

Biggest recorded earthquake was brewing for four centuries

October 7 2005

The earthquake that rocked Chile in 1960 - at magnitude 9.5, the biggest ever recorded - was preceded by almost 400 years of accumulating stress, according to studies of the region's buried soils and sand. Strain had been building up on the fault ever since the Spanish conquistadors were jolted by a large quake in 1575.

Seismologists had previously been confused because the region had experienced earthquakes in 1837 and 1737, making the 1960 monster difficult to explain - the fault would not have had time to become sufficiently stressed to produce the magnitude 9.5 event.

In last month's issue of the journal *Nature*, a team led by Marco Cisternas (Pontificia Universidad Católica de Valparaíso, Valparaíso, Chile) now reports that these earlier quakes produced little if any subsidence or tsunami in the study area near the centre of the earthquake fault, meaning that they probably did not significantly release the stress building on the fault.

By studying soils and sands laid down over the past 2,000 years, the researchers have built up a picture of how and when previous tremors occurred along the fault, which runs between the Nazca and South American plates on the continent's west coast. The 1960 event represents between 250 and 350 years' worth of motion along a 1,000-kilometre section of the fault, where the Nazca plate is grinding below the continent at a rate of some 8 metres per century.

Source: Nature

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