



Il Progetto di Interesse NextData

Un sistema nazionale per la raccolta, conservazione, accessibilità e diffusione dei dati ambientali e climatici in aree montane e marine.

P5 - The use of sedimentary proxies in high altitude lakes for inferring the environmental changes during the late Holocene

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Project duration: 2013-2015

Start date: 01 May 2013

End date: 30 September 2015

Main goal

- to reconstruct quantitatively the temporal and spatial changes in trophic state (e.g. primary productivity, phosphorus concentration in lake waters) and in biological communities at a high resolution (decadal) over the last 1000 years so as to obtain baseline data on the natural variability of primary production in several areas of minimal human impact in the Alps. We focus on biological proxy-records because they are closely related to human and climate impacts;
- to contribute to creation of a system of Long Term Data Repositories for lacustrine sequences, environmental data as foreseen in NEXTDATA WP 2.3;
- to evaluate the reconstructed changes from sediment core with the model scenario reconstructed in NEXTDATA WP 2.5;
- to inform policy makers about the impacts of changes in these areas in general ecological and environmental terms.

While model-drawing scenarios of change for temperature, precipitation, water availability and sea level rise are increasingly more accurate and spatially defined, we know very little about the potential for species adaptation and the expected changes in species distribution, overall biodiversity and its organization.

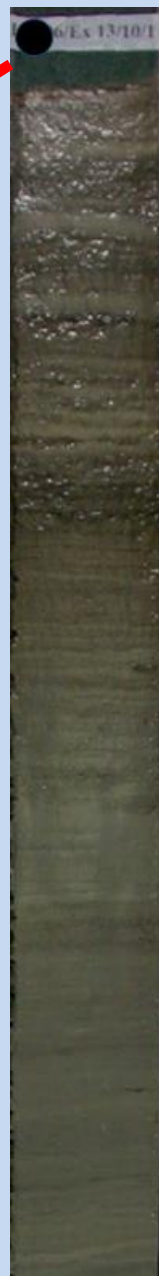
Milestone

Description	Delivery date
Identification of the site on mountain areas where lacustrine sediment cores are available, data consistence and the identification of the knowledge gap to be filled in the second year	8
Population of the GIS based archives developed within the Sub-project 2: Long-term system of digital data on climate and environment of NEXTDATA project	12

pH
Fosforo
Salinità

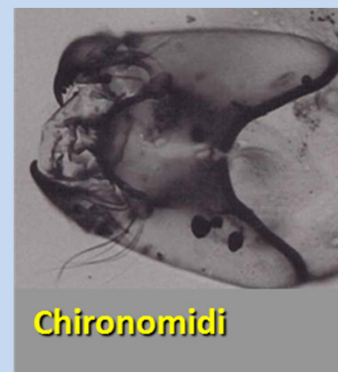


Produzione
primaria
Intensità
radiazione UV
Condizioni di
ossigenazione



Sostanza organica
N, P, CaCO_3

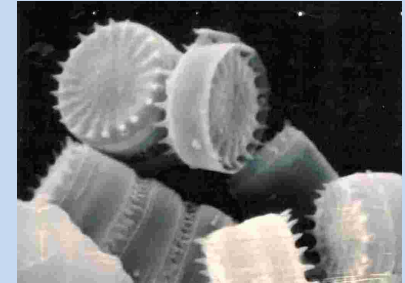
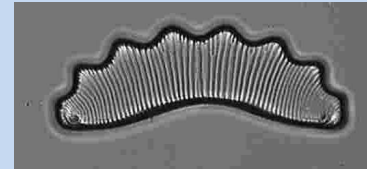
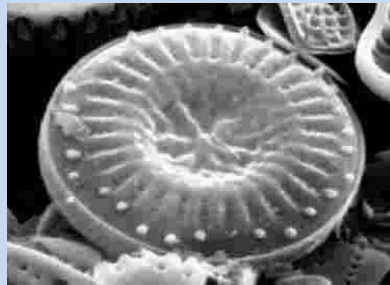
Condizioni trofiche



Temperatura dell'acqua
Fluttuazioni di livello
Condizioni trofiche

Biodiversità
Condizioni trofiche





Diatomee

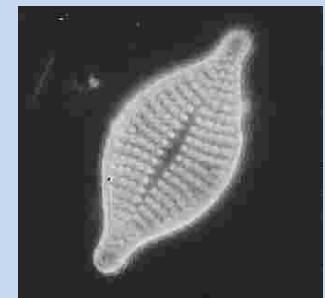
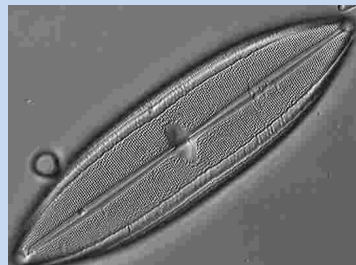
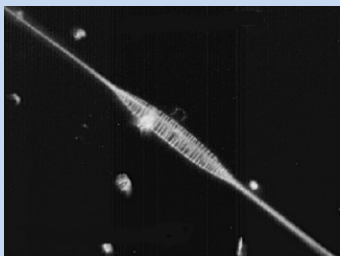
Molto abbondanti

Frustoli ben conservati

Elevata specificità a condizioni ambientali

Risposta quantificabile a cambiamenti ambientali

Proxy-record per: idrochimica lacustre, trofia, salinità, durata della copertura glaciale



Metodi

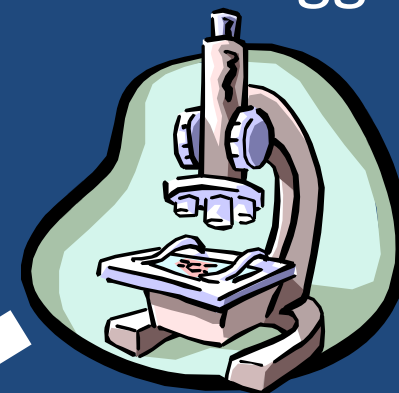
Datazione

Campionamento

Digestione

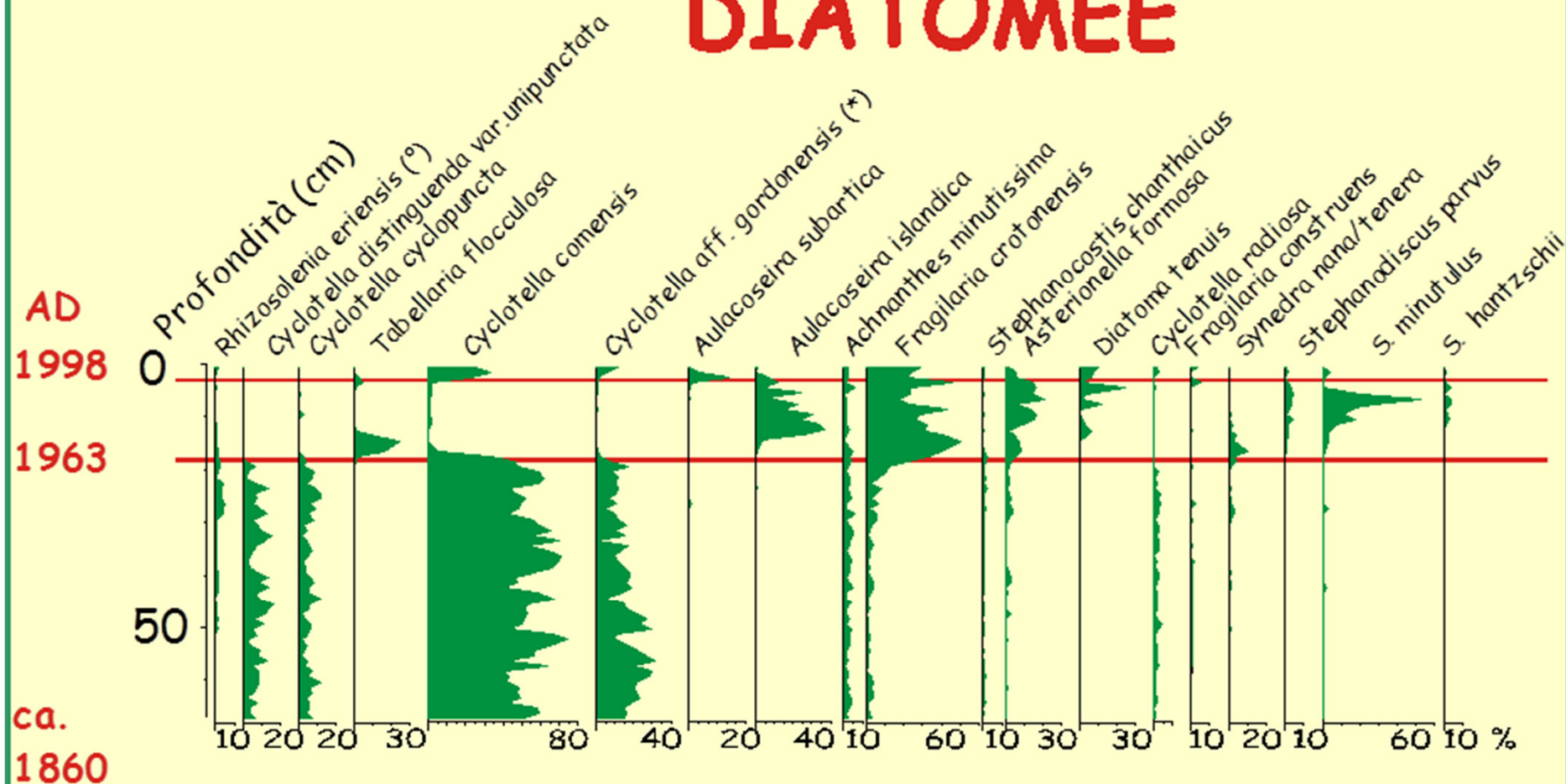
Montaggio
e conteggio

*Modelli
numerici per
ricostruire TP*



Analisi quantitativa

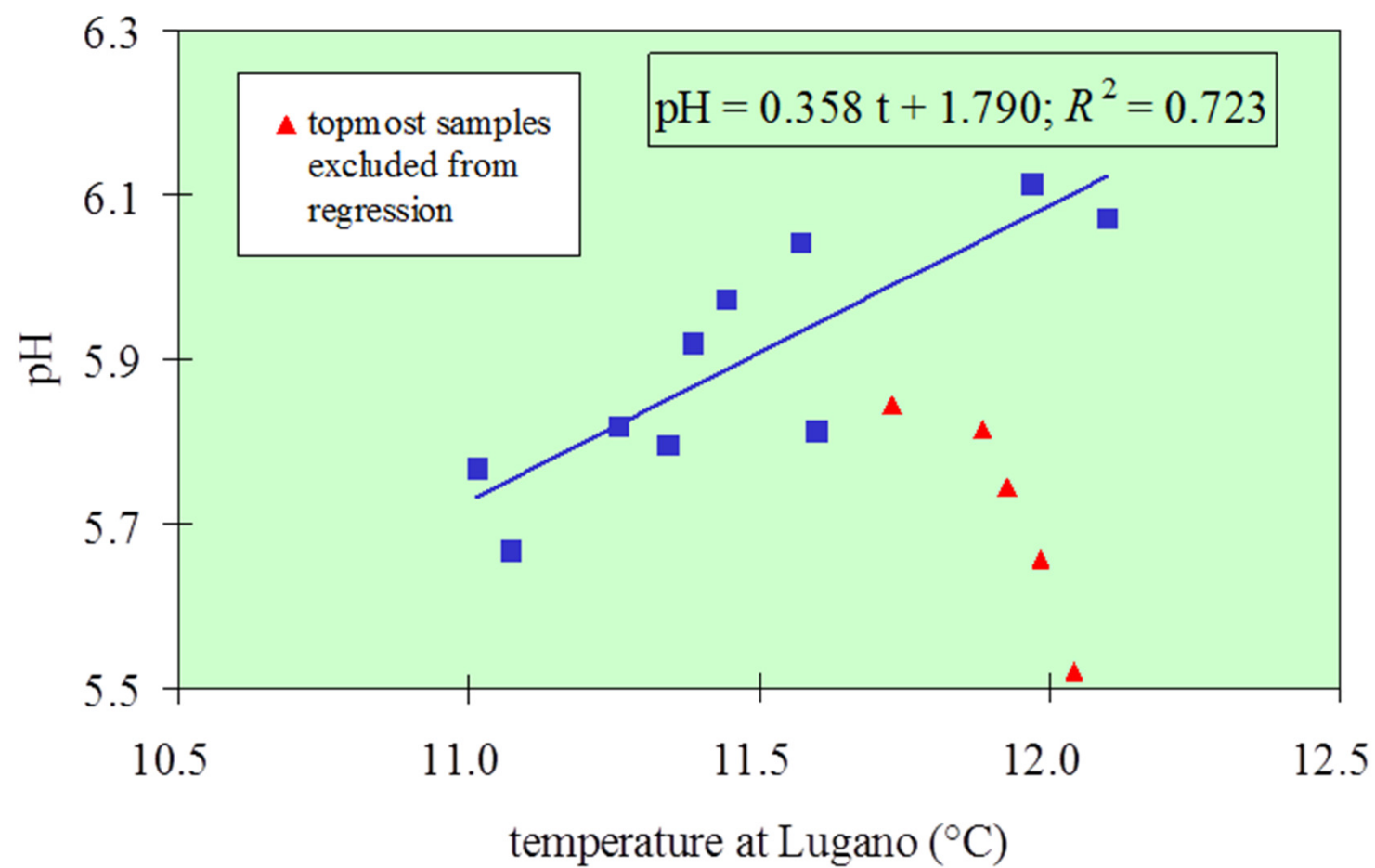
DIATOMEEE

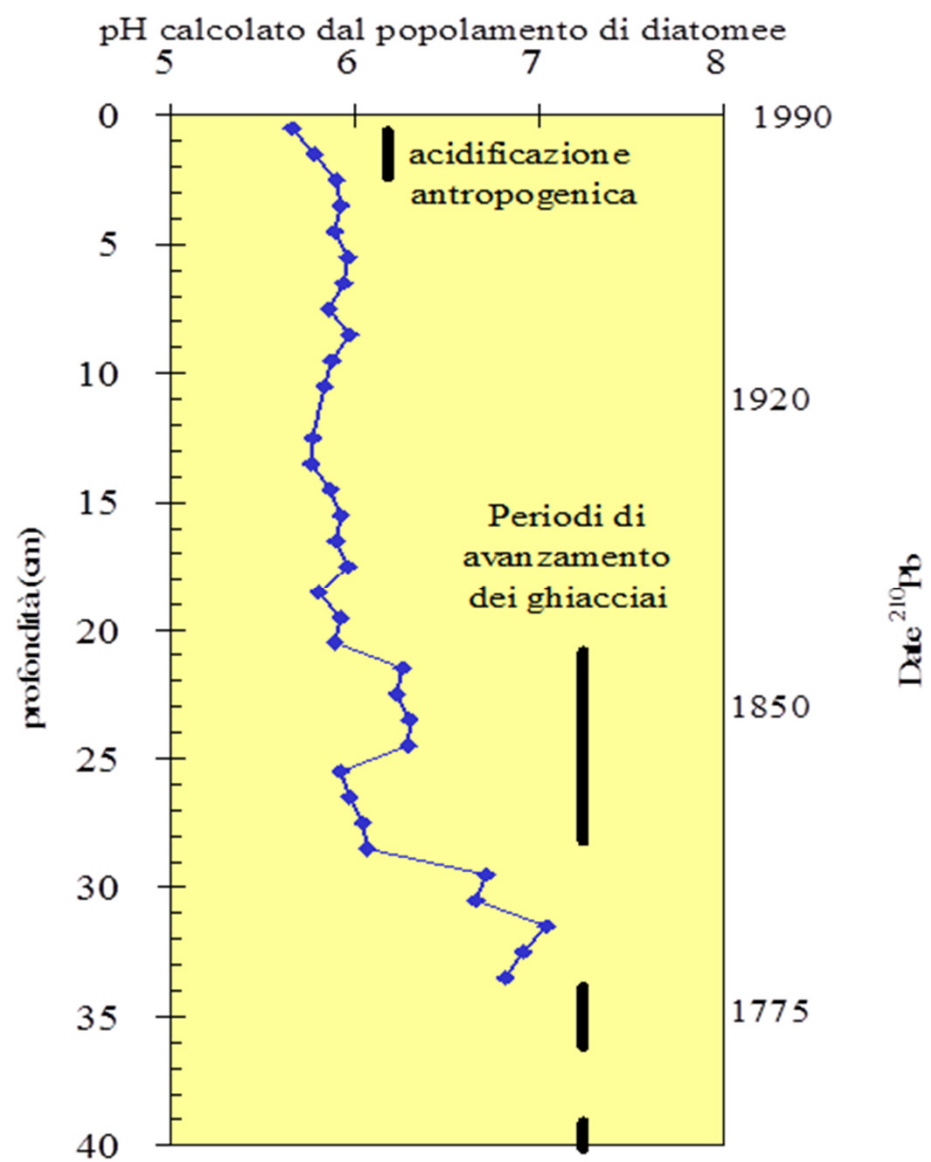


(*) comprende anche *Acanthoceras zachariasii*

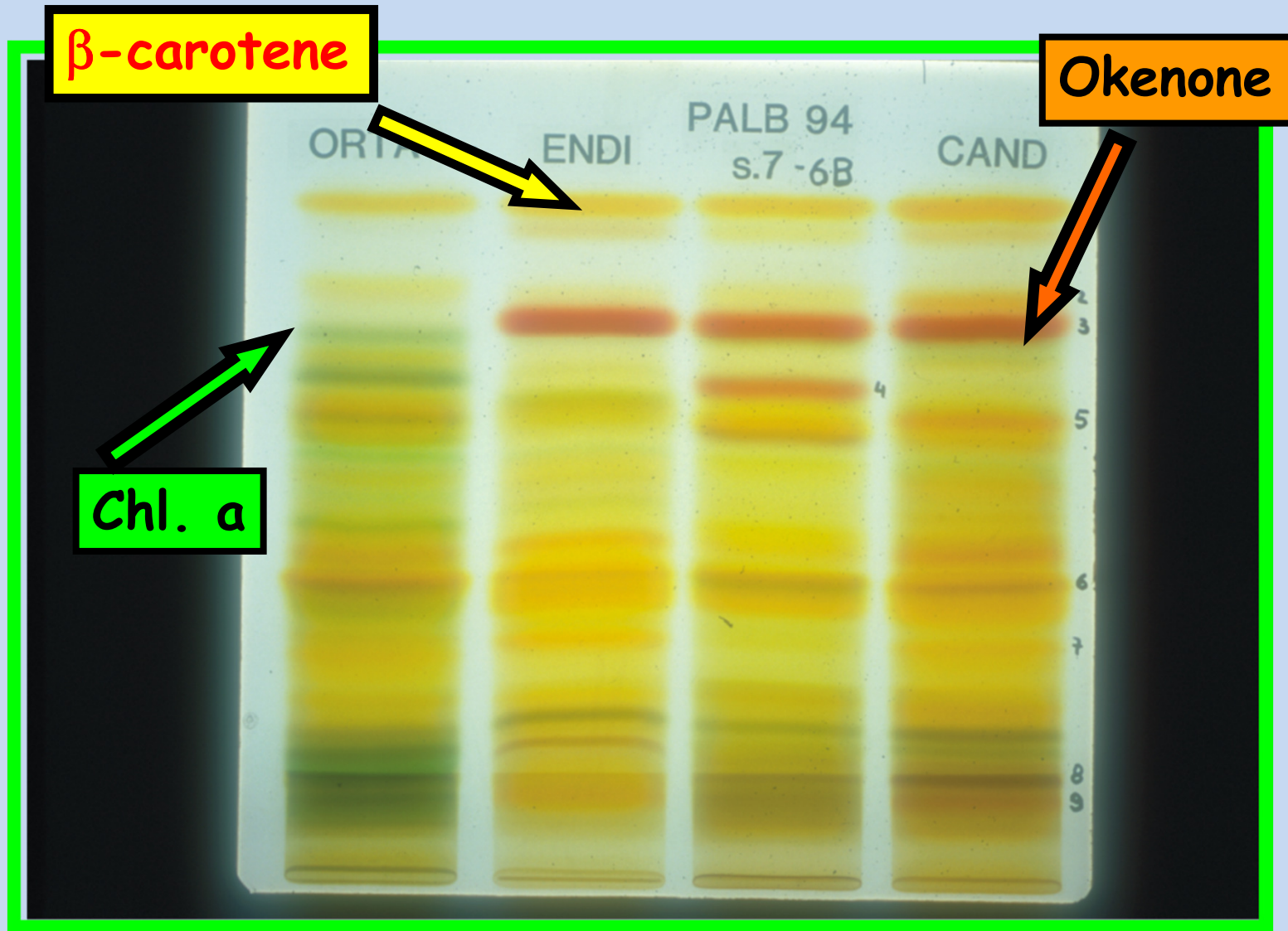
(*) come in Wunsam et al. (1995)

Carota
LM98/13A





A proposito dei pigmenti:



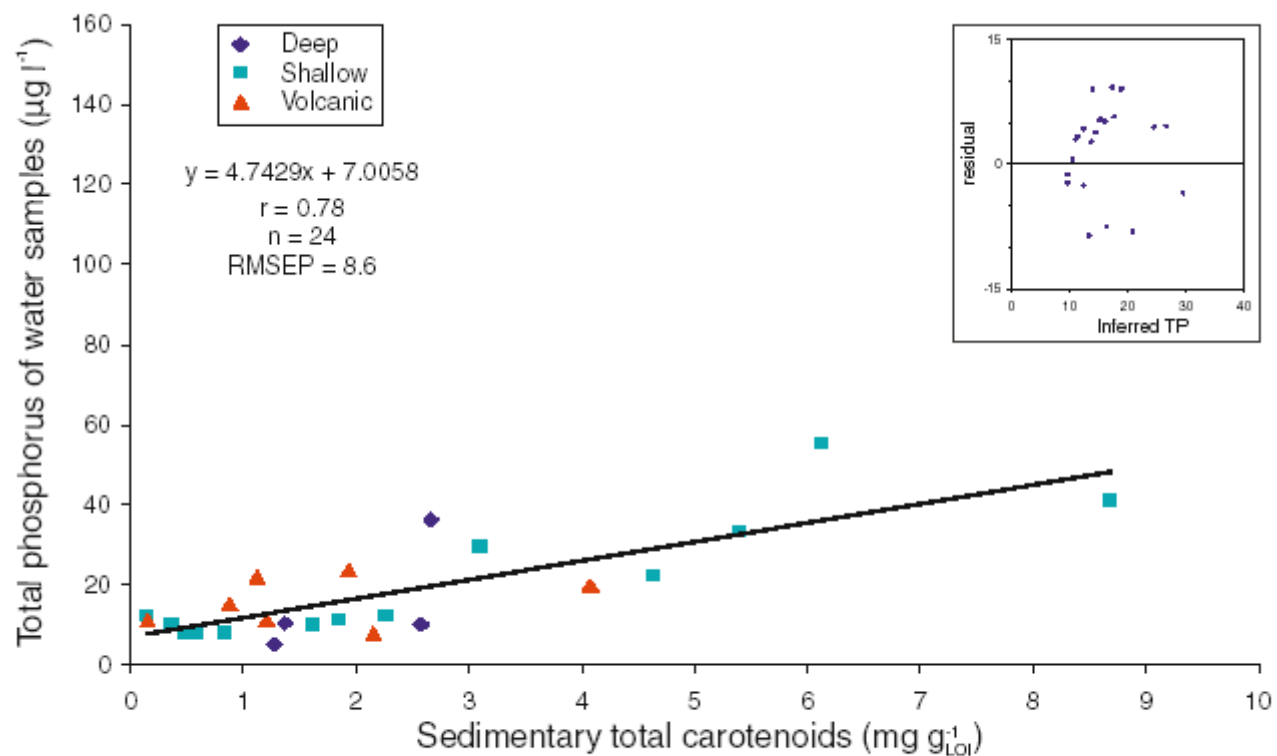


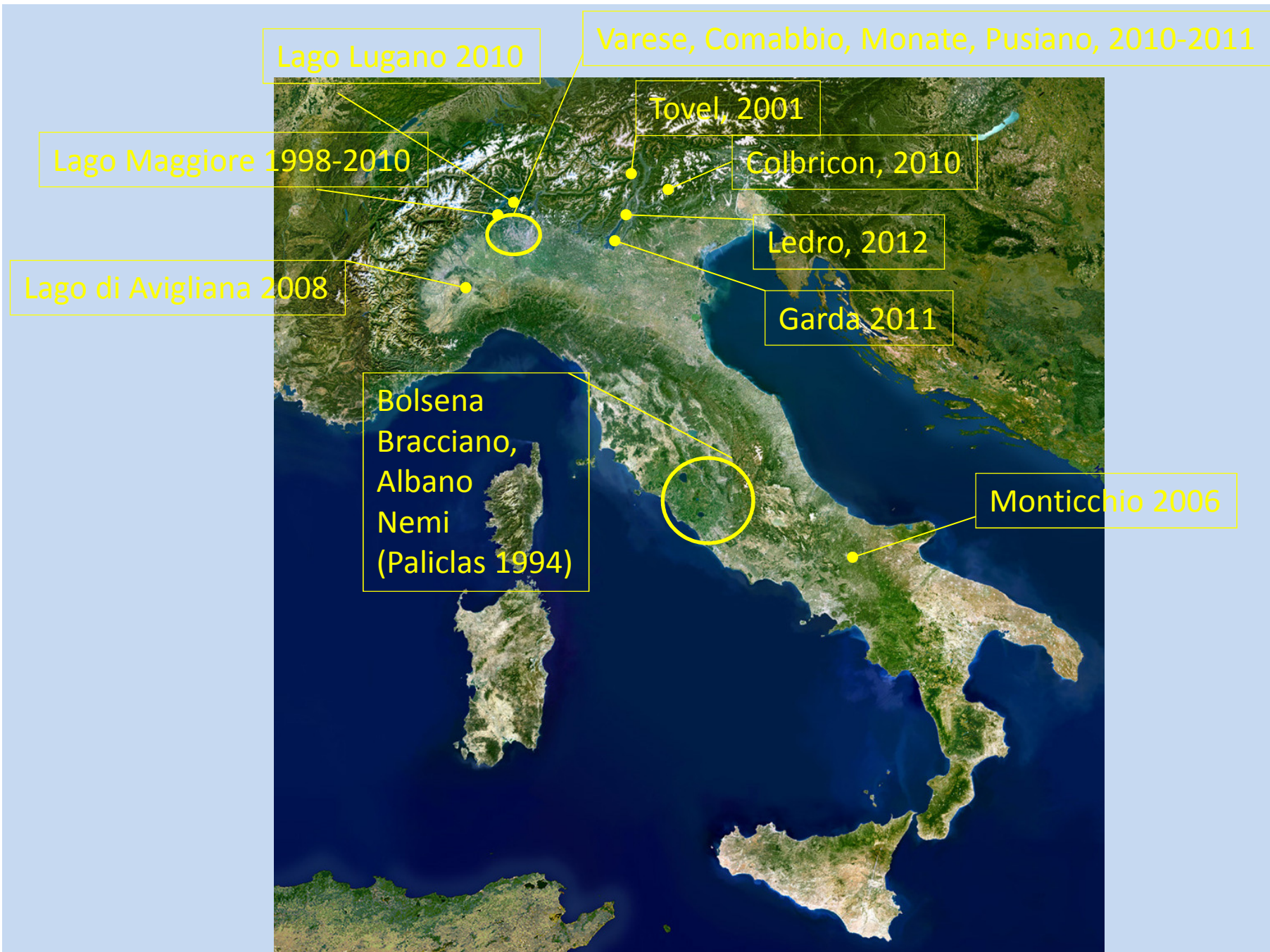
J Paleolimnol (2011) 45:433–445
DOI 10.1007/s10933-010-9421-9

ORIGINAL PAPER

Use of sedimentary pigments to infer past phosphorus concentration in lakes

Piero Guilizzoni · Aldo Marchetto ·
Andrea Lami · Stefano Gerli · Simona Musazzi





Tab. 1. Location and morphometric features of the study lakes

	Variable	Latitude (N)	Longitude (E)	Altitude	Lake surface	Catchment area	Mean depth	Maximum depth	Volume	Theoretical renewal time	Bedrock - lithology	Site-type	Present trophic conditions	Geomorphic origin	Drilling-technique	Depth of drilling	Core bottom age	Dating techniques applied	Sedimentation rate (cm/y) (*)
	Lake			(m)	(km ²)	(km ²)	(m)	(m)	(10 ⁶ m ³)	(year)						(m)	(k yrs)	Radiometric, varve counts, lithological correlation	C-14 calib.
Nord Italia	Paione Superiore	46° 11' 39"	08° 11' 26"	2269	0.014	0.55	5.1	11.7	69	0.09	orthogneiss and grey gneiss	high alpine	oligotrophic	glacier cirque	gravity	8	0.2	Pb, Cs	
	Paione Inferiore	46° 10' 14"	08° 11' 26"	2002	0.014	1.14	7.4	13.5	103	0.06	orthogneiss and grey gneiss	high alpine	oligotrophic	glacier cirque	gravity	13	0.2	Pb, Cs	
	Colbricon	46° 17' 02"	11° 45' 55"	1910	0.013	0.361	3.8	8	49	0.5	Crystalline	high alpine	mesotrophic	glacier cirque	gravity	8	0.5	Pb-210, Cs-137, C-14	0.15
	Tovel	46° 15' 40"	10° 56' 56"	1178	0.38	39.11	19.26	39	7.4	0.05	Carbonatic	high alpine	oligotrophic	glacial	gravity	39	0.4	Pb, Cs	
	Ledro	45° 52' 36"	10° 45' 02"	655	2.187	101.2	35	48	75.8	0.85	calcareous	sub-alpine	mesotrophic	glacial	gravity	48		Pb-210, Cs-137	
	Ghirla	45° 55' 01"	08° 49' 20"	442	0.28	15.4	11	14	3	0.1	Carbonatic	sub-alpine	mesotrophic	glacial					
	Montorfano	45° 46' 57"	9° 08' 15"	397	0.46	1.9	3.5	7	1.9	1.5		sub-alpine	oligotrophic	glacial	freeze	7	0.2		
	Segrino	45° 49' 45"	9° 16' 02"	374	0.38	3.4	3.2	9	1.2	0.4	Carbonatic	sub-alpine	mesotrophic	intermorenic	freeze	9	0.15	Pollen	0.35
	Avigliana Grande	45° 03' 59"	7° 23' 14"	352	0.914	10.7	19.5	26	16.2	2.3	Carbonatic	sub-alpine	eutrophic	glacial	freeze-corer, gravity	26	12	Pb-210, Cs-137, C-14	
	Endine	45° 46' 40"	9° 56' 18"	334	1.74	36.7	5.1	9	12	0.3	Carbonatic	sub-alpine	eutrophic	glacial	freeze	9	0.2	Lithol. change	
	Orta	45° 48'	8° 23'	290	18.14	116	71.3	143	1294.1	8.5	Calcareous schists	sub-alpine	mesotrophic	fluvioglacial	gravity	30	0.35	Pb-210, Cs-137	0.19
	Lugano	45° 58'	9° 01'	271	48.7	565.6	134	288	6.5	8.2	complex	sub-alpine	meso-eutrophic	glacial	gravity				
	Sirio	45° 49' 29"	7° 89' 53"	271	0.3	2.6	18	46	5.4	5.7	crystalline	sub-alpine	eutrophic	Glacial-tectonic	gravity	46	2.0-1.9	Cs-137; C-14	0.7
	Monate	45° 47' 40"	8° 39' 52"	266	2.5	6.3	18	34	45	7.9	Crystalline	sub-alpine	oligotrophic	glacial	freeze	34	0.3		
	Alserio	45° 47' 06"	09° 12' 48"	260	1.23	17.05	5.32	8.1	6.54	1.9	Carbonatic	sub-alpine	mesotrophic	intermorenic	gravity, freeze	8	0.15	varves	0.4
	Pusiano	45° 48' 09"	9° 16' 34"	259	5.26	94.3	13.3	25	69.2	1	calcareous	sub-alpine	eutrophic	intermorenic	gravity	25	0.3	Pb-210, Cs-137	0.31
	Lucone	45° 33'	10° 29'	249											piston			C-14	
	Comabbio	45° 45' 53"	8° 41' 24"	243	3.59	15.3	4.6	7.7	16.62	1.47	Crystalline	sub-alpine	eutrophic	glacial	gravity				
	Varese	45° 8' 48"	8° 75' 45"	238	14.8	111.5	10.7	26	160	1.8	Carbonatic	sub-alpine	hypertrophic	moraine	freeze	25	0.15	Pb-210, Cs-137 (10)	0.79
	Candia	45° 19'	7° 54' 2	226	1.49	8.27	4.73	7.7	7.21	6.5	Crystalline	sub-alpine	Meso-eutrophic	moraine	gravity	7.7	2	Pb-210, Cs-137	0.56
	Annone Est	45° 48' 34"	9° 20' 59"	224	3.81	28.1	6.3	11	24	1.4	Carbonatic	sub-alpine	freeze	intermorenic	freeze	11	0.15	Pollen	0.35
	Annone Ovest	45° 49' 02"	9° 19' 59"	224	1.7	14.7	4	10	6.8	0.8	Carbonatic	sub-alpine	freeze	intermorenic	freeze	10	0.15		
	Como	46° 00'	9° 16'	198	145	4509	154	410	22500	4.5	Carbonatic	sub-alpine	eutrophic	fluvioglacial	gravity	410	0.1	Pb-210, Cs-137	0.66
	Maggiore	45° 57'	8° 40'	194	212	6599	176.5	370	37506	4.1	complex	sub-alpine	oligotrophic	fluvioglacial	gravity	20 to 300	0.15	Pb-210, Cs-137	0.2-1.0 (*)
	Mergozzo	45° 36' 6"	8° 46' 18"	194	1.83	10.4	45.4	73	83	6	Crystalline	sub-alpine	oligotrophic	fluvioglacial	gravity	70	0.4	Pb-210, Cs-137	0.19
	Iseo	45° 44'	10° 04'	186	60.9	1736	123	251	7600	4.1	Carbonatic	sub-alpine	eutrophic	glacial	gravity	250	0.1	Lithol. change, Pb-210, Cs-137	0.73-0.83
	Garda	45° 40'	10° 42'	65	368	2240	133	350	49030	27	Carbonatic	sub-alpine	Meso-eutrophic	Crystalline	gravity	344	0.15	Lithol. change	1.3

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[illegible]

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Sud Italia e isole	Alimini Piccolo	40°11'20"	18°26'46"	1	1.05			1.2				coastal lake							
	Averno	40°50'20"	14°04'34"	2	55		10	35			pyroclastic deposit	volcanic							
	Battaglia	41°54	16°08																
	Salso	41°33'36"	15°52'20"	0	5.5			2											
	Monticchio Grande	40°33'56"	15°6'13"	650	0.418	4.02	8.2	35	3.445		pyroclastic deposit	volcanic	mesotrophic	crater	gravity	10	0.4	Pb-210	0.23
	Pergusa	37°30'50"	14°18'21"	667	1.83	7.25	3.5	12						tectonic					
	Preola	37°37"	12°38	4															
	San Puoto	41°17'08"	13°24'30"	2	0.4		25	37	10		pyroclastic deposit	volcanic	eutrophic	unknown	gravity	32	0.2	Pb-210	0.27