



## **Contribution of DMS monitoring systems in the analysis of slide micro-movements for early warning management, risk assesment and evaluation of mitigating actions**

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Geotechnical underground monitoring activities are of particular importance in landslide analysis as they allow the investigation of the slope internal structure and the analysis of the concurrent causes originating the movement, unlike surface monitoring systems which only measure induced effects and are necessarily subject to alert delays. Among the systems based on strings of in place inclinometers (IPI), DMS multiparametric columns allows continuous real time monitoring of the whole vertical subject to landslide movements; the information acquired in fact allows the analysis of the displacement in situ through the study of the micro-movements, supported by a statistical analysis, of even multiple sliding surfaces, and the contextual correlation of these data with other geotechnical parameters such as water-table piezometric levels, in relation to rain precipitations. The integration and contextual correlation of different geotechnical parameters, together with the stability and instrumental precision characteristics of the DMS monitoring column, provide an important decisional contribution for early warning management, risk assesment and evaluation of mitigating actions.