Geophysical Research Abstracts, Vol. 8, 04844, 2006
SRef-ID: 1607-7962/gra/EGU06-A-04844


# The influence of a subducting slab on the uplift rate induced by glacial changes of Patagonia

**V. Klemann** (1), E. R. Ivins(2), Z. Martinec(1), D. Wolf(1)

(1) GeoForschungszentrum Potsdam, Germany, (2) Jet Propulsion Laboratories Pasadena, USA (volkerk@gfz-potsdam.de)

Modern geodetic techniques such as precise Global Positioning System (GPS) and high resolution space gravity mapping (GRACE) make it possible to measure the present-day rate of viscoelastic gravitational Earth response to present and past glacier-mass changes. The Andes of Patagonia contain glacial environments of dramatic mass change. These mass load changes occur near a tectonically dynamic boundary between the Antarctic and South American plates. The continental side of this boundary is currently dominated by the subduction of a youthful oceanic slab. A ridge of youthful volcanics parallels the Pacific coastline. Release of volatiles (such as water) at depth along this ridge are likely to create a unique rheological environment. To assess the influence of this rheological ridge structure on the observational land uplift rate and gravitational change we apply a two-dimensional viscoelastic earth model. For a case study, we discuss the variability of observational quantities related to a subducting slab, the viscous wedge between slab and continental lithosphere, the increase of elastic thickness from oceanic to continental lithosphere and the existence of a ductile crustal layer.