Overview and Status of Satellite-Inferred Surface Albedo Products

- Short intro on definitions
- Tabular (i.e. standardized) description of operational Albedo products
  - MERIS
  - MISR
  - MODIS
  - MVIRI and SEVIRI (Meteosat)
  - Polder
- Overview on available intercomparison results

- Publication strategy (journal, website)
- Additions to attributes?
- Contributions by email (update for all products, intercomparison results and description of methodology)

1 General		
1.1 Sensor		**MODIS**
1.2 Platform	1.2.1 Name	Terra (EOS AM-1) & Aqua (EOS PM-1)
	1.2.2 Orbit	Polar
1.3 Product name		MCD43A3 (500m), MCD43B3 (1km), (MCD43C3 (0.05deg CMG), V5 (Collection 5)
1.4 Data availability		2000 - present
1.5 Algorithm development	1.4.1 Current responsibility	Crystal Schaaf, Boston University, US
	1.4.2 Email	schaaf@bu.edu
1.6 Data access (search and download)		http://ladsweb.nascom.nasa.gov/ and http://edcdaac.usgs.gov/modis/MCD43A3v5.asp
1.7 Product information website		http://www-modis.bu.edu/brdf/ http://modis-land.gsfc.nasa.gov/brdf.htm
1.8 General product reference document		[2, 9, 18, 19]

2 Atmospheric correction		MODIS
2.0 Model		6SV - dense dark vegetation approach [4, 5, 21]
2.1 Aerosol properties	2.1.1 Aerosol optical depth	Aeronet-derived models and blue band reflectance (412, 443, 480, 490 nm)
	2.1.2 Particle size	Aeronet-derived models and blue band reflectance (412, 443, 480, 490 nm)
	2.1.3 Single scattering albedo	Aeronet-derived models and blue band reflectance (412, 443, 480, 490 nm)
	2.1.4 Vertical distribution	Aeronet-derived models and blue band reflectance (412, 443, 480, 490 nm)
2.2 Adjacency treatment		None
2.3 Terrain treatment		
2.4 A priori knowledge/ assumptions		Lambertian surfaces
		Correlation between blue, red, SWIR reflectance [15]
2.5 Cloud screening		MOD09 and MYD09 internal cloud mask, plus MODIS cloud mask products MOD35 (Terra) and MYD35 (Aqua)
2.6 At-surface reflectance (input for angular modelling)	2.6.1 Physical quantity and product name	MOD09GA V5 (Terra), MYD09GA V5 (Aqua), at 500m and 1 km spatial resolution [22]

3 Angular modelling		MODIS
3.1 Angular model		RossThickLiSparseReciprocal [9, 23], 1) full model inversion for well sampled # observations >=7 (quality flag QA=0), 2) magnitude inversion for # observations <=7 (quality flag QA = 1)
3.2 Multi-angular sampling principle		16-day period of combined MODIS on Terra and Acqua observations. Terra only before Aqua launch (2000-2001) (multiple view and sun angles)
3.3 Sun zenith angles used for angular modeling		1-16 angles corresponding to overpass time
3.4 A priori knowledge/ assumption		Magnitude inversion relies on stored first guess BRDF for given pixel
3.5 Spectral albedo	3.5.1 Product name	MCD43A3, MCD43B3 (DHR: grids 1-7, BHRiso: grids 11-17)
	3.5.2 Physical quantity	1. BHRiso (sz = n.a.)
		2. DHR (sz = mean local solar noon sun zenith angle over 16-day time period)
	3.5.3 # of spectral bands (bandwidth/ center wvl)	7 (620-670, 841-876, 459-479, 545-565, 1230-1250,1628-1652, 2105-2155 nm)
	3.5.4 Backup/ gap-filling algorithm	No gap-filling
	3.5.5 Spatial resolution	500m (MCD43A3) and 1km (MCD43B3) tiled products in SIN projection
	3.5.6 Temporal resolution	8 days (utilizing 16 days)

4 Spectral conversion		**MODIS**
4.1 Spectral subsampling of broadband albedo	4.1.1 # of used bands (bandwidth/ center wvl)	7 (620-670, 841-876, 459-479, 545-565, 1230-1250,1628-1652, 2105-2155)
4.2 Conversion model		[8]
4.3 Broadband albedo	4.3.1 Product name	MCD43A3 (500m), MCD43B3 (1km)
	4.3.2 Physical quantity	BHRiso (sz = n.a.)
		DHR (sz = mean local solar noon sun zenith angle over 16-day time period)
	4.3.3 Spectral coverage	300-700, 700-5000, 300-5000nm
	4.3.4 Backup/ gap-filling algorithm	
	4.3.5 Spatial resolution	500m, 1km, 0.05deg
	3.5.6 Temporal resolution	8 days (utilizing 16 days)
	4.3.8 Spatial coverage	Global

5 Temporal and spatial albedo composites		**MODIS**
5.1 Spatial composites	5.1.1 Product name	Climate Modelling Grid products (CMG) MCD43D (1km) and MCD43C3 (0.05deg)
	5.1.2 Physical quantity	BHRiso (sz = n.a.)
		DHR (sz = mean local solar noon sun zenith angle over 16-day time period)
	5.1.3 Spectral coverage	7 spectral albedos (620-670, 841-876, 459-479, 545-565, 1230-1250,1628-1652, 2105-2155 nm); 3 broadband albedos (300-700, 700-5000, 300-5000nm)
	5.1.4 Spatial averaging	Spatial mean of MCD43B3 (1km) pixels
	5.1.5 Spatial resolution, projection	1 km (MCD43D) and 0.05deg (MCD43C3), latitude/ longitude grid
	5.1.6 Gap filling	
	5.1.7 Temporal resolution	
5.2 Temporal composites	5.2.1 Product Name	
	3.5.5 Temporal resolution	
6 References		