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Kinematics of mainland Greece from continuous GPS data (2006-2013): exploring the boundaries of extension and shear

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We processed 30-s GPS data from 90+ continuous GPS stations in central and western Greece using the Kalman filtering approach and accounting for time-correlated noise content, obtaining a velocity field in the ITRF2008 and the Eurasian-fixed reference frame. The dense station distribution allowed us to compute 2-D strain and rotation maps using the weighted least squares approach of Shen et al (JGR, 1996). The largest extension is observed in the western and central part of the Corinth rift (around 200 ns/yr) with a prominent N-S pattern that diminishes in the area of Thessaly, towards north. Extension direction switches to E-W in southern Peloponnese with increasing rates towards the south. Another change towards E-W extension direction is detected in Epirus but we need more data to establish its boundary. Compression is observed over large areas of western Greece due to horizontal movements (shearing). The boundary of compression in NW Peloponnese is mapped in the vicinity of the June 2008 M=6.4 strike-slip earthquake.