

Analysis of the Kinematics of a Deep-Seated Landslide

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SUMMARY

A >20 years long geodetic monitoring record of a major, slow moving (about 15cm/yr) deep-seated landslide in Northern Greece was analyzed. The same exponential function was found to describe the long-term kinematics of all control points on the sliding mass, as well as of another neighboring, >1km long and 600m wide landslide. This evidence indicates that for major, deep-seated landslides the long-term kinematics of all their parts reflect an overall exponential trend, on which smaller events of accelerated movement are superimposed. Such events correspond to the residuals of observations after their non-linear detrending, have a mean return period of 4.0 to 7.5 years, as a least-square derived spectral analysis indicated, and are most likely triggered by meteorological events. These results are the first to be ever obtained, for long, detailed geodetic records of landslides are extremely rare.