Cloud Detection From Geostationary Satellite Using Artificial Neural Networks

E-mail: 8515652@ mail.dyu.edu.tw

ABSTRACT

The variations of clouds indicate many global phenomena.In this researth we propose a method using artifical neural networks for cloud detection. Neural network technipues havethe capabilities of generalization, fault tolerance and parallel processing which can increase the speed and accuracyof processing. This research advances the techniques ofdetection/classification of cloud field from satellite data inthe infrared(IR) range. Unlike many conventional methods, which utilize thresholding or statistical type of approaches, this research uses Singular Value Decomposition and Karhunen- Loeve transform to extract image textural features in additionto mean value methodologies. The extracted features in additionto mean value methodologies. The extracted features are thenpresented to a self-organizing feature ,ap or Kohonen networkfor automatic detection and classification of cloud areas. The effectiveness of approach demostrated under manysituations which are considered difficult for the conventionalmethod. The processed results also show some interestingclassification capabilites which can facilitate futurestudies on this tipic.

Keywords : K-L ; artifical neural network ; cloud detection ; singular value decomposition ; Karhunen-Loeve transform ; feature extraction ; self-organizing feature map

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