Olan Thongkhawphurg 2011: Application of Multiquadric Equations and 3D CAD Technique for Estimation of Mean Areal Rainfall on Thailand Basins. Master of Engineering (Water Resources Engineering), Major Field: Water Resources Engineering, Department of Water Resources Engineering. Thesis Advisor: Associate Professor Teekawuth Potapirom, M.Sc. 123 pages.

For application in hydrology , especially studies involving large area , it is usually beneficial to have estimates of average areal rain fall depth it is main parameter for calculation runoff and water balance on a watershed. Rainfall phenomena have traditionally been analyzed as stochastic processes. The variation of rainfall depth can be thought as a 3D surface with a random variable and is positively correlated with surrounding rainfall depths. Two typical assumptions are that the rainfall process is spatially homogeneous and is isotropic.

Areal rainfall estimation have development for along tine Such as the Arithmetic Mean, the Thiessen Polygon and Isohyetal overall. Numerical surface fitting methods such as kriging, reciprocal distance and multiquadric Equation.

In cause of study apply of multiquadric equations and 3D cad technique for volume under cone and compairision the root mean squre error (RMSE) are lightly with thiessen by at the sakeakrang river basin have RMSE are lightly with thiessen more than other river basin in 1999 is the year that have many rainfall RMSE is 0.84 mm./year and 1993 is the year that have light rainfall RMSE is 0.97 mm./year and in the year that have light rainfall of ever river basin in Thailand have RMSE neary Theeasen method more than year that have many rainfall so that Application of multiquadric equation can apply estimate of areal rain fall on Thailand basins.

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