# APPENDIX

## APPENDIX I

### Error analysis

- While assessing the results it is important to note whether the data is altered or not. There may have been differences in spectral reflectance due to the properties of the trees themselves. Variation in site conditions and microclimate, as well as elevation and soil moisture can also cause inconsistency. Some species may resemble phenologically similar and may be subject to variability error, so that two species may be mistakenly classified as wrong type. In chapter-3 (table-3) *Mangifera* and *Ficus* have been classified wrongly in the class of *Pongamia*. Similarly, *Dendrocalamus* and *Tectona* also have been classified in the "other" class where dry mixed patches of other species are present. During wet season, species whose spectra are similar to one or more species because of many reasons are prone to being confused.

- The close spatial proximity of species relative to the pixel size of the instruments used to detect them also altered the results. Individual pixels often include fine scale mixtures of species, and unless the image spatial resolution is fine enough to capture individual tree crowns, it remains challenging to classify tree species in heterogeneous forests. At SWS, there are very few pure stands of tree species because they co-occur nearly everywhere. The problem of spatial mixture of species could be a greater factor in SAM results from Hyperion.

- Further, any bare patches of ground or road that are exposed to the sensor will have different reflectance than the vegetation and cause classification errors. This is because the classifier must place it in a class, and those different values will skew the entire classification scheme.

- Classification results are also altered by the used accuracy assessment method. In other words, results from an error analysis may not be completely represented by the results of the classification. A contingency table or error matrix (Congalton & Green, 1999) can

provide not only an overall measure of accuracy, but also the ability to quantify errors within specific ranges of abundances. Even when classes are finely defined, class mixture and within-class variability will nearly always exist.

- Lower accuracies for Hyperion likely results from a number of factors including a lower SNR, coarser spatial resolution, spatial artifacts, and a higher solar zenith angle.