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Feasibility analysis of long-term surface displacement monitoring on potential landslide areas by low-cost GPS recievers

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We use low-cost single-frequency global positioning system (GPS) receivers to monitor long-term real-time surface displacements on the selected two potential landslide areas where are both located in Xiding catchment of Alishan, Taiwan. There are five GPS monitoring stations in each of study area. The GPS receiver is “GPS-721-MRTU” type with observations in 2-minute frequency. The GPS observation period is from 12th May to 31th December, 2017. In data processing, the methods of outlier removal and filter usage are both seriously considered. All results derived from the GPS-721-MRTU re-ceivers are well compared with those derived from a Trimble R8S receiver. The main objective of this research is to analyze the accuracy and assess the feasibility for long-term real-time surface displacement monitoring on potential landslide areas by low-cost single-frequency GPS receivers.

Keywords: GPS, low-cost, single-frequency, landslide