

ABSTRACT

Image classification techniques convert remote sensing data into informational data. Various conventional hard classification techniques are used widely to classify images and produce thematic maps. However, these techniques do not perform accurately when image contains mixed pixels due to loss of information. Thus, soft classification techniques can be used effectively which assigns a pixel multiple classes. Fuzzy based soft classifiers (FCM & PCM) are gaining wide popularity as fuzzy set theory takes into account the uncertainties present in nature. The output of FCM is dependent upon numerous factors. In the present, study three factors viz. fuzzy exponent 'm', A-norm and training data size are considered and their influence on FCM output has been studied. Fuzzy Error Matrix with MIN-PROD operator has been used for accuracy assessment and three parameters viz. overall accuracy, kappa coefficient and RMSE are determined for evaluation of accuracy. Results show that Mahalanobis norm outperformed the other two giving maximum OA and kappa values of 74.032 and 0.638 respectively. Accuracy values show a slight increase with increase in 'm' upto 1.5 and then a sharp decrease with increase in 'm'. With training data size, different trends are observed for different norms. OA/kappa measures outperformed RMSE measure for accuracy assessment giving RMSE of 1.0623 as compared to 2.907. Since the spatial distribution of various classes within a pixel cannot be determined through soft classification techniques so mapping is limited to facies area calculation only.