

Global Land Cover Mapping



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OUTLINE

- Existing global land cover data
- Trend of global land cover mapping
- On-going global land cover mapping projects
- Global Mapping Project

Satellite Data of Global Land Coverage

1981	92	95	98	99	02
AVHRR 1km	—	—			
8km					
1km	VEGETATION				
1km - 250m	MODIS				
300m	MERIS				
1km - 250m	GLI				

Information sources of global land cover mapping

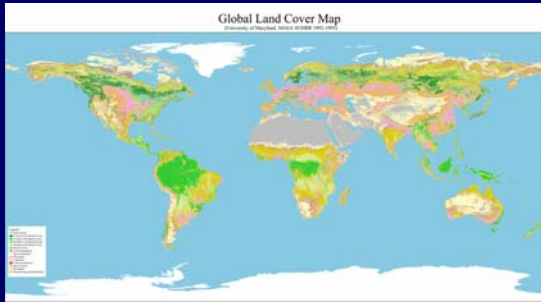
- existing thematic maps (before 1980's)
- AVHRR (1990's)
- MODIS, VEGETATION, MERIS, GLI (2000's)
- add SAR, lidar (future)

Satellite Data of Global Land Coverage

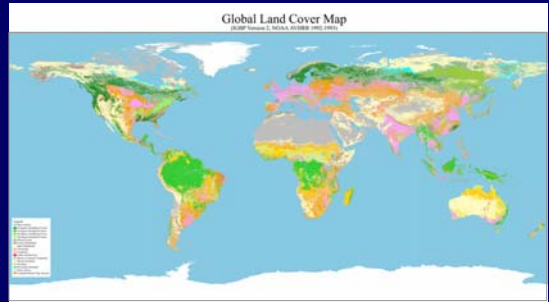
1981	92	95	98	99	02
AVHRR 1km	—	—			
8km					
	VEGETATION				
	MODIS				
		MERIS			
		GLI			

Existing global land cover data

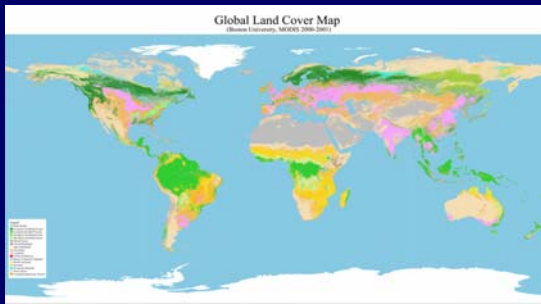
- **IGBP-DISCOVER**
 AVHRR 1992 IGBP legend
- **Univ. of Maryland**
 AVHRR 1992 Maryland legend
- **Boston Univ.**
 MODIS 2000 IGBP legend
- **GLC2000 by JRC**
 SPOT/VEGETATION 2000 JRC legend



Univ. of Maryland



IGBP-DISCover

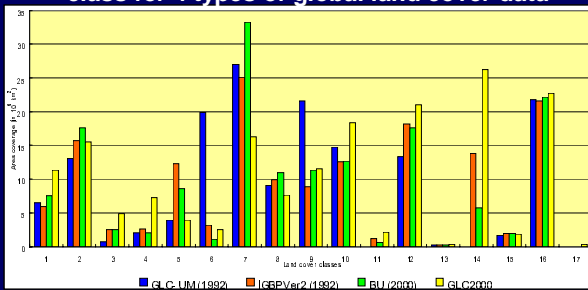


Boston Univ.



GLC2000

Comparison of area coverage of each land cover class for 4 types of global land cover data



- Class
- 1. Evergreen Needleleaf Forest
- 2. Evergreen Broadleaf Forest
- 3. Deciduous Needleleaf Forest
- 4. Deciduous Broadleaf Forest
- 5. Mixed Forest
- 6. Closed Shrubland
- 7. Open Shrubland
- 8. Woody Savanna
- 9. Savanna
- 10. Grassland
- 11. Permanent Wetland
- 12. Cropland
- 13. Urban and Built-Up
- 14. Cropland/Natural Vegetation Mosaic
- 15. Snow and Ice
- 16. Barren or Sparsely Vegetated
- 17. Tree Cover, Burnt

Common area of three land cover products (except Maryland's data)



Trend of global land cover mapping

- 1 Improvement of resolution
- 2 Optical sensor + SAR + lidar
- 3 Harmonization of land cover legend Land Cover Classification System(LCCS) developed by FAO.
- 4 Development of global land cover ground truth database
- 5 Global mapping of individual land cover classes
- 6 Categorical data + percent area cover of basic land cover types

On-going global land cover mapping projects

- **GLOBCOVER**
by ESA, FAO, UNEP, JRC, IGBP and GOCF-GOLD
ENVISAT/MERIS 300m 2005
- **Boston Univ.**
MODIS 1 km IGBP 17 class periodically
- **Global Mapping project phase 2**
MODIS 1 km 2003
- **Africover, Asicover, etc.**
Global Land Cover Network (GLCN) by FAO
higher resolution based on national needs

Development of Global Land Cover Dataset in Global Mapping project

- Ground truth collection by the cooperation with National Mapping Organizations
- Legend will be defined by LCCS of FAO
- MODIS 1km 7 bands data
- Decision tree method
- Validation using ALOS (10m res.) by the cooperation with National Mapping Organizations
- Complete by 2007

Examples of Land Cover Ground Truth sites



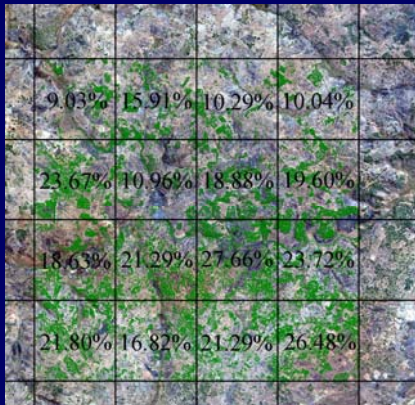
Another product by Global Mapping project by 2007

Global estimate of percent tree cover
by QuickBird data and MODIS data

QuickBird image with the grid of MODIS 1km pixel size



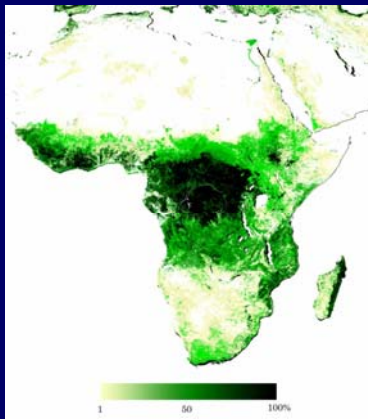
QuickBird image with percent tree cover for MODIS 1km pixel area



MODIS 2003



Estimated percent tree cover by MODIS and QuickBird (tentative result)



Conclusions

- Four global land cover data are available
- Several global land cover mapping projects are going on including "Global Mapping project"
- Trends of global land cover mapping were identified
- Recommendation
accumulation of global land cover ground truth data among ongoing and future land cover mapping projects

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Thank you

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