Figure 1: Proportion of days flagged as cloudy in 2009 by the MOD35 (top) and MOD09 (middle) cloud masks. Bottom panel shows the difference between the two masks (MOD35-MOD09). Black boxes indicate the location of the four regions shown in Figure 2.
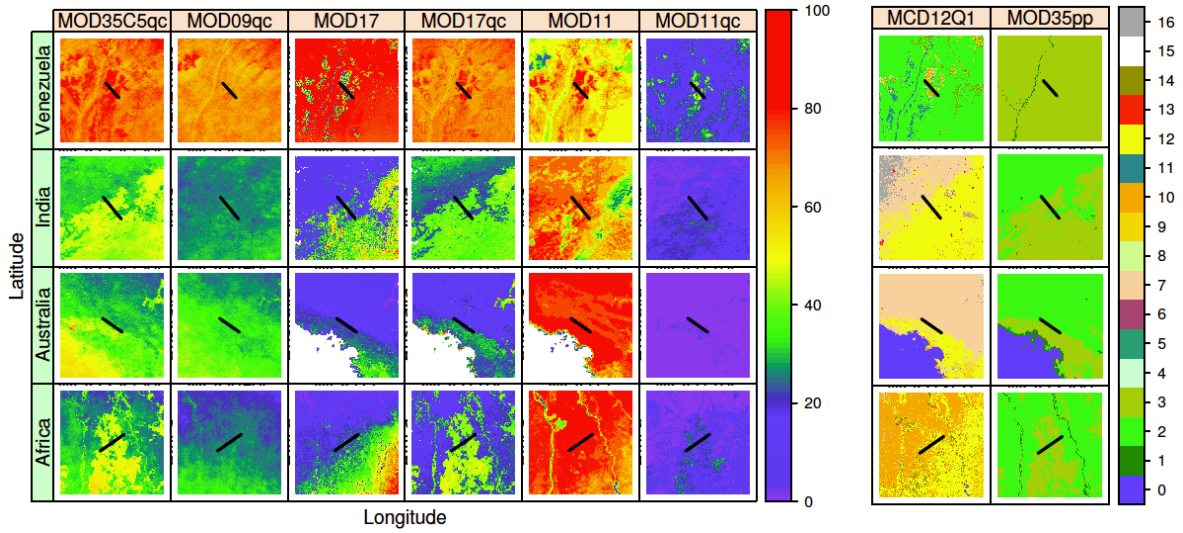
Figure 2: Comparison of mean products (columns) for regions (rows) shown in Figure X. MOD35C5qc and MOD09qc are the proportion of days flagged as cloudy over 2009 in the MOD35 and MOD09 cloud masks, respectively. MOD17 and MOD17qc are the mean 2000-2010 NPP and proportion of missing days in the LAI input dataset, respectively (Zhao et al., 2005). MOD11 and MOD11qc are the mean annual land surface temperature and proportion of missing data in 2009, respectively. The MOD17 and MOD11 products have been rescaled to range from 0-100 within each region to aid comparison with the cloud products. MCD12Q1 is the MODIS land cover product for 2005 and MDO35pp is the "processing path" which is used to select cloud tests within the MOD35 algorithm where 0:Water, 1:Coast, 2:Desert, and 3:Land. The black lines in each panel are the transects shown in Figure 3.
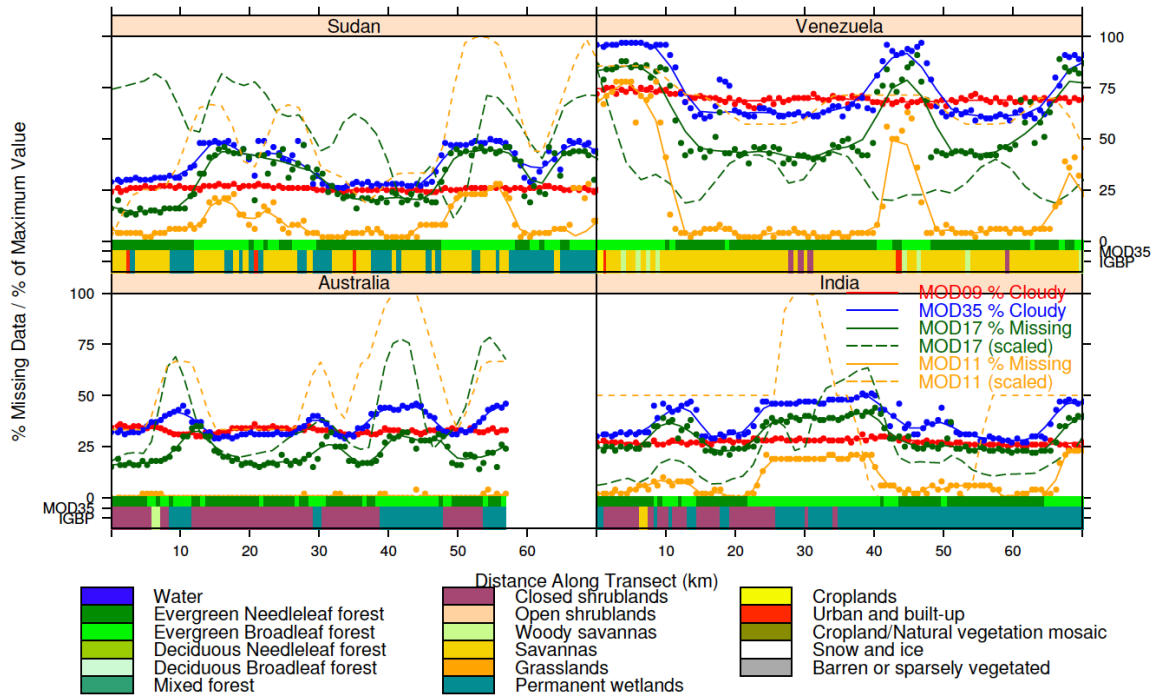
Figure 3: Profile plot of variables shown in Figure 2. Solid lines indicate % cloudy using the MOD09 and MOD35 clouds masks and % Missing data in MOD17 and MOD11. Dashed lines indicate the mean annual values of NPP (MOD17) and LST (MOD11) that have been scaled to range from 0-100% of the values from the region shown in Figure 2. Colored bars on the bottom of each panel show the land cover types (MOD12) and MOD35 processing path along each transect. Note that in each case cloud frequency from the MOD09 cloud mask is relatively constant, while the MOD35 cloud mask shows a strong relationship with land cover and/or processing path along the transect.
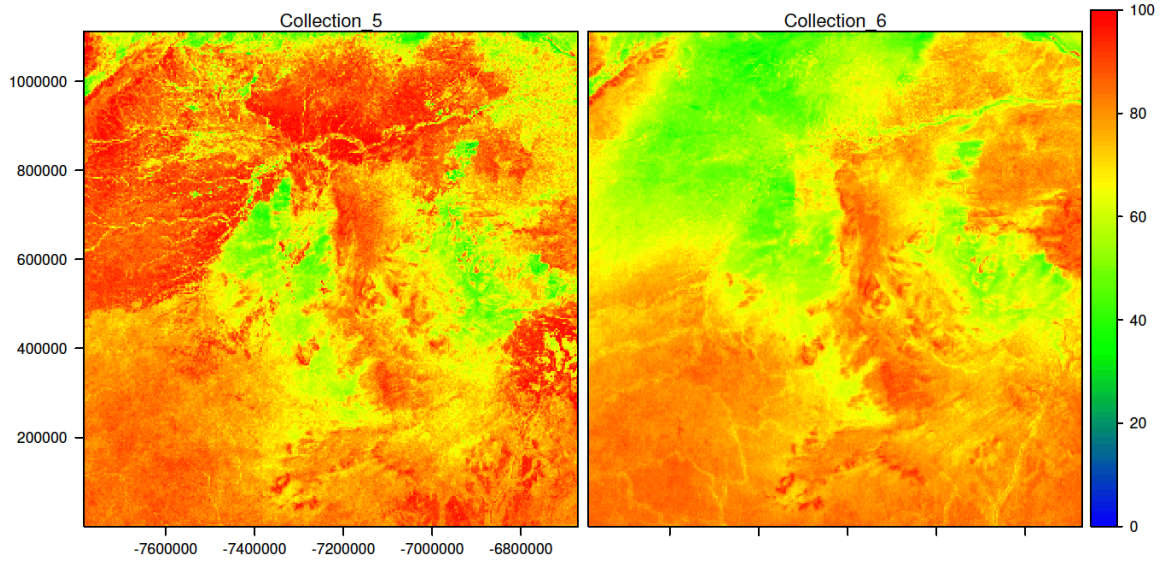
Figure 4: Frequency of cloudy days from MOD35 collection 5 (left) and collection 6 (right) for March (2000-2012). Note the extreme differences in non-forested areas. The changes in the Collection 6 algorithms have strongly reduced the cloud-landcover artifacts in this region.