtained for southeastern Asia using two methods. The first method inverts attenuation coefficients of the fundamental Rayleigh mode obtained using a standard two-station technique. The second method matches theoretical amplitude spectra for the fundamental and higher-mode Rayleigh waves computed for previously obtained velocity and assumed Q_μ models, and earthquakes with known source depths and focal mechanisms, to observed spectra. The latter method provides much better regional coverage than the first and allows us to map lateral variations of Q_μ at various levels in the crust and uppermost mantle.

For the single-station, multi-mode method, I assumed an Earth model consisting of three layers, layer 1 being 10 km, layer 2 being 20 km, and layer 3 being 30 km in thickness. Q_μ in layer 1 achieves lowest values (about 40) in the southern part of the Tibetan Plateau and in the Tarim basin and is highest (about 250) in southeastern China. The Q_μ map of layer 2 indicates that the highest Q_μ values (about 150) lie in the central part of China and in parts of the Sino-Korean platform. The lowest Q_μ value (about 50) occurs in Tibet and the Pamir thrust system. Layer 2 exhibits an overall increase in Q_μ going from south to north. For layer 3 the resolution of crustal variations in Q_μ is poorer than layers 1 and 2. Available results, however, indicate that Q_μ is highest (about 180) under southern Mongolia and the Tarim basin, somewhat lower (100) beneath the southern portion of the Baikal Rift, and lowest (80) under

the Pamir thrust system.