



## **Tomographic imaging of a seismic cluster in northern Taiwan and its implications for crustal fluid migration**

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After the occurrence of the 1999 magnitude 7.3 Chi-Chi earthquake, a cluster of NE-SW trending earthquakes, almost along the surface trace of the Lishan fault, has been detected in the northern portion of the Central Range in northern Taiwan. From the spatiotemporal distribution of hypocenters based on cluster analysis, the Lishan fault cluster (LFC) can quantify the evolution of seismicity as aftershocks of the 1999 Chi-Chi earthquake. The results of seismic tomographic inversion indicate that the LFC extends down to about 10 km depth and seems to be distributed in high  $V_p$  areas rather than in low  $V_p$  areas. This temporal expansion is attributed to fluid diffusion. Seismic activity in the upper crust tends to be high above broad zone with low  $V_p$  in the lower crust. Our tomographic images demonstrate a series of relatively high  $V_p/V_s$  anomalies dipping to the east which seems to form a fluid upwelling conduit beneath the Central Range. We thus suggest that the Lishan Fault might play a role of an active fluid conduit, fluid or fluid fluxed a partial melt of the Philippines Sea plate would be released along the east-dipping conduit and rise gravitationally to the upper crust.