

Porrameth Nitayavardhana 2008: Topography-Hydrological Model in Geoinformatics Public Domain System GRASS Appraised on Steep Slope Prototype River Basin. Master of Engineering (Water Resources Engineering), Major Field: Water Resources Engineering, Department of Water Resources Engineering. Thesis Advisor: Associate Professor Hansa Vathananukij, D.Eng. 93 pages.

River basins in northern part of Thailand are situated on steep slope area and in monsoon region that produced flood almost every year. This study selected Mae Waang basin, Amphoe Mae Waang, Chiangmai province as a study area. The 518 square-kilometers river basin area have two discharge-observed stations; P.82 (Ban Sop Win, Tambon Mae Win) and P.84 (Ban pan Ton, Tambon Tungpi). There are four rainfall gauging stations; 07801 (Ban Sop Win, Tambon Mae Win), 074C1 (Ban pan Ton, Tambon Tungpi), 07811 (Ban Toong Laung, Tambon Mae Win) and 071B1 (Ban Khung Waang, Tambon Mae Win)

According to the study, Topography-Hydrological Model in Geoinformatics Public Domain System GRASS could model the characteristic of Mae Waang basin through 1:50,000 geoinformatic data. The comparison among daily and monthly discharge outputs gave good results. Efficiency was studied on Sum of absolute error (SAE), Sum of squared residuals (SSE), Percent error in peak (PEP), Peak-weighted root mean square error objection function (PSE), Sum of squared log residuals (SLE) and The Nash and Sutcliff Efficiency (EFF). The Nash and Sutcliff Efficiency (EFF) gave the best result. Relation between simulated data and recorded data of discharge ( $R^2$ ) were 0.771/0.949 for P.82 station and 0.786/0.937 for P.84 respectively.

The Topography-Hydrological Model in Geoinformatics Public Domain System GRASS could mend problem on software licenses of the geoinformatics Hydrological Model. This potentiality could be used as a tool for river basin planning/management. Especially on flood warning system that often occurred in the northern river basins of Thailand.

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