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Multi-technical monitoring system Installed at Lajedo Landslides – Flores Island

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Due to its geological, hydrological and morphological context, Flores island, located in the Azores archipelago, is a prone zone to develop slow moving landslides. In the last 20 years, these movements have intensified, mainly in periods of intense and long rainfall periods. These slow moving landslides are responsible for damage in buildings, municipal roads, and agricultural land.
This work is presently being carried out in the parish of Lajedo, located southwest on Flores island (Azores archipelago), a place where a series of landslides with slow kinematic characteristics have been observed, some of which put at risk people and property. In this context, this work consists in the development of a network of hydrological and geotechnical monitoring, using Casagrande and vibrating wire piezometers, tiltmeters, inclinometers and a rainfall station.
In this work, landslides that affect parish of Lajedo are presented, as well as the specifications of the installed monitoring network, and the obtained results. During the geotechnical drilling to install the monitoring devices, soil samples were collected in order to obtain the physical and mechanical proprieties. Triaxial tests (CIU – consolidated isotropic undrained) were performed on undistributed samples from different stratigraphic layers. Shear strength results shows for the internal friction angle mean values of 32º and for the effective cohesion values between 0 to 1,2 kPa.
This study is part of a research project known as DECISIONLARM, whose main objective is to develop a multi-technical monitoring system to support decision-making based on alert and alarm levels in the unstabilized zone by evaluating the effect of precipitation and the oscillations of water level in the potential failure planes capable of triggering landslides.

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