LBA-ECO LC-03 Hypsography, Rivers, Roads, and DEM, Four Areas across Brazilian Amazon

Summary:

This data set provides four related spatial data products for four study areas across the Brazilian Amazon: Manaus, Amazonas; Tapajos National Forest, Para Western (Santarem); Rio Branco, Acre; and Rondonia, Rondonia. Products include vector data showing (1) roads, (2) rivers, and (3) hypsography and (4) digital elevation model (DEM) images that were encoded from the hypsography vectors. There are 15 data files with this data set which includes 12 *.zip files containing ArcInfo shape files and 3 GeoTIFFS.

This data set contains vector data showing roads, rivers, and hypsography for each study area in ESRI ArcGIS shapefile format. The vectors were hand-digitized by the Images Company in Brazil from paper maps produced by the Brazilian government. Depending on the scale of the original maps, the digitization errors vary. For some maps, some vectors are missing. Data were manually checked for duplicate or extra vectors. These data sets were derived from several map sheets produced from aerial coverages dating from 1974 to 1978.

The DEM images were encoded from the hypsography vectors and are provided in GeoTIFF format. The attribute value associated with each line and point in the vector segment is encoded into the image channel; the image channel is then filled in by interpolating image data between encoded vector data. For each DEM: 1 image channel with pixel resolution = 25m x 25m. DEM images are provided for Manaus, Tapajos National Forest, and Rondonia. The files for Rio Branco were unusable due to a documentation error.

DATA QUALITY STATEMENT: The Data Center has determined that there are questions about the quality of the data reported in this data set. The data set has missing or incomplete data, metadata, or other documentation that diminishes the usability of the products.

KNOWN PROBLEMS:

The data providers note that due to limited resources, these data have been neither validated nor quality-assured for general use. For that reason, extreme caution is advised when considering the use of these data.

- Any use of the derived data is not recommended because the results have not been validated.

- However, the DEM, vectors, and orthorectified SAR data (related data set) can be used if the user understands how these were produced and accepts the limitations.

Data Citation:

Cite this data set as follows:

Dobson, M.C. and L.E. Pierce. 2012. LBA-ECO LC-03 Hypsography, Rivers, Roads, and DEM, Four Areas across Brazilian Amazon. Data set. Available on-line [http://daac.ornl.gov] from Oak Ridge National Laboratory Distributed Active Archive Center, Oak Ridge, Tennessee, U.S.A .http://dx.doi.org/10.3334/ORNLDAAC/1094

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 June of 2012. Users who download the data between June 2012 and May 2017 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 website [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: LC-03 (Dobson / Soares)

The investigators were Burnham, Robyn J.; DeGrandi, Gianfranco; Dobson, Myron Craig; Pierce, Leland E.; Soares, Joao Vianei; Ulaby, Fawwaz T.; Valeriano, Dalton De Morisson; Xie, Hua and Zhou, Mi. You may contact Pierce, Dr. Leland E. (lep@eecs.umich.edu).

LBA Data Set Inventory ID: LC03_Hypsography_DEM

This data set provides four related spatial data products for four study areas across the Brazilian Amazon: Manaus, Amazonas; Tapajos National Forest, Para Western (Santarem); Rio Branco, Acre; and Rondonia, Rondonia. Products include vector data showing (1) roads, (2) rivers, and (3)

hypsography and (4) digital elevation model (DEM) images that were encoded from the hypsography vectors.

Related Data Set:

- [LBA-ECO LC-03 SAR Images, Land Cover, and Biomass, Four Areas across Brazilian Amazon](#)

2. Data Characteristics:

Hypsography, Rivers, and Roads

There are 12 data files in this data set as compressed *.zip files. These are zipped ESRI ArcGIS shapefiles. When unzipped, each shapefile contains five files (.dbf, .prj, .sbx, .shp, and .shx) and 3 GeoTIFFS. Each shapefile contains polyline geometry with the following projection parameters:

- Projected Coordinate System: WGS_1984_UTM (Zones vary: 20S, 19S, 21S)
- Projection: Transverse_Mercator
- False_Easting: 500000.000000
- False_Northing: 10000000.000000
- Central_Meridian: -63.000000
- Scale_Factor: 0.999600
- Latitude_of_Origin: 0.000000
- Linear_Unit: Meter
- Geographic Coordinate System: GCS_WGS_1984
- Datum: D_WGS_1984
- Prime Meridian: Greenwich
- Angular Unit: Degree

Manaus_hypsography.zip: hypsography vectors, Manaus, Amazonas

manaus_hypsography.xxx: where file extension is .dbf, .prj, .sbx, .shp, or .shx

Attributes:

> FID: Internal feature number; sequential unique whole numbers that are automatically generated.
>
> Shape: Feature geometry.
>
> LENGTH: Length of feature in internal units
>
> MANUS_HYP: Internal feature number; sequential unique whole numbers that are automatically generated.
>
> INTEGER1: Likely elevation in meters (0, 20, 40, 50, 60, 80, 100, 120, 140, 150, 160, 180, 200, 250, 280, 300, 320, 360, 400, 440, 480)

Manaus_river.zip: river vectors, Manaus, Amazonas

manaus_river.xxx: where file extension is .dbf, .prj, .sbx, .shp, or .shx

Attributes:

FID: Internal feature number; sequential unique whole numbers that are automatically generated.

Shape: Feature geometry.

LENGTH: Length of feature in internal units

MANUS_RIV: Internal feature number; sequential unique whole numbers that are automatically generated.

INTEGER1: Undefined Working Attribute (0, 1, 11, 113, 150)

Manaus_road.zip: road vectors, Manaus, Amazonas

manaus_road.xxx: where file extension is .dbf, .prj, .sbx, .shp, or .shx

Attributes:

FID: Internal feature number; sequential unique whole numbers that are automatically generated.

Shape: Feature geometry.

LENGTH: Length of feature in internal units

MANUS_ROA: Internal feature number; sequential unique whole numbers that are automatically generated.

INTEGER1: Undefined Working Attribute (0, 1, 140, 165, 200)

rio_hypsography.zip: hypsography vectors, Rio Branco, Acre

rio_hypsography.xxx: where file extension is .dbf, .prj, .sbx, .shp, or .shx

Attributes:

FID: Internal feature number; sequential unique whole numbers that are automatically generated.

Shape: Feature geometry.

LENGTH: Length of feature in internal units

RIO_HYPSOG: Internal feature number; sequential unique whole numbers that are automatically generated.

INTEGER1: Likely elevation in meters (0, 20, 40, 50, 60, 80, 100, 120, 140, 150, 160, 180, 200, 250, 280, 300, 320, 360, 400, 440, 480)

rio_river.zip: river vectors, Rio Branco, Acre.

rio_river.xxx: where file extension is .dbf, .prj, .sbx, .shp, or .shx

Attributes:

FID: Internal feature number; sequential unique whole numbers that are automatically generated.

Shape: Feature geometry.

LENGTH: Length of feature in internal units

RIO1_RIVER: Internal feature number; sequential unique whole numbers that are automatically generated.

INTEGER1: Undefined Working Attribute (0, 1, 11, 113, 150)

rio_road.zip: road vectors, Rio Branco, Acre

rio_road.xxx: where file extension is .dbf, .prj, .sbx, .shp, or .shx

Attributes:

FID: Internal feature number; sequential unique whole numbers that are automatically generated.

Shape: Feature geometry.

LENGTH: Length of feature in internal units

RIO1_ROADS: Internal feature number; sequential unique whole numbers that are automatically generated.

INTEGER1: Undefined Working Attribute (0, 1, 140, 165, 200)

ron_hypsography.zip: hypsography vectors, Rondonia, Rondonia

ron_hypsography.xxx: where file extension is .dbf, .prj, .sbx, .shp, or .shx

Attributes:

FID: Internal feature number; sequential unique whole numbers that are automatically generated.

Shape: Feature geometry.

LENGTH: Length of feature in internal units

RON_HYPSOG: Internal feature number; sequential unique whole numbers that are automatically generated.

INTEGER1: Likely elevation in meters (0, 20, 40, 50, 60, 80, 100, 120, 140, 150, 160, 180, 200, 250, 280, 300, 320, 360, 400, 440, 480)

ron_river.zip: river vectors, Rondonia, Rondonia

ron_river.xxx: where file extension is .dbf, .prj, .sbx, .shp, or .shx

Attributes:

FID: Internal feature number; sequential unique whole numbers that are automatically generated.

Shape: Feature geometry.

LENGTH: Length of feature in internal units

RON1_RIVER: Internal feature number; sequential unique whole numbers that are automatically generated.

INTEGER1: Undefined Working Attribute (0, 1, 11, 113, 150)

ron_road.zip: road vectors, Rondonia, Rondonia

ron_road.xxx: where file extension is .dbf, .prj, .sbx, .shp, or .shx

Attributes:

FID: Internal feature number; sequential unique whole numbers that are automatically generated.

Shape: Feature geometry.

LENGTH: Length of feature in internal units

RON1_ROADS: Internal feature number; sequential unique whole numbers that are automatically generated.

INTEGER1: Undefined Working Attribute (0, 1, 140, 165, 200)

tap_hypsography.zip: hypsography vectors, Tapajos National Forest, Para Western (Santarem)
tap_hypsography.xxx: where file extension is .dbf, .prj, .sbn, .sbx, .shp, .shp, or .shx;

Attributes:

FID: Internal feature number; sequential unique whole numbers that are automatically generated.

Shape: Feature geometry.

LENGTH: Length of feature in internal units

TAP_HYPSOG: Internal feature number; sequential unique whole numbers that are automatically generated.

INTEGER1: Likely elevation in meters (0, 20, 40, 50, 60, 80, 100, 120, 140, 150, 160, 180, 200, 250, 280, 300, 320, 360, 400, 440, 480)

tap_river.zip: river vectors, Tapajos National Forest, Para Western (Santarem)

tap_river.xxx: where file extension is .dbf, .prj, .sbx, .shp, or .shx

Attributes:

FID: Internal feature number; sequential unique whole numbers that are automatically generated.

Shape: Feature geometry.

LENGTH: Length of feature in internal units

TAP_RIVER: Internal feature number; sequential unique whole numbers that are automatically generated.

INTEGER1: Undefined Working Attribute (0, 1, 11, 113, 150)

tap_road.zip: road vectors, Tapajos National Forest, Para Western (Santarem)

tap_road.xxx: where file extension is .dbf, .prj, .sbx, .shp, or .shx

Attributes:

FID: Internal feature number; sequential unique whole numbers that are automatically generated.

Shape: Feature geometry.

LENGTH: Length of feature in internal units

TAP_ROADS50: Internal feature number; sequential unique whole numbers that are automatically generated.

INTEGER1: Undefined Working Attribute (0, 1, 140, 165, 200)

DEM Files

The DEM images were encoded from the hypsography vectors in are provided in GeoTIFF format.

- The attribute value associated with each line and point in the vector segment is encoded into the image channel; the image channel is then filled in by interpolating image data between encoded vector data.
- For each DEM: 1 image channel with pixel resolution = 25m x 25m.

DEM images are provided for Manaus, Tapajos National Forest, and Rondonia areas. The DEM files for Rio Branco were unusable due to a documentation error.

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

Site (Region)	Westernmost Longitude	Easternmost Longitude	Northernmost Latitude	Southernmost Latitude	Geodetic Datum
Amazonas (Manaus) (Amazonas (Manaus))	-60.64694	-59.48056	-2.00167	-3.48139	South-American Datum, 1969 (SAD-69)

Acre - Rio Branco (Acre)	-68.50083	-66.76694	-9.47694	-10.50139	South-American Datum, 1969 (SAD-69)
Rondonia (Rondonia)	-63.00083	-62.4825	-9.49944	-10.49444	South-American Datum, 1969 (SAD-69)
Para Western (Santarem) - Tapajos National Forest (Para Western (Santarem))	-55.50056	-54.49889	-2.49833	-3.50556	South-American Datum, 1969 (SAD-69)

Time period:

- The data set covers the period 1974/01/01 to 1978/01/01.
- Temporal Resolution: Annual

  Each map was produced from aerial coverages dated as follows:
  Manaus site: 1977-01-01
  Rio Branco: 1976-01-01
  Rondonia: 1974-01-01
  Tapajos: 1978-01-01

Platform/Sensor/Parameters measured include:

- TOPOGRAPHIC MAP / DIGITIZER / TERRAIN ELEVATION
- MAPS / DIGITIZER / LAND COVER
- AERIAL PHOTOGRAPH / DIGITIZER / LAND COVER

3. Data Application and Derivation:

These data sets were derived from several map sheets; each map was produced from aerial coverage.

4. Quality Assessment:

These data sets were derived from several map sheets. Each map was produced from aerial coverage. The start date provided here for each site represents the earliest date of any one map in a set, because this is the worst-case value.

KNOWN PROBLEMS:

The data providers note that due to limited resources, these data have been neither validated nor quality-assured for general use. For that reason, extreme caution is advised when considering the use of these data.

- Any use of the derived data is not recommended because the results have not been validated.

- However, the DEM, vectors, and orthorectified SAR data (related data set) can be used if the user understands how these were produced and accepts the limitations.

5. Data Acquisition Materials and Methods:

The vectors were hand-digitized by the Images Company in Brazil from paper maps produced by the Brazilian government. Depending on the scale of the original maps, the digitization errors vary. For some maps, some vectors are missing. We hand-checked to make sure that there were no extra vectors.

These data sets were derived from several map sheets. Each map was produced from aerial coverage. The start date provided here for each site represents the earliest date of any one map in a set because this is the worst-case value.

The DEM images were encoded from the hypsography vectors and are provided in GeoTIFF format.

- The attribute value associated with each line and point in the vector segment is encoded into the image channel; the image channel is then filled in by interpolating image data between encoded vector data.
- For each DEM: 1 image channel with pixel resolution = 25m x 25m.

DEM images are provided for Manaus, Tapajos National Forest, and Rondonia areas. The DEM files for Rio Branco were unusable due to a documentation error.

6. Data Access:

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

Data Archive Center:

Contact for Data Center Access Information:
E-mail: uso@daac.ornl.gov
Telephone: +1 (865) 241-3952

7. References:

None cited.