



## **Tectonic deformation in South Shetland Islands, Bransfield Sea and Antarctic Peninsula environment from GPS surveys.**

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The GPS system is essential in positioning applications that request high accuracy. This is the case of velocity field estimation of tectonic plates. The goal of this presentation is to study the plate motions in the area defined by Antarctic Peninsula, Bransfield Sea and the South Shetland Islands. This region is a very complex terrestrial zone. In this area two principal tectonic plates converge: South American plate and Antarctic plate. Moreover, three minor plates converge too: Scotia, Phoenix, and South Shetland plates.

For this purpose, a geodetic GPS network formed by 7 stations was observed during six field campaigns from 1999 to 2005. High accuracy GPS measurements have been collected since 1999. GPS data processing has been done using the Bernese GPS Software Version 4.2. Normal equations were obtained from each individual solution, enclosing some IGS stations, and combined to get the final solutions for each epoch.

The resolutions of the absolute horizontal velocities is estimated to be at the level of 15-20 mm/year. These velocities are given in ITRF2000. The results show that crustal movement is toward to the SW-NE directions, agreeing with the Bransfield Sea basin, a marginal active basin, witch has identified a extensional axis with direction NE-SW between parallel 60ž and 63ž S along 500 Km approximately.