



Effect of Climate Change on the Advancement of Real-Time Environment Change Monitoring Technology in Mountainous Regions

Han Chung Yang (1) and Chih Chiang Su (2)

(1) Shu Te University, Department of Leisure and Tourism Management, Kaohsiung, Taiwan (hcyang@stu.edu.tw), (2) National Chung Hsing University, Department of Civil Engineering, Taichung, Taiwan

Under drastic climate change worldwide, extreme rainfall events have caused severe landslides and erosion near rivers and slopeland in mountainous regions, gravely undermining the residential safety of settlements therein. Therefore, proposing a set of technology applicable to the real-time monitoring of natural environments and debris flow disasters is highly imperative. This enables extending disaster lead time and provides additional opportunities for local residents to evacuate, thereby preventing them from being trapped in related disasters. In this study, a self-developed wireless tracer was employed at landslide locations to serve as an effective instrument for a real-time landslide monitoring system. Currently, wireless tracers have been continuously improved to resolve their shortcomings, and have been tested on-site to monitor scour in river channels, verifying the applicability of such devices in real-time dynamic scour monitoring. In addition, remote wireless transmission systems can be adopted, along with webpage data display, to help users and managers easily understand the operation of wireless tracers; this avoids the risk of having related personnel visiting disaster-prone locations in person. In Taiwan, wireless tracers have been widely adopted by relevant authorities, such as the Taiwan Area National Freeway Bureau, 4th River Management Office of Water Resource Agency, Soil and Water Conservation Bureau of Council of Agriculture, and Department of water Resource of Taoyuan City, to conduct on-site scour monitoring, attaining excellent outcomes. This indicates that the development of wireless tracer technology can facilitate fulfilling the technology requirement of disaster prevention applications.