

STUDIES OF SEISMICITY IN THE Cerdanya Region  
OF  
THE Eastern Pyrenees

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## DIGEST

The Cerdanya seismic network (CSN) is an analog telemetered seismic network located in the region of the Cerdanya Valley in the eastern Pyrenees. It operated over the period November 1985 to September 1987. This Network has allowed the first detailed studies of seismicity in the region.

The network event location performance was first investigated in order to estimate errors in earthquake location. This analysis showed that a good confidence in the epicentral location ( $<2$  km) is obtained in the region if S-wave arrival time readings are available.

A P-wave velocity model for the region was obtained from an analysis of P-wave travel times. S-waves for the model were inferred using Wadati's method. A substantial difference between the  $V_p/V_s$  ratio in the crust and the mantle is found. A joint hypocenter velocity determination (JHVD) procedure suggests the presence of a low-velocity layer in the upper crust.  $S \rightarrow P$  converted phases as well as reflected phases were identified on the seismograms.

Seismicity maps obtained for the Cerdanya region include three seismogenic zones. The first one is located to the south of the CSN, the second one beneath the valley itself, and the third one to the east of the CSN.

A composite focal mechanism was obtained for the second zone. It agrees well with other mechanisms obtained for earlier events in the same zone.

The seismograms may include well-developed Rayleigh waves from local earthquakes, but scattering and uncertainty in earthquake location prevents their use for crustal studies.