

## Spatial accuracy assessment of soft classification land cover map

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Reliable land use/cover information contributes to assess terrestrial environments. Land use/cover map is fundamental data for broad ranges of studies such as future earth, digital earth, and interdisciplinary researches including geography and environmental studies. Showing accuracy of a land use/cover map is essential to tell how the map is reliable. Accuracy assessment is often implemented by using R-squared, root mean squared error (RMSE), mean absolute error (MAE) for soft classification approach, while user's, producer's, and overall accuracies for hard classification approach. However, as such traditional measures are global indicators which tell the overall evaluation of map, they do not show any local information: where the classified land covers are accurate. For hard classification, previous studies successfully developed the accuracy surface of user, producer, and overall by applying a geographically weighted (GW) logistic regression, while as yet there is no application of them for soft classifications. Thus, the aim of this study is to demonstrate the way of estimating spatially explicit accuracy surfaces of soft classification land cover map. R-squared, RMSE, and MAE are estimated spatially on the classification map by applying the GW approach. Proportional impervious surface rate map in Jakarta metropolitan areas is used as a case study and accuracy surfaces of this are estimated from GW-Rsquared, GW-RMSE, and GW-MAE using independent proportional validation data. The proposed techniques are applicable for other case studies easily, and help understandings of accuracy of a soft classification map locally.

Keywords: Soft classification land cover map, Geographically weighted model, Accuracy assessment