

CHARACTERIZING LAND COVER HETEROGENEITY AND LAND COVER CHANGE FROM MULTISENSOR SATELLITE DATA

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PROJECT OBJECTIVES

- **Improve characterization of land surface in regional and global earth system models**
spatial: land cover heterogeneity
temporal: interannual variability and land use change
- **Contribute to LCLUC goal to “develop the capability to perform repeated global inventories of land use and land cover from space”**

ORIGINAL PROPOSAL

- **GLOBAL LAND COVER CLASSIFICATION**
apply methodology from previous work to
1km AVHRR data
- **ALTERNATIVE DEPICTION OF LAND
COVER AS “CONTINUOUS FIELDS”**
8km AVHRR time series to identify land cover
change
1km AVHRR
- **SIGNIFICANCE FOR BIOSPHERE-
ATMOSPHERE MODELS**

EARLY ATTEMPT AT GLOBAL LAND COVER CLASSIFICATION FROM REMOTE SENSING

- Based on phenology of vegetation types represented in temporal NDVI profile
- Derived from NOAA's AVHRR data
- Coarse one by one degree resolution
- Maximum likelihood classification algorithm
- Designed for use in biosphere-atmosphere models

IMPROVEMENTS IN GLOBAL LAND COVER CLASSIFICATIONS

- Based on higher resolution AVHRR data (8km and 1km)
- Training data from interpretation of global network of Landsat scenes
- Decision tree algorithm
- Based on multitemporal metrics using all bands in addition to NDVI

ALTERNATIVE CHARACTERIZATION OF LAND COVER AS “CONTINUOUS FIELDS”

- Describes proportional coverage of life form, leaf type, and leaf longevity for each pixel
- Removes discrete boundaries between cover types to more realistically depict land surface heterogeneity
- Allows inclusion of subpixel interannual variability and land use change in models
- MODIS post-launch product

8km CONTINUOUS FIELDS TIME SERIES

- Continuous fields derived independently for each year in 1982-95 AVHRR Pathfinder series
- In stable locations, %woody varies up to 10%
- Comparison with Landsat Pathfinder results from Bolivia

1km CONTINUOUS FIELDS

- Integrates mixture model result with 1km classification
- % tree cover to be available on-line
- Prototype to be revised using multiple endmembers

1km CONTINUOUS FIELDS IN CASA

- Continuous fields used for NPP allocation to wood, leaf, root
- .5 degree run with veg type mosaic from 1km classification
- .5 degree %woody for each veg type from continuous fields

WHAT'S LEFT?

- Final version of 1km land cover classification to include additional types
- Improvements on method for continuous fields with multiple endmembers
- Continued validation with high resolution data
- Application of methods to MODIS data
- Modeling applications!!