RAYLEIGH WAVE AMPLITUDES AND REGIONAL VARIATIONS OF ANELASTICITY IN THE EASTERN PACIFIC

by

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Rayleigh waves generated by five earthquakes beneath the Pacific Ocean, on the East Pacific Rise, have been analyzed to obtain the anelastic attenuation coefficients of the fundamental mode for the eastern Pacific in the 15-110 second period range. Attenuation coefficients have been obtained using two different methods, a least-squares process developed by Tsai and Aki, and a reference station method. Results from both methods are in very good agreement and indicate that Rayleigh wave attenuation coefficients in the eastern Pacific may be somewhat higher than average values obtained for the entire Pacific. One path which lies along or near the East Pacific Rise seems characterized by much higher attenuation than other paths in the east Pacific for all periods. These values suggest that a narrow zone of low Q values such as that inferred by Solomon for the mid-Atlantic ridge might also exist beneath the east Pacific rise.

Focal depths for two of the earthquakes have been redetermined using the least-squares process.

The reference station method has proven to be very useful in studies of lateral variation of attenuation, if effects such as lateral refraction are not severe, or can be minimized.

As a byproduct of the multiple-filter technique used in the analysis of the observed amplitudes, mean group velocity curves of each event have been analyzed. From their inversion a new Earth model has been determined for the east Pacific.