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## Orographic rainfall in the Mae Chaem watershed in Southeast Asia

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Faced with threats to human life and natural ecosystems, such as droughts, floods, and soil erosion, water resource planners must, increasingly, make future risk assessments. Many researchers have examined temporal and spatial precipitation distributions. These studies are important for water resource and flood control management, and for designing and planning various engineering projects. Precipitation generally increases with elevation, and mountain ranges play an important role in organizing precipitation systems. However, worldwide, only an irregular, coarse grid of precipitation measurement data exists and it is not sufficient to say that mechanisms are fully understood. Tropical countries typically have sparse operational rain gauge networks and extremely limited high temporal resolution (one hour or less) precipitation records. A dense tipping-bucket rain gauge network was established in the Mae Chaem watershed, in the mountains of northwestern Thailand as part of the Global Energy and Water Cycle Experiment (GEWEX), Asian Monsoon Experiment-Tropics (GAME-Tropics). Investigations of rainfall amounts, intensities, durations, and frequencies in the rainy season revealed strong orographic rainfall enhancement in the region. The larger amount of high altitude rainfall was attributed to duration and frequency rather than intensity. Despite large rainfall variations, similar patterns were found in the two study years, 1998 and 1999.