Environment and organisms - Task #583

MODIS Cloud Mask - landcover interaction

03/08/2013 10:21 AM - Adam Wilson

Status:	New	**Start date:**	03/08/2013
Priority:	Normal	**Due date:**	
Assignee:	Adam Wilson	**% Done:**	30%
Category:	Climate	**Estimated time:**	0.00 hour
Target version:			
Activity type:	Coding/analysis		

Description

In the process of developing the global 1-km cloud climatology using MODIS data for tile h11v08 (Venezuela), I was surprised to find a strong association between proportion cloudy days and land cover at fine resolutions in some regions. I first noticed this in the MOD06 product, but recently realized that the root of the pattern is in the cloud flag itself. See attached for a document explaining the issue.

A problematic effect of this problem is that the cloud mask is used in most MODIS products and thus it also affects the MOD11 LST data that we are using to interpolate temperature. The implication is that some regions (categorized as desert by the cloud mask algorithm) will have LST measurements from far fewer days (and thus the climatologies are more questionable). The trouble is that for LST, the 'desert' regions are also more likely to have higher surface temperatures. The pattern can be seen quite clearly in the new interpolated surfaces for Venezuela [[https://projects.nceas.ucsb.edu/nceas/issues/568]].

I have been communicating with the MOD35 team and they have recently (for collection 6) updated the cloud detection algorithm in a way that it should reduce this problem (see attached document). But it is unlikely that the MOD11 data will be updated in the near future.

Files

MOD06_Landcover.pdf	3.16 MB	03/08/2013	Adam Wilson