LBA-ECO CD-06 Land Use/Land Cover Time Series, Ji-Parana Basin, Brazil: 1986-2001

Summary:

This data set contains four land use/land cover images (1986, 1992, 1996 and 2001) for the Ji-Parana River Basin, derived from the digital classification of 8 Landsat images obtained from The Tropical Rain Forest Information Center (TRFIC).

Data Citation:

Cite this data set as follows:

Hanada, L., M. V. R. Ballester, J. E. Richey, R. L. Victoria, C. Fernandes, A. V. Krusche, and CD-06 Team. 2007. LBA-ECO CD-06 Land Use/Land Cover Time Series, Ji-Parana Basin, Brazil: 1986-2001. Data set. Available on-line [http://www.daac.ornl.gov] from Oak Ridge National Laboratory Distributed Active Archive Center, Oak Ridge, Tennessee, U.S.A.

Implementation of the LBA Data and Publication Policy by Data Users:

The LBA Data and Publication Policy [http://daac.ornl.gov/LBA/lba_data_policy.html] is in effect for a period of five (5) years from the date of archiving and should be followed by data users who have obtained LBA data sets from the ORNL DAAC. Users who download LBA data in the five years after data have been archived must contact the investigators who collected the data, per provisions 6 and 7 in the Policy.

This data set was archived in August of 2007. Users who download the data between August 2007 and July 2012 must comply with the LBA Data and Publication Policy.

Data users should use the Investigator contact information in this document to communicate with the data provider. Alternatively, the LBA Web Site [http://lba.inpa.gov.br/lba/] in Brazil will have current contact information.

Data users should use the Data Set Citation and other applicable references provided in this document to acknowledge use of the data.

Table of Contents:

1. Data Set Overview:

Project: LBA (Large-Scale Biosphere-Atmosphere Experiment in the Amazon)

Activity: LBA-ECO

LBA Science Component: Land Use and Land Cover

Team ID: CD-06 (Richey / Victoria)

The investigators were Richey, Jeffrey E.; Victoria, Reynaldo Luiz; Aalto, Rolf Erhart; Abdo, Mara Silvia Aguiar; Alin, Simone Rebecca; Aufdenkampe, Anthony K.; Ballester, Maria Victoria Ramos; Barbosa, Roosevelt Passos; Bernardes, Marcelo Correa; Bolson, Marcos Alexandre; Bonelle, Nilton; Brito, David Silva; Cogo, Michelle Cristine; Cunha, Hillandia Brandao; da Silva, Luis Vilmar Souza; Deus, Fabiano Alves de; Devol, Allan H.; Ellis, Erin Elizabeth; Ferro, Jaderson Coradi; Filho, Walter Jorge do Nascimento; Frickmann, Fernando Cruz; Gamero Guandique, Manuel Enrique; Gomes, Beatriz M.; Gouveia Neto, Sergio Candido; Hanada, Lais de Carvalho; Holtgrieve, Gordon William; Krusche, Alex V.; Lacerda, Francisco A. Siebra; Leite, Nei Kavaguichi; Logsdon, Miles Grant; Macedo, Gelson de; Marcondes, Renata; McGeoch, Lauren; Melo, Emanuele Gurgel de Freitas; Mendes, Francisco de Assis; Moreira, Marcelo Zacharias; Neu, Vania; Oliveira, Carolina Barisson Marques; Ometto, Jean Pierre H. B.; Pimentel, Tania Pena; Priante Filho, Nicolau; Rasera, Maria de Fatima Fernandes Lamy; Remington, Sonya Marie; Rodda, Sarah; Salimon, Cleber Ibraim; Santiago, Alailson Venceslau; Santos, Arnoldo Marcilio dos; Silva, Cleoni Virginio da; Silva, Jonismar; Silva, Simao Correa da; Souzapetro, Petronio Lopes de; Toledo, Andre Marcondes Andrade; Tumang, Cristiane Azevedo and Victoria, Daniel de Castro . You may contact Ballester, Maria Victoria Ramos (vicky@cena.usp.br).

LBA Data Set Inventory ID: CD06_Landuse_Timeseries_JiParana

Time series of land use and land cover maps of the Ji-Parana River Basin derived from the digital

classification of Landsat-5 TM and Landsat-7 ETM+ images for the years 1986, 1992, 1996 and 2001.

For additional information, please see the following web sites:

- The Tropical Rain Forest Information Center (TRFIC)

Related Publications

- Hanada, L. 2005. Land Use and Land Cover Changes in the Amazonian Frontier, Ji-Parana River Basin Rondonia - Brazil. Thesis.

2. Data Characteristics:

Land use and land cover images of the Ji-Parana River Basin, located in the State of Rondonia, Western Amazonia, Brazil are available for 1986, 1992, 1996, and 2001. The images for each year span a period of 3 months (June to August). The images are in ERDAS-IMAGINE (*.zip containing *.rrd and *.img files) and GeoTIFF (*.zip containing *.tif and *.tfw files) formats. Each image includes the following 9 land use classes:

Class	Description	
0	fundo	No data
1	floresta	Forest
2	agropastoril	Agriculture and pasture
3	cerrado	Savanna
4	0	No data
5	area urbana	Urban
6	agua	Water
7	nuvens	Cloud
8	regeneracao	Secondary growth

The ERDAS-IMAGINE images are version 8.4 files (*.rrd and *.img) that have been zipped together and named luYYYY.zip, where YYYY is the year, 1986, 1992, 1996 and 2001. When unzipped, the files uso_YYYY.rrd and uso_YYYY.img for 1986, 1992, 1996, and 2001 result. For use with non-proprietary software each image is also provided in GeoTIFF (georeferenced tag image, *.tif and *.tfw) format, zipped together and named uso_YYYY.zip for each of the four years provided.

Projection: UTM, zone 20S; WGS84 datum; spatial resolution 30 m.

Site boundaries: (All latitude and longitude given in degrees and fractions)

Site (Region)	Westernmost Longitude	Easternmost Longitude	Northernmost Latitude	Southernmost Latitude	Geodetic Datum
Rondonia - Rio Ji-Parana (Rondonia)	-63.41528	-60.015	-8.03333	-12.92694	WGS84

Time period:

- The data set covers the period 1986/07/01 to 2001/08/31.
- Temporal Resolution: Every 4-5 Years

Platform/Sensor/Parameters measured include:

- LANDSAT-5 / LANDSAT TM / LAND USE CLASSES
- LANDSAT-7 / LANDSAT ETM+ / LAND USE CLASSES

3. Data Application and Derivation:

Possible applications for these data include landscape characterization, landscape ecology, landscape evolution and modeling.

4. Quality Assessment:

These data are quality assured and the classification accuracy is 89%.

5. Data Acquisition Materials and Methods:

Using ERDAS-IMAGINE (version 8.4), land-use/cover maps were produced from a digital classification of eight Landsat scenes. The images were acquired from the Tropical Rain Forest Information Center (TRFIC) at Michigan State University, as 1G products, radiometrically and geometrically corrected orthorectified images. Geodetic errors of these products are approximately 30 meters and this precision was achieved employing ground control points (http://www.bsrsi.msu.edu/). Pre-classification processing included haze reduction in input images using the method based on the Tasseled Cap transformation, which yields a component, correlated with haze, that is then removed, and the image is transformed back into RGB space. The supervised classification consisted of 183 signatures from training sites found throughout the mosaic; training sites were chosen in a spatially even and thorough manner across the entire image and processed as encoded radiance.

Shadow pixels (mainly along the edges of forest and large rivers) were mis-classified as either water or burned soils; these pixels are, for the most part, isolated or in groups of 2 or 3. In order to correct this problem the following five steps were taken: 1) re-code the classified image into a binary mask containing only water and burned soil pixels (value of 1); 2) in this mask, group all connected pixels into separate

entities; 3) filter out any groups smaller than 4 pixels in size; this left a layer of all of the water and burned soil pixels which were not to be altered; 4) obtain a shadow mask by recoding this layer so that all of these pixels had a value of 1; 5) overlay this mask on the classified image and, using a neighborhood analysis operating in a 5x5 window, change the shadow pixels to the value of their surroundings. Accuracy assessment also included 161 control points collected in the field and later brought into the ERDAS-IMAGINE accuracy assessment module. The classification points (class values) and ground truth points (reference points) were compared and quantitatively summarized to compute a matrix and an accuracy assessment report.

Sensors used include:

- LANDSAT TM
- LANDSAT ETM+

6. Data Access:

This data is available through the Oak Ridge National Laboratory (ORNL) Distributed Active Archive Center (DAAC) or the EOS Data Gateway.

Data Archive Center:

Contact for Data Center Access Information:

E-mail: uso@daac.ornl.gov
Telephone: +1 (865) 241-3952
FAX: +1 (865) 574-4665

7. References:

Hanada, L.C., Ballester, M.V.R., Victoria, R.L., and Richey, J.E. Land Use and Land Cover Changes in the Amazonian Frontier, Ji-Parana River Basin Rondonia. III Conferencia Cientifica do LBA (Large Scale Biosphere-Atmosphere Experiment in Amazonia). Brasilia, DF. 27-29 July, 2004.

Related Publications

- Hanada, L. 2005. Land Use and Land Cover Changes in the Amazonian Frontier, Ji-Parana River Basin Rondonia - Brazil. Thesis. Centro de Energia Nuclear na Agricultura/ USP (CENA/USP)