

Thesis Title	Identification of Severe Thunderstorm over Thailand using Fractal Dimension Analysis
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### Abstract

The objective of this research is to identify severe thunderstorm cloud over Thailand from satellite image using fractal dimension. Satellite images in infrared 1 channel of Geostationary Meteorological Satellite-5 (GMS-5) during the years 1996 to 2003 are used in the study. A new method of fractal dimension approximation called overlapping area-perimeter is presented. This new method is developed from the area-perimeter method by reducing the broken perimeter associated with large values of reduction factor. This is done by using two values of cloud top temperature for the same cloud to identify the perimeters of the cloud. Then these two perimeters are combined to create a less broken perimeter. Results from 13 experiment cases of severe thunderstorm cloud show that the fractal dimension of the severe thunderstorm storm cloud is maximum at the mature stage. Comparison with non-severe thunderstorm cloud reveals that severe thunderstorm cloud has slightly smaller fractal dimensions than non-severe thunderstorm cloud during 1-hr before and 1-hr after the mature stage. However, during the mature stage the fractal dimensions of both types of clouds have almost the same value.

Keywords : Area Perimeter Method / Fractal Dimension / Thunderstorm.