

highest accuracy of about 99% has been obtained for SR and NBAR products when time-separation Δt is about 4 months as shown in Figure 10.

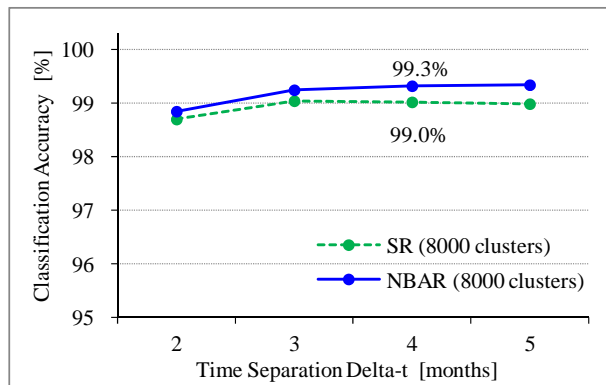


Figure 10. Classification accuracies obtained by time-domain co-occurrence matrix which is defined with 8000 spectral clusters.

The time-domain co-occurrence matrix defined with 8000 spectral cluster shows 3%-4% higher classification accuracy than that of the time-domain co-occurrence matrix defined with reflectance.

MOD12Q1 and MCD12Q1 of MODIS land cover product which are respectively produced from SR and NBAR products showed classification accuracy of 81% and 96%, respectively. That is, the classification accuracy obtained by the time-domain co-occurrence matrix which is defined with spectral cluster is 3%-18% higher than that of MODIS land cover products. Classification accuracies of MODIS land cover product were measured by using same test samples. Because test samples were extracted from training area for classification of SR and NBAR products, it is fundamentally presumed that the accuracy of MOD12Q1 and MCD12Q1 products is lower than that of our classification results. However, we consider that these classification accuracies of SR and NBAR products showed good performance of the proposed simple classification method.

Figure 11 shows the classification results obtained by cosine distance classifier in the case of the highest accuracy.

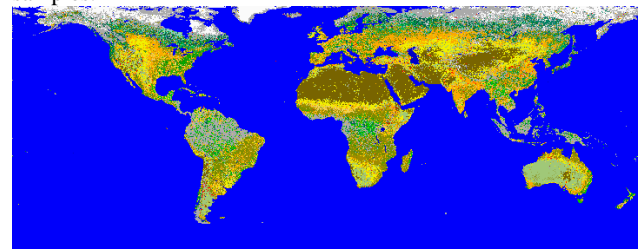
5. CONCLUSIONS

Land cover classification for global scale were performed by using two kinds of multi-temporal MODIS reflectance products. The proposed method using the time-domain co-occurrence matrix and the non-parametric minimum distance classifier showed good classification performance compared with MOD12Q1 and MCD12Q1 MODIS land cover product.

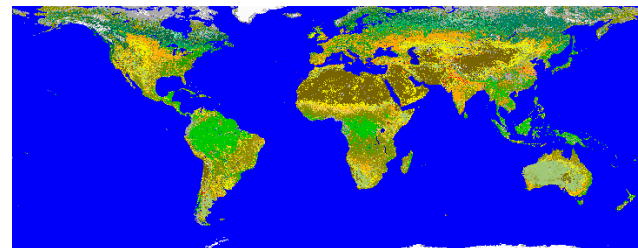
The highest classification accuracy was obtained when the non-parametric cosine distance classifier was driven by the time-domain co-occurrence matrix defined with spectral cluster and three or four months time-separation. And also, it was cleared that Surface Reflectance 8-Day L3 product and Nadir BRDF-Adjusted Reflectance product showed similar classification accuracy of 99% for IGBP-17 land cover categories.

Future study should be carry out in our classification scheme in order to examine stability of classification for multiple years

and to validate classification accuracy with more suitable test samples.



(a) SR product



(b) NBAR product

Figure 11. Land cover classification results.

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