Table S2. Datasets included in IntCal20 with numbered references: a) tree-rings and macrofossils. Genus and species are given for trees if one or two species only are in the dataset. b) corals and foraminifera, c) speleothems. Setno and division refer to the keys in the IntCal20 database. Latitude and longitude are rounded to the nearest tenth of a degree with north and east positive and south and west negative. For more precise locations please see the IntCal20 database (http://intcal.org).

a) Tree-rings and terrestrial macrofossils							
setno	division	series	location	Lat	Lon	Genus species	references
1	1	Alaska KI tree	Kodiak Island, Alaska, USA	57.9	-152.6	*Picea sitchensis*	1,2
1	2	A tree	Olympic Peninsula, Washington, USA	47.8	-124.1	*Pseudotsuga menziesii*	1,2
1	3	Douglas fir B	Mt Rainier, Washington, USA	46.8	-121.8	*Pseudotsuga menziesii*	1,2
1	4	C tree	Olympic Peninsula, Washington, USA	47.8	-124.1	*Pseudotsuga menziesii*	1,2
1	5	DW tree	Cougar, Washington, USA	46.1	-122.3	*Abies procera*	1,2
1	6	fir (F tree)	Coos Bay, Oregon, USA	43.2	-123.8	*Pseudotsuga menziesii*	1,2
1	7	fir (F10)	Coos Bay, Oregon, USA	43.2	-123.8	*Pseudotsuga menziesii*	1,2
1	8	Sequoia (RC)	Sequoia Natl Forest, California, USA	36.7	-118.9	*Sequoiadedron giganteum*	1,2
1	9	Sequoia (SR)	Sequoia Natl Park, California, USA	36.5	-118.5	*Sequoiadedron giganteum*	1,2
1	10	S tree	Shawnigan Lake, Vancouver Island, Canada	48.7	-123.7	*Pseudotsuga menziesii*	1,2
1	11	R (2)	Pierce County, Washington, USA	47	-122	*Pseudotsuga menziesii*	1,2
1	12	oak (PQ tree)	Ireland			*Quercus sp.*	1,2
1	13	oak 5600 series D	Germany	50.0–49.8	10.9–9.9	*Quercus sp.*	1,2
1	14	oak	Germany	51.9–47.2	11.6 –8.0	*Quercus sp.*	1,2
1	15	pine	Germany	49.7–48.4	11.0 –7.7	*Pinus sylvestris*	1,2
2	1	BrabsPR	Ireland	54.5–51.9	-9.5– -6.6	*Quercus sp.*	3
2	2	Irish Oaks98	Ireland			*Quercus sp.*	4,6
2	3	Pearson86-	Ireland			*Quercus sp.*	5

		bidecadal					
2	4	Pearson-decadal	Ireland			*Quercus sp.*	5
2	5	German Oaks	Germany	50.2–48.4	11.1– 8.6	*Quercus sp.*	5
3	1	Wk Irish Oak	Ireland			*Quercus sp.*	4,6
3	2	hogg_2009_oak	Ireland	54.6–52.5	-7.2– -5.9	*Quercus sp.*	7
4	1	DEJONG	Donau River Basin	48.4	10.1	*Quercus sp.*	8,9
4	2	BOF041	Netherlands	52.1	4.8	*Quercus sp.*	10
5	1	Late Glacial	Switzerland			*Pinus sylvestris*	11
5	3	Roppenheim52	Germany	48.84	8.05	*Pinus sylvestris*	12,15
5	4	1k-2kBC	Germany	48.84	8.05	*Quercus sp.*	13,14
5	5	6k-12kBP	Germany			*Quercus sp.&Pinus sylvestris*	12,15
6	1	Pretoria Tree	Germany	50.0–47.0	11.6 –7.1	*Quercus sp.*	16
8	1	1963-043	California, USA	37.4	-118.1	*Pinus longaeva*	17
8	2	Breitenthal 198	Germany	48.2	10.3	*Pinus sylvestris*	18
8	3	CLS19b	California, USA	38.3	-120.3	*Sequoiadendron giganteum*	19
8	4	Baunach 33	Germany	50	10.8	*Quercus sp. robur L./ petraea M.*	20
8	5	Oberhaid 15	Germany	49.9	10.8	*Quercus sp. robur L./ petraea M.*	20
8	6	Trieb 70a	Germany	50.1	11.1	*Quercus sp. robur L./ petraea M.*	20
59	1	scl14	England	51.1	-1.8	*Quercus sp.*	21
60	1	Knet40-MAMS	Germany	50.0	10.6	*Quercus sp. sp*	22
60	2	MAMS Cott418	Cottbus, Germany	51.8	14.4	*Pinus sylvestris*	23
60	3	MAMS Brei232	Germany	48.2	10.3	*Pinus sylvestris*	23
60	4	Finnish Pine	Germany	68.5	20	*Pinus sylvestris*	24
60	5	German oak	Germany	51.4	14.7	*Quercus sp.*	24
60	6	Steinbach 91	Germany	50.0	10.6	*Quercus sp.*	25

61	1	Barb12	French Alps	44.4	5.8	*Pinus sylvestris*	26,27
61	2	Barb13	French Alps	44.4	5.8	*Pinus sylvestris*	27
61	3	Barb14	French Alps	44.4	5.8	*Pinus sylvestris*	27
61	4	Barb17	French Alps	44.4	5.8	*Pinus sylvestris*	26,27
61	5	Barb30	French Alps	44.4	5.8	*Pinus sylvestris*	27
62	2	Schackenborg	Denmark	54.9	8.8	*Quercus sp.*	28
62	3	Gram Bro (x112)	Denmark	55.3	9.1	*Quercus sp.*	28
62	4	Mojbol	Denmark	55.3	9.2	*Quercus sp.*	29
62	5	Ravning Enge	Denmark	55.7	9.3	*Quercus sp.*	30
62	6	Grabrodre Kloster	Denmark	56.5	10.0	*Quercus sp.*	30
62	8	Haderslev Fjord	Denmark	55.3	9.7	*Quercus sp.*	30
62	9	Knet40-AAR	Knetzgau, Germany	50.0	10.6	*Quercus sp.*	22
63	1	Karlsruhe	Karlsruhe, Germany	49.1	8.4	*Quercus sp.*	31
63	3	N Ireland	Banbridge, Northern Ireland	54.3	-6.1	*Quercus sp.*	31
63	8	Aalen	Aalen, Germany	48.8	10.1	*Quercus sp.*	31
63	9	Creglingen	Creglingen, Germany	49.5	10.0	*Quercus sp.*	31
63	10	Biberach	Biberach, Germany	48.1	9.8	*Quercus sp.*	31
63	11	Regensburg	Regensburg, Germany	49.0	12.1	*Quercus sp.*	31
63	12	AA TZM3	Jordan	30.3	35.5	*Juniperus phoenicea*	32
63	13	AA TZM4	Jordan	30.3	35.5	*Juniperus phoenicea*	32
63	14	AA TZM15	Jordan	30.3	35.5	*Juniperus phoenicea*	32
63	15	OxA TZM3	Jordan	30.3	35.5	*Juniperus phoenicea*	32
63	16	OxA TZM4	Jordan	30.3	35.5	*Juniperus phoenicea*	32
63	17	OxA TZM15	Jordan	30.3	35.5	*Juniperus phoenicea*	32
64	1	GDM-40	Austria	46.9	10.7	*Pinus cembra L*	33,34
64	2	EBA-46	Austria	47	11	*Pinus cembra L*	33,34
64	3	SSM-102	Austria	47	11.8	*Pinus cembra L*	33,34
64	4	EBA-47	Austria	47	11	*Pinus cembra L*	33,34
64	5	SSM-84	Austria	47	11.8	*Pinus cembra L*	33,34
64	6	KRO-2	Austria	46.9	11.1	*Pinus cembra L*	33,34

65	1	HRHH-C261	Japan	34.4	132.7	*Chamaecyparis obtusa*	35
65	2	PLD HKN-1	Japan	35.8	137.9	*Cyptmeria japonica*	36
65	3	GrA HKN-1	Japan	35.8	137.9	*Cyptmeria japonica*	37
65	4	NNMSM-TR1	Japan	35.3	137.9	*Chamaecyparis obtusa*	38
65	5	NNMT-1	Japan	35.7	137.9	*Chamaecyparis obtusa*	38
65	6	PLD KTUBH-C	Japan	34.9	135.8	*Sciadopitys verticillata*	38
65	7	IAAA KTUBH-C	Japan	34.9	135.8	*Sciadopitys verticillata*	38
65	8	PLD KTUBH-B	Japan	34.9	135.8	*Chamaecyparis obtusa*	38
65	9	IAAA KTUBH-B	Japan	34.9	135.8	*Chamaecyparis obtusa*	38
65	10	HGHEK-2	Japan	34.9	134.7	*Zelkova serrata*	39
65	11	YNKSU-2	Japan	34.7	138.8	*Tsuga sieboldii*	39
65	15	STSAB-1	Japan	35.9	139.6	*Chamaecyparis obtusa*	39
65	16	MGTYJ-1	Japan	38.5	141.5	*Zelkova serrata*	39
66	1	CMC-3F	California, USA	36.6	-118.8	*Sequoiadendron giganteum*	40
67	1	1971#059-STE	California, USA	37.4	-118.2	*Pinus longaeva*	41
68	1	SHP-33	California, USA	37.5	-118.2	*Pinus longaeva*	42
68	2	SHP-849	California, USA	37.5	-118.2	*Pinus longaeva*	42
68	3	SHP-851	California, USA	37.5	-118.2	*Pinus longaeva*	42
68	4	Q5654	Ireland	53.3	-6.9	*Quercus sp.*	42,43
68	5	Q6427	Ireland	53.3	-6.9	*Quercus sp.*	42,43
68	6	Q5653	Ireland	53.3	-6.9	*Quercus sp.*	42,43

68	7	BCP	California, USA	37.5	-118.2	*Pinus longaeva*	44
68	8	Yamal	Okrug, Russia	67.5	70.7	*Larix sibirica Ldb*	44
68	9	1971#059-AA	California, USA	37.4	-118.2	*Pinus longaeva*	41
68	10	Knet40-AA	Germany	50.0	10.6	*Quercus sp.*	22
68	13	1977-201C	California, USA	37.4	-118.2	*Pinus longaeva*	45
68	14	1972-052	California, USA	37.4	-118.2	*Pinus longaeva*	45
68	15	SHP 846 2002	California, USA	37.4	-118.2	*Pinus longaeva*	45
68	16	BCL01	California, USA	37.8	-118.4	*Pinus longaeva*	45
69	1	ZH-644415	Switzerland	47.4	8.6	*Quercus sp.*	46
69	2	ZH-600797	Switzerland	47.4	8.6	*Quercus sp.*	46
69	3	HFD-C01	England	51.6	-0.5	*Quercus sp.*	46
69	4	COD-C38	England	53.1	-1.4	*Quercus sp.*	46
69	5	DRN-D11	England	53.3	-1.5	*Quercus sp.*	46
69	6	ALT-B05	England	51.4	-1.8	*Quercus sp.*	46
69	7	BLS-B10	England	53.2	-1.3	*Quercus sp.*	46
69	8	LYB-H40	England	52.6	-0.7	*Quercus sp.*	46
69	9	SYD-M22	England	50.6	-4.2	*Quercus sp.*	46
69	10	ALT-B04	England	51.4	-1.8	*Quercus sp.*	46
69	11	TAT-C13	England	53.1	-0.2	*Quercus sp.*	46
69	12	STK-C10	England	53.4	-2.2	*Quercus sp.*	46
69	13	STA-C34	England	51.7	-0.3	*Quercus sp.*	46
69	14	GAEN0005	Switzerland	47.3	8.5	*Pinus sylvestris*	47
69	15	BREI0232	Breitenthal, Germany	48.2	10.3	*Pinus sylvestris*	23
69	16	GAEN0027	Switzerland	47.3	8.5	*Pinus sylvestris*	47
69	17	GAEN0102	Switzerland	47.3	8.5	*Pinus sylvestris*	47
69	18	BINZ0026	Switzerland	47.4	8.5	*Pinus sylvestris*	47
69	19	COTT0418	Cottbus, Germany	51.8	14.4	*Pinus sylvestris*	23
69	20	BINZ0073	Switzerland	47.4	8.5	*Pinus sylvestris*	47
69	22	LAND0062	Switzerland	47.4	8.5	*Pinus sylvestris*	47
69	23	GAEN0007	Switzerland	47.3	8.5	*Pinus sylvestris*	47

69	24	LAND0004	Switzerland	47.4	8.5	*Pinus sylvestris*	47
69	25	GAEN0008	Switzerland	47.3	8.5	*Pinus sylvestris*	47
69	26	KHW10030	Switzerland	47.4	8.5	*Pinus sylvestris*	47
69	27	KHW10028	Switzerland	47.4	8.5	*Pinus sylvestris*	47
69	28	KHW10031	Switzerland	47.4	8.5	*Pinus sylvestris*	47
69	29	GAEN0071	Switzerland	47.34	8.52	*Pinus sylvestris*	47
69	32	USA07	New Mexico, USA	36.0	-108.1	*Pseudotsuga menziesii (Mirb.) Fr*	48
69	33	USA02	New Mexico, USA	36.0	-108.1	*Pseudotsuga menziesii (Mirb.) Fr*	48
69	34	SWE02	Sweden	68.3	19.6	*Pinus sylvestris L.*	48
69	36	AUT02	Italy	47	12.1	*Pinus cembra*	48
69	37	AUT01	Italy	47	11	*Pinus cembra*	48
69	38	GRE02	Greece	40.1	21	*Pinus heldreichii*	48
69	39	CAN06	Quebec, Canada	54.5	-70.4	*Picea mariana*	48
69	40	ITA09	Italy	46.3	11.0	*Picea abies*	48
69	41	CHI01	Qinghai, China	37.5	97.7	*Juniperus przewalskii*	48
69	42	RUS04	Okrug, Russia	67.5	70.7	*Larix sibirica (Ledeb.)*	48
69	43	MON05	Mongolia	46.7	101.8	*Larix sibirica*	48
69	44	MON03	Mongolia	46.7	101.8	*Larix sibirica*	48
69	45	USA11	Alaska, USA	58.6	-136.5	*Tsuga meretensiana*	48
69	46	EBEN0060	Ebensfeld, Germany	50.1	10.9	*Quercus sp.*	49
69	47	Steinbach91	Ebelsbach, Germany	50.0	10.6	*Quercus sp.*	25
69	49	Q6427	Ireland	53.3	-6.9	*Quercus sp.*	43
69	50	Knet40-ETH	Knetzgau, Germany	50.0	10.6	*Quercus sp.*	22
69	51	1971#059-ETH	California, USA	37.4	-118.2	*Pinus longaeva*	41
69	52	Q5654	Ireland	53.3	-6.9	*Quercus sp.*	43
69	53	Q5653	Ireland	53.3	-6.9	*Quercus sp.*	43
98	1	A15	Avigliana, Italy	45.1	7.4	*Pinus*	50
98	2	P305U	Palughetto, Italy	46.2	12.4	*Larix*	50

98	3	P317	Palughetto, Italy	46.2	12.4	*Larix*	50
99	1	Finlayson Farm F08	Finlayson Farm, New Zealand	-35.8	173.6	*Agathis australis*	51
99	2	Waikato Mangawhai	Mangawai Heads, NZ	-36.1	174.6	*Agathis australis*	52
99	3	ANUA Mangawhai	Mangawai Heads, NZ	-36.1	174.6	*Agathis australis*	52
109	2	Macrofossils	Lake Suigetsu, Japan	35.6	135.9	Various	53,54

b) Coral and foraminifera						
110	4	Mururoa	Mururoa	-21.8	-138.9	56
110	5	Huon peninsula, Papua, New Guinea	Papua	-6.1	147.6	56
110	6	Barbados	Barbados	13.1	-59.32	55,56
111	1	Araki, Vanuatu	Vanuatu	-15.6	167.0	57
111	2	Kiritimati	Kiritimati	1.9	-157.4	57
111	3	Barbados	Barbados	13.1	-59.3	57
114	1	Urelapa, Vanuatu	Vanuatu	-15.6	167.0	58
114	2	Tasmalum, Vanuatu	Vanuatu	-15.6	166.9	58
114	3	Huon peninsula, Papua, New Guinea	Papua	-6.1	147.6	58
115	1	Cariaco Basin varved sediment	Cariaco basin, Venezuela	10.6	-65.1	59,60
117	1	Tiarei, Tahiti	Tahiti	-17.5	-149.4	61
117	2	Faaa, Tahiti	Tahiti	-17.6	-149.6	61
117	3	Maraa, Tahiti	Tahiti	-17.8	-149.5	61
120	1	Unvarved Cariaco Updated	Cariaco basin, Venezuela	10.6	-65.1	62,63
121	1	Iberian Margin on Hulu timescale	Iberian Margin	37.8	-10.2	64,65
122	1	Pakistan Margin on Hulu timescale	Pakistan Margin	24.9	64.0	64,65

c) Speleothems						
124	1	Hulu Cave OffAxisCoreSamples	Hulu Cave	32.5	119.2	66
124	2	Hulu Cave TrenchandWall_0-138mm	Hulu Cave	32.5	119.2	66
124	3	Hulu Cave TrenchandWall_130-310mm	Hulu Cave	32.5	119.2	66
124	4	Hulu Cave Chips	Hulu Cave	32.5	119.2	66
124	5	MSD-14C data	Hulu Cave	32.5	119.2	67
124	6	MSL-14C-data	Hulu Cave	32.5	119.2	67
125	1	GB89-25-3-wx	Sagittarius Blue Hole, Grand Bahama	26.6	-77.9	68
125	2	GB89-25-3-stuv	Sagittarius Blue Hole, Grand Bahama	26.6	-77.9	68
126	1	GB89-24	Sagittarius Blue Hole, Grand Bahama	26.6	-77.9	69

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