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Data description for the DANS project:

Disclosure of paleoecological datasets of IBED, FNWI, UvA

(NL titel: Ontsluiting van paleoecologische datasets van IBED, FNWI, UvA)

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Abstract:

The Paleoecology group of IBED has collected sediment cores in lakes and analyzed the samples for pollen during many decades, but the resulting data have not been digitized in a systematic way. Therefore a project was funded by DANS with the aim to archive data and at making them public domain. The focus of this project is on the large amounts of pollen data from South America, mainly Colombia. Metadata were collected from the publications, where necessary taxon names were adapted to modern nomenclature, all age models were fitted using the same methodology and data were entered in spreadsheets, together with the raw pollen counts. From these spreadsheets ASCII files were created (CSV-format) and archived on the DANS server (EASY, <u>https://easy.dans.knaw.nl/</u>). The data from 62 sediment cores were uploaded: 3 cores from Bolivia, 53 from Colombia, 1 from Ecuador, 1 from Guatemala, 1 from Mexico, and 3 from Peru. All these data are now in EASY and can be downloaded from there.

If you use the data from this database please reference this report as:

Van Boxel JH, Brandts EB, Flantua SGA, Grimm EC, Hooghiemstra H, Van Loon EE (2017). Data description for the DANS project: Disclosure of paleoecological datasets of IBED, FNWI, UvA. *Report of the Department Ecosystem and Landscape Dynamics, Institute for Biodiversity and Ecosystem Dynamics, University of Amsterdam.* 19 pp .

Van Boxel et al. (2017)



1. Introduction

Paleoecological datasets can be used to reconstruct the vegetation in the deep past, i.e. thousands of years back in time and in some cases even millions of years in the past (e.g. Torres et al., 2013). The vegetation composition provides information on the environment and climatic conditions in which the plants were growing can be inferred. Therefore these datasets can also be used for the reconstruction of past climates.

The paleoecology group of the Institute for Biodiversity and Ecosystem Dynamics (IBED) of the University of Amsterdam has collected sediment cores for six decades, mostly in Europe and in South America. From these cores samples were taken and analyzed for one or more proxies, like pollen grains, spores and lithology. Dating was often done by measuring radioactive carbon (¹⁴C dating) (Flantua et al., 2016). The long records, however, reach ages far beyond the maximum age that the radiocarbon method can accommodate (ca. 50 kyr before present). For these records orbital tuning was used to fit the observed peaks to the orbital record of climate change (e.g. Groot et al., 2011; Torres et al., 2013).

Large amounts of data were collected, but the data often remained in the archives of the researchers that had produced them. This practice produces a big risk of losing the data and moreover the data are not available to other researchers. To fuel new projects and research questions the data should be archived in a professional manner and they should be available to others. DANS gave us the opportunity to archive the data at their server and also provided funding for a project on which we could hire a junior researcher to do much of the work. The aim of this project was to collect and check the relevant data of 50 cores and to publish the data in the DANS archive (https://dans.knaw.nl/nl) in an orderly manner.

2. Methods

At the Department of Ecosystem and Landscape Dynamics (ELD) many paleoecological data were available, often already in digital form.

We designed a template in Excel to make sure that the data of all sediment cores considered were presented in the same way. The data of each core were copied in a separate spreadsheet. Since taxonomy has changed over the past 60 years, taxon names were adapted to the current (2017) taxonomy with the help of Eric Grimm of the University of Minnesota (US). He also recalculated the age models using the modern IntCal13 calibration curve (Reimer et al., 2013). However the age model, determined by the original data producers, was also maintained in the data files. For all cores the coordinates of the location where the core was collected were checked and when needed corrected. We also collected the original publications in which the sediment cores were described and the records presented. The references to these articles and to additional publications were also included in the spreadsheets as metadata (Table 1).



Site description	Persons & Publications	Other information
Site Name	Collectors	¹⁴ C dates (geochronology)
Latitude [°]	Researchers	Age models (chronologies)
Longitude [°]	Data processors	
Elevation [m]	Contact person	
Country		
Department	Publication(s)	Only if available:
Description		Lithology

Table 1: Most important metadata, chronology and other information.

The data were also copied into TILIA for a consistency check, especially to check whether taxon names were according to the current (2017) taxonomy. Entering the data in TILIA also made it possible to upload the data to the international Neotoma database (<u>https://www.neotomadb.org/;</u> Grim et al., 2013).

The Excel spreadsheets were converted to ASCII files in CSV format. For each record we produced at least three ASCII files: Metadata, Chronology, Pollen record. Most records also have a separate file describing the lithology. Table 2 describes how we named the data files.

Documen For exam	t name COU ple: COL_	NTRY_HANDLE-YEAR_TYPE.csv _AGUABLA1-1982_META.csv	(The Excel file has the extension .xlsx)
Codes:	COUNTRY	3-letter abbreviation of the country were the core was taken	BOL = Bolivia COL = Colombia ECU = Ecuador GUA = Guatemala MEX = México PER = Perú
	HANDLE	8 letter abbreviation for the core	Zie tabel 3
	YEAR	Year the core was collected	
	ТҮРЕ	Indication for the type of document	META = Metadata RAW = Pollen counts CHRON = Dating and chronologies LITH = Lithology (if available) Excel = The complete spreadsheet
NOTE:	CSV stands for separated by appear as pa	or Commas Separated Values. Howeve commas, as the name suggests, but b rt of a number.	r, the values in these files are not by semicolons because a comma can

Table 2: System for naming the data files

The ASCII data files will hopefully last forever. That is why all data have been stored in CSV format. These CSV files can be loaded into any spreadsheet program.

Many users of these data will indeed load these data into a spreadsheet in order to analyze them. Therefore we have also stored the Excel spreadsheets from which the CSV files were produced. These are already formatted in such a way that they are easily readable.



Country	HANDLE	Coring year	Location	Coor	dinates	Elevation [m]	Age range [cal yr BP]	Nr. of samples	References
BOL	CHALALAN	2003	Lake Chalalán	14,43 S	67,92 W	330	-53 - 16511	39	45
BOL	SANTAROS	2003	Lake Santa Rosa	14,48 S	67,87 W	350	5 - 16108	34	45
BOL	TITICACA	2001	Lake Titicaca	16,20 S	69,00 W	3810	0 - 210898	184	26 27 29 30 43
COL	AGUABLA1	1982	Páramo de Agua Blanca 1	4,99 N	74,16 W	3250	-32 - 383731	104	1 31 32 34 52
COL	AGUABLA2	1982	Paramo de Agua Blanca 2	4,99 N	74,16 W	3250	70 - 9197	20	35
COL	AGUABLA3	1982	Paramo de Agua Bianca 3	4,99 N	74,16 W	3250	20 - 8883	24	35
		1972		4,10 N	74,25 VV	3750	12/5-1/852	101	18 38 39
	BOOLULIA	1008	Boquillas	Q 12 N	74,55 W	20	1606 - 11/13	101	22 11 12
COL	CABOSOUE	1996	Laguna Carimagua-Bosque	4.59 N	71.33 W	180	-46 - 1032	27	11 12
COL	CAIMITO1	1997	Laguna El Caimito	2,45 N	77,69 W	50	-3 - 3806	119	46 60 62
COL	CARIMAGU	1996	Laguna Carimagua	4,59 N	71,33 W	180	1281 - 9218	41	7 13
COL	CHENEVO1	2000	Laguna Chenevo	4,59 N	71,44 W	150	-50 - 8172	37	11 14
COL	EL_PINAL	1996	Laguna El Piñal	4,66 N	71,45 W	180	969 - 21536	36	7
COL	ELPATIA1	2000	El Patía-1	2,01 N	77,12 W	580	-50 - 9513	84	58 59
COL	ELPATIA2	2000	El Patía-2	2,01 N	77,12 W	580	-50 - 8450	53	58 59
COL	FUQUENE2	1967	Laguna de Fúquene	5,46 N	73,75 W	2540	107 - 44474	102	17 28 56 57
COL	GENAGRA1	1996	Pantano de Genagra	2,47 N	76,60 W	1/30	58 - 52000	4/	5 64
COL	GOBERNAD	1973	Laguna Gobernador	3,95 N	74,30 W	3815	57 - 11488	86	18 38 39
COL		1972	Laguna La Guitarra	3,95 N	74,16 W	3450	544 - 18363	120	18 38 39
		2006		4,09 N	74,27 VV	2550	-51 - 3134	40	51 61
		1959	Valle de Lagunillas V	6 38 N	77,15 W	3931	-1 - 14759	71	21
		1959	Valle de Lagunillas VII	6 39 N	72,34 W	3922	No dates	11	24
COL	LAGUNIL8	1959	Valle de Lagunillas VIII	6.39 N	72,34 W	3923	609 - 10485	16	24
COL	LATETA-2	1997	La Teta-2	3,08 N	76,53 W	1020	-47 - 9936	39	11 15
COL	LG-ALSAC	1981	Laguna Negra de Alsacia	3,97 N	74,09 W	3100	3150 - 28378	79	38 39
COL	LG-ANGEL	1996	Laguna Angel	4,45 N	70,54 W	200	-46 - 11580	27	6
COL	LGCIEGA1	1967	Laguna Ciega I	6,47 N	72,39 W	3510	389 - 33827	78	54
COL	LGCIEGA3	1967	Laguna Ciega III	6,47 N	72,39 W	3510	496 - 33234	64	48
COL	LOMALIND	1996	Laguna Loma Linda	3,30 N	73,36 W	233	103 - 9856	67	8
COL	LOSBOBOS	1959	Laguna de los Bobos	6,22 N	72,76 W	3815	49 - 6583	22	47
COL	MARGARIT	1996	Laguna Las Margaritas	3,37 N	73,42 W	240	646 - 11186	190	63
COL	MONICA-1	1995	Pantano de Mónica 1	0,705	72,05 W	160	4804 - 14075	1/	10
COL	MONICA-2	1995	Pantano de Monica 2	0,715	72,06 W	112	-45 - 4499	21	10 11
	MOZAMBIO	2000	Laguna Mozambigue	2 05 N	72,00 W	175	-45 - 3542	19 51	
COL	PENANEG1	1982	Páramo de Peña Negra 1	5.07 N	73,05 W	3625	-27 - 16609	71	25
COL	PIAGUA-1	1997	Piagua	2.43 N	76.78 W	1700	-47 - 20370	121	62 64
COL	PIUSBI-1	1996	Laguna Piusbi	1,88 N	77,93 W	100	69 - 5625	57	9 46
COL	PLVERDE1	1982	Páramo de Laguna Verde 1	5,22 N	74,00 W	3647	21 - 6248	45	35
COL	POTRERI2	2000	Potrerillo-2	2,10 N	77,05 W	750	0 - 9273	47	25
COL	PRIMAVE1	1973	Laguna La Primavera 1	3,98 N	74,16 W	3547	19 - 8175	130	18 36 37
COL	PRIMAVE2	1981	Laguna La Primavera 2	3,98 N	74,16 W	3547	10521 - 13399	91	36 37 53
COL	PVARGAS1	1996	Pantano de Vargas 1	5,77 N	73,06 W	2488	2054 - 10177	119	23
COL	QUEBAMOR	?	Quebrada del Amor	0,60 S	72,40 W	381	-49 - 100	26	16
COL	QUILIC-1	1997	Quilichao-1	3,10 N	76,52 W	970	-43 - 14375	112	11 15
COL	RABONA-1	1972	Cuchilla La Rabona	4,00 N	74,25 W	4000	14-7283	29	18 38 39
COL	ROSAGRND	? 2	Rosarito Grande	4,89 N	75,21 W	3320	29907 - 43860	25	41 42 49
	SARDINAS	1996	Laguna Sardinas	4,90 N	69 53 W	80	-/6 - 13536	46	41 42 49
COL	TIMBIO-1	1997	Rio Timbio	2.36 N	76.70 W	1750	498 - 31289	71	62 64 65
COL	VBOCAT09	1959	Valle de la Bocatoma IX	6,37 N	72.33 W	4117	830 - 7548	18	24
COL	VBOCAT10	1959	Valle de la Bocatoma X	6,37 N	72.32 W	4288	No dates	4	24
COL	VBOCAT11	1959	Valle de la Bocatoma X	6,37 N	72,33 W	3998	No dates	9	24
COL	VISITADO	1958	Ciénaga del Visitador	6,18 N	72,80 W	3300	185 - 16532	46	50 61
ECU	MAXUS-S5	1994	Maxus Site 5	0,69 S	76,44 W	246	-44 - 71222	16	3 4
GUA	PETENITZ	2006	Lake Petén-Itzá	17,01 N	89,69 W	110	40 - 85408	445	19 20 22 33 40
MEX	LAGARTO2	2011	Ría Lagartos-2	21,58 N	88,07 W	2	8 - 3812	64	2
PER	REFUGIO1	2006	Lake Refugio 1	13,09 S	71,70 W	3401	-56 - 18894	31	44
PER	REFUGIO2	2006	Lake Refugio 2	13,10 S	71,71 W	3406	-56 - 18847	18	44
PER	REFUGIO3	2006	Lake Retugio 3	13.10 S	71.71 W	3404	-56 - 10572	6	44

Table 3: Overview	of the most	important i	metadata for ea	ch core (Age:	BP is before 1950).
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3. Pollen records in the database

The database contains the data of 62 records from Central America and South America, collected between 1957 and 2011. Most records (53) are from Colombia, where research of the Paleoecology group of IBED was focused. Additionally there were also three cores from Bolivia, one from Ecuador, one from Guatemala, one from Mexico and three from Peru (Table 3).

The number of samples taken along the sediment cores varies from 4 to 445 (Table 3). On average 64 samples were taken per core, and the total number of analyzed pollen samples amounts 3991. In total 1.8 million pollen grains and 2.4 million spores were identified (some were classified as unknown taxa). To give an idea of the investment in time (and research money) mostly 1 to 2 pollen samples are analyzed per day.

The map in Figure 1 shows the locations of the records uploaded in DANS.



Figure 1: Locations where the cores were collected. Red dots represent cores in Colombia and blue dots show cores in other countries. Some coring sites are so close together that they not show up as separate dots (map by Eric Grimm).



4. Data organization and data format

The data files reside in 6 folders, one for each country for which we have data: Bolivia, Colombia, Ecuador, Guatemala, Mexico and Peru. Within these folders there is one subfolder for each record. The naming of these subfolders is equivalent to that of the file names: that is COUNTRY_HANDLE_YEAR, where COUNTRY is the 3-letter abbreviation for the country, HANDLE is an 8-letter code for the record and YEAR is the year the sediment core was retrieved (also see Table 2). If the date of core collection is unknown 9999 is entered for the year. Each subfolder contains at least 4 files: the spreadsheet with all the information in an easily readable format and three ASCII files in CSV format for the metadata, the chronology and the pollen counts (Table 2, Figure 2). Most subfolders also contain an ASCII file in CSV format describing the lithology.

The Excel spreadsheets present the data in a readable format. The spreadsheets contain 5 worksheets titled: Metadata, Raw_data, Geochronology, Chronologies and Lithology. These will be described in more detail in the sub-sections below. However, the disadvantage of spreadsheets is that the way the data are represented internally varies for different spreadsheet programs and will also vary between different versions of the same program. LOTUS123, once the standard spreadsheet, is hardly used anymore. We had some difficulties reading old data from the LOTUS123 spreadsheets in the WK1 format. So it is well possible that in 10 or 20 years from now it will be difficult to read the spreadsheets we are using now.

This is the reason why the data are also stored as ASCII files. ASCII already existed long before spreadsheets were invented and ASCII files will probably continue to be used in the far future. The files are in CSV format, where CSV stand for Comma Separated Values. However, since commas can also be used as a decimal mark or as a thousand mark, it is inconvenient to use them to separate the values. Therefore, here the values in the CVS file are separated by semicolons (";") and not by commas. These CSV files can easily be imported into spreadsheets (also into other spreadsheets than Excel). In the CSV files the Geochronology and the Chronologies are combined into one file. So there are 4 CSV files per core or 3 if there is no information on the lithology.

Appendix 1a, 2a, 3a and 4a include screen shots showing what the data look like in the original Excel spreadsheet. Appendix 1b, 2b, 3b and 4b show what they look like as an ASCII file in CSV format and what they will look like when the CSV file is imported again into a spreadsheet. With some formatting the original layout can be restored.

Organize 🔻 🛛 Burn	New folder			•				
☆ Favorites	Name	Date modified	Туре	Size				
📃 Desktop 🗏	COL_AGUABLA1_1982_Excel	28-7-2017 10:49	Microsoft Excel Worksheet		73 KB			
鷆 Downloads 👘	🖾 COL_AGUABLA1-1982_CHRON	14-7-2017 15:21	Microsoft Excel Comma Separated Values File		5 KB			
🚹 Google Drive	🖳 COL_AGUABLA1-1982_LITH	1982_LITH 14-7-2017 15:21 Microsoft Excel Comma Separated Values Fi						
🖳 Recent Places	🖺 COL_AGUABLA1-1982_META	28-7-2017 10:49	Microsoft Excel Comma Separated Values File		4 KB			
😌 Dropbox 👻	COL_AGUABLA1-1982_RAW	14-7-2017 15:20	Microsoft Excel Comma Separated Values File		31 KB			

Figure 2: Typical content of a folder containing the data from one record.



5. Conclusion

A significant volume of unconsolidated paleoecological data has been saved and has been made public domain to serve new research and to fuel new research questions. The uploaded database now contains 62 palynological records from 6 countries in Latin America: Colombia, Mexico, Guatemala, Ecuador, Peru and Bolivia. 53 records are from Colombia. Storing these records at DANS safe guards many years of work and also makes the data available for other researchers. The metadata of all records have been checked, including coordinates and taxon names, and age models were recalibrated using the modern IntCal13 calibration curve. Also the original age model is retained in the data files.

Since the data were also entered in TILIA it is also possible to upload them to the international Neotoma database.

Finally, we are pleased to observe a change in opinion about the ownership of data produced with financial support from national funding agencies. For a long time such data have been considered as belonging to the private domain. Nowadays many palynologists are willing to make their data public domain. The DANS initiative is timely and important to save data, produced during tens of years of NWO and WOTRO funded research. The present project reflects a welcome start and deserves continuation.

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NOTE: Numbered references from Table 3 are in a separate list below.

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Appendix 1a: Excel worksheet Metadata

Α	B C	D	E	F	G	H	1	J	K
	METADATA								
_									
	Site description								
	Site Name:	Laguna De La Cocha				Country	:		Colombia
			-			Departn	nent:		Nariño
	Latitude:	1.12	2			Third Ge	op Division:		
	Longitude:	-//.15	5			Adminis	trative Unit:		
	Altitude (m):	2/80	U						
	Area of Site (ba)	4200	n			Laka Ba	amatara		
	Area of Site (na):	4200	U			Lake Pai	ameters:		
	Site Description:					Site Not	oc'		
	La Cocha lies in a tectori	ic "pull-apart" basin formed a	long the			Lake site	e includes large wetla	nd on n	orth end. Lake data derived
	Algeciras fault system. T	he lake lies in the Andean for	rest zone	with		from Du	aue-Truiillo, J., M. He	rmelin	and G.F. Toro. 2016. The
	frequent elements of W	einmannia, Alnus, Myrica, Sty	vloceras,			Guamué	z (La Cocha) Lake. In:	Landsc	apes and landforms of
	Podocarpus, Clusia, Myr	sine, Juglans, Ilex, and Hedyo	smum. To	oday		Colomb	ia, pp. 203-210 (M. He	rmelin	, ed.) World geomorphological
	most forest has bee rep	laced by pasture, meadows, a	nd agricu	Itural		landsca	oes. Springer, Cham, S	witzerl	and. DOI: 10.1007/978-3-319-
	fields. Forest remnants	are dominated by Ocotea guia	anensis a	nd		11800-0	_17.		
	Weinmannia pubescens	. The shrubs Miconia harlineii	i and Mico	onia sp.					
	along with the ferns Asc	otrichyum arborium, Polypod	lium, Ant	hurium					
	and Cavendishia.								
	Collection Unit								
	Handle:	Collection Unit Type:				Collecti	on Unit Name:		
	LACOCHA3	Core				C-3			
	Collection Device:					Collecto	rs:		
	Russian corer (7 cm diam	neter)				Berrío N	logollón, J.C.; Gonzále	z-Carra	inza, Z.
	Location in Site:					Date Co	llected:		
						May 200	6		
	GPS Coordinates		Er	ror (m):		Deposit	ional Environment:		
	Latitude:	1.145	5			Lake Ma	rginal Fen		
	Longitude:	-77.160	<u>0</u>			Substrat	e:		
-	Altitude (m):					-			
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	Callection Unit Natas					Mater D		-	
	Conection Unit Notes:	land on the north and of Lag	ian Do La	Cocho		water D	epth (m):	-	
	Core is from a large we	liand on the north end of Lag		a cocna.					
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	Dataset								
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	Pollen inventory								
	Dataset Name:								
	Investigators:								
	Epping, I; González-Carr	anza, Z.							
	Publications:								
	Epping 2009								
	Dataset Notes:					Data Pro	cessors:		
						Grimm,	E.C.		
	Publications								
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	Publications Primary Pub	lication ing, I. 2009. Environmental ch	ange in ti	he Colomi	bian upper	forest be	t. Master's thesis. Uni	iversity	of Amsterdam, Amsterdam,



Appendix 1b: Metadata as a CSV file

						The	e imag	ge to	the	left sł	nows	wha	t					
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agricultural fields. Forest remnants a	re dor	inated by 0	cotea g	juiane	nsis	lon	ger te	exts.										
ferns Ascotrichyum arborium, Polypodiu	n, Ant	hurium and	Cavend:	ishia.	";;;;;													
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Appendix 2a: Excel worksheet Raw_data

	Δ	В	С	D	F	F	G	н	1	1	K	
1		pollen		Der	oth (cm)	1	3	5	7	9	11	13
2	Code	Name	Element	Units	Group	_						
3	#Chron1	Clam best age				-23	-13	-3	6	16	26	35
4	#Chron1 Young	Clam min age				-84	-79	-73	-68	-64	-59	-54
5	#Chron1 Old	Clam max age				18	30	42	55	68	80	93
6	#Chron2	Clam best age				100	106	111	116	121	127	132
7	#Chron2 Young	Clam min age				-181	-170	-159	-148	-137	-126	-115
8	#Chron2 Old	Clam max age				277	278	280	282	283	284	285
9	#Chron3	Bacon weighted mean age	PREFERRED			-51	-41	-31	-20	-10	1	11
10	#Chron3 Young	Bacon min age				-57	-57	-56	-56	-55	-52	-49
11	#Chron3 Old	Bacon max age				-41	-11	19	49	79	98	105
12	#Anal Thick	Analysis Unit Thickness				1	1	1	1	1	1	1
13	#Samp Analyst	Sample Analyst				Foning I						
14	samp quant	Sample quantity	volume	ml	LABO	1	1	1	1	1	1	1
15	Lyc tab	Lycopodium tablets	quantity added	number	LABO	1	1	- 1	1	- 1	- 1	- 1
16	Lyc tab	Lycopodium tablets	concentration	grains/tablet	LABO	12542	12542	12542	12542	12542	12542	12542
17	Lyc spik	Lycopodium spike	counted	number	LABO	366	142	180	214	116	204	127
18	Areeae ud	Arecaceae undiff	nollen	NISP	PALM	0000	0	100		0		
19	Cev-t	Ceroxylon-type	nollen	NISP	PALM	0	0	0	0	0	0	0
20	Alc	Alchornea	pollen	NISP	TRSH	0	0	0	0	0	0	0
21	Ahr	Alchorneopsis	pollen	NISP	TRSH	0	0	0	0	0	0	0
22	Aln	Alnus	pollen	NISP	TRSH	0	0	0	1	0	0	0
23	Anaeae	Anacardiaceae	pollen	NISP	TRSH	0	0	0	- 0	0	0	0
24	Bigeae	Bignoniaceae	pollen	NISP	TRSH	0	0	0	0	0	0	0
25	Brl-t	Brunellia-type	pollen	NISP	TRSH	0	0	0	0	0	0	0
26	Clseae	Celastraceae	pollen	NISP	TRSH	0	0	0	0	0	0	0
27	Cle	Clethra	pollen	NISP	TRSH	1	0	0	0	0	0	0
28	Clu-t	Clusia-type	pollen	NISP	TRSH	0	0	0	0	0	0	0
29	Frceae	Fricaceae	pollen	NISP	TRSH	2	16	8	5	3	5	5
30	Gaa	Gaiadendron	pollen	NISP	TRSH	0	0	0	0	0	0	0
31	Hdm	Hedvosmum	pollen	NISP	TRSH	5	11	14	3	7	11	4
32	llx	llex	pollen	NISP	TRSH	0	0	0	0	0	0	0
33	Mlaeae.ud	Melastomataceae undiff.	pollen	NISP	TRSH	- 6	11	8	14	11	3	11
34	Mco	Miconia	pollen	NISP	TRSH	23	35	29	32	68	22	67
35	Myr	Myrica	pollen	NISP	TRSH	56	21	50	53	52	54	53
36	Mrs	Myrsine	pollen	NISP	TRSH	0	0	0	0	0	0	0
37	Pre-t	Pera-type	pollen	NISP	TRSH	0	0	0	0	0	0	0
38	Pod	Podocarpus	pollen	NISP	TRSH	1	- 5	3	1	1	2	0
39	Prieae.sf.Mrsdae.ud	Primulaceae subf. Myrsinoideae undiff.	pollen	NISP	TRSH	1	0	1	2	0	0	0
40	Psv	Psychotria	pollen	NISP	TRSH	13	6	4	7	3	7	8
41	Oue	Ouercus	pollen	NISP	TRSH	0	0	0	. 0	0	. 0	0
42	Rubeae.ud	Rubiaceae undiff.	pollen	NISP	TRSH	0	0	0	0	0	0	0
43	Spm	Sapium	pollen	NISP	TRSH	0	0	0	0	0	0	0
44	Svp	Symplocos	pollen	NISP	TRSH	1	2	3	2	0	0	0
45	Urteae/Moreae	Urticaceae/Moraceae	pollen	NISP	TRSH	3	2	10	2	3	0	2
46	VII	Vallea	pollen	NISP	TRSH	1	0	0	0	0	0	0
47	Vib	Viburnum	pollen	NISP	TRSH	0	0	0	0	0	0	0
48	Wei	Weinmannia	pollen	NISP	TRSH	4	12	13	12	11	4	15
49	Acv	Acalypha	pollen	NISP	UPHE	0	1	3	3	3	0	0
50	Amaeae	Amaranthaceae	pollen	NISP	UPHE	0	0	0	0	0	0	0
51	Amreae	Amaryllidaceae	pollen	NISP	UPHE	1	1	0	0	0	0	0
52	Atu	Anthurium	pollen	NISP	UPHE	3	4	2	3	0	0	2
53	Apieae	Apiaceae	pollen	NISP	UPHE	0	0	0	0	0	0	0
54	Apoeae	Apocynaceae	pollen	NISP	UPHE	0	0	0	0	0	0	0
CC.	Actors of Actors	Actoração subf. Actoroidaza	nollon	NICD	LIDUE	71	100	117	110	11/	195	112
14 -	🔹 🕨 Metadata 📜	raw_data / geochronology / chrono	logiés 🦯 litholog	<u>y (🖓 / </u>								

The first row lists the depths at which the samples were taken.

The second row only has the column headers for columns A-E.

Then follow the ages as determined by the different chronologies. In this example the third chronology is considered the preferred chronology (as indicated).

After a few rows on the Sample Analyst and the added lycopodium tablets follow the pollen counts. There are much more rows below and columns to the right, which are not shown in the screenshot.

Note: When summing the total number of pollen grains and spores that were identified, the rows "*Sample quantity*" up to "*Lycopodium spike*" were not included.



Appendix 2b: Raw data as a CSV file

		The image to the left shows						;							
Lister - [H:_2017_DANS_ArchiveringPollen	Data\DA	NS-	-2017_Up	oloadFolder\(Colombi	a\COL_L	ACOCHA	A 😐	the	e CSV	file f	or th	e rav	v data	э.
File Edit Options Help pollen;;Depth (cm):::1:3:5:7:9	;11:13	;1'	5;17:1	9;21:23:2	5:27:	29:31:	33:35	;37:39	,						
Code;Name;Element;Units;Group;	,, ,,,,,,	;;;	16-26-	;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;	63.73		;;;;;; •100-	100-11	Th	a ima	a ha	سماه	is wł	nat it	
#Chron1.Young;Clam min age;;;;-	-84;-7	9;-	-73;-6	8;-64;-59	;-54;	-49;-4	, 100, 14;-39	;-34;-		z mio ko lik	ige Di			acit	the
#Chron1.UId;Clam max age;;;;18; #Chron2;Clam best age;;;;100;10	;30;42 06;111	;5: ;1:	>;68;8 16;121	0;93;105; ;127;132;	117;1	29;142 42;147	;153; ;153;	165;1/	⁶ CSV file into a correct heart in						
#Chron2.Young;Clam min age;;;; #Chron2 Old:Clam max age:::277	;Clam min áge;;;;-181;-170;-159;-148;-137;-126;-115;-105; lam max age:277:278:280:282:283:284:285:287:288:280:20										into	a spr	eads	neet.	In
#Chron3;Bacon weighted mean age	;PREF	ERI	RED;;;	-51;-41;-	31;-2	0;-10;	1;11;	21;31;	orc	ler to	b be a	ble t	o rea	id the	<u>۽</u>
#Chron3.Young;Bacon min age;;;; #Chron3.Old;Bacon max age:;;;-4	;-57;-! +1:-11	57) ;19	;-56;- 7:49:7	56;-55;-5 9:98:105:	2;-49	;-46;- 24:139	·44;-4):151:	2;-38; 156;16	full	taxo	on na	mes	one v	vould	1
#Anal.Thick;Analysis Unit Thick	(ness;	;;	;1;1;1	;1;1;1;1;1;	1;1;1	;1;1;1	;1;1;	1;1;1;	hav	ve to	wide	n co	lumn	В.	
samp.quant;Sample quantity;volu	;;Eppi Jme;ml	ng ;Lí	, 1.;E ABO;1;	pping, i. 1;1;1;1;1;1	;Epp1 ;1;1;	ng, 1. 1;1;1;	;Epp1 ;1;1;1	.ng, 1. ;1;1;1							
Lyc.tab;Lycopodium tablets;quar	ntity - centra	ade Fin	ied;nu	mber;LABO ins/table	;1;1; +- AB	1;1;1; n-1254	1;1;1	;1;1;1;1 42-125	ц <u>,,,,</u> ,						
Lyc.spik;Lycopodium spike;count	ted;nu	mbe	er;LAB	0;366;142	;180;	214;11	6;204	;127;1	95;22						
Areeae.ud;Arecaceae undiff.;po] Ceu-t:Ceroxulon-tupe:pollen:NIS	Llen;N SP:PAL	ISH M:U	P;PALM 0:0:0:	;0;0;0;0;0; 0:0:0:0:0	0;0;0):1:0:	;0;0;0;0 0:1:0:);0;0; 0:0:2	0;0;0; :2:0:0	;0;0;0):0:0:						
Alc;Alchornea;pollen;NISP;TRSH;	;0;0;0	;0	;0;0;0	;0;0;1;2;	0;0;0	;1;0;0);0;0;	0;0;0;	0;0;0						
Aln;Alnus;pollen;NISP;TRSH;0;0;	;0;1;0	;0 ;0	, 0, 0, 0 , 0, 0, 0	;0;0;0;0;0; ;0;0;0;0;0;	0;0;0 0;0;0	;0;0;0;0 ;0;0;0);0;0;);0;0;	0;0;0;0; 0;0;0;	0;0;0 0;0;0						
Anaeae;Anacardiaceae;pollen;NIS	SP;TRS	H;	0;0;0;	0;0;0;0;0;0);0;0;	0;0;0;	0;0;0	;0;0;0);0;1; 0.0.0						
Brl-t;Brunellia-type;pollen;NIS	SP;TRS	, U H ; I	, 0, 0, 0 0; 0; 0;	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	0,0,0);0;0;	0;0;0;0;	0;0;0;0	0,0,0,0, 1,0,0,0	, u, u, u); 0; 0;						
Clseae;Celastraceae;pollen;NISF Cle:Clethra:pollen:NISP:TRSH:1;	?;TRSH מ:מ:מ:מ	; 0 0	;0;0;0 :0:0:0	;0;0;0;0;0;	0;0;0 0:0:0	;0;0;0;0);0;0;):0:0:	0;0;0; 0:0:0:	0;0;0						
Clu-t;Clusia-type;pollen;NISP;1	e;Clethra;pollen;NISP;TRSH;1;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;														
Erceae;Ericaceae;pollen;NISP;TF Gaa;Gaiadendron;pollen;NISP;TRS	RSH;2; SH:0; m	16	;8;5;3	;5;5;3;4;	6;1;3	;3;12;	9;5;5	;8;13;	5;5;2						
Hdm;Hedyosmum;pollen;NISP;TRSH;	;5;11	1	A pollen	В	C Depth (cn	D ()	E	F 1	G 3	н 5	1	J 9	к 11	L 13	M 15
Mlaeae.ud;Melastomataceae undif	0;0;0 Ff.;p	2	Code #Chron1	Name Clam best age	Element	Units	Group	-23	-13	-3	6	16	26	35	45
Mco;Miconia;pollen;NISP;TRSH;23	3;35;	4	#Chron1.\	Clam min age				-84	-79	-73	-68	-64	-59	-54	-49
Mrs;Myrsine;pollen;NISP;TRSH;0;	;0;0;	6	#Chron1.0 #Chron2	Clam best age				100	106	111	116	121	127	132	105
Pre-t;Pera-type;pollen;NISP;TRS Pod:Podocarnus:nollen:NISP:TRS	SH;0; 1:1:5	7 8	#Chron2.1 #Chron2.0	Clam min age Clam max age				-181 277	-170 278	-159 280	-148 282	-137 283	-126 284	-115 285	-105 287
Prieae.sf.Mrsdae.ud;Primulaceae	e sub	9 10	#Chron3	Bacon weighted	PREFERRE	D		-51	-41	-31	-20	-10	-52	11	21
Psy;Psychotria;pollen;NISP;TRSH Que;Quercus;pollen;NISP;TRSH;0:	1,13,	11	#Chron3.0	Bacon max age				-41	-11	19	49	79	98	105	113
Rubeae.ud;Rubiaceae undiff.;pol	llen;	12 13	#Anal.Thio #Samp.An	Analysis Unit Th Sample Analyst	ickness			1 Epping, I.	1 Epping, I.	1 Epping, I.	1 Epping, I.	1 Epping, I.	1 Epping, I.	1 Epping, I. F	1 Epping, I. Epp
Syp;Symplocos;pollen;NISP;TRSH;	;1;2;	14 15	samp.qua Lyc.tab	Sample quantit Lycopodium tab	volume quantity :	ml number	LABO LABO	1	1	1	1	1	1	1	1
Urteae/Moreae;Urticaceae/Morace	eae;p	16	Lyc.tab	Lycopodium tab	concentra	grains/tal	LABO	12542	12542	12542	12542	12542	12542	12542	12542 1
Vib;Viburnum;pollen;NISP;TRSH;(0;0;0	18	Areeae.ue	Arecaceae undi	pollen	NISP	PALM	0	0	0	0	0	0	0	0
Wei;Weinmannia;pollen;NISP;TRSF Acu:Acalupha:pollen:NISP:UPHE:(1;4;1 9:1:3	19 20	Cey-t Alc	Ceroxylon-type Alchornea	pollen pollen	NISP	PALM TRSH	0	0	0	0	0	0	0	0
Amaeae;Amaranthaceae;pollen;NIS	SP;UP	21 22	Ahr Aln	Alchorneopsis Alnus	pollen pollen	NISP NISP	TRSH TRSH	0	0	0	0	0	0	0	0
Atu;Anthurium;pollen;NISP;UPHE;	;3;4;	23	Anaeae	Anacardiaceae	pollen	NISP	TRSH	0	0	0	0	0	0	0	0
Apieae;Apiaceae;pollen;NISP;UP	IE;0;	25	Brl-t	Brunellia-type	pollen	NISP	TRSH	0	0	0	0	0	0	0	0
Asteae.sf.Astdae;Asteraceae sut	of. A:	26 27	Clseae Cle	Celastraceae Clethra	pollen pollen	NISP	TRSH TRSH	0	0	0	0	0	0	0	0
Asteae.sf.Cchdae;Asteraceae sub Brr;Borreria;pollen;NISP;UPHE;	0F. C: 0;0;0	28 29	Clu-t Erceae	Clusia-type Ericaceae	pollen pollen	NISP NISP	TRSH TRSH	0	0	0	0	0	0	0	0
Braeae;Brassicaceae;pollen;NISF	°;UPH	30	Gaa	Gaiadendron	pollen	NISP	TRSH	0	0	0	0	0	0	0	1
		32	llx	llex	pollen	NISP	TRSH	0	0	0	0	0	0	0	0
		33 34	Mlaeae.u Mco	Melastomatace Miconia	pollen pollen	NISP	TRSH	23	11 35	8 29	14 32	11 68	3 22	11 67	6 36
	-	35 36	Myr Mrs	Myrica Myrsine	pollen pollen	NISP	TRSH TRSH	56	21	50 0	53	52 0	54 0	53	100
		37 38	Pre-t Pod	Pera-type Podocarous	pollen	NISP	TRSH TRSH	0	0	0	0	0	0	0	0
		39	Prieae.sf.	Primulaceae su	pollen	NISP	TRSH	1	0	1	2	0	0	0	1
		40 41	Psy Que	Psychotria Quercus	pollen pollen	NISP	TRSH	13	6	4	0	3	0	8	8
		42 43	Rubeae.u Spm	Rubiaceae undi Sapium	pollen pollen	NISP	TRSH TRSH	0	0	0	0	0	0	0	0
		44 45	Syp Urteae/M	Symplocos Urticaceae/Mo	pollen	NISP	TRSH TRSH	1	2	3	2	0	0	0	1
		46	VII	Vallea	pollen	NISP	TRSH	1	0	0	0	0	0	0	0
		47 48	Wei	Viburnum Weinmannia	poilen pollen	NISP	TRSH	0	0	0 13	0	0	0	0 15	9
		49 50	Acy Amaeae	Acalypha Amaranthacea	pollen pollen	NISP	UPHE	0	1	3	3	3	0	0	4
		51 52	Amreae Atu	Amaryllidaceae Anthurium	pollen	NISP	UPHE	1	1	0	0	0	0	0	0
		53	Apieae	Apiaceae	pollen	NISP	UPHE	0	0	0	0	0	0	0	0
	-	54 55	Apoeae Asteae.sf	Apocynaceae Asteraceae sub	pollen pollen	NISP	UPHE	0 71	0 120	0 117	0 118	0 114	0 135	0 112	0 118
		56 57	Asteae.sf Brr	Asteraceae sub Borreria	pollen pollen	NISP	UPHE	0	2	0	1	0	1	0	1
		58	Braeae	Brassicaceae	pollen	NISP	UPHE	0	1	0	0	0	0	1	0

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Appendix 3a: Excel worksheets Geochronology and Chronologies

In the ASCII files both the worksheet "*Geochronology*" and "*Chronologies*" appear in the CSV files marked by the abbreviation CHRON.

The worksheet "*Geochronology*" specifies the radio carbon dates (in radiocarbon years) as they were determined in the lab by ¹⁴C dating. The worksheet "*Chronologies*" specifies which dates were actually used in the different chronologies.

1	Α	В	С	D	E	F	G	н	l. I	J	К	L	М	N
1		GEOCHRONO	DLOGY											
2														
3		Investigators	: Epping, I.; González-Ca	rranza, Z.	Notes:									
4														
5														
6		Method	Age Units	Depth (cm)	Thickness (cm)	Lab Number	Age	SD	Params	Material Dated	Publication	Notes		
7		Carbon-14	Radiocarbon years BP	35	1	GrA-35558	220	30	Method:AMS	bulk sediment				
8		Carbon-14	Radiocarbon years BP	122	1	GrA-40162	370	30	Method:AMS	bulk sediment				
9		Carbon-14	Radiocarbon years BP	270	1	GrA-35562	1685	35	Method:AMS	bulk sediment				
10		Carbon-14	Radiocarbon years BP	830	1	GrA-35560	7640	40	Method:AMS	bulk sediment				
11		Carbon-14	Radiocarbon years BP	1046	1	GrA-35561	11760	50	Method:AMS	bulk sediment		Date not i	n Epping (2	2009).
12														
13														
14 4	► ►	Metadata	raw data geochr	onology 🦯	chronologies /	lithology /	*] /						[] ◀ []	

A	В	С	D	E	F	G	н	1	J	К	L	М	N
1	CHRONOL	DGIES											
2	Chron. No.	Name	Age Units	Default	Age Model	Older Bound	Younger Bound	Preparers	Date Prepared	Notes			
4	1	LAPD 1	Cal. radiocarbon years BP		clam	2700	-30	Blaauw, M.		This chronology subm	itted with the data by Z	. González	2-Carranza
5		Depth (cm)	Thickness (cm)	Age Units	Age	Older Limit	Younger Limit	Age Basis	Cal Curve	Cal Program	Geochronology Links	Notes	
6		0	1	Calendar	-56	-46	-66	Core top					
7		35	1	Radiocarbon	220	250	190	Radiocarbon			{GrA-35558;220}		
8		122	1	Radiocarbon	370	400	340	Radiocarbon			{GrA-40162;370}		
9		270	1	Radiocarbon	1685	1720	1650	Radiocarbon			{GrA-35562;1685}		
10		830	1	Radiocarbon	7640	7680	7600	Radiocarbon			{GrA-35560;7640}		
11		1046	1	Radiocarbon	11760	11810	11710	Radiocarbon			{GrA-35561;11760}		
12													
13													
14	2	Flantua et al. 2016	Cal. radiocarbon years BP		clam	2610	100	Blaauw, M.	9-10-2015	Note: Dangerous extr	apolation downward. U	nreliable a	ages. Calib
15		Depth (cm)	Thickness (cm)	Age Units	Age	Older Limit	Younger Limit	Age Basis	Cal Curve	Cal Program	Geochronology Links	Notes	
16		35	1	Radiocarbon	220	250	190	Radiocarbon			{GrA-35558;220}		
17		122	1	Radiocarbon	370	400	340	Radiocarbon			{GrA-40162;370}		
18		270	1	Radiocarbon	1685	1720	1650	Radiocarbon			{GrA-35562;1685}		
19													
20													
21	3	DANS 1	Cal. radiocarbon years BP		Bacon	3140	-60	Grimm, E.C.	25-4-2017	Based on IntCal13 cali	bration curve.		
22		Depth (cm)	Thickness (cm)	Age Units	Age	Older Limit	Younger Limit	Age Basis	Cal Curve	Cal Program	Geochronology Links	Notes	
23		0	1	Calendar	-56	-55	-57	Core top					
24		35	1	Radiocarbon	220	250	190	Radiocarbon			{GrA-35558;220}		
25		122	1	Radiocarbon	370	400	340	Radiocarbon			{GrA-40162;370}		
26		270	1	Radiocarbon	1685	1720	1650	Radiocarbon			{GrA-35562;1685}		
27		830	1	Radiocarbon	7640	7680	7600	Radiocarbon			{GrA-35560;7640}		
28													
29													
30													
31													
32													
	Metadata	/ raw_data / geod	hronology chronologies	Ithology 2	2/								

In this example there are three chronologies.

- 1. The chronology by Maarten Blauw, which was submitted with the data by Z. Gonzalez.
- 2. Apparently Flantua et al. (2016) found the last two dates not reliable and fitted a new age model (also with the help of Maarten Blauw).
- 3. Eric Grimm considered the long downward extrapolation risky and included the ¹⁴C date at depth 830 cm and also inserted a date for the core top.

The latter chronology was considered the most reliable and was indicated as "PREFERRED" in the worksheet "Raw_data".





Appendix 3a: Geochronology and Chronologies as a CSV file

Lictor														all and a state of the state of		642
Lister	- [H:_2017_	DANS_Arch	niveringPol	lenData\D/	ANS-2017_U	JploadFold	er\Colomb	ia\COL_LA	COCHA3_20	06\COL_LA	сосназ-:	2006_CHR0	ON.csv]	U		~
le <u>E</u> di	t <u>O</u> ptions	<u>H</u> elp														100 <u>%</u>
GEOCH	RONOLOGY		;;;;;;;;													
;;;;; Inves	;;;;;;;;; tinators	; ::"Enni:	na. I.:	Gonz le	z-Carra	nza. 7.'	"::Note									
	:::::::::	., cppr: ;	ı g ,,	00112 10	2 04114		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,									
;;;;;	;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;	;														
letho	d;Age Un:	Íts;Dep	th (cm);	Thickne	ss (cm)	;Lab Nu	nber;Ag	e;SD;Pai	rams;Mate	erial Da	ted;Pul	blicatio	on;Note:	5;;;;		
Carbo	n–14;Rad:	iocarbo	n years	BP;35;1	;GrA-35	558;220	;30;Metl	hod:AMS	;bulk se	diment;;	;;;;					
Carbo	n-14;Rad	iocarbo	n years	BP;122;	1;GrA-4	0162;37	0;30;Me	thod:AM	S;bulk s	ediment;	;;;;;					
Carbo	n-14;Rad	iocarboı	n years	BP;270;	1;GrA-3	5562;16	85;35;M	ethod:Al	MS;bulk :	sediment	;;;;;;					
Carbo	n-14;Rad	iocarboı	n years	BP;830;	1;GrA-3	5560;76	40;40;M	ethod:Al	MS;bulk :	sediment	;;;;;;					
Carbo	n-14;Rad	iocarbo	n years	BP;1046	;1;GrA-	35561;1	1760;50	;Method	:AMS;bull	k sedime	nt;;Dai	te not i	in Eppin	ng (201	09).;;;;	;
;;;;;	;;;;;;;;;	;														
;;;;	;;;;;;;;;	;														
CHRON	OLOGIES;	;;;;;;;;	;;;;;;													
,,,,,	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	;										-				
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1;LHP	V 1;6al.	rauloca	aroon ye	ars Br;	;0140;2	700;-30	;BIAAUW	, ";;!!	nis chro	norogy s		eu with	cne ua	ca uy a	C. GONZ	Tez-
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Appendix 4a: Excel worksheet Lithology

In the ASCII data the worksheet "Lithology" will be in the CSV file marked ad "LITH". This a mostly brief description of the lithology of the core as it was observed (see example below). This description is usually made when the core is laid out in the lab.

Most cores have a lithological description, but for some cores this description is missing.

	А	В	С	D	E	F	G	Н	1	J	К
1		LITHOLOGY									
2											
3		Top (cm)	Bottom (cm)	Description							
4		0	50	Dark-brown peat, compact, wiht abundar	nt roots an	d some da	rk fragme	nts (charco	al?)		
5		50	100	Dark-brown clay with abundant roots.							
6		100	150	Dark-brown organic mud, not very compa	act at the t	op and mi	ddle. Junc	us fragmer	nts near th	e bottom.	
7		150	190	Dark-brown peat, abundant plant fragme	ents.						
8		190	225	Black peat.							
9		225	525	Dark brown peat with abundant roots and	d plant ma	crofossil r	emains. W	ood at 425	-500 cm.		
10		525	560	Light brown clayey peat.							
11		560	562	Gray sand.							
12		562	700	Brown-reddish peat, compact							
13		700	705	Clayey peat.							
14		705	800	Brown-reddish peat with wood, transitio	ning to bla	ick peat					
15		800	1000	Dark-brown to black peat, abundant plan	t material						
16		1000	1050	Black peat transitioning to reddish peat v	vith roots,	compact.					
17											
14 4	► H	Metadata / raw data	aeochronoloay chron	ologies lithology							

Appendix 4b: Lithology as a CSV file

;LI1 ;;; ;Top ;0;5 ;50; ;100 ;150 ;190 ;225 ;525 ;525	(HOLOGY) (cm); (0;Dark (100;Da);150;D);190;D);225;B (;525;D (;560;L);560;L	stions <u>H</u> elp ;; -brown p rk-brown vark-brow vark-brow lack pea ark brow ight brow ight brow	cm);Desc eat, com clay wi n organi n peat, t. m peat w wn claye	ription mpact, wi th abund cc mud, n abundant with abun y peat.	ht abunda ant roots ot very o plant fo dant root	ant root s. compact ragments ts and p	s and so at the t lant mac	me dark op and m rofossil	fragments hiddle. Jun L remains.	100 ½ (charcoal?) cus fragments near the bottom. Wood at 425-500 cm.
;562 ;700 ;709 ;800 ;100 ;;;	2;700;8 3;705;C 5;800;8 3;1000; 30;1050	rown-red layey pe rown-red Dark-bro ;Black p	dish pea at. dish pea wn to bl eat tran	nt, compa nt with w .ack peat nsitionin	ct ood, trai , abundai g to redo	nsitioni nt plant dish pea	ng to bl materia t with r	ack peat 1. oots, co	: ompact.	The image above shows what the CSV file for the lithology looks like. Below is what it looks like
4	٨	D	6	D	E	E	G	ц		when you import it into a
	A	В		U	E	F	G	н		mien you import it into u
1		LITHOLOG	Y							chroadchaot
1		LITHOLOG	Y							spreadsheet.
L 2 3		LITHOLOG	Y Bottom (c	Descriptio	'n					spreadsheet.
2 2 3		LITHOLOG Top (cm) 0	Y Bottom (c 50	Descriptio Dark-brow	n /n peat, cor	mpact, wih	it abundan	t roots an	d some dark fr	spreadsheet.
1 2 3 1 5		LITHOLOG Top (cm) 0 50	Y Bottom (c 50 100	Descriptio Dark-brow Dark-brow	n /n peat, cor /n clay with	mpact, wih 1 abundani	it abundan t roots.	t roots an	d some dark fr	ragments (charcoal?)
L 2 2 3 4 5		LITHOLOG Top (cm) 0 50 100	Y Bottom (c 50 100 150	Descriptio Dark-brow Dark-brow Dark-brow	n /n peat, cor /n clay with /n organic r	mpact, wih 1 abundan1 nud, not v	it abundan t roots. ery compa	t roots and	d some dark fr	spreadsheet. ragments (charcoal?) c. Juncus fragments near the bottom.
L 2 2 3 4 5 5 7		LITHOLOG Top (cm) 0 50 100 150	Y Bottom (c 50 100 150 190	Descriptio Dark-brow Dark-brow Dark-brow Dark-brow Dark-brow	n /n peat, cor /n clay with /n organic r /n peat, abu	mpact, wih 1 abundant 1 ud, not v undant pla	t abundan t roots. ery compa int fragme	t roots and ct at the to nts.	d some dark fr op and middle	spreadsheet. ragments (charcoal?) 2. Juncus fragments near the bottom.
L 2 3 3 5 5 7 3		LITHOLOG Top (cm) 0 50 100 150 190	Y Bottom (c 50 100 150 190 225	Descriptio Dark-brow Dark-brow Dark-brow Dark-brow Black peat	n vn peat, cor vn clay with vn organic r vn peat, abu	mpact, wih 1 abundan1 mud, not v undant pla	it abundan t roots. ery compa nt fragme	t roots and ct at the to nts.	d some dark fr	spreadsheet. ragments (charcoal?) 2. Juncus fragments near the bottom.
L 2 2 3 3 5 5 7 3 9		LITHOLOG Top (cm) 0 50 100 150 190 225	Y Bottom (c 50 100 150 190 225 525	Descriptio Dark-brow Dark-brow Dark-brow Dark-brow Black peat Dark brow	n vn peat, cor vn clay with vn organic r vn peat, abu :. n peat with	mpact, wih a abundant mud, not v undant pla h abundan	it abundan t roots. ery compa nt fragme t roots anc	it roots and ct at the to nts. I plant mag	d some dark fr op and middle crofossil rema	spreadsheet. ragments (charcoal?) a. Juncus fragments near the bottom. ins. Wood at 425-500 cm.
1 2 3 4 5 5 7 3 9 .0		LITHOLOG Top (cm) 0 50 100 150 190 225 525	Y Bottom (c 50 100 150 190 225 525 560	Descriptio Dark-brow Dark-brow Dark-brow Dark-brow Black peat Dark brow Light brow	n yn peat, cor yn clay with yn organic r yn peat, abu c. yn peat with yn clayey pe	mpact, wih a abundant mud, not v undant pla h abundan eat.	it abundan t roots. ery compa int fragme t roots and	t roots and ct at the to nts. I plant mad	d some dark fr op and middle crofossil rema	spreadsheet. ragments (charcoal?) e. Juncus fragments near the bottom. ins. Wood at 425-500 cm.
1 2 3 4 5 5 7 3 3 9 .0 .1		LITHOLOG Top (cm) 0 50 100 150 190 225 525 560	Y Bottom (c 50 100 150 190 225 525 560 562	Descriptio Dark-brow Dark-brow Dark-brow Dark-brow Black peat Dark brow Light brow Gray sand.	n yn peat, cor yn clay with yn organic r yn peat, abu :. yn peat with yn clayey pe	mpact, wih n abundant mud, not v undant pla h abundan eat.	it abundan t roots. ery compa nt fragme t roots anc	t roots and ct at the to nts. I plant mad	d some dark fr op and middle crofossil rema	spreadsheet. ragments (charcoal?) e. Juncus fragments near the bottom. ins. Wood at 425-500 cm.
1 2 3 3 5 5 5 7 3 9 0 1 1 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1		LITHOLOG Top (cm) 0 50 100 150 190 225 525 560 562	Y Bottom (c 50 100 150 190 225 525 560 562 700	Descriptio Dark-brow Dark-brow Dark-brow Black peat Dark brow Light brow Gray sand. Brown-rec	n n peat, cor n clay with n organic r n peat, abu n peat, abu n peat with n clayey p ddish peat,	mpact, wih n abundant mud, not v undant pla h abundan eat. compact	it abundan t roots. ery compa int fragme t roots and	t roots and ct at the to nts. I plant mad	d some dark fr op and middle crofossil rema	spreadsheet. ragments (charcoal?) e. Juncus fragments near the bottom. ins. Wood at 425-500 cm.
1 2 3 3 3 5 5 5 5 5 7 7 3 3 9 0 1 1 2 2 3		LITHOLOG Top (cm) 0 50 100 150 190 225 525 525 560 560 562 700	Y Bottom (c 50 100 150 190 225 525 560 562 700 705	Descriptio Dark-brow Dark-brow Dark-brow Black peat Dark brow Gray sand. Brown-rec Clayey pea	n vn peat, cor vn clay with vn organic r vn peat, abu n peat with vn clayey po ddish peat, at.	mpact, wih n abundant mud, not v undant pla h abundan eat. compact	it abundan t roots. ery compa int fragme t roots and	it roots and ct at the to nts. I plant mad	d some dark fr op and middle crofossil rema	spreadsheet. ragments (charcoal?) e. Juncus fragments near the bottom. ins. Wood at 425-500 cm.
1 2 3 3 4 4 5 5 5 7 7 3 3 9 9 0 0 1 1 2 3 3 4		LITHOLOG Top (cm) 0 500 100 150 190 225 525 560 562 700 705	Y Bottom (c 50 100 150 190 225 525 560 562 700 705 800	Descriptio Dark-brow Dark-brow Dark-brow Dark-brow Black peat Dark brow Light brow Gray sand. Brown-rec Clayey pei Brown-rec	n yn peat, cor yn clay with yn organic r yn peat, abu yn clayey pu ddish peat, at. ddish peat	mpact, wih a abundant nud, not v undant pla h abundan eat. compact with wood	it abundari t roots. ery compa nt fragme t roots and	t roots and ct at the to nts. I plant mad	d some dark fr op and middle crofossil rema	spreadsheet. ragments (charcoal?) e. Juncus fragments near the bottom. ins. Wood at 425-500 cm.
1 2 3 3 5 5 5 5 5 7 7 3 3 9 0 0 1 1 2 2 3 4 4 5		LITHOLOG Top (cm) 0 50 100 150 225 525 560 562 700 705 800	Y Bottom (c 50 100 150 225 525 560 562 700 705 8800 1000	Descriptio Dark-brow Dark-brow Dark-brow Dark-brow Black peat Dark brow Gray sand. Brown-rec Clayey pea Brown-rec Dark-brow	n yn peat, cor yn clay with yn organic r yn peat, abu , n peat with yn clayey p , ddish peat, at. ddish peat y yn to black	mpact, wih n abundant nud, not v undant pla h abundan eat. compact with wood peat, abur	it abundan i roots. ery compa nt fragme t roots and , transitioi dant plani	it roots and ct at the to nts. I plant mad	d some dark fr op and middle crofossil rema	spreadsheet. ragments (charcoal?) 2. Juncus fragments near the bottom. ins. Wood at 425-500 cm.
1 2 3 4 5 5 5 7 8 9 .0 1 1 .2 3 4 4 5 6		LITHOLOG Top (cm) 0 50 100 150 225 525 560 562 700 705 8800 1000	Y Bottom (c 50 100 150 225 525 560 562 700 705 800 1000 1050	Descriptio Dark-brow Dark-brow Dark-brow Dark-brow Black peat Dark brow Light brow Gray sand. Brown-rec Clayey peat Brown-rec Dark-brow Black peat	n vn peat, cor vn clay with vn organic r vn peat, abu n peat with vn clayey po ddish peat, at. ddish peat v vn to black t ransitioni	mpact, wih n abundant mud, not v undant pla h abundan eat. compact with wood peat, abur ing to redd	it abundan i roots. ery compa nt fragme t roots and i, transition idant plan lish peat w	t roots and ct at the to nts. I plant mad ning to bla t material. vith roots,	d some dark fr op and middle crofossil rema ick peat compact.	spreadsheet. ragments (charcoal?) 2. Juncus fragments near the bottom. ins. Wood at 425-500 cm.