

Revision date: August 04, 2009

# **Pre-LBA RADAMBRASIL Project Data**

## **Summary**

The RADAMBRASIL project extensively mapped the Amazon soils using a combination of soil pit information, aerial photography, and geologic maps. During the project, 1,153 soil pits, distributed basin-wide, were described and sampled by horizon and analyzed for texture and chemical composition.

This data set, which consists of one file in ASCII comma separated format, contains soil profile descriptions for locations throughout Brazilian Amazonia. These data are based on RADAMBRASIL surveys from the Soil Profiles of Amazonia (Source: IPAM, Brazil/WHRC, USA). See the companion file [Soil Profiles of Amazonia.pdf](#).

## **A Complementary Soil Profile Database**

A more recent complementary database of Brazilian Soil Profiles has been compiled by Cooper et al. (2005). In addition to the RADAM survey volumes covering the Amazon region included in this data set, Cooper et al. have also compiled profiles from all the soil survey volumes of RADAM, EMBRAPA, SUDENE, SUDAM, etc. for all regions of Brazil. The database contains 5,500 soil profiles. However, they only included data for the soil A horizon and the diagnostic B horizon and did not include all of the descriptive information for the profiles that is included in this data set.

## **Pre-LBA Data Set Collection Initiative**

The data in the documented Pre-LBA Data sets were originally published as a set of three CD ROMs (Marengo and Victoria, 1998) but the individual data products are now archived separately. The RADAMBRAZIL soil profile data file provided on the CD ROMs was not useable due to inconsistencies with profile identification and coordinates.

The Pre-LBA data set collection was dedicated to providing information to the LBA research community about existing data that have been collected in Amazonia during the 20 years prior to 1998. The main goal of this activity was to compile and document existing data sets in a consistent manner and make them available prior to the beginning of the LBA experiment.

The data set compilation efforts included satellite imagery, micrometeorological observations, near surface and upper-air atmospheric conditions, surface biophysical and hydrological measurements obtained from 1970s – 1990s in a number of field experiments. Data were

collected for several intensive field campaigns, during the rainy and dry seasons, and other periods that vary from short intensive field campaigns to several years worth of observations, measured sometimes with a time resolution of 5 minutes and 1 hour.

## Data Citation:

### Cite this data set as follows:

Negreiros, G. H. de, A.C. Alencar, P. Schlesinger, D.C. Nepstad, and P. A. Lefebvre. 2009. Pre-LBA RADAMBRASIL Project Data. Data set. Available on-line [<http://daac.ornl.gov>] from Oak Ridge National Laboratory Distributed Active Archive Center, Oak Ridge, Tennessee, U.S.A. [doi:10.3334/ORNLDAAC/941](https://doi.org/10.3334/ORNLDAAC/941)

### The original CD-ROM citation is as follows:

Marengo, J. A., and R. L. Victoria. 1998. Pre-LBA Data Sets Initiative, 3 vols. [Pre-Large-Scale Biosphere-Atmosphere Experiment in Amazonia Data Sets Initiative, 3 vols.]. CD-ROM. Centro de Previsao de Tempo e Estudos Climaticos, Instituto Nacional de Pesquisas Espaciais (CPTEC/INPE) [Center for Weather Forecasting and Climate Study, National Institute for Space Research], Sao Paulo, Brazil.

<p><b><u>Pre-LBA Data Set Collection Metadata</u></b></p> <p><b>Campaign:</b> RADAMBRASIL</p> <p><b>Technical_Contact</b></p> <p>Instituto Brasileiro de Geografia e Estatística - IBGE</p> <p><b>Address</b></p> <p>Address: Av. Visconde de Niteroi, no. 12 6o. andar City: Rio de Janeiro State_or_Province: 20943-001 Rio de Janeiro Country: Brazil</p> <p><b>Keywords</b> <b>RADAMBRASIL</b> <b>Texture</b> <b>Nutrients</b></p>	<p><b>Data_Center</b></p> <p>Dataset_ID: RADAMBRAZIL PROJECT</p> <p><b>Data_Center_Contact</b></p> <p>Last_name: Informacoes First_name: Departamento Middle_name: de</p> <p><b>Address</b></p> <p>Address: Av. Visconde de Niteroi, 1246 B 6o. andar City: Rio de Janeiro State_or_Province: 20943-001 Rio de Janeiro Country: Brazil</p> <p><b>Originating_Center:</b> IBGE <b>Revision_Date:</b> 1995-12-31 <b>Future_Review_Date:</b> 1998-12-31 <b>Constraints</b></p>
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<p><b>Start_Date:</b> 1973-01-01  <b>Stop_Date:</b> 1986-12-31</p> <p><b>Sensor_Name:</b> Laboratory Analyses  <b>Source_Name:</b> RADAMBRASIL Books</p> <p><b>Coverage</b>  <b>Southernmost_latitude:</b> 15S  <b>Northernmost_latitude:</b> 5N  <b>Westernmost_longitude:</b> 75W  <b>Easternmost_longitude:</b> 42W</p> <p><b>Location:</b> SOUTH AMERICA</p> <p><b>Author</b>  Instituto Brasileiro de Geografia e Estatística - IBGE  <b>Address</b>  Address: Av. Visconde de Niteroi, no. 12  60. andar  City: Rio de Janeiro  State_or_Province: 20943-001 Rio de Janeiro  Country: Brazil</p>	<p>Access: Data may not be used for commercial applications.  Use: Data may not be used for commercial applications.</p> <p><b>Data_Set_Quality</b>  Medium</p> <p><b>Contact Information:</b></p> <p>1) Source Data Investigator:  Gustavo Hees de Negreiros, Ane Alencar</p> <p>2) Data Preparation Investigators:  Peter Schlesinger / Dan Nepstad / Paul Lefebvre</p> <p>Woods Hole Research Center  PO Box 296, 149 Woods Hole Rd  Woods Hole, MA 02543</p>
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## Data Description

The soil profile data are provided in a single comma-delimited ASCII file.

### Data File Structure and Definition (Soil\_Profiles\_Amazonia.csv)

Column Heading	Units/ Format	Original Column Heading (Portuguese)	Comments	Missing Value Codes  (See notes below)
Profile_Number		No	Profile Number #	No missing values
RadamBrasil_Source_Volume		Volume	RadamBrasil Source Volume #	-888

Soil_Profile_Number		No_Perfil	Soil Profile #	-888
Latitude	decimal degrees	lat_dd	Latitude (Degrees, Minutes, Seconds, Origin (S))	-999.999
Longitude	decimal degrees	long_dd	Longitude (Degrees, Minutes, Seconds, Origin (W))	-999.999
Map_Sheet	Reference code and UTM zone	Folha	Map Sheet (Reference code and UTM zone)	Not_available
Classification		Classificacao	Classification	No missing values
Parent_Material		Material_Originario	Parent Material	Not_available
Horizon_Symbol		Horizonte	Horizon Symbol	None
Horizon_sample_depth_initial	cm	Inicial	Horizon Depth (Initial and final - units=cm)	None
Horizon_sample_depth_final	cm	Final		None
Coarse_Gravel	%	Calhau	Texture analysis (% Coarse Gravel, Gravel, Coarse Sand, Fine Sand, Silt, Clay)	-999, -888
Gravel	%	Cascalho		-999, -888, -777
Coarse_Sand	%	Areia_Grossa		-999, -888, -777, -666
Fine_Sand	%	Areia_Fina		-999, -888, -777
Silt	%	Silte		-999, -888, -777
Clay	%	Argila		-999, -888, -777
SiO2	%	SiO2	H2SO4 analysis (%SiO2, %Al2O3, %Fe2O3)	-999, -888
Al2O3	%	Al2O3		-999, -888
Fe2O3	%	Fe2O3		-999, -888
pH_water_soil_1_1		ph_H2O	pH, water:soil, 1:1	-999
pH_1N_KCl_soil_1_1		ph_KCl_1n	pH, 1N KCl:soil, 1:1	-999, -888
Carbon	%	Carbon	%C, %N, and, %Organic Matter	-999, -888, -777

Nitrogen	%	Nitrogen		-999, -888, -777
Organic_Matter	%	organic_matter		-999, -888, -777
Comments		OK__field		Blank cells

### Missing Value Notes:

In the investigator provided data file, missing values for numeric fields were represented by several different character codes. These codes were converted to distinct negative numeric values. It was not apparent from the original documentation if there were important distinctions among the missing value codes. Subsequent users may choose to set all numeric missing values to a common code for convenience.

Investigator provided missing value codes	Converted values	Comments
“-“ for data values reported as integers	-999	
“-“ for data values reported with decimals	-999.999	Latitude and Longitude
“blank cell” for data values reported as integers	-888	
“blank cell” for data values reported as characters	Not_available	Map_Sheet and Parent_Material
“X” for data values reported as integers	-777	
In the column “Areia_Grossa” (Coarse Sand) the character values “T. areia” ( and variations)	-666	It appears that when column “Areia_Grossa” (Coarse Sand) = “T. areia” then both Calhau(Coarse Gravel) and Cascalho (Gravel) are missing and Areia_Fina, Silte, and Argila (Fine_Sand, Silt, Clay) total to 100%.

## Example Data Records (Soil\_Profiles\_Amazonia.csv)

```
Profile_Number,RadamBrasil_Source_Volume,Soil_Profile_Number,Latitude,Longitude,Map_Sheet ,Classification,Parent_Material,Horizon_Symbol,Horizon_sample_depth_initial,Horizon_sample_depth_final,Coarse_Gravel,Gravel,Coarse_Sand,Fine_Sand,Silt,Clay,SiO2,Al2O3,Fe2O3,pH_water_soil_1_1,pH_1N_KCl_soil_1_1,Carbon,Nitrogen,Organic_Matter,Comments

,,,decimal degrees ,decimal degrees,Reference code and UTM zone,,,
,cm,cm,%,%,%,%,%,%,%,
%,%,%,,,%,%,%,

No, Volume,No_Perfil,lat_dd,long_dd,Folha,Classificacao,Material_Originario,Horizonte,Inicial,Final,Calhau,Cascalho,Areia_Grossa,Areia_Fina,Silte,Argila,SiO2,Al2O3,Fe2O3,ph_H2O,ph_KCl_1n,Carbon,Nitrogen,organic_matter,OK__field

352,4,1,-2.934166667,-47.89361111,SA23YA,Latossolo Amarelo Distrofico textura argilosa.,Sedimentos argilosos.,
Ap,0,10,0,13,20,12,21,47,-999,-999,-999,4.2,3.9,0.59,0.06,-888,
352,4,1,-2.934166667,-47.89361111,SA23YA,Latossolo Amarelo Distrofico textura argilosa.,Sedimentos argilosos.,A3,10,25,0,11,17,12,19,52,-999,-999,-999,4.1,3.9,0.41,0.05,-888,
352,4,1,-2.934166667,-47.89361111,SA23YA,Latossolo Amarelo Distrofico textura argilosa.,Sedimentos argilosos.,B1,25,50,0,6,16,14,11,59,-999,-999,-999,4.1,3.9,0.32,0.04,-888,
...
9,5,13,-4.301111111,-49.17277778,Not_available,Latossolo vermelho Amarelo Alico A moderado textura muito argilosa.,Produto da decomposicao de rochas filiticas.,Bwc1,38,77,2,21,15,11,12,62,-888,-888,-888,4.4,4.2,1.19,0.24,-888
9,5,13,-4.301111111,-49.17277778,Not_available,Latossolo vermelho Amarelo Alico A moderado textura muito argilosa.,Produto da decomposicao de rochas filiticas.,Bwc2,77,130,0,30,15,11,12,62,-888,-888,-888,4.3,4.2,0.94,0.17,-888
9,5,13,-4.301111111,-49.17277778,Not_available,Latossolo vermelho Amarelo Alico A moderado textura muito argilosa.,Produto da decomposicao de rochas filiticas.,Bwc3,130,200,5,46,9,6,10,75,-888,-888,-888,4.3,4.2,0.42,0.11,-888
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## RADAMBRASIL Background

In 1970, the RADAMBrasil project started its collection of airborne radar images and photographs over an extensive area of Brazil. The equipment and data collection effort were

designed to map sections of the Brazilian territory. An altimeter recorded altitude variations that were registered and used to produce a three-dimensional relief map of the Brazilian areas. Over the 15 year period of 1970 to 1985, the Radambrasil instrumentation imaged and photographed each section of the country. With this instrumentation, a team of geographers and cartographers from the University of São Paulo (Sao Paulo, Brazil), led by Prof. Jurandyr Luciano Sanches Ross, compiled a compendium of information showing the diverse physical aspects of Brazilian territory. The final product helped in redefining the existing Brazilian relief maps.

For soil maps and charts of Brazil, please refer to the IBGE Home Page. Current link:  
<http://www.ibge.gov.br/>

## References

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[http://whrc.org/southamerica/LBAData/Amaz\\_Soil\\_prof.htm](http://whrc.org/southamerica/LBAData/Amaz_Soil_prof.htm)

### **RABAMBRASIL Sources**

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## **Data Access:**

This data is available through the Oak Ridge National Laboratory (ORNL) Distributed Active Archive Center (DAAC) [<http://daac.ornl.gov>].

## **Data Archive Center:**

### **Contact for Data Center Access Information:**

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