

# **Pre-LBA CABARE Mapped Land Surface and Vegetation Characteristics, Rondonia, Brazil**

## **Summary**

Surface parameter digital maps of vegetation, soil, and topography were obtained for Rondonia, Brazil, covering the 5x5 degree region bounded by 13-8 degrees S and 65-60 degrees W. Numerical maps of the natural landscape structure were prepared by digitizing existing 1:1,000,000 maps. Satellite data give information about the most recent modifications of the surface due to human activities. This mapping work was the first step of a mesoscale meteorological modeling program (Calvet et al., 1997) in forested and deforested Southwestern Amazonia (Rondonia, Brazil). This work was performed in the framework of a research program (CABARE) supported by the European Union, CEC Environment Program.

Data are provided in ArcGIS ArcInfo grid ascii format for the following surface parameters:

**Elevation of terrain of the Rondonia region (altitude.txt)**

**LANDSAT-derived vegetation classification of the Rondonia region in 1993-1994 (classify.txt)**

**Soil classification of the Rondonia region (soil.txt)**

**Sand and Clay of the Rondonia region (sand.txt and clay.txt)**

**Vegetation classification of the Rondonia region from RADAMBRASIL (Macedo et al., 1979) (vegetation.txt)**

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

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 (1998).

The data sets compiled include satellite imagery, micrometeorological observations, near surface and upper-air atmospheric conditions, surface biophysical and hydrological measurements obtained from the 1970s to the 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.

## Citation:

### Cite this data set as follows:

Santos Alvala, R.C., G. Jaubert, C.A. Nobre, I.R. Wright, J. Noilhan, J.C. Calvet. 2009. Pre-LBA CABARE Mapped Land Surface and Vegetation Characteristics, Rondonia, Brazil. 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/918.

### 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.

<b><u>Pre-LBA Data Set Collection</u></b> <b><u>Metadata</u></b>	
<b>Campaign:</b> RONDONIA MAPS - CABARE	<b>Technical_Contact</b> Last_name: dos Santos Alvala First_name: Regina Middle_name: Celia <b>Email:</b> <a href="mailto:regina@met.inpe.br">regina@met.inpe.br</a> Phone: 55 12 345 6644 FAX: 55 12 345 6666
<b>Keywords</b>	
<b>Deforestation</b>	Address: Divisao de Ciencias Meteorologicas Instituto Nacional de Pesquisas Espaciais Av. dos Astronautas, 1758 City: Sao Jose dos Campos 12201-970 State_or_Province: Sao Paulo Country: Brazil
<b>Soil</b>	
<b>Vegetation</b>	
<b>Altitude</b>	
<b>Landsat-TM</b>	
<b>Clay</b>	
<b>Sand</b>	

**Silt**  
**RADAMBRASIL**  
**Rondonia**

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**Coverage**  
**Southernmost\_latitude:** 13S  
**Northernmost\_latitude:** 8S  
**Westernmost\_longitude:** 65W  
**Easternmost\_longitude:** 60W  
**Minimum\_altitude:** 50m  
**Maximum\_altitude:** 1100m

**Location:** SOUTH AMERICA

**Data\_Resolution**

**Temporal\_Resolution:** annual  
**Dataset\_Progress:** Complete  
**Author**  
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**Data\_Center**  
**Data\_Center\_Name:** Meteo-France, INPE  
**Data\_Center\_URL:** <http://www.cptec.inpe.br/lba/prelba/prelba.html>  
**Dataset\_ID:** Rondonia - Maps

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## Data Description

All data files are provided in ArcGIS ArcInfo grid ascii file format. The figures displayed are provided as companion files in gif format. These data are unprojected.

Surface Parameters	Data Files	Companion Files
Elevation of terrain of the Rondonia region	altitude.txt	altitude.gif
LANDSAT-derived vegetation classification of the Rondonia region in 1993-1994	classify.txt	classify.gif
Soil classification of the Rondonia region	soil.txt	soil.gif
Sand, and Clay of the Rondonia region	sand.txt, clay.txt	clay.gif, sand.gif
Vegetation classification of the Rondonia region from RADAMBRASIL (1979)	vegetation.txt	vegetation.gif

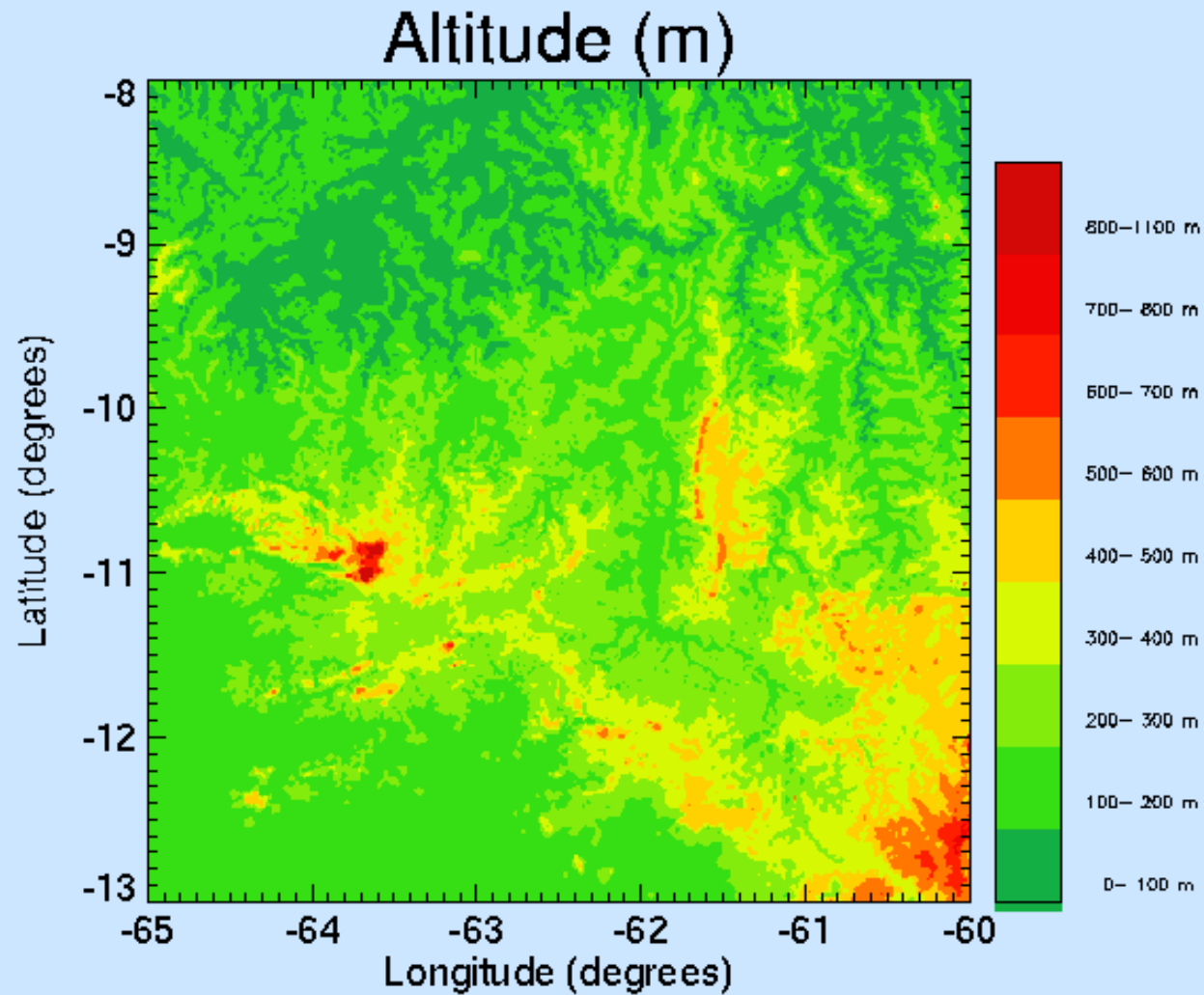
There are two companion files, altveg\_land.gif and silt.gif, within this data set for which no data files are available. These data files were either corrupt or unavailable in the source Pre-LBA CD- ROMS.

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

Site (Region)	Westernmost Longitude	Easternmost Longitude	Northernmost Latitude	Southernmost Latitude	Geodetic Datum
Rondonia, Brazil	-65	-60	-8	-13	WGS-84

Layer Name	#cols	#rows	min value	max value	cell size
altitude	600	600	45	1110	.0083333
classify	5000	5000	0	7	.001
soil	600	600	0	133	.0083333
sand	600	600	-999	96	.0083333
clay	600	600	-999	68	.0083333
vegetation	600	600	0	100	.0083333

Topography of the Rondonia region (Brazil)



RADAMBRASIL MAPS used: Porto-Velho, Guapore.

Paper maps at the millionth scale. Digitized at Meteo-France/CNRM Sept. 1995

**Altitude file format (ALTITUDE.txt):**

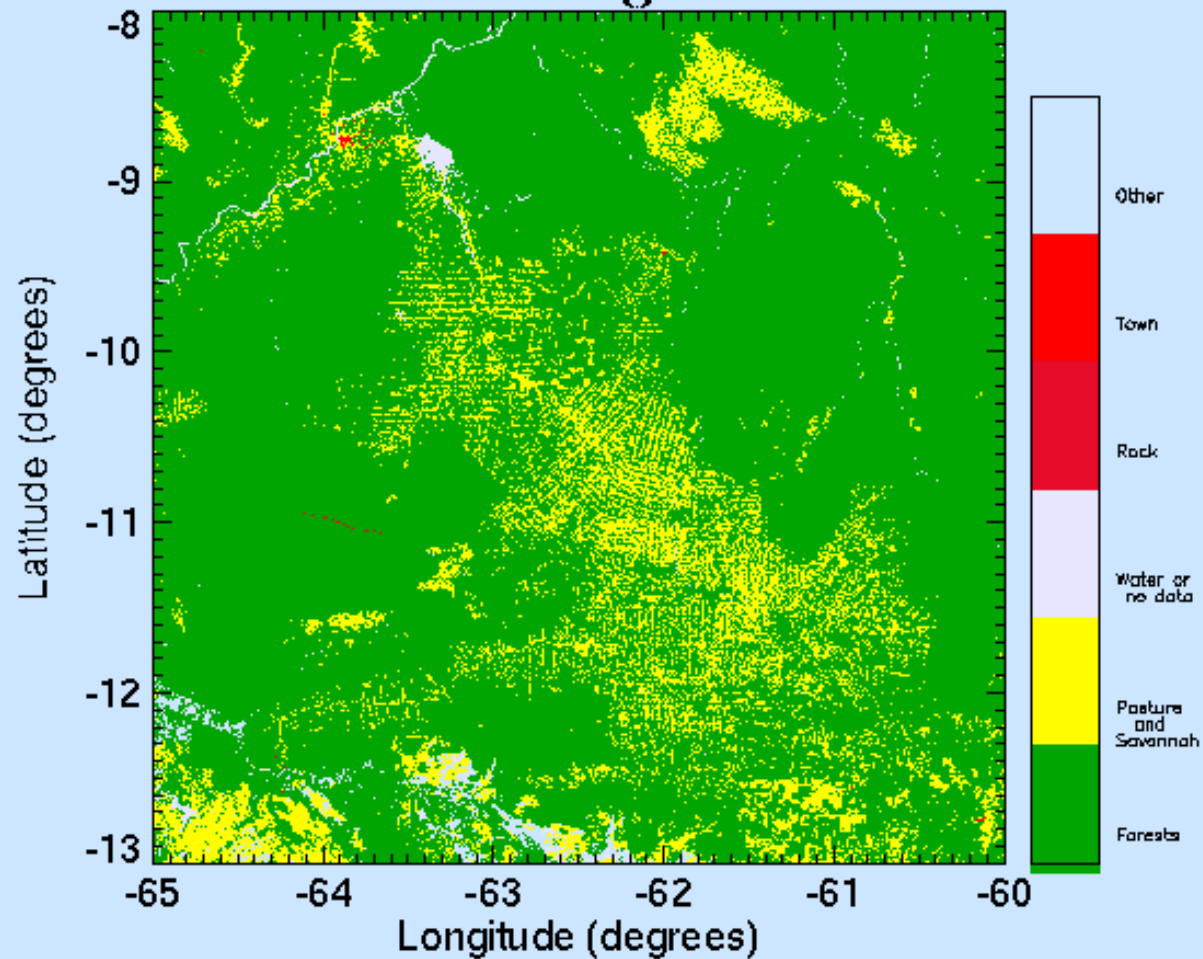
The file has a header section which describes the location and size of the data, followed by the data itself.

**Partial listing of altitude.txt:**

```
ncols          600
nrows          600
xllcorner      -65
yllcorner      -13
cellsize       0.0083333
NODATA_value   -9999
 100 100 100 100 100 100 100 100 .... First line (Northern line) 600 data
```

**LANDSAT-derived vegetation classification of the Rondonia region (Brazil) in 1993-1994**

# Current vegetation



17 LANDSAT images have been used.

Origin of the LANDSAT data: INPE, Sao Jose dos Campos, Brazil.

## # 6 categories

Classification from LANDSAT imagery computed at Meteo-France/CNRM

- 0:Water
- 1:Forests (primary or regrowth)
- 2:Pasture or Savannah
- 5:Rock
- 6:Town
- 7:Other (bogs...)

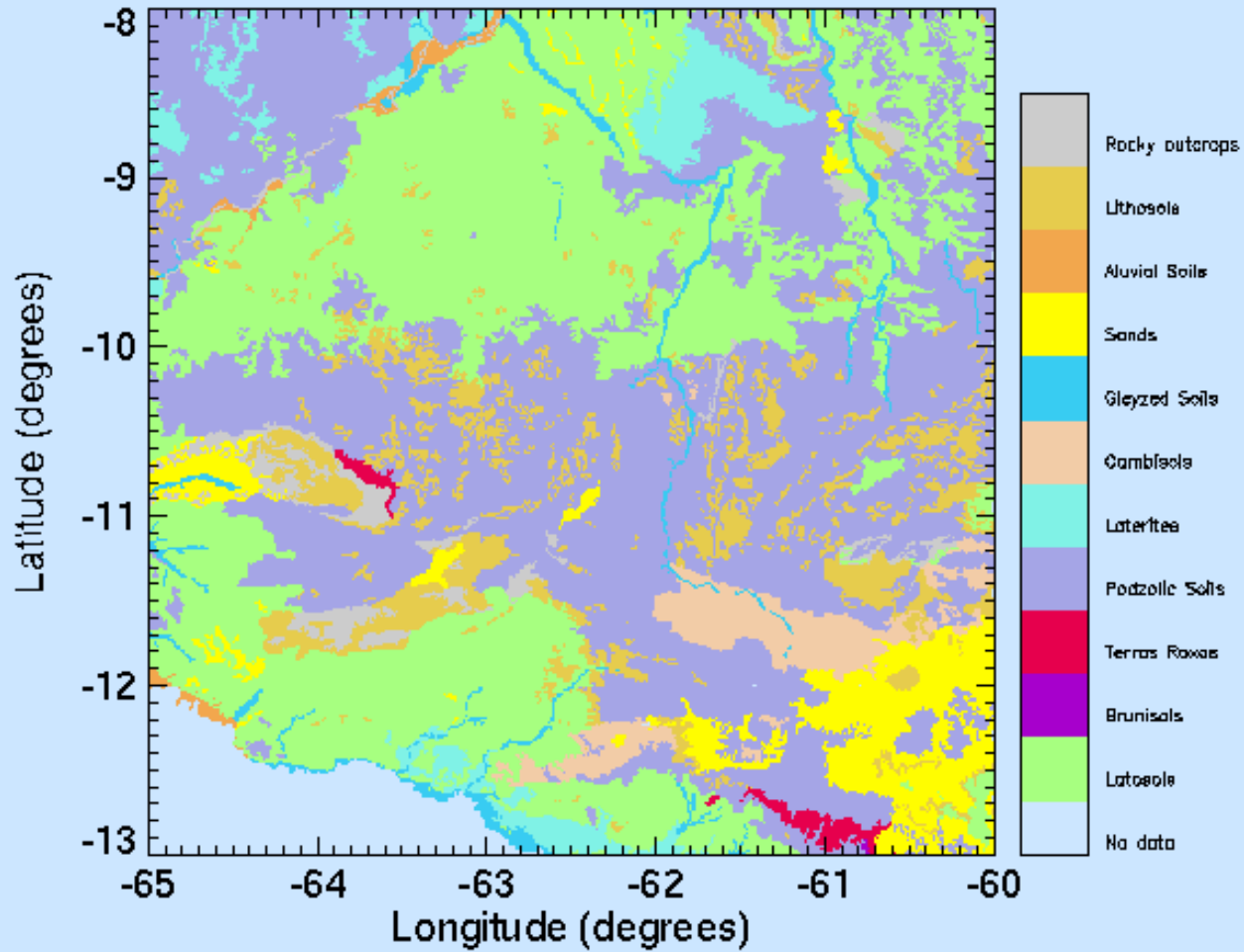


**Partial listing of classify.txt:**

```
ncols      5000
nrows      5000
xllcorner  -65
yllcorner  -13
cellsize   .001
NODATA_value -9999
1 1 1 1 1 1 1 1 1 1 ..... First line (Northern line) of data
```

**Soil classification of the Rondonia region (Brazil)**

# Soil



RADAMBRASIL MAPS used: Porto-Velho, Guapore.

# 133 categories

Soil classification maps Porto\_velho and Guapore digitized at CNRM/Meteo-France Sept 95

0.00 0.00 0.00 0.00

0:no data

1:LAa1

2:LAa2

3:LAa3

4:LVa1

5:LVa2

6:LVa3

7:LVa4

8:LVa5

9:LVa6  
10:LVa7  
11:LVa8  
12:LVa9  
13:LVa10  
14:LVa11  
15:LVa12  
16:TRd1  
17:TRd2  
18:PE1  
19:PE2  
20:PE3  
21:PE4  
22:PVd1  
23:PVd2  
24:PVd3  
25:PVd4  
26:PVd5  
27:PVd6  
28:PVd7  
29:PVa1  
30:PVa2  
31:PVa3  
32:PVa4  
33:PVa5  
34:PVa6  
35:PVa7  
36:PVa8  
37:PVa9  
38:PVa10  
39:PVa11  
40:PVa12  
41:PVa13  
42:PVa14  
43:PVa15  
44:PVa16  
45:HLa  
46:HLra1  
47:HLra2  
48:HLra3  
49:HLra4  
50:HP1  
51:HP2  
52:HP3  
53:Cte1  
54:Cte2  
55:Cte3  
56:Cte4  
57:Cte5  
58:Cta  
59:HGPa1  
60:HGPa2  
61:AQa1

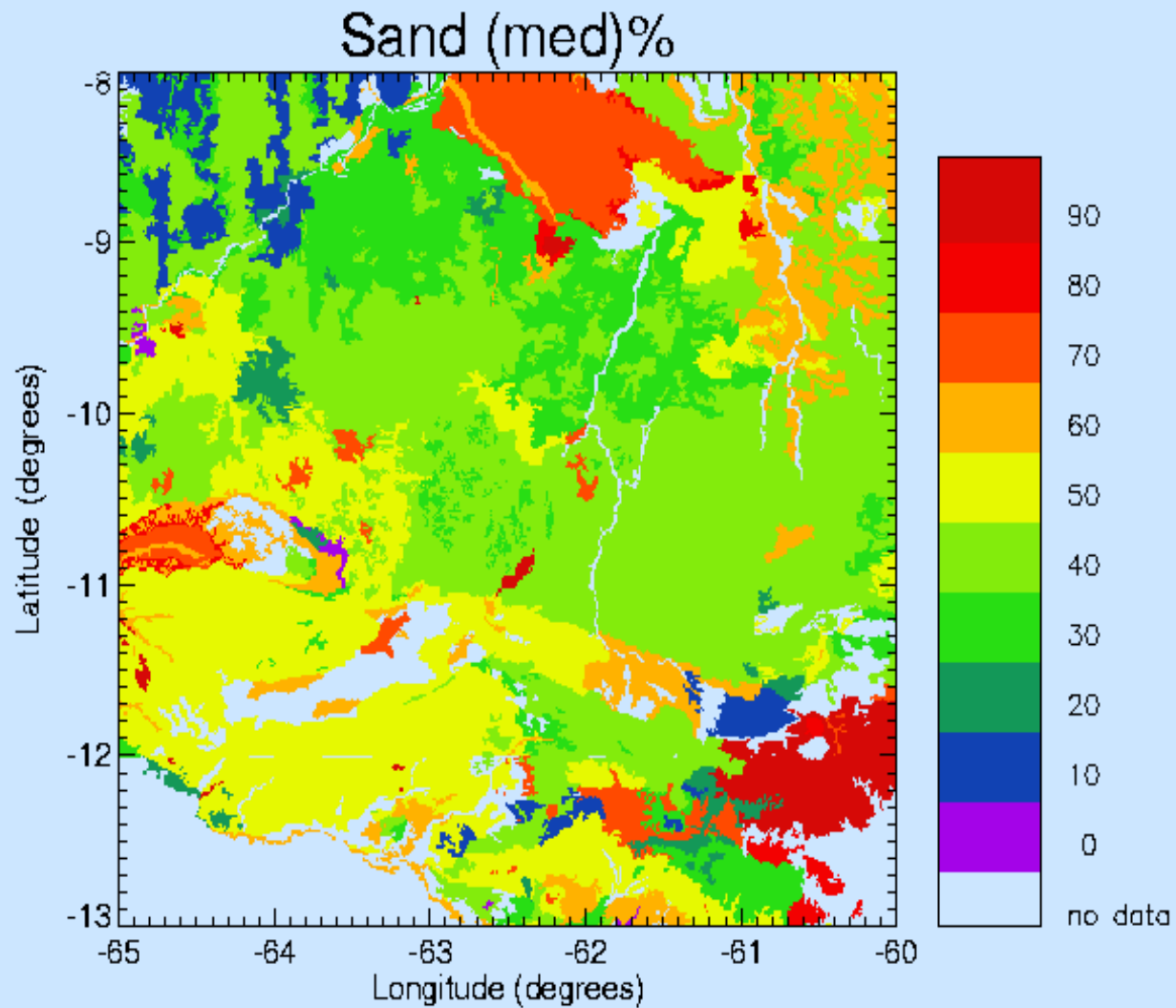
62:AQa2  
63:AQa3  
64:HAQa1  
65:HAQa2  
66:Ad  
67:Re  
68:Rd1  
69:Rd2  
70:Rd3  
71:AR1  
72:AR2  
73:LAa1  
74:LAa2  
75:LAa3  
76:LAa4  
77:LAa5  
78:LVa  
79:LEd1  
80:LEd2  
81:BV1  
82:BV2  
83:TRe  
84:PE1  
85:PE2  
86:PE3  
87:PE4  
88:PE5  
89:PE6  
90:PE7  
91:PVd1  
92:PVd2  
93:PVd3  
94:PVd4  
95:PVd5  
96:PVd6  
97:PVd7  
98:PVd8  
99:PVd9  
100:HLa1  
101:HLa2  
102:HLa3  
103:HLa4  
104:HLa5  
105:HLa6  
106:Ctd1  
107:Ctd2  
108:HGPd  
109:HGPa1  
110:HGPa2  
111:HGPa3  
112:HGPa4  
113:AQd1  
114:AQd2

115:AQd3  
116:AQd4  
117:AQd5  
118:AQd6  
119:AQd7  
120:AQd8  
121:AQa1  
122:AQa2  
123:AQa3  
124:Ad  
125:Re  
126:Rd1  
127:Rd2  
128:Rd3  
129:Rd4  
130:Rd5  
131:Ra  
132:AR  
133:aqua

**Partial file listing of soil.txt:**

```
ncols          600
nrows          600
xllcorner      -65
yllcorner      -13
cellsize       0.0083333
NODATA_value   -9999
  38  38  38  38  38  38  38  38 .... First line (Northern line) of data
```

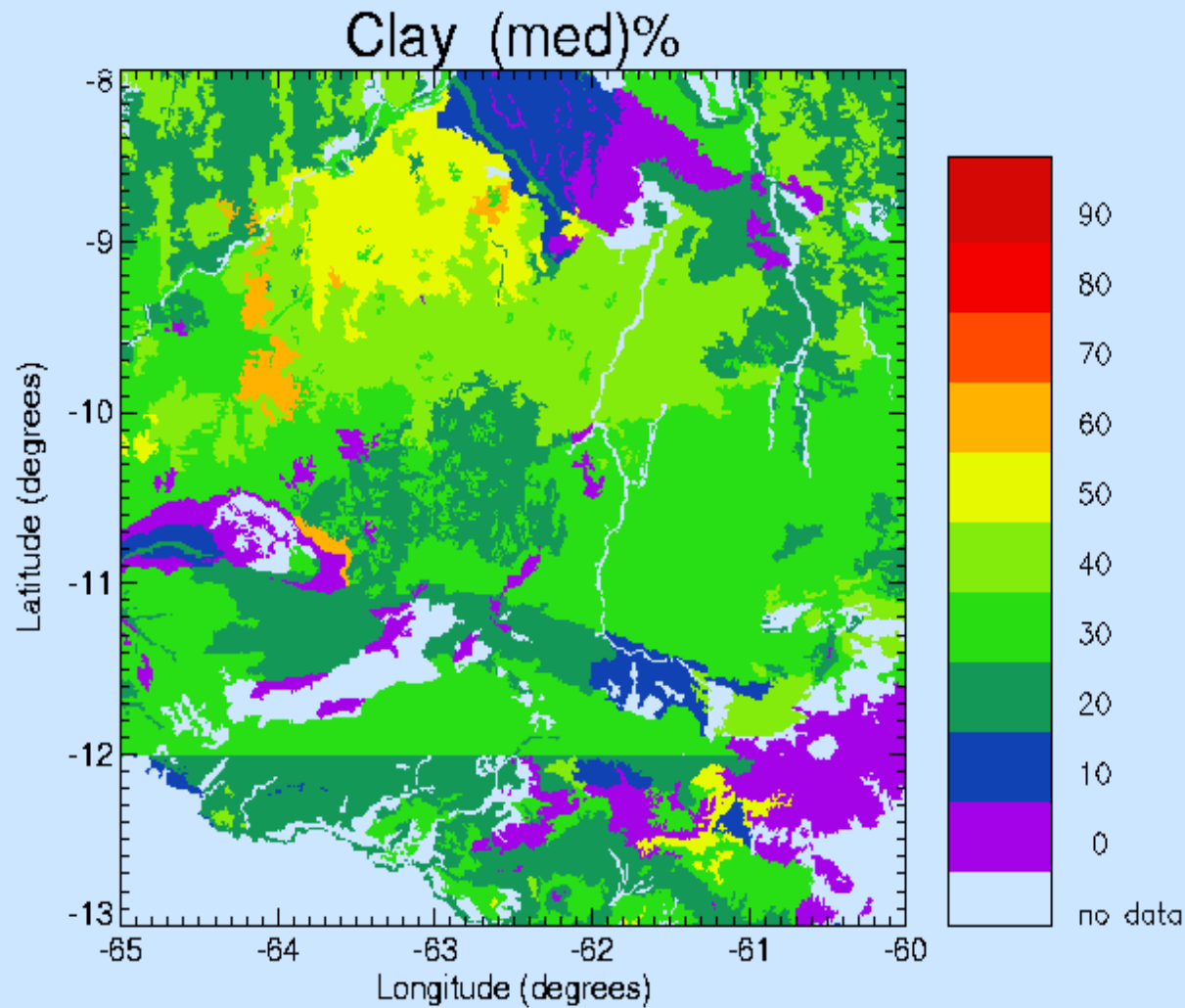
Sand percentage of the Rondonia region (Brazil)



**Partial listing of sand.txt:**

```
ncols      600
nrows      600
xllcorner  -65
yllcorner  -13
cellsize   0.0083333
NODATA_value -9999
15 15 15 15 15 15 15 15 15 15 ..... First line (Northern line) of data
```

Clay percentage of the Rondonia region (Brazil)



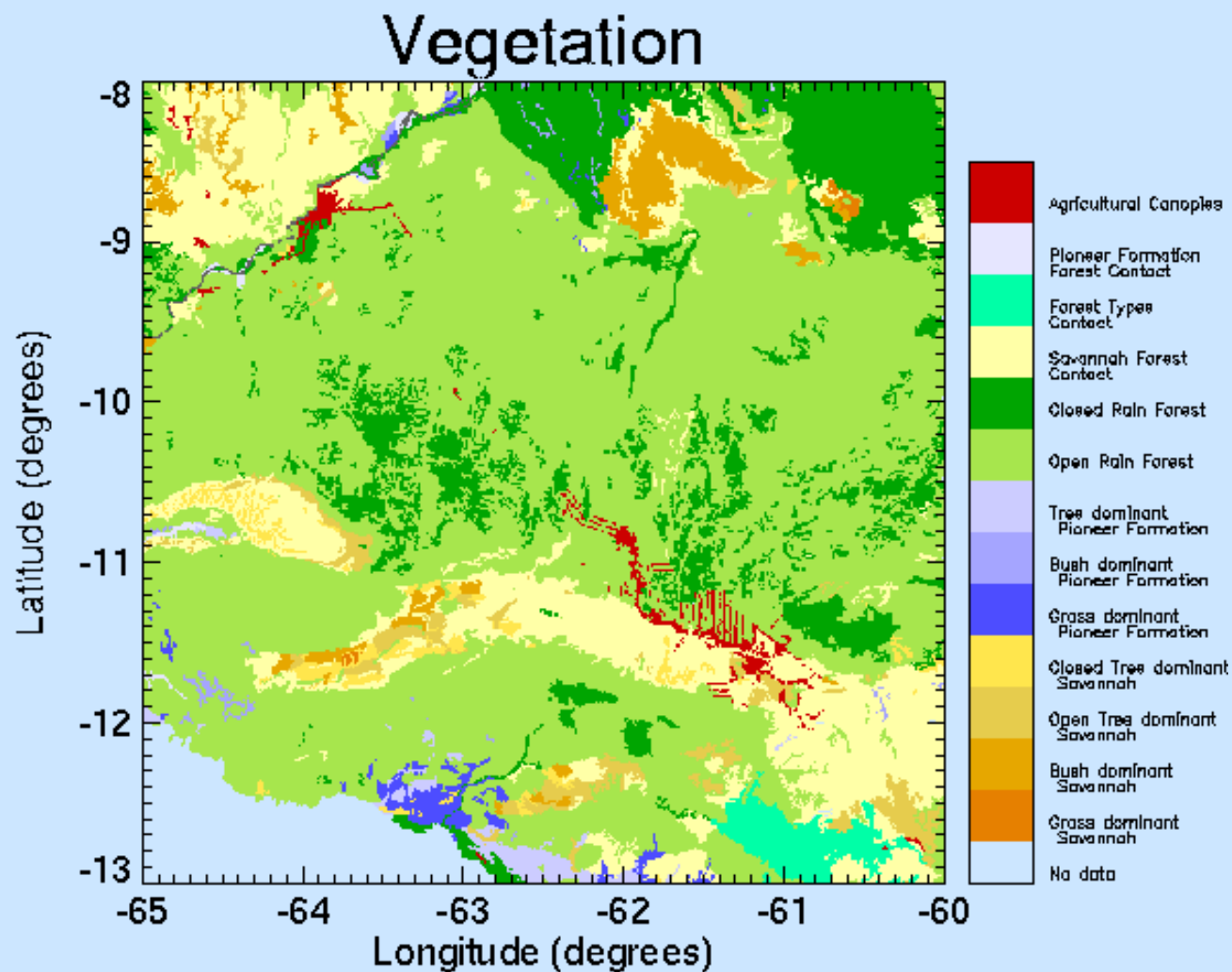
**Partial listing of clay.txt:**

```
ncols      600
nrows      600
xllcorner  -65
yllcorner  -13
cellsize   0.0083333
```

NODATA\_value -9999

40 40 40 40 40 40 40 40 40 40 ..... First line (Northern line) of data

Vegetation classification of the Rondonia region (Brazil) from RADAMBRASIL (1979)



RADAMBRASIL MAPS used: Porto-Velho , Guapore.

# 100 categories

Vegetation maps Porto\_velho and Guapore digitized at CNRM/Meteo\_France sept 95



0.00 0.00 0.00 0.00  
1:Sad Savana, Arborea densa, Porto velho, Relevo Residual do Sul da Amazonia  
2:Sad Savana, Arborea densa, Porto velho, Superficie Pediplanada  
3:Sd Savana, Arborea densa, Guapore  
4:Saa Savana, Arborea aberta, Porto velho, Relevo Residual do Sul da Amazonia  
5:Saa Savana, Arborea aberta, Porto velho, Superficie Pediplanada  
6:Sas Savana, Arborea aberta sem floresta de galeria, Guapore  
7:Saf Savana, Arborea aberta com floresta de galeria, Guapore  
8:Sp Savana, Parque, Porto velho, Relevo Residual do Sul da Amazonia  
9:Sp Savana, Parque, Porto velho, Superficie Pediplanada  
10:Sps Savana, Parque sem floresta de galeria, Guapore  
11:Spf Savana, Parque com floresta de galeria, Guapore  
12:Sg Savana, Gramineo-lenhosa, Porto velho, Relevo Residual do Sul da Amazonia  
13:Sg Savana, Gramineo-lenhosa, Porto velho, Superficie Pediplanada  
14:Sgs Savana, Gramineo-lenhosa sem floresta de galeria, Guapore  
15:Sgf Savana, Gramineo-lenhosa com floresta de galeria, Guapore  
20:Pap Formacoes Pioneiras, Arborea, areas periodicamente inundadas, Porto velho, Areas de Acumulacao inundaveis  
21:Pfb Formacoes Pioneiras, Influencia Fluvial bunitizal, Guapore  
22:Pau Formacoes Pioneiras, Arbustiva, depressoes periodicamente inundadas, Porto velho, Areas de Acumulacao inundaveis  
23:Pau Formacoes Pioneiras, Arbustiva, depressoes periodicamente inundadas, Porto velho, Depressoes nos interfluvios  
    Tabulares do Terciario  
24:Pfs Formacoes Pioneiras, Influencia Fluvial arbustiva, sem palmeiras, Guapore  
25:Pag Formacoes Pioneiras, Graminosa, areas periodicamente inundadas, Porto velho, Areas de Acumulacao inundaveis  
26:Pag Formacoes Pioneiras, Graminosa, areas periodicamente inundadas, Porto velho, Depressoes nos interfluvios  
    Tabulares do Terciario  
27:Pfh Formacoes Pioneiras, Influencia Fluvial graminoide, Guapore  
30:Fdp Floresta Tropical Densa, Aluvial, planicie periodicamente inundada, Porto velho, Sub-regiao Aluvial da Amazonia  
31:Fdc Floresta Tropical Densa, Aluvial, terracos, Porto velho, Sub-regiao Aluvial da Amazonia  
32:Fdb Floresta Tropical Densa, Terras baixas, plato, Porto velho, Sub-regiao dos Baixos Platos da Amazonia  
33:Fda Floresta Tropical Densa, Terras baixas, relevo dissecado, Porto velho, Sub-regiao dos Baixos Platos da Amazonia  
34:Fdo Floresta Tropical Densa, Terras baixas, relevo ondulado, Porto velho, Sub-regiao dos Baixos Platos da Amazonia  
35:Fdn Floresta Tropical Densa, Submontana, relevo dissecado, Porto velho, Altos Xingu/ Tapajos/ Madeira  
36:Fds Floresta Tropical Densa, Submontana, relevo ondulado, Porto velho, Altos Xingu/ Tapajos/ Madeira  
37:Fdt Floresta Tropical Densa, Submontana, baixas cadeias de montanhas, Porto velho, Sul da Amazonia  
38:Fdr Floresta Tropical Densa, Submontana plato, Porto velho, Cobertura de Plataforma Pre-Cambriana  
39:Fdu Floresta Tropical Densa, Submontana relevo dissecado, Porto velho, Cobertura de Plataforma Pre-Cambriana  
40:Fdi Floresta Tropical Densa, Submontana relevo ondulado, Porto velho, Cobertura de Plataforma Pre-Cambriana  
41:Dae Floresta Ombrofila Densa Tropical, Aluvial, dossel emergente, Guapore  
42:Dse Floresta Ombrofila Densa Tropical, Submontana, dossel emergente, Guapore  
43:Fap Floresta Tropical Aberta, Aluvial, planicie periodicamente inundada, Porto velho, Sub-regiao Aluvial da Amazonia  
44:Fac Floresta Tropical Aberta, Aluvial, terracos, Porto velho, Sub-regiao Aluvial da Amazonia

45:Fal Floresta Tropical Aberta,Aluvial,superficie aplainada,Porto velho,Superficie Aplainada de Acumulacao

46:Fab Floresta Tropical Aberta,Terras baixas,plato,Porto velho,Sub-regiao dos Baixos Platos da Amazonia

47:Faa Floresta Tropical Aberta,Terras baixas,relevo dissecado,Porto velho,Sub-regiao dos Baixos Platos da Amazonia

48:Fao Floresta Tropical Aberta,Terras baixas,relevo ondulado,Porto velho,Sub-regiao dos Baixos Platos da Amazonia

49:Fan Floresta Tropical Aberta,Submontana,relevo dissecado,Porto velho,Altos Xingu/Tapajos/Madeira

50:Fas Floresta Tropical Aberta,Submontana,relevo ondulado,Porto velho,Altos Xingu/Tapajos/Madeira

51:Far Floresta Tropical Aberta,Submontana plato,Porto velho,Cobertura de Plataforma Pre-Cambriana

52:Fau Floresta Tropical Aberta,Submontana relevo dissecado,Porto velho,Cobertura de Plataforma Pre-Cambriana

53:Fai Floresta Tropical Aberta,Submontana relevo ondulado,Porto velho,Cobertura de Plataforma Pre-Cambriana

54:Abc Floresta Ombrofila Aberta Tropical,Terras Baixas com cipos,Guapore

55:Abp Floresta Ombrofila Aberta Tropical,Terras Baixas com palmeiras,Guapore

56:Asc Floresta Ombrofila Aberta Tropical,Submontana com cipos,Guapore

57:Asp Floresta Ombrofila Aberta Tropical,Submontana com palmeiras,Guapore

58:Fae Floresta estacional Semidecidual Tropical,Aluvial dossel emergente,Guapore

59:Fbe Floresta estacional Semidecidual Tropical,Terras Baixas dossel emergente,Guapore

60:Fse Floresta estacional Semidecidual Tropical, Submontana dossel emergente,Guapore

61:Sad Conatato Savana/Floresta,Savana Arborea densa,Porto velho

62:Sd2 Contato Savana/Floresta Estacional,Savana, Arborea densa,Guapore

63:Saa Contato Savana/Floresta,Savana Arborea aberta,Porto velho

64:Sas2 Contato Savana/Floresta Estacional,Savana, Arborea Aberta sem floresta de galeria,Guapore

65:Saf2 Contato Savana/Floresta Estacional,Savana, Arborea Aberta com floresta de galeria,Guapore

66:Sp Contato Savana/Floresta,Savana Parque,Porto velho

67:STe3 Contato Savana/Savana Estepica,Ecotono,Guapore

68:FSm Contato Savana/Floresta,Ecotono,Porto velho

69:SNe2 Contato Savana/Floresta Estacional,Ecotono,Guapore

70:Fbe2 Contato Savana/Floresta Estacional,Floresta Semidecidual,Guapore,Terras Baixas dossel emergente

71:Fse2 Contato Savana/Floresta Estacional,Floresta Semidecidual,Guapore,Submontana dossel emergente

72:SOe1 Contato Savana/Floresta Ombrofila, Ecotono,Guapore

73:Abc1 Contato Savana/Floresta Ombrofila, Floresta aberta,Guapore,Terras Baixas com cipos

74:Asc1 Contato Savana/Floresta Ombrofila, Floresta aberta,Guapore,Submontana com cipos

75:Fac Contato Savana/Floresta,Floresta Tropical Aberta,Aluvial,terracos,Porto velho,Sub-regiao Aluvial da Amazonia

76:Fab Contato Savana/Floresta,Floresta Tropical Aberta,Terras baixas,plato,Porto velho,Sub-regiao dos Baixos Platos da Amazonia

77:Fao Contato Savana/Floresta,Floresta Tropical Aberta,Terras baixas,relevo ondulado,Porto velho,Sub-regiao dos Baixos Platos da Amazonia

78:Fan Contato Savana/Floresta,Floresta Tropical Aberta,Submontana,relevo dissecado,Porto velho,Altos Xingu/Tapajos/Madeira

79:Fas Contato Savana/Floresta,Floresta Tropical Aberta,Submontana,relevo ondulado,Porto velho,Altos Xingu/Tapajos/Madeira

80:Far Contato Savana/Floresta,Floresta Tropical Aberta,Submontana plato,Porto velho,Cobertura de Plataforma Pre-Cambriana

81:Fau Contato Savana/Floresta,Floresta Tropical Aberta,Submontana relevo dissecado,Porto velho,Cobertura de Plataforma Pre-Cambriana

```

82:Fai Contato Savana/Floresta,Floresta Tropical Aberta,Submontana relevo ondulado,Porto velho,Cobertura
de
  Plataforma Pre-Cambriana
83:Fdr Contato Savana/Floresta,Floresta densa,Submontana plato,Porto velho
84:Fdu Contato Savana/Floresta,Floresta densa,Submontana relevo dissecado,Porto velho
85:Fdi Contato Savana/Floresta,Floresta densa,Submontana relevo ondulado,Porto velho
86:Cbe4 Contato Savana Estepica/Floresta Estacional,Floresta Decidual,Guapore,Terras Baixas dossel
emergente
87:Fbe5 Contato Floresta Ombrofila/Floresta Estacional,Floresta Semidecidual,Guapore,Terras Baixas dossel
emergente
88:Fse5 Contato Floresta Ombrofila/Floresta Estacional,Floresta Semidecidual,Guapore,Submontana dossel
emergente
89:ONe5 Contato Floresta Ombrofila/Floresta Estacional,Ecotono,Guapore
90:Pap Contato Formacoes Edaficas/Floresta,Arborea,Porto velho,areas periodicamente inundadas
91:Fdp Contato Formacoes Edaficas/Floresta,Floresta Tropical Densa,Porto velho,Aluvial planicie,Sub-
regiao
  Aluvial da Amazonia
92:Fdc Contato Formacoes Edaficas/Floresta,Floresta Tropical Densa,Porto velho,Aluvial terracos,Sub-
regiao
  Aluvial da Amazonia
93:Fap Contato Formacoes Edaficas/Floresta,Floresta Tropical Aberta,Porto velho,Aluvial planicie,Sub-
regiao
  Aluvial da Amazonia
94:Fac Contato Formacoes Edaficas/Floresta,Floresta Tropical Aberta,Porto velho,Aluvial terracos
95:Fag Contato Formacoes Edaficas/Floresta,Floresta Tropical Aberta,Porto velho,Aluvial planicie
96:Fao Contato Formacoes Edaficas/Floresta,Floresta Tropical Aberta,Porto velho,Terras baixas,relevo
ondulado
99:Water
100:Ap Agropecuaria

```

**Partial listing of vegetation.txt:**

```

ncols          600
nrows          600
xllcorner      -65
yllcorner      -13
cellsize       0.0083333
NODATA_value   -9999
  46  46  46  0  0  0  0  0  .... First line (Northern line) of data

```

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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:

E-mail: [uso@daac.ornl.gov](mailto:uso@daac.ornl.gov)

Telephone: +1 (865) 241-3952

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[webmaster@daac.ornl.gov](mailto:webmaster@daac.ornl.gov)