



## **Study of a wireless tracer used to monitor climate and environmental changes in remote mountainous areas of Southern Taiwan**

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Because of climate change, remote mountainous areas are affected by heavy rainfall events, which frequently trigger severe natural disasters, such as mud flows, collapses, and landslides. These disasters severely affect the lives and properties of residents in remote mountainous settlements. Therefore, improving the function of immediate monitoring and early warning systems for disaster prevention is a crucial problem that is continuously studied. Improvements in natural disaster observation technology in remote mountainous areas and the continuous collection of on-site measured data can reduce risks for on-site researchers. This study, for the first time, expanded its application to the immediate monitoring of collapse and landslides by improving wireless tracer observation technology. This study focused on the remote mountainous areas of Kaohsiung City, South Taiwan. After numerous surveys, real-time monitoring, and station construction site evaluation, the observation location of this research was set to Dajin Bridge in Liugui District, Kaohsiung City. After selecting the monitoring site, various materials and equipment required for the monitoring station were prepared. According to burial operation procedures, a river channel real-time scouring monitoring station and landslides real-time monitoring station were established, and a remote wireless real-time data receiving system was developed. The results indicated no recent extreme rainfall events in the study area; thus, no scouring or landslides were observed; moreover, the lives and properties of the settlement residents in the study area were safe. The monitoring technology developed by the institute can continuously monitor environmental changes in the study area.