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Geodynamics of the Moravo-Silesian area, the Bohemian Massif, detected by epoch GPS measurements

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The Bohemian Massif is a deep-seated Variscan structure unit that protects Alpine structures in their movements to the north. These conditions cause that peripheral parts of the Massif are dynamically affected in a more intensive way and thus they move rapidly than its central parts. The Moravo-Silesian area and its adjacent blocks belong to the peripheral parts with diverse kinetically affected structures and thus a geodynamical GPS network was established to detect possible movements of individual structure blocks. The GPS network data supplied by four EPN stations observed for seven annual epochs (1997-2003) were processed by the Bernese software. Applied field methodology and data processing do not allow errors in the horizontal directions 1 to 1.5 mm and in the vertical direction 2 to 3 mm to be exceeded. Geodynamic movements obtained for individual structure blocks gave already distinct trends that allow geological interpretations of these movements to be done. Generally, it was observed pronounce northern movements of the Moravo-Silesian blocks with respect to surrounding the Bohemian Massif and the Western Carpathians blocks. Some geological attributes indicate that the most probable origin of these movements should be linked to latest mid-Miocene Alpine orogene phases. Possible geodynamic concepts based on geological, geophysical, geodetic and other materials will be discussed.