Geophysical Research Abstracts, Vol. 7, 01039, 2005 SRef-ID: 1607-7962/gra/EGU05-A-01039 © European Geosciences Union 2005



Three-dimensional interseismic deformation model for the Andean subduction zone

M. Baes , J. Klotz , A. Abolghasem , J. Bolte and J. Zschau GeoForschungsZentrum, Potsdam, Germany mbaes@gfz-potsdam.de / Phone: +49-331-2881113 klotz@gfz-potsdam.de / Phone: +49-331-2881118 abolghasem@gfz-potsdam.de / Phone: +49-331-2881182 bolte@gfz-potsdam.de / Phone: +49-331-2881150 zschau@gfz-potsdam.de / Phone: +49-331-2881200

A three-dimensional (3-D) spherical finite element model is developed to model interseismic deformation rates at the Andean subduction zone between $-15 \leq \phi \leq -45$. The model is constructed by considering fully locking of the thrust interface between the subducting Nazca and the overriding South American plates constrained by horizontal deformation data, including strain rates and surface velocities from Global Positioning System (GPS) measurements. The GPS data set used in this study comprises 110 point velocities from GPS measurements of the South American Geodynamic Activities (SAGA). The model includes an elastic lithosphere layer underlain by a viscoelastic asthenosphere which simulates interseismic deformation by assigning a backslip rate to the locked zone of the subduction fault.