The Global Land Cover Facility

REASoN Activities

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The GLCF

- **The GLCF research facility is located at the University of Maryland.**

- **The GLCF is a part of the University of Maryland Institute for Advanced Computer Studies (UMIACS).**

- **The GLCF is also associated with the University of Maryland Department of Geography.**

- **The GLCF is a founding member of the Federation of ESIPs.**

GLCF REASoN Brings Renewal

- **The Global Land Cover Facility began as an ESIP in 1998.**

- **The GLCF will continue under REASoN for another three years.**

32-Day 500m MODIS Composite
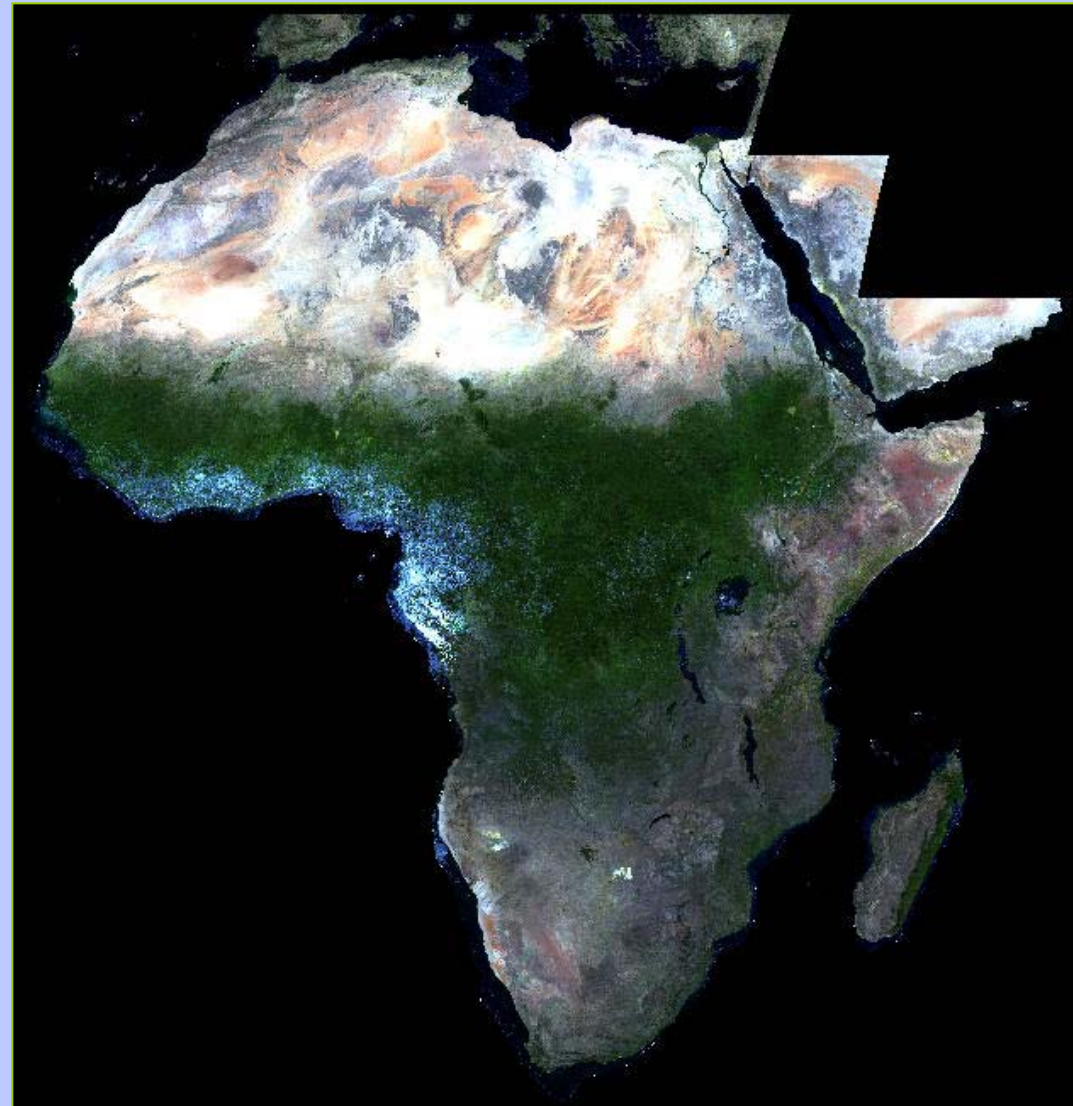
GLCF ESIP Success Stories

The GLCF accomplished many Earth science and computer science activities as an ESIP:

- Massive distribution of Earth Science data
- Integration of Earth science and computer science
- Development of land cover products
- Collaborations with major Earth science organizations
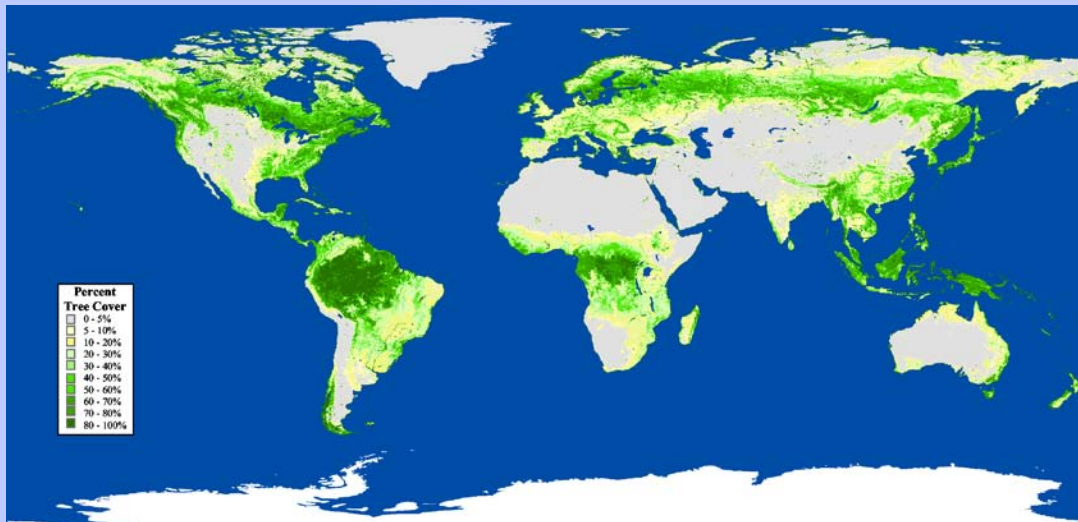
Forest Cover and Hotspot Map for the Pan-Amazon Region
Global Land Cover Facility - Deforestation Mapping Group
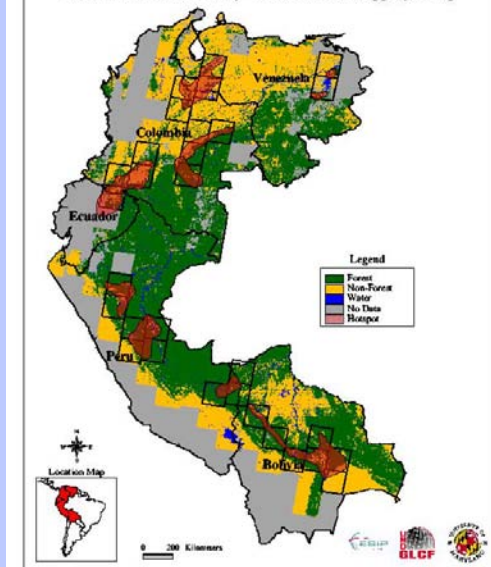
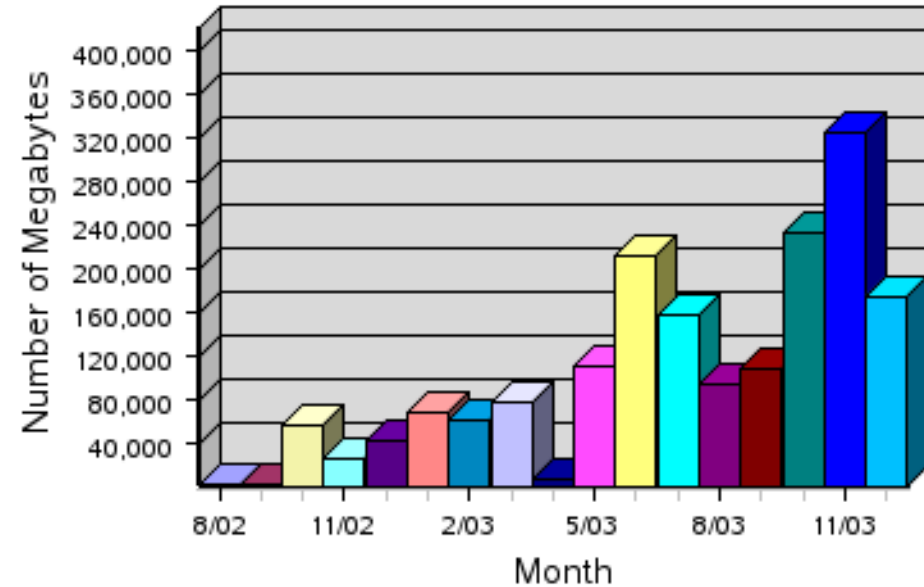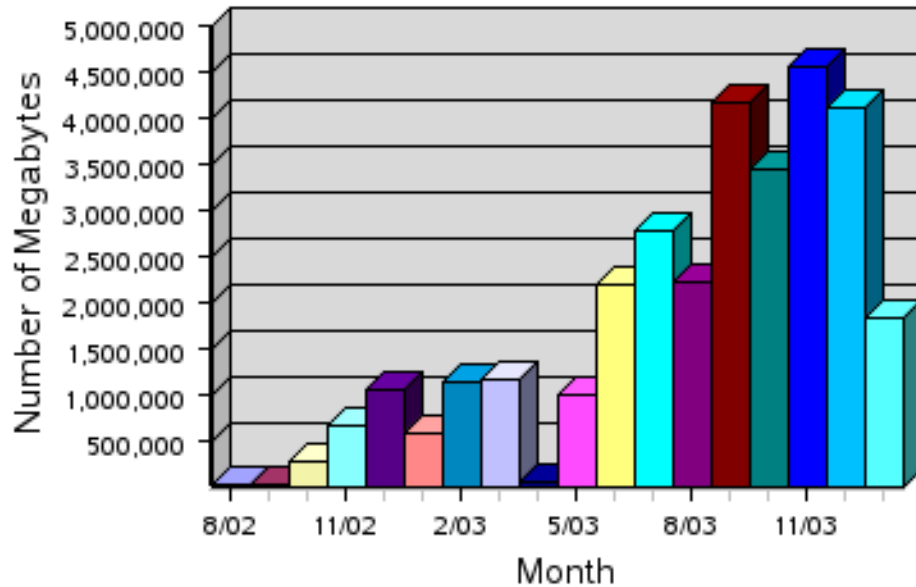10-year mean shortwave surface downwelling flux (w/m**2) from ISCCP D1 data
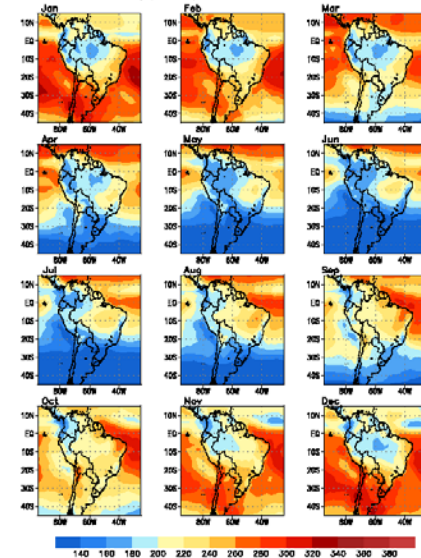
GLCF Current Activities

The GLCF has become a leading provider of Earth science data.

FTP Downloads as of January 18, 2004

FTP Downloads as of December 17, 2003

Landsat & AVHRR Products Archive
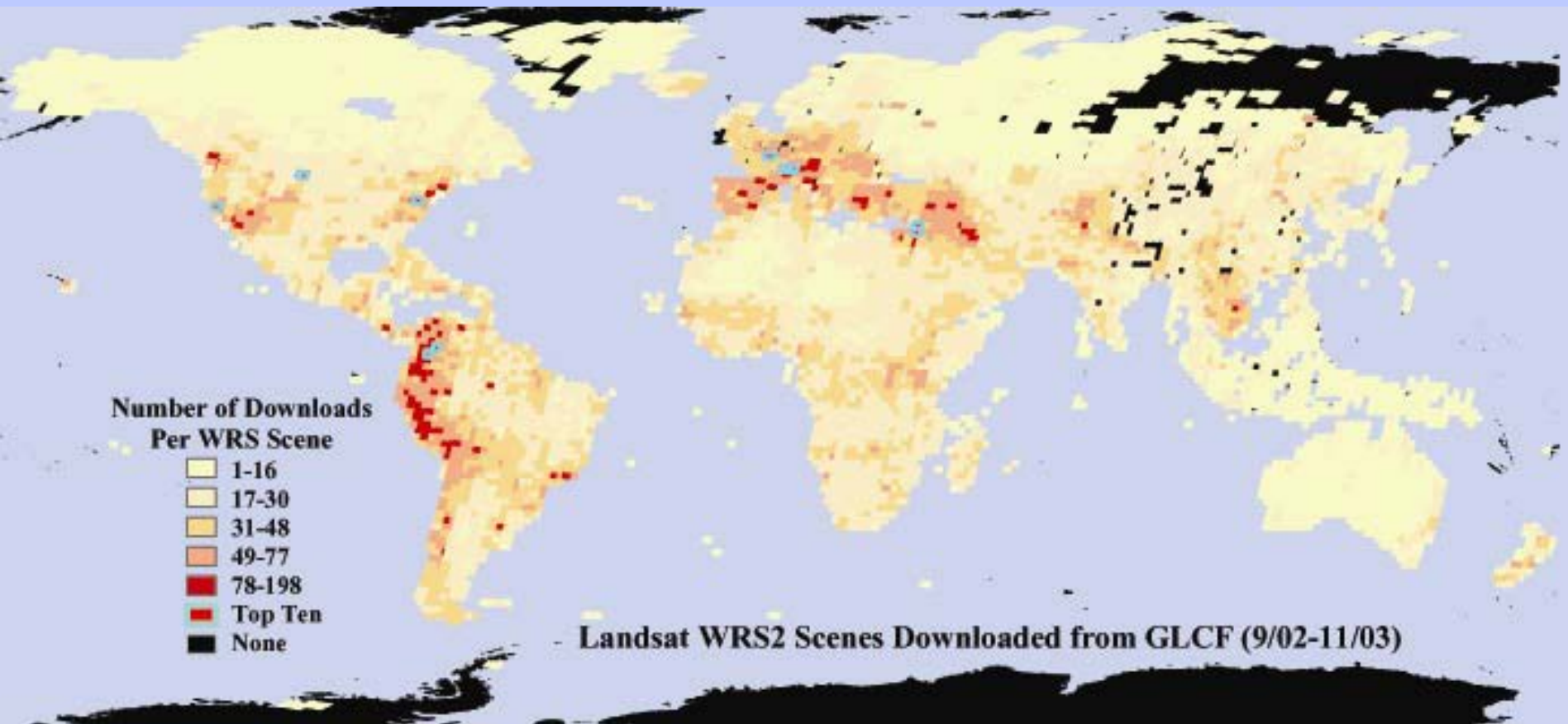
MODIS Products Archive

*April 2003 logs were lost

GLCF Current Activities

The GLCF is involved in the processing and delivery of three global multiple series MODIS products:

- **Vegetation Continuous Fields (VCF); 3 layers: Percent Tree Cover, Percent Herbaceous Cover, Percent Bare Cover**

- **32-Day 500m Composites**

- **Vegetation Cover Conversion (VCC)**

Tree Cover of the People's Republic of China from MODIS Data

Digital versions of the Global Vegetation Continuous Fields product (VCF) can be obtained from the GLCF website at http://glcf.umiacs.umd.edu. The VCF data are available by continent in two projections: Goode's Homolosine and Geographic Coordinates. The GLCF archive also includes thousands of Landsat TM/ETM scenes as well as other imagery. GLCF is a state of the art open source archive of remotely sensed data available to everyone.

0%
Percent
Tree Canopy
Cover
100%

Projection: Alber's Conical Equal Area
Parellels: 29° 30' N and 45° 30' N
Central Meridian: 100° E
Scale: 1 : 23,500,000

0   800   Kilometers

GLCF Current Activities

Number of Downloads Per WRS Scene
- 1-16
- 17-30
- 31-48
- 49-77
- 78-198
- Top Ten
- None

Landsat WRS2 Scenes Downloaded from GLCF (9/02-11/03)

GLCF Current Activities

The Deforestation Mapping Group (DMG) at GLCF specializes in assessing forest cover change, with primary experience in:

- **The Amazon rainforest in Colombia, Venezuela, Ecuador, Peru and Bolivia**

- **The central African rainforest in Dem. Rep. Congo, Congo, Gabon, Cameroon, Equatorial Guinea, Central African Republic**

- **The boreal forest of Canada**

- **The rainforests of Indonesia**

- **The Atlantic Forest and Chacoan forests of Paraguay**

Forest Change In Eastern Paraguay
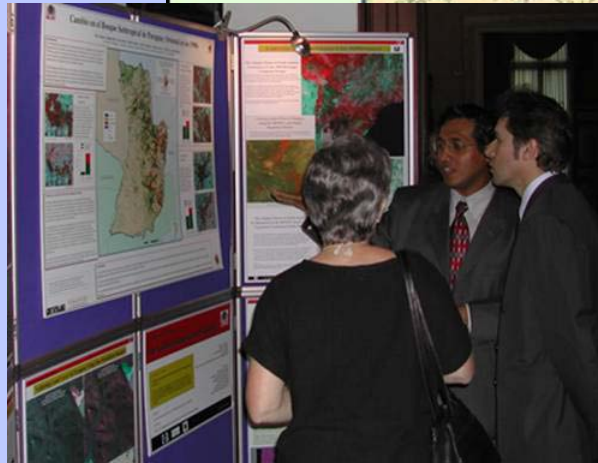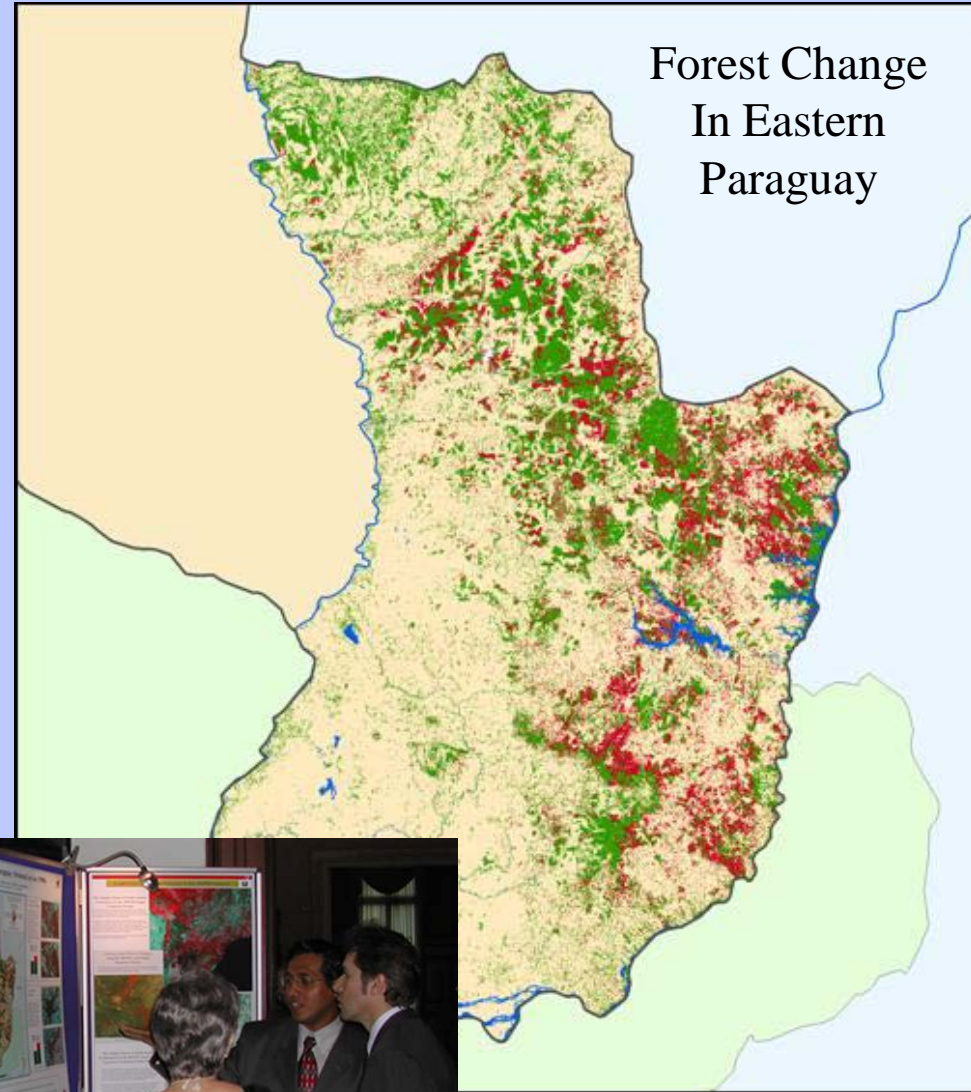
GLCF staff present products to Vice President of Paraguay

IT Research

- Land applications of DODS/OpeNDAP
  - Designed to remotely process data before returning to client by specifying a set of allows transformations.
  - Command set to control how transformations occur.
- Data GRID
  - SRB (Storage Resource Broker)
  - Designed as a data repository with remote process execution as opposed to registering processed data sets. DODS: web based service, stateless queries.
  - This means it's easily scalable using today's web technologies, load balancers, etc.
  - Ability to open, read, seek into files. It allows data in the srb to be more easily treated as a local file.
  - MCAT tracks registered objects and organizes them into collections. Metadata on objects and collections is also stored.

The GLCF Translation into REASoN

With REASoN support, the GLCF will continue as a critical Earth Science research and data center.

<u>The continuing overall mission of the GLCF is</u>: "To encourage the use of remotely sensed imagery, derived products and applications within a broad range of science communities in a manner that improves comprehension of the nature and causes of land cover change and its impact on the Earth."

<u>GLCF goals include</u>: "Provide free access to an integrated collection of critical land cover and Earth science data through systems that are designed to maximize user outreach and that promote development of novel tools for ordering, visualizing and manipulating spatial data."

GLCF REASoN Tasks

The GLCF has a variety of tasks to accomplish through the REASoN program, including:

- Continue Earth science data & products distribution
- SEEDS committees responsibilities
- Delivery of GeoCover products
- Support of collaborating agencies (NGOs, UN)
- Develop & distribute enhanced MODIS products
- Develop subsets for MODIS products
- Design online subset tool
- Improve Web interface tools
- Interoperability research and operation (data grid, OpenDAP, Terascale)
- Advanced visualization tools
- GloPEM dataset

GLCF REASoN Tasks

The GLCF will undertake several activities involving MODIS data:

- **Six new 16-day NDVI and VCF products for the United States to feed the Forestry and Inventory Analysis (FIA) program of the USFS**

- **Design and implement a system for making MODIS products subsets in a format and size readily accessible to most public users.**

- **Update current MODIS products formats (projections, data formats), possibly including NDVI products.**

VCF Product
Percent Tree Cover, 2001
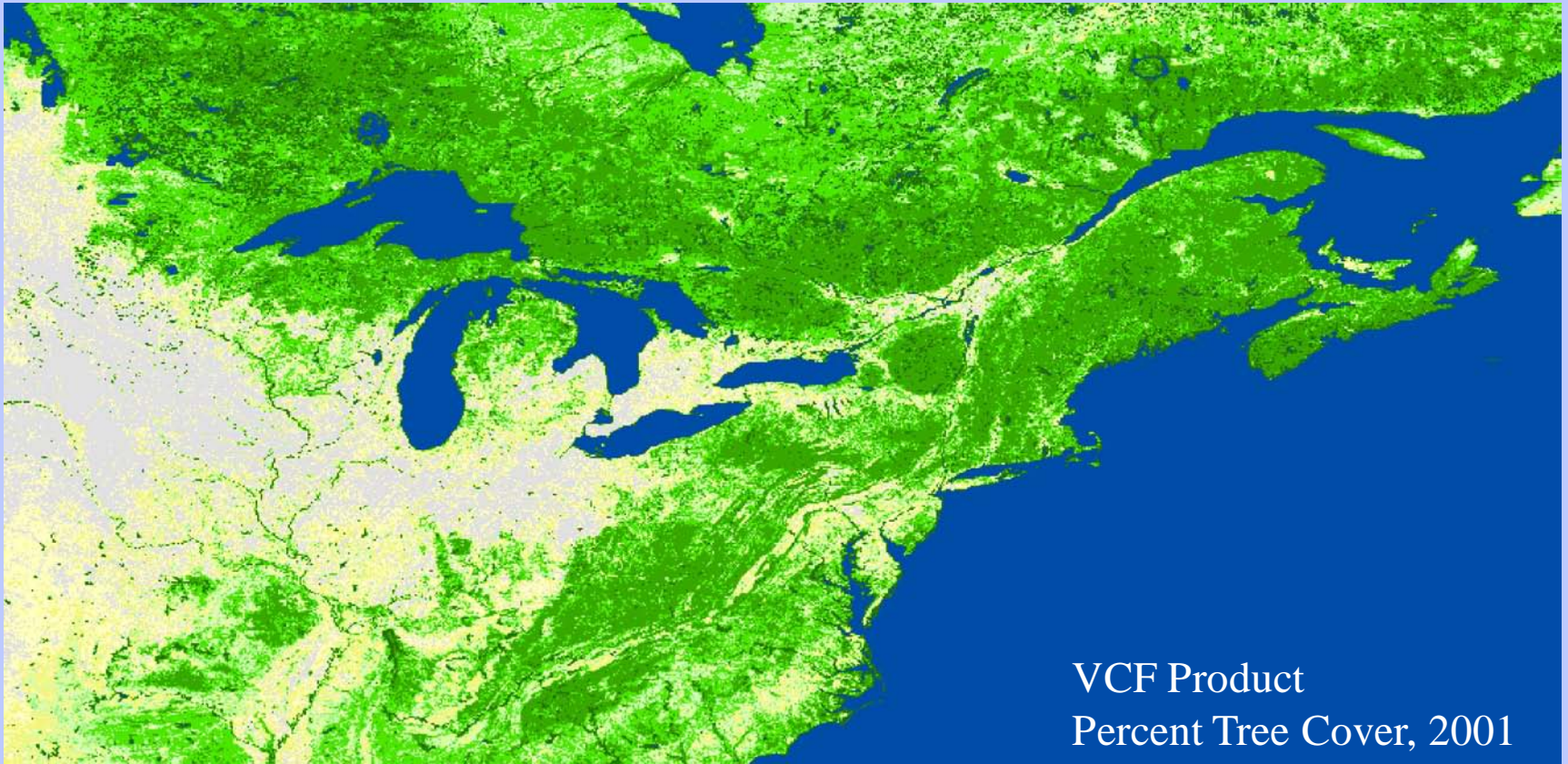
GLCF REASoN Tasks

The GLCF is responsible to NASA for delivery of the EarthSat GeoCover Landsat collection to the developing nations of the world. This involves:

- Coordination through the United Nations Environment Programme
- Providing each country with a copy of all GeoCover imagery covering their area.

This program will provide each environmental agency of every developing country with a free copy of imagery for their use.

The EarthSat GeoCover product was sponsored by NASA under the Science Data Purchase, and includes orthorectified Landsat imagery for all land surfaces in three editions: 1975, 1990 and 2000.

The GLCF provides access to all GeoCover imagery via FTP – free to the world.

http://glcf.umiacs.umd.edu

Landsat WRS2 scenes for Sudan

GLCF REASoN Tasks

The GLCF participates in the SEEDS Metrics Working Group. This group is designated to help facilitate metrics collection for the REASoN awardees. GLCF staff currently hold the co-chair position of the working group.

This activity continues the GLCF efforts at designing, processing and delivering metrics for Earth science research activities.

GLCF REASoN Tasks

The GLCF is involved in and will continue visualization research under the REASoN. This includes both enhancing current interface tools and developing new applications to help users gain easy and rapid access to Earth science data.

New edition of the GLCF's successful Earth Science Data Interface (ESDI)

GLCF REASoN Tasks

Complimentary Activities: The GLCF is involved with many complimentary research and distribution activities, including:

- Large scale data distribution
- Metrics formulation and collection
- Forest change assessment

Collaborations: The GLCF actively participates in research and distribution activities with many science and related organizations including:

- The United Nations (FAO, UNEP)
- GOFC
- IUCN
- World Wildlife Fund
- NASA NGOs

IUCN/UNEP Protected Areas (red)
and MODIS VCF Percent Tree Cover (green)
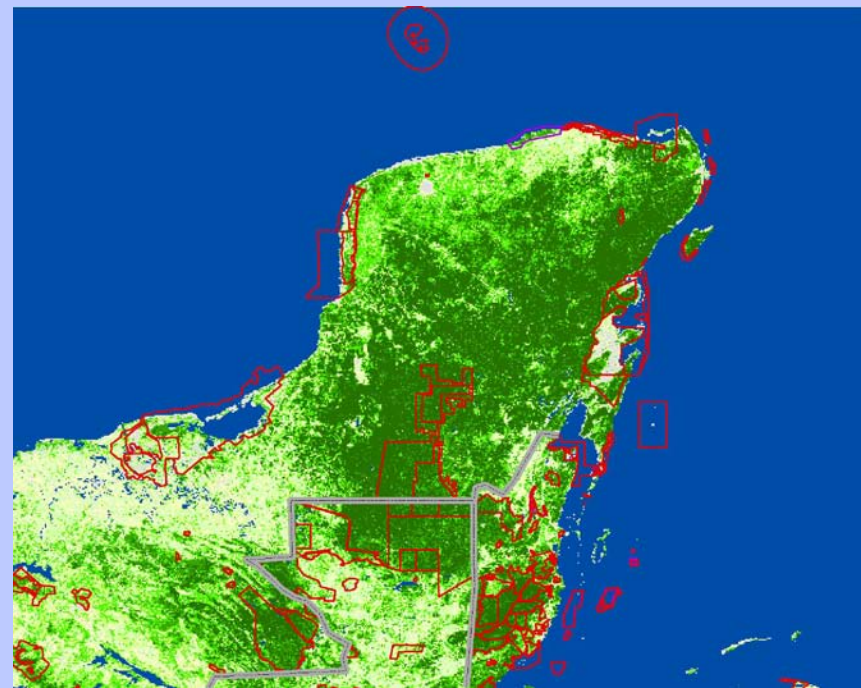
The GLCF is Serving the Earth Science Community Today

For Further Information:

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