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Preliminary Flood Risk Intensity Map of the Southern Province of Sri Lanka

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ABSTRACT

Floods are one of the common natural hazards experienced in Sri Lanka. This is more significant during Southwest and Northeast monsoonal rainy periods. When compared to urban flash floods, coastal and river floods are more frequent in Sri Lanka. In 2003, severe urban flash floods seriously affected Ratnapura, Kegalle, Galle, Kalutara, Matara and Hambanthota districts in the central highlands and the coastal regions of the country. In the recent past Gampaha, Colombo, Kalutara and Galle districts were flooded badly and many people were affected. According to the geomorphological setting and the drainage network of the country, coastal lowlands have high flood risks. Therefore, it is extremely important to demarcate flood risk areas within coastal lowlands.

Southern province has been badly affected by floods during the past two decades. Aerial photographs, Geographical Information Systems (GIS) and satellite images have proven their importance in demarcating preliminary flood risk areas. A few principal factors such as, drainage density, rainfall intensity, geomorphology, land-use pattern, etc., have an influence on floods, thus, these were considered during preparation of preliminary flood risk intensity map of the Southern Province. These factors behave in different manner to accelerate flooding. Therefore, different weightages were assigned to each factor using Multi Criteria Decision Analysis Method (MCDAM). The influence of a single factor on creating a flood varies with its intensity or conditions. Considering this phenomenon, different index values were assigned using pair-wise comparison method. Using weightage values and index values, Flood Risk Indexes (FRI) have been introduced using overlay analysis method. Finally, using Flood Risk Index values, a flood risk intensity map has been prepared for the study area.