Geophysical Research Abstracts, Vol. 8, 03765, 2006
SRef-ID: 1607-7962/gra/EGU06-A-03765

Landslide investigation by means of electrical tomography: Evaluation of the efficiency of drainage wells

J.M. Azañón (1), A. Azor (1), J.A. Peña (2), T. Teixido (2), J. Yesares (1)

(1) Departamento de Geodinámica, Universidad de Granada, Spain (2) Instituto Andaluz de Geofísica, Universidad de Granada (jazanon@ugr.es / Fax: +34 958 243384 / Phone: +34 958 249505)

A large-scale complex landslide, occurred in March 2001 in SE Spain, has been surveyed by geophysical methods. This landslide (Diezma landslide) is located close to the drainage divide between the Granada and Guadix topographic depressions. It produced important damage in the Sevilla-Almería highway. This road was partially closed because its cut-face was completely collapsed. We have used electrical resistivity tomography (ERT), geo-radar (GPR) surveying and borehole data to investigate several cross-sections of the landslide. Thus, we have been able to establish the depth and geometry of the slide surface down to 30 m. ERT and GPR show a single and continuous slide surface, which was previously detected with inclinometer measurements. Furthermore, we have tested the reliability and resolution of both geophysical methods on landslides affecting marls and clays with low resistivity values ($<$ 100 Ohm m). One of the most important stabilization works on the Diezma landslide was the perforation of twenty interconnected drainage wells. At the points where ERT cross-sections intersect the drainage well lines, the resistivity values increase, which can be attributed to a decrease in the water content of clay and marls. Thus, ERT can also be used as an accurate method to evaluate drainage control on unstable slopes.