The objective of this study was to estimate the potential slope failure hazard distribution in Thailand attributed to extreme rainfall. For this purpose, a multiple logistic regression relationship was developed, considering relative relief and hydraulic gradient due to extreme rainfall as the valuables. Landslide inventory was derived in the study area from previous landslide researches, for example, by Thailand Land Development Department. Extreme rainfall values were calculated by using a frequency analysis based on a daily gridded precipitation dataset for 1951-2007, created by collecting rain gauge observation data across Asia through the activities of the Asian Precipitation Highly Resolved Observational Data Integration Towards the Evaluation of Water Resources (APHRODITE) project. The calculated extreme rainfall was then bias-corrected by comparing with rainfall observations for 20 year (1987-2006) obtained from 150 rain gauges throughout Thailand. For taking orographic rainfall effect into account, a regression relationship between the calculated extreme rainfall, elevation and latitude was developed using the 150 rain gauge data. Incorporating the effect of orographic rainfall, the extreme rainfall distribution was improved to show the characteristic of precipitation in mountainous areas. The improved rainfall distribution was validated by reviewing past studies about orographic rainfall in Thailand. Finally, the developed logistic model was employed to estimate the potential slope failure hazard map in Thailand with the resolution of 5km x 5 km. This map is useful for the risk management of landslides.