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Monitoring of Sediment Transport by UAV Aerial Survey in the Watershed of Wen-Shui River and Tou-Bian-Keng River, Central Taiwan

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The survey and topography monitoring is carried out in in the watershed of Wen-Shui river and Tou-Bian-Keng river, contains basic data collection, river material survey, section and topographic surveys, environment data gathering and image processing , analysis and discussion of sediment transport volume and so on.
The main rainfall in 2015 is May 20 to the end of August, The typhoons occur including LINFA, CHAN-HOM, SOUDELOR during this period. Then to the end of September 27 to 29, caused heavy rains by DUJUAN typhoon. According to Madu-an station statistics, rainfall intensity of CHAN-HOM and DUJUAN typhoon is higher, respectively 5.3mm / hr, 6.0mm / hr. According to Zhongzhulin station statistics, rainfall intensity of SOUDELOR typhoon and DUJUAN typhoon is higher, respectively 2.9 mm / hr, 3.3 mm / hr.
The plan including UAV aerial survey, topographic survey, section measurment before the flood execution in May, 2015. The second time survey were carried out after major rainfall period in September, 2015. The second time section measurement is executed in October. The way to analyze sediment volume changes by calculating changes by UAV DSM, cross-section topography changes, investigate landslide by orthophoto and calculate area and volume.
After the main rainfall in 2015, the area of landslide at the slope of main river changed little. It was found a newborn's landslide No. TL11, located upstream 500 meters from section 17 (7k + 500), located at the right bank of creek, in September orthophoto, it's sediment production volume calculated according to DSM is 3032.23 cubic meters. The total sediment production volume of all landslide at the slope of main river were -21555.72 cubic meters according to DSM comparison.

Keyword: sediment transport, UAV, aerial survey, DSM