

STUDY OF INTRAPLAQUE SEISMICITY TRIGGERED IN NORTHERN CHILE BY THE JUNE 23, 2002 PERUVIAN SUBDUCTION EARTHQUAKE

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ABSTRACT

An earthquake of magnitude $M_w = 8.4$ occurred in the southern Peru subduction zone on June 23, 2002. This event was immediately followed by a significant increase of the crustal seismicity of the forearc in the southern Peru and northern Chile regions. This activity culminated with the July 24, 2002 $M_w=6.3$ Aroma crustal earthquake. We modeled the broad band teleseismic records and studied the aftershocks sequence using the local network complemented by temporary stations. This event occurred on an even known fault zone not yet recognized as active, the Ausipar Thrust. The focal mechanism shows right lateral movement on a north-south east dipping plane, corresponding to a jog of the main fault. The aftershocks zone extends about 25 km suggesting some segmentation. In depth, the seismic activity extends below the aftershocks zone down to the subducted slab. This earthquake and its aftershocks sequence are located on a major P-wave velocity jump evidenced down to the Moho by a previous tomographic study. On January 14, 2002, a magnitude $M_w=5.7$ earthquake occurred there, with about the same epicentral area but at a depth of about 70 km. This depth is well controlled by nearby stations, and therefore this event is not crustal neither in the subducted slab. The obtained depth agrees well with the CMT solution determined by global agencies, showing a similar focal mechanism of the $M_w=6.3$ crustal event. It was followed by other events in the same range depth. We present some possible interpretation of this unusual spatial and temporal seismic sequence and its mechanical pattern.

Géodynamique andine Andean Geodynamics Geodinámica Andina

Résumés étendus
Extended abstracts
Resúmenes expandidos



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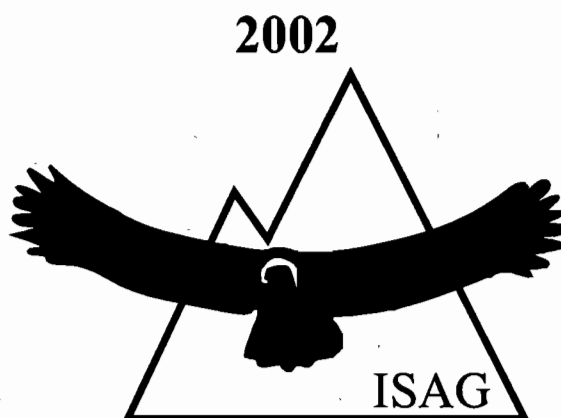
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