# Controls on continental strain partitioning above an oblique subduction zone, Northern Andes

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Strain partitioning is a common process at obliquely convergent plate margins, dividing oblique convergence into margin-normal slip on the plate-bounding fault and horizontal shearing on a strike-slip system parallel to the subduction margin. Plate convergence is oblique along much of the western margin of South America, yet strain partitioning is only observed along part of that length, possibly related to variations in the convergence obliquity angle, subducting plate dip or presence of a volcanic arc. This raises the question, to what extent do subduction zone characteristics control strain partitioning in the overriding continental plate?

We address this question using a lithospheric scale 3D numerical geodynamic model to investigate the relationship between subduction dip angle, convergence obliquity, weaknesses in the crust owing to the volcanic arc and strain partitioning behavior. The model design is based on the Northern Volcanic Zone of the Andes (5°N - 2°S), where strain partitioning is observed. This region is characterized by steep subduction (approx. 35°), convergence obliquity between 31°-45° and extensive arc volcanism. The relatively high angle of convergence obliquity suggests strain should be close to partitioning in this region, but preliminary model results show no strain partitioning for a uniform continental crustal strength. However, strain partitioning does occur when including a weak zone in the continental crust resulting from arc volcanic activity.