



Image detection monitoring system (IDMS) for landslide monitoring

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In the field of topographic displacement monitoring systems, the CNR IRPI of Turin has developed and patented a new instrumentation, named Image Detection For Monitoring System (IDMS). The IDMS is constituted by a digital reflex camera that, according to different needs, can be combined to a long range reflectorless laser distantiometer . The resulting assembly is automatically moved by an high accuracy sophisticated positioning mechanism managed by a low-consumption pc. The principle of operation is based on the analysis of a time series of pictures of an area that, processed using particular algorithms, allow to obtain topographic displacements. If necessary, with the long range laser integration it is also possible to get the displacement values in three-dimensions. The system, initially experimented with the use of a cam, has been improved using a reflex camera, developing a special software that allowed to improve performances and to set algorithms to seek the monitored areas. These implementations, in addition to the freedom from the needs of reflecting targets, increase the system flexibility that can operate in dynamic contexts where the phenomenon morphology can quickly change. With this characteristics , the IDMS can preserve the topographic total station accuracy, but it hasn't the necessity to use expensive reflecting targets, often characterized by the difficulty of their installation and maintenance. These characteristics make the system most flexible allowing to modify the investigated areas without particular logistic difficulties and without further costs.