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Application of Innovative Technology for Landslide Investigation and Observation (2019) (1/4)

主管單位：經濟部中央地質調查所

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摘要

較大規模的潛在山崩地區，往往具有特殊的地質條件，進而構成不同的山崩機制，並可能伴隨不同的邊坡滑動變形特性及行為，如老崩塌地、順向坡地區等。但在豪大雨條件作用下，均可能誘發邊坡發生或再次發生滑動，引致嚴重災害，如南投縣廬山溫泉北坡及嘉義縣油車寮地區等，均屬於老崩塌地再次滑動現象。故面對近期尚未發生較大規模山崩災害之潛在山崩地區，除透過現場調查瞭解其山崩機制外，亦須配合適當的活動性觀測技術，輔以掌握坡地的環境地質狀況及潛在山崩活動特性，避免邊坡災害無預警發生。

經濟部中央地質調查所於前期計畫中，已完成 31 處潛在山崩地區之基礎調查工作，發現部分潛在山崩地區，於近期活動性相對較高，有必要持續觀測，供警戒防災參考。此外，經濟部中央地質調查所於前期計畫中，持續引進或改良更先進的調查、觀測技術，以提升現有調查觀測技術水準，工作成果豐碩。由於近期國、內外相關調查、活動性觀測及物聯網技術不斷發展中，本計畫將進行相關技術的資料蒐集、研發及應用，以持續提昇整體防災應變能量。整體計畫包括四大部分：1.潛在山崩地區調查、活動性觀測及地質安全評估、2.多尺度遙測技術應用於潛在山崩地區地表變形探討研究、3.前瞻地中調查觀測與物聯網之技術研發防災應用及 4.山崩活動性觀測成果智慧應用推廣及國內外技術交流。

關鍵詞：潛在山崩地區、地質調查、孔內探測、活動性觀測技術、物聯網

Abstract

Large-scale potential landslide areas often have special geological conditions, which in turn constitute different landslide mechanisms, and may be accompanied by different slope sliding deformation characteristics and behaviors, such as ancient landslide area or dip slope area. However, these large-scale potential landslide areas all may happen sliding induced by the heavy rain conditions, resulting serious disasters, such as the northern slope of Lushan Hot Spring in Nantou County and the Youcheliao area in Chiayi County, all of which belong to the phenomenon of re-sliding in the ancient landslide area. Therefore, in the face of potential landslides where large-scale landslides have not occurred in the near future, in addition to understand the landslide mechanism through in-situ investigations, it is also necessary to cooperate with appropriate active observation techniques to study the environmental geological conditions of slopes and the characteristics of potential landslide activities to avoid unwarranted slope disasters.

The Central Geological Survey of the Ministry of Economic Affairs has completed 31 basic investigation and observation works of potential landslide areas in previous plan. It has discovered some of the potential landslide areas recently show relatively high activity, and thus it is necessary to continue observation for disaster prevention. In addition, the Central Geological Survey of the Ministry of Economic Affairs continued to introduce or improve advanced investigation and observation techniques in the past, which expect to improve the existing survey and observation technology standards and achieved fruitful results. Due to the recent development of investigations and active observation technologies and Internet of Things technologies, the project will continue to collect, develop and apply relevant technologies to enhance the overall disaster prevention and response energy. The objects of overall plan include: (1) Potential landslide area survey, active observation and geological safety assessment. (2) Multi-scale remote sensing technology applied to potential surface landslide deformation research. (3) The research, development and disaster application of prospective survey and observation and Internet of Things technology (4) Smart application and promotion of landslide activity observation results and technical exchanges at home and abroad.

Keywords : Potential landslide area, geological survey, borehole test, activity observation technology, internet of things

