



*Geography
for the Millennium*

**NATIONAL GEOGRAPHY
CONFERENCE - 2009**

JANUARY 23-24, 2009

Department of Geography, University of Peradeniya

THE GIS BASED APPLICATION OF INTERPOLATING OF RAINFALL WITHIN THE KUKULE RIVER BASIN IN SRI LANKA

Ananda Karunaratna¹ and Ranjana. U.K. Piyadasa²

¹Main Library, University of Colombo

²Department of Geography, University of Colombo

Interpolating rainfall distribution is one of the most important hydrologic geo-statistical analyses used in most of the environmental impact assessment applications. This paper presents a precise and convenient/efficient way to analyze the spatial distribution of rainfall throughout a catchment by interpolating point measurements. Research study was conducted in the Kukule river basin in Sabaragamuwa province. Within the study area six rain gauging stations were selected to represent spatial distribution patterns of rainfall. The study considered and compared three spatial interpolation models in GIS environment as Thiessen polygon method (known as Dirichlet Tessellation or Voronoi diagrams), inverse distance weighting (IDW) method and Kriging method. The aim of this study was to identify precise rainfall interpolating module for the basin.

Thiessen polygons, IDW interpolation and Kriging use weighted values from surrounding measurements to predict values at unmeasured locations. As with IDW interpolation, the closest measured values usually have the most influence. However, the Kriging weights for the surrounding measured points are more sophisticated than other two modules. IDW uses a simple algorithm based on distance, but Kriging weights come from a semi-variogram that was developed by looking at the spatial structure of the data. Thiessen polygon method was followed to get weighted average rainfall in the basin. The study revealed that, the Kriging is the best rainfall interpolating method, whereas Thiessen polygons and Inverse Distance Weighting do not always produce an accurate estimation of the total volume of water falling over a particular area. The IDW method is suitable for uniformly distributed values. In general, Kriging is better than other two models.