Long-Term Velocity Field for Mexico country

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Abstract

Mexico is known to host the largest Slow Slip Events ever observed on a subduction zone: from Guerrero to Oaxaca areas, these kinds of transients are regularly detected using GPS observations, with deformations at the surface up to 6cm in the NS direction. Many mexican areas are now well studied thanks to cGPS installed since several years, the oldest has been installed in 1997. Some permanent networks installed and maintained by Institutions (IG-UNAM, SSN, INEGI) or by projects (TlalocNet) permit to cover more or less the country, being completed recently by the very new REGNOM network (Baja California and North Mexico). The coverage is not so dense and presents some disparities in space distribution, but it allows now to perform a complete study of the country.

Although the existence of transients, the observation time span is large enough to perform the study of the long-term velocity field. Indeed, the transients observed in Guerrero and Oaxaca do not release all the constrains accumulated on the subduction interface, and the final budget over decades shows that some long-term deformation still remains. Furthermore, for the sites outside these areas, no transients have been detected, allowing us working on shorter time series for the long-term velocity field determination.

For this work, we used the tools and strategies developed at Université Grenoble Alpes – CNRS within the frame of the EPOS project (see presentation of Déprez et al.). Indeed, for integrating all the cGPS in Mexico and some 70-80 IGS sites, an analysis using sub-network has been implemented on the CIMENT computing facilities at the University.

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