Abstract: The MODIS products offer the possibility of weekly global monitoring of fundamental vegetation parameters such as LAI/FPAR and NPP at spatial resolutions down to 1 km. While this spatial and temporal resolution represents a big advancement for global and regional ecological monitoring compared to the pre-MODIS era, it leaves out urbanized pixels, which are masked out in the calculation of MODIS LAI/FPAR (MOD15A2) and MODIS NPP (MOD17A2). The high degree of heterogeneity is one of the reasons for exclusion of urban areas, since the spatial resolution of 1 km is still too coarse to resolve vegetation processes in these fragmented landscapes.

For the purpose of improving the characterization of terrestrial ecosystem processes in highly heterogeneous regions such as metropolitan areas, we are developing MODIS 250m estimates of LAI/FPAR. We expect that these data will prove useful to enhance the ecological monitoring, modeling, and forecasting of these regions. Here we present preliminary results of LAI estimates for the southwestern US and the San Francisco Bay Area.

Methods: To test the retrieval of LAI at 250 m, we apply the MOD15 algorithm to all the biomes represented in the US portion of the MCDIS site v08 NDS. The steps involve the creation of a 250m land cover to be used as input into the MOD15 Radiative Transfer algorithm together with the 250m surface reflectances and the biome-dependent lookup table. To scale the algorithm to 250m, we compare the 250m LAI retrievals to the standard 1km product (MOD15A2) and perform adjustments to the lookup table. To validate the LAI estimates for urban ecosystems, we use data from US Forest Service plots scaled through an Aster image.

Preliminary results: A first comparison of the 8-day 250m MODIS LAI with the standard 1km composites indicates a good agreement for most biomes. No lookup table adjustment has been yet been implemented. Observed differences in LAI estimation can be explained by differences in land cover assignment and scaling effects.

Conclusions and future work: Initial results from the implementation of the MOD15 algorithm on 250m MODIS surface reflectance are encouraging. Next steps include lookup table adjustments and validation of the LAI estimates over urbanized pixels. This step will be implemented by scaling plot level measurements to 250m LAI estimates through Aster data.