

TRENCH-PARALLEL MANTLE FLOW BENEATH THE SUBDUCTED NAZCA PLATE

P. G. Silver and R. M. Russo

DTM, Carnegie Institution of Washington
5241 Broad Branch Rd., N.W., Washington, DC 20015

America, through shear-wave splitting measurements, in order to characterize mantle flow beneath the subducted Nazca Plate. The shear-wave splitting parameters (fast polarization direction ϕ and delay time δt between the two split shear waves) from two data sets are discussed: splitting from the SKS phases recorded at Andean stations, and S waves originating in the descending slab and recorded at other stations at teleseismic distances.

zones of trench-normal values of ϕ are coincident with two changes in slab dip: from 'normal' subduction beneath the Altiplano to 'flat' subduction both north and south. We suggest that the trench-normal values of ϕ represent either a modulation in the trench parallel flow, or possibly flow associated with an actual break in the slab. Finally, we consider the possibility that the existence of Caribbean and Scotia arcs, as well as the Altiplano are direct or indirect manifestations of the trench parallel flow.