

## **Cloud Classification of Satellite Radiance Data by the Local Region of Influence Method**

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We developed a new technique, the local region of influence (LROI) method, for supervised cloud classification of satellite radiance data. The classification of each new observation is performed within the LROI, where the center of each class is calculated as a weighted average of its training class members with respect to the observation. The probability of each class is assigned to each observation, which represents the fraction of each class within the observed field of view (FOV). The proposed LROI scheme is applied to the Moderate Resolution Imaging Spectroradiometer (MODIS) radiances observed from the scenes of clear skies, ice clouds, or water clouds. The classification results are compared with those from the maximum likelihood (ML) classification method, the multicategory support vector machine (MSVM) and the operational MODIS cloud mask algorithm. The lowest misclassification error rates show the advantage of the LROI scheme. Unlike the other schemes, the LROI scheme also provides the information of cloud fraction of each cloud type within each FOV, which is a desired parameter for cloudy remote sensing.

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