

Digital soil properties database of the Amazon part from the RADAMBRASIL project Version 1

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Description:

The soil database in the CD provides information on soil physical and chemical attributes for the Brazilian Amazon region. The data was manually digitized from 23 bulletins (volumes) produced by the Projeto RADAMBRASIL.

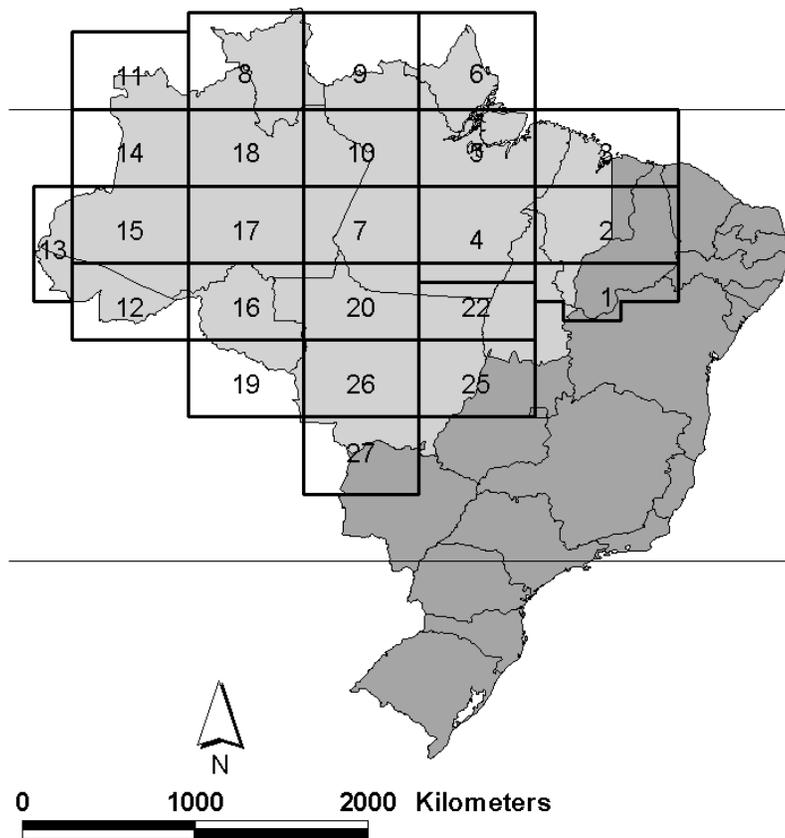
The Projeto RADAMBRASIL was carried out from 1973 to 1982 in the entire Brazilian Amazon. The main objectives of this survey were identifying, delimiting, and localizing the various classes that occur in the region. It includes surveys of geology, geomorphology, vegetation, soils, and land use. It reports soil analyses for about 12,000 soil horizons representing 2559 soil profiles, containing carbon, nitrogen and phosphorus concentration, soil texture, major cations, and other soil properties measurements. However, bulk density determinations are available for just part of the data, corresponding to about 474 horizons.

Data of each volume was organized in a separated spreadsheet (.xls), in which the first line was translated to English. The list of the volumes contained in this CD is as follow:

- Volume 1, part of sheets SC-23 Rio São Francisco and SC-24 Aracaju, 1973;
- Volume 2, sheet SB-23 Teresina and part of sheet SB-24 Jaguaribe, 1973;
- Volume 3, sheet SA-23 São Luís and part of sheet SA-24 Fortaleza, 1973;
- Volume 4, sheet SB-22 Araguaia and part of sheet SC-22 Tocantins, 1974;
- Volume 5, Sheet SA-22 Belém, 1974;
- Volume 6, Sheet NA/NB-22 Macapá, 1974;
- Volume 7, Sheet SB-21 Tapajós, 1975;
- Volume 8, Sheet NA-20 Boa Vista and part of sheets NA-21 Tumucumaque, NB-20 Roraima and NB-21, 1975;

- Volume 9, Sheet NA-21 Tumucumaque and part of sheet NB-21, 1975;
- Volume 10, Sheet SA-21 Santarém, 1976;
- Volume 11, Sheet NA-19 Pico da Neblina, 1976;
- Volume 12, Sheet SC-19 Rio Branco, 1976;
- Volume 13, Sheets SB/SC-18 Javari/Contamana, 1977;
- Volume 14, Sheet SA-19 Içá, 1977
- Volume 15, Sheet SB-19 Juruá, 1977;
- Volume 16, Sheet Sc-20 Porto Velho, 1978;
- Volume 17, Sheet SB-20 Purus, 1978;
- Volume 18, Sheet SA-20 Manaus, 1978;
- Volume 19, Sheet SD-20 Guaporé, 1979;
- Volume 20, Sheet SC-21 Juruena, 1980;
- Volume 22, Sheet SC-22 Tocantins, 1981;
- Volume 26, Sheet SD-21, Cuiabá, 1982;
- Volume 27, Sheet SE-21 Corumbá and part of sheet SE-20, 1982.

Those volumes cover all the Brazilian Amazon region. The area covered by each volume is shown in the figure below.



RADAMBRASIL volumen numbers and locations.

Finally, the table below provides information about the methods used in the laboratory analyses for each soil property of the database.

Variable	Method		Lab
Granulometry	Dispersing agent	NaOH 1N a 6%	SNLCS,CPATU,IPEAN
		(NaPO ₃) ₆	CES, SUDESUL
Total clay	Hydrometer of Boyoucos		SNLCS
	Pipette method		All the others
Natural clay	as total clay, but dispersion in H ₂ O _{distilled}		All the same
Sand fraction	Sieving		All the same
Flocculation Level	100 x (total clay – natural clay) / total clay		All the same
Equivalent Moisture	Centrifugation		All the same
C	Method of Tiurin, oxidation by potassium bichromate 0,4N		SNLCS
	Method of Walkley & Black		All the others
Total N	Method of Kjeldahl		All the same
pH	pH H ₂ O	1:2.5	SNLCS
		1:1	All the others
	pH KCl	1:1	All the same
P assimilable	Method by State University of North Carolina		All the same
Carbonates	Volumetric by calcium-meter of Collins		All the same
Equivalent CaCO ₃	Volumetric comparison of CO ₂ (HCL 1:1)		All the same
Exchangeable Ca and Mg	Extraction by KCl N at pH 7		All the same
	Extraction by NH ₄ OAc		SUDESUL
Exchangeable Na and K	HCl 0,05N		All the others
	NH ₄ O Ac at pH 7		CES
Sum of exchangeable bases (S)	Extraction by KCl N and HCl 0.5N		All the same
Exchangeable acidity (H ⁺ + Al ³⁺)	Titration: NaOH 0.0606 N, Indicator: Phenolphthalein		SNLCS
	Titration: NaOH 0.1 N, Indicator: Phenolphthalein		All the others

Exchangeable Al (Al^{3+})	Extraction: KCl N Titration: NaOH 0.025 N	SNLCS
	Extraction: HCl Titration: NaOH 0.1N	All the others
	Extraction: CaOAc	CPATU, SUDESUL, IDESP
Exchangeable H^+	exchangeable acidity – exchangeable Al	All the same
CEC	S + total acidity	CES, IDESP
	$\text{S} + \text{H}^+ + \text{Al}^{3+}$	SNLCS, CPATU SUDESUL, IPEAN
Saturation with exchangeable Al	$100 \times \text{Al}^{3+} / (\text{Al}^{3+} + \text{S})$	All the same
Saturation of exchangeable bases (V)	$100 \times \text{S} / \text{CEC}$	All the same
Saturation with Na	$100 \times \text{Na}^+ / \text{CEC}$	All the same
SOM	$1.724 \times \text{SOC}$	All the same
Free Fe_2O_3	Method of Deb Reduction: Sodium Ditionite	All the others
	H_2SO_4 d=1.47	CPATU
Ki	$1.7 \times \text{SiO}_2 (\%) / \text{Al}_2\text{O}_3 (\%)$	All the same
Kr	$1.7 \times \text{SiO}_2 (\%) / \text{Al}_2\text{O}_3 (\%) + 0.7375 \text{Fe}_2\text{O}_3 (\%)$	All the same
Molecular relation $\text{Al}_2\text{O}_3 / \text{Fe}_2\text{O}_3$	$\text{Al}_2\text{O}_3 / \text{Fe}_2\text{O}_3 \times 1.57$	All the same
TiO2	Extraction: Hydrogen peroxide	All the same

SNLCS: Serviço Nacional de Levantamento e Conservação de Solos

CPATU: Centro de Pesquisa Agropecuária do Trópico Úmido,

IPEAN: Instituto de Pesquisa Agropecuária do Norte.

CES: Centro de Estudos de Solos da Escola Superior de Agricultura Luiz de Queiroz

SUDESUL: Superintendência do Desenvolvimento da Região Sul.

IDESP: Instituto do Desenvolvimento Econômico-Social do Pará.

Distribution: The data set may be freely used for non-commercial scientific and educational purposes, provided that the contents of this file are included with the redistribution, and it is attributed to the following source:

Bernoux M.; Cerri C.E.P.; Cerri C.C. 2003. Digital soil properties database of the Amazon part from the RADAMBRASIL project. Version 1, dated September 25th, 2003. 23 Files on CD.

Disclaimer: The authors bear no responsibility for the accuracy of the dataset. This dataset may contain errors and omissions that will correct in subsequent releases.