The characteristics of three-dimesional strong ground motions along principal axes

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Time-varying principal axes of the covariance matrix of three-dimensional ground motions were examined by applying the moving window technique for k-net strong motion records. The principal axes were used to investigate the characteristics of ground motions in time and space. It is found that the principal axes are stable for a short time periods after the arrivals of P and S waves, respectively. The direction of the principal axes and the distribution of the maximum standard variance after S wave arrival can be explained by the theoretical SH and SV wave solutions of a point source.