



## **Thermal structure and intraplate seismicity associated with subhorizontal subduction beneath Peru and central Chile**

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From a recent study of temperatures in the world's subduction zones it seems that, if the dependence of the relevant physical parameters on temperature is included in the modelling, deep and intermediate depth intraplate seismicity is restricted to material having potential temperatures less than 600 °C. The exceptions to this global trend lie within the portions of the South American subduction zone where the descending Nazca Plate lies subhorizontally beneath the Andes. Because the overriding South American Plate has a colder thermal structure than the convecting mantle, temperatures within the subducting slab are lower than they would be if the slab were in direct contact with the mantle, a condition assumed in the global study. The present study shows that the potential temperatures up to which intraplate earthquakes occur within the subducting Nazca Plate are most likely lower than 600 °C, consistent with the global pattern of subduction zone seismicity. Furthermore, the horizontally subducting slab acts to keep the continental mantle of the South American Plate cold enough to generate earthquakes. Evidence is presented showing that the continental mantle of Peru is indeed seismogenic.