Space Geodesy and the Study of the Seismic Cycle of large Earthquakes in Peru: Lima Region

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Large and destructive earthquakes have characterized the Peruvian margin since historical times. Among the more recent ones it can be cited the 2001 Arequipa earthquake (Mw 8.4); the 1942 and 1996 Nazca earthquakes ($\sim$Mw 7.2); the 1940, 1966 and 1974 Lima earthquakes (Mw 8) and the 1970 Chimbote earthquake (Mw 8) which had a death toll over 70,000 people. Based on Reid's hypothesis that accumulation and release of strain is a characteristic of large earthquakes we have been monitoring crustal deformation along the central coast of Peru (Lima region) as inferred from GPS measurements carried out between 2001 -2005. We use the estimated velocity field to infer spatial variations of the interplate coupling and how this relates with the background seismicity in the region. The results will be compared with the coseismic rupture at the end of the present earthquake cycle.