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Comparison of regional and local horizontal strain field on the area of Central Europe determined from GPS data

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Permanent GPS observations on EPN stations are being continued already about 15 years and so velocities of horizontal and vertical movements of the sites are determined with the great credibility. However density of the EPN sites on the area of Central Europe allow to determine only a very general model of deformation field. For determining the local strain field epoch-making GPS observations in local research networks can be used. As en example the GEOSUD GPS Network located in the area of the Sudeten mountains in South-West Poland were used. Velocities of GPS points were estimated from observations of annually repeated two-day measuring campaigns, connected to the EPN stations. On the basis of these velocities local velocity field and local strain field were estimated. The toolbox grid_strain (Teza, Pesci and Galgaro, 2008) was used. Areas of the maximum compressions and extensions were outlined as well as they were confronted with the tectonic structure of area. In the picture of the deformation field clearly four principal zones of deformations are standing out. The presence of the Sudetic Marginal Fault is becoming scratched slightly in south-eastern his parts. Values of deformations in the vicinity of fault zone are generally smaller than in more distant area. It is proving the hypothesis on interseismic character of changes and the weak tectonic activity of the fault. Such an image of horizontal deformations in which extensions are perpendicular to main direction of the fault line, is matching with the hypothesis on normal character of the SMF. On the entire research area however compression deformations are dominating.