



## **Present-Day Kinematics of the Tectonic Blocks around Colombia, South America**

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The Northwestern part of the South American continent contains one of the most complex active tectonic settings in the world. It is the contact between stable South America and other major tectonic units (Nazca, Cocos, Caribbean plates) which also created some more smaller tectonic units (e.g., North Andes, Panama, Altiplano blocks), and orogens areas (e.g., Peru, Puna-Sierras Pampeanas). The interaction between all these blocks has produced many destructive earthquakes and volcanic eruptions in historical and recent past.

We present a revised estimation of the present-day angular velocity of the major tectonic blocks derived from CORS (Continuously Operating Reference Stations) GNSS (Global Navigation Satellite Systems) observations. For this, we use all available stations installed by several institutions, namely stations part of the GEORED Project (CGS), IGS (International GNSS Service), and national mapping networks. These networks provide us with a sufficient large number of stations ( $\sim 100$ ) to determine a very robust estimation of the velocity field for these tectonic units.

The estimated angular velocities are computed with respect to the latest global reference frame, ITRF2008. We compare our estimated model with other estimations based also on geodetic and geophysical/geological data to show the consistency of the predicted motions. We use the estimated angular velocity solutions to constrain the motions of the Colombian Geored network in order to understand the tectonic complexity of the north-western corner of South America.

Finally, we present and interpret the strain rate field computed using QOCA. The estimated map is correlated with the known geological and geophysical setting to identify the areas in Colombia suffering large rates of deformation.