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*Supplement of*

**Stable isotope study of a new chondrichthyan fauna (Kimmeridgian, Porrentruy, Swiss Jura): an unusual freshwater-influenced isotopic composition for the hybodont shark *Asteracanthus***

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STABLE OXYGEN ISOTOPE COMPOSITION OF PHOSPHATE FOR THE PRESENT STUDY AND PREVIOUS STUDIES

Fossil reference number	Sample ID	Taxon	Order	Class	Sample type	Stage	Ammonite Biozone	Stratigraphic Level (regional naming)	Bed	Location	Excavation site, Swiss coordinates	Country	$\delta^{18}\text{O}_\text{p}$ (‰ SMOW)	Water T (°C) using eq. (1)* and $\delta^{18}\text{O}_\text{w} = -1\text{‰}$	Reference
TCH006-1652	LL-70	<i>Hybodus</i>	Hybodontiformes	Chondrichthyes	T-b	Upper Kimmeridgian	Eudoxus	Lower Virgula Marls	2450	Jura, Porrentruy area	2'568'600/1'250'425	Switzerland	18.8	28.3	This study
TCH006-1694	LL-71	<i>Hybodus</i>	Hybodontiformes	Chondrichthyes	T-b	Upper Kimmeridgian	Eudoxus	Lower Virgula Marls	2900	Jura, Porrentruy area	2'568'600/1'250'425	Switzerland	19.3	26.0	This study
BSY009-961	LL-72	<i>Hybodus</i>	Hybodontiformes	Chondrichthyes	T-b	Upper Kimmeridgian	Eudoxus	Lower Virgula Marls	4500	Jura, Porrentruy area	2'568'615/1'251'605	Switzerland	19.6	24.9	This study
TCH006-1610	LL-73	<i>Hybodus</i>	Hybodontiformes	Chondrichthyes	T-b	Upper Kimmeridgian	Eudoxus	Lower Virgula Marls	2250	Jura, Porrentruy area	2'568'600/1'250'425	Switzerland	19.0	27.5	This study
TCH006-1748	LL-74	Rhinobatidae	Rajiformes	Chondrichthyes	T-b	Upper Kimmeridgian	Eudoxus	Lower Virgula Marls	2250	Jura, Porrentruy area	2'568'600/1'250'425	Switzerland	19.2	26.3	This study
TCH006-1692	LL-75	Rhinobatidae	Rajiformes	Chondrichthyes	T-b	Upper Kimmeridgian	Eudoxus	Lower Virgula Marls	2900	Jura, Porrentruy area	2'568'600/1'250'425	Switzerland	19.3	25.9	This study
BSY009-926	LL-76	Rhinobatidae	Rajiformes	Chondrichthyes	T-b	Upper Kimmeridgian	Eudoxus	Lower Virgula Marls	4500	Jura, Porrentruy area	2'568'615/1'251'605	Switzerland	19.6	24.7	This study
SCR010-22	LL-1	<i>Ischyodus</i>	Chimaeriformes	Chondrichthyes	T-d	Upper Kimmeridgian	Eudoxus	Lower Virgula Marls	4500	Jura, Porrentruy area	2'568'900/1'250'000	Switzerland	18.9	27.9	This study
TLB001-666	LL-18	<i>Ischyodus</i>	Chimaeriformes	Chondrichthyes	T-d	Lower Kimmeridgian	Cymodoce	Banné Marls	-	Jura, Porrentruy area	2'571'800/1'250'470	Switzerland	19.5	25.4	This study
SCR003-946	LL-60	<i>Ischyodus</i>	Chimaeriformes	Chondrichthyes	T-d	Upper Kimmeridgian	Eudoxus	Lower Virgula Marls	2600	Jura, Porrentruy area	2'568'900/1'250'000	Switzerland	18.8	28.5	This study
SCR010-1000	LL-3	<i>Ischyodus</i>	Chimaeriformes	Chondrichthyes	T-d	Upper Kimmeridgian	Eudoxus	Lower Virgula Marls	4500	Jura, Porrentruy area	2'568'900/1'250'000	Switzerland	18.7	28.8	This study
BSY008-422	LL-13	<i>Ischyodus</i>	Chimaeriformes	Chondrichthyes	T-d	Upper Kimmeridgian	Eudoxus	Lower Virgula Marls	4000	Jura, Porrentruy area	2'568'615/1'251'605	Switzerland	19.5	25.4	This study
SCR003-1185	LL-59	<i>Ischyodus</i>	Chimaeriformes	Chondrichthyes	T-d	Upper Kimmeridgian	Eudoxus	Lower Virgula Marls	4500	Jura, Porrentruy area	2'568'900/1'250'000	Switzerland	18.5	29.6	This study
BSY007-106	LL-4	<i>Ischyodus</i>	Chimaeriformes	Chondrichthyes	T-d	Upper Kimmeridgian	Eudoxus	Lower Virgula Marls	4500	Jura, Porrentruy area	2'568'615/1'251'605	Switzerland	19.8	23.8	This study
SCR010-765	LL-7	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-d	Upper Kimmeridgian	Eudoxus	Lower Virgula Marls	4500	Jura, Porrentruy area	2'568'900/1'250'000	Switzerland	18.7	28.6	This study
BSY008-579	LL-9	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-d	Upper Kimmeridgian	Eudoxus	Lower Virgula Marls	4500	Jura, Porrentruy area	2'568'615/1'251'605	Switzerland	18.0	32.0	This study
SCR010-763	LL-11	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-d	Upper Kimmeridgian	Eudoxus	Lower Virgula Marls	4500	Jura, Porrentruy area	2'568'900/1'250'000	Switzerland	18.7	28.9	This study
SCR010-758	LL-14	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-d	Upper Kimmeridgian	Eudoxus	Lower Virgula Marls	2400	Jura, Porrentruy area	2'568'900/1'250'000	Switzerland	18.4	30.3	This study
VTT010-3	LL-16	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-d	Lower Kimmeridgian	Cymodoce	Banné Marls	-	Jura, Porrentruy area	2'568'250/1'252'160	Switzerland	19.5	25.2	This study
SCR003-387	LL-31	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-d	Upper Kimmeridgian	Eudoxus	Lower Virgula Marls	2400	Jura, Porrentruy area	2'568'900/1'250'000	Switzerland	18.9	27.7	This study
SCR002-1150	LL-34	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-d	Upper Kimmeridgian	Eudoxus	Lower Virgula Marls	2400	Jura, Porrentruy area	2'568'900/1'250'000	Switzerland	17.7	33.1	This study
VTT001-4696	LL-40	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-d	Lower Kimmeridgian	Cymodoce	Banné Marls	132	Jura, Porrentruy area	2'568'250/1'252'160	Switzerland	19.8	23.7	This study
SCR003-1376	LL-45	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-d	Upper Kimmeridgian	Eudoxus	Lower Virgula Marls	1700	Jura, Porrentruy area	2'568'900/1'250'000	Switzerland	19.8	23.7	This study
TCH004-239	LL-42	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-d	Upper Kimmeridgian	Eudoxus	Lower Virgula Marls	1200	Jura, Porrentruy area	2'568'600/1'250'425	Switzerland	20.0	23.0	This study
SCR011-281	LL-5	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-d	Upper Kimmeridgian	Eudoxus	Lower Virgula Marls	4000	Jura, Porrentruy area	2'568'900/1'250'000	Switzerland	18.7	28.7	This study
SCR003-1376	LL-44	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Upper Kimmeridgian	Eudoxus	Lower Virgula Marls	1700	Jura, Porrentruy area	2'568'900/1'250'000	Switzerland	18.3	30.5	This study
TCH004-637	LL-46	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Upper Kimmeridgian	Eudoxus	Lower Virgula Marls	2100	Jura, Porrentruy area	2'568'600/1'250'425	Switzerland	18.8	28.3	This study
SCR003-527	LL-48	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Upper Kimmeridgian	Eudoxus	Lower Virgula Marls	2100	Jura, Porrentruy area	2'568'900/1'250'000	Switzerland	18.6	29.2	This study
SCR003-71	LL-49	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Upper Kimmeridgian	Eudoxus	Lower Virgula Marls	2250	Jura, Porrentruy area	2'568'900/1'250'000	Switzerland	18.5	29.7	This study
TCH004-50	LL-50	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Upper Kimmeridgian	Eudoxus	Lower Virgula Marls	2250	Jura, Porrentruy area	2'568'600/1'250'425	Switzerland	17.9	32.2	This study
TCH004-73	LL-51	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Upper Kimmeridgian	Eudoxus	Lower Virgula Marls	2250	Jura, Porrentruy area	2'568'600/1'250'425	Switzerland	17.6	33.6	This study
TCH004-1092	LL-52	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Upper Kimmeridgian	Eudoxus	Lower Virgula Marls	2300	Jura, Porrentruy area	2'568'600/1'250'425	Switzerland	17.8	32.8	This study
TCH006-670	LL-53	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Upper Kimmeridgian	Eudoxus	Lower Virgula Marls	2300	Jura, Porrentruy area	2'568'600/1'250'425	Switzerland	18.2	30.9	This study
TCH004-1069	LL-54	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Upper Kimmeridgian	Eudoxus	Lower Virgula Marls	2300	Jura, Porrentruy area	2'568'600/1'250'425	Switzerland	17.8	32.8	This study

TCH004-36	LL-55	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Upper Kimmeridgian	Eudoxus	Lower Virgula Marls	2500	Jura, Porrentruy area	2'568'600/1'250'425	Switzerland	17.8	32.8	This study
TCH006-112	LL-56	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Upper Kimmeridgian	Eudoxus	Lower Virgula Marls	3000-3500	Jura, Porrentruy area	2'568'600/1'250'425	Switzerland	18.9	28.0	This study
TCH006-108	LL-57	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Upper Kimmeridgian	Eudoxus	Lower Virgula Marls	3000-3500	Jura, Porrentruy area	2'568'600/1'250'425	Switzerland	17.0	36.3	This study
TCH006-173	LL-58	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Upper Kimmeridgian	Eudoxus	Lower Virgula Marls	3000-3500	Jura, Porrentruy area	2'568'600/1'250'425	Switzerland	18.2	31.2	This study
SCR011-281	LL-6	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Upper Kimmeridgian	Eudoxus	Lower Virgula Marls	4000	Jura, Porrentruy area	2'568'900/1'250'000	Switzerland	17.9	32.2	This study
SCR010-763	LL-12	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Upper Kimmeridgian	Eudoxus	Lower Virgula Marls	4500	Jura, Porrentruy area	2'568'900/1'250'000	Switzerland	18.1	31.5	This study
SCR010-765	LL-8	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Upper Kimmeridgian	Eudoxus	Lower Virgula Marls	4500	Jura, Porrentruy area	2'568'900/1'250'000	Switzerland	17.4	34.6	This study
SCR010-758	LL-15	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Upper Kimmeridgian	Eudoxus	Lower Virgula Marls	2400	Jura, Porrentruy area	2'568'900/1'250'000	Switzerland	17.0	36.5	This study
VTT010-3	LL-17	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Lower Kimmeridgian	Cymodoce	Banné Marls	-	Jura, Porrentruy area	2'568'250/1'252'160	Switzerland	18.0	31.9	This study
BSY008-579	LL-10	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Upper Kimmeridgian	Eudoxus	Lower Virgula Marls	4500	Jura, Porrentruy area	2'568'615/1'251'605	Switzerland	18.3	30.7	This study
SCR003-387	LL-32	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Upper Kimmeridgian	Eudoxus	Lower Virgula Marls	2400	Jura, Porrentruy area	2'568'900/1'250'000	Switzerland	18.2	31.2	This study
SCR002-1150	LL-33	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Upper Kimmeridgian	Eudoxus	Lower Virgula Marls	2400	Jura, Porrentruy area	2'568'900/1'250'000	Switzerland	17.5	34.1	This study
TCH004-239	LL-41	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Upper Kimmeridgian	Eudoxus	Lower Virgula Marls	1200	Jura, Porrentruy area	2'568'600/1'250'425	Switzerland	18.5	29.9	This study
SCR002-224	LL-35	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Upper Kimmeridgian	Eudoxus	Lower Virgula Marls	2100	Jura, Porrentruy area	2'568'900/1'250'000	Switzerland	17.5	34.2	This study
VTT001-4380	LL-37	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Lower Kimmeridgian	Cymodoce	Banné Marls	131	Jura, Porrentruy area	2'568'250/1'252'160	Switzerland	19.7	24.2	This study
VTT001-4696	LL-39	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Lower Kimmeridgian	Cymodoce	Banné Marls	132	Jura, Porrentruy area	2'568'250/1'252'160	Switzerland	19.4	25.6	This study
VTT010-11	AST1	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Lower Kimmeridgian	Cymodoce	Banné Marls	-	Jura, Porrentruy area	2'568'250/1'252'160	Switzerland	18.9	27.8	This study
BSY008-465	AST3	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Upper Kimmeridgian	Eudoxus	Lower Virgula Marls	4000	Jura, Porrentruy area	2'568'615/1'251'605	Switzerland	18.2	31.0	This study
NMS 7235 (small)	SOLa1	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Upper Kimmeridgian	Autissiodorensis	Solothurn Turtle Limestone	-	Solothurn, Solothurn	-	Switzerland	19.1	26.9	This study
NMS 7235 (large)	SOLa2	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Upper Kimmeridgian	Autissiodorensis	Solothurn Turtle Limestone	-	Solothurn, Solothurn	-	Switzerland	17.6	33.9	This study
NMS 7389	SOLa3	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Upper Kimmeridgian	Autissiodorensis	Solothurn Turtle Limestone	-	Solothurn, Solothurn	-	Switzerland	17.8	32.8	This study
NMS 7390 (in matrix)	SOLa4	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Upper Kimmeridgian	Autissiodorensis	Solothurn Turtle Limestone	-	Solothurn, Solothurn	-	Switzerland	17.9	32.2	This study
NMS 7390	SOLa5	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Upper Kimmeridgian	Autissiodorensis	Solothurn Turtle Limestone	-	Solothurn, Solothurn	-	Switzerland	19.9	23.3	This study
NMS 7390 (large)	SOLa6	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Upper Kimmeridgian	Autissiodorensis	Solothurn Turtle Limestone	-	Solothurn, Solothurn	-	Switzerland	19.5	25.2	This study
NMS 8150	SOLa7	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Lower Kimmeridgian	Divisum	Wettingen Member	Wangener-schichten	Däniken, Solothurn	-	Switzerland	19.3	25.9	This study
NMS 8151	SOLa8	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Lower Kimmeridgian	Divisum	Wettingen Member	-	Oberbuchsiten, Solothurn	-	Switzerland	19.2	26.4	This study
NMS 8153	SOLa9	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Lower Kimmeridgian	Divisum	Wettingen Member	-	Oberbuchsiten, Solothurn	-	Switzerland	17.6	33.7	This study
TCH004-679	LL-61	Pycnodontiformes	Pycnodontiformes	Actinopterygii	T-e	Upper Kimmeridgian	Eudoxus	Lower Virgula Marls	1700	Jura, Porrentruy area	2'568'600/1'250'425	Switzerland	19.4	25.5	This study
VTT006-173	LL-62	Pycnodontiformes	Pycnodontiformes	Actinopterygii	T-e	Lower Kimmeridgian	Cymodoce	Banné Marls	900	Jura, Porrentruy area	2'568'250/1'252'160	Switzerland	20.7	19.6	This study
TCH005-502	LL-63	Pycnodontiformes	Pycnodontiformes	Actinopterygii	T-e	Upper Kimmeridgian	Eudoxus	Lower Virgula Marls	1100-1300	Jura, Porrentruy area	2'568'600/1'250'425	Switzerland	21.9	14.3	This study
SCR003-177	LL-64	Pycnodontiformes	Pycnodontiformes	Actinopterygii	T-e	Upper Kimmeridgian	Eudoxus	Lower Virgula Marls	2100	Jura, Porrentruy area	2'568'900/1'250'000	Switzerland	20.6	20.1	This study
SCR003-520	LL-65	Pycnodontiformes	Pycnodontiformes	Actinopterygii	T-e	Upper Kimmeridgian	Eudoxus	Lower Virgula Marls	2400	Jura, Porrentruy area	2'568'900/1'250'000	Switzerland	20.1	22.3	This study
SCR003-1398	LL-66	Pycnodontiformes	Pycnodontiformes	Actinopterygii	T-e	Upper Kimmeridgian	Eudoxus	Lower Virgula Marls	2400	Jura, Porrentruy area	2'568'900/1'250'000	Switzerland	19.2	26.5	This study
TCH007-98	LL-67	Pycnodontiformes	Pycnodontiformes	Actinopterygii	T-e	Upper Kimmeridgian	Eudoxus	Lower Virgula Marls	4500	Jura, Porrentruy area	2'568'600/1'250'425	Switzerland	20.2	22.2	This study
SCR010-454	LL-68	Pycnodontiformes	Pycnodontiformes	Actinopterygii	T-e	Upper Kimmeridgian	Eudoxus	Lower Virgula Marls	4500	Jura, Porrentruy area	2'568'900/1'250'000	Switzerland	20.1	22.4	This study
TCH006-1634	PYC1	Pycnodontiformes	Pycnodontiformes	Actinopterygii	T-e	Upper Kimmeridgian	Eudoxus	Lower Virgula Marls	2450	Jura, Porrentruy area	2'568'600/1'250'425	Switzerland	18.9	27.8	This study
TCH007-720	PYC2	Pycnodontiformes	Pycnodontiformes	Actinopterygii	T-e	Upper Kimmeridgian	Eudoxus	Lower Virgula Marls	4500	Jura, Porrentruy area	2'568'600/1'250'425	Switzerland	18.2	31.0	This study

TCH006-1608	PYC3	Pycnodontiformes	Pycnodontiformes	Actinopterygii	T-e	Lower Kimmeridgian	Eudoxus	Banné Maris	2250	Jura, Porrentruy area	2°56'600/1°250'425	Switzerland	19.1	26.9	This study
TCH006-1828	PYC4	Pycnodontiformes	Pycnodontiformes	Actinopterygii	T-e	Upper Kimmeridgian	Eudoxus	Solothurn Turtle Limestone	2300	Jura, Porrentruy area	2°56'600/1°250'425	Switzerland	19.8	23.7	This study
VTT003-351	PYC5	Pycnodontiformes	Pycnodontiformes	Actinopterygii	T-e	Lower Kimmeridgian	Cymodoce	Solothurn Turtle Limestone	300	Jura, Porrentruy area	2°56'250/1°252'160	Switzerland	18.9	27.8	This study
NMS 7229	SOLp1	Pycnodontiformes	Pycnodontiformes	Actinopterygii	T-e	Upper Kimmeridgian	Autissiodorensis	-	-	Solothurn, Solothurn	-	Switzerland	19.1	27.2	This study
NMS 20694	SOLp3	Pycnodontiformes	Pycnodontiformes	Actinopterygii	T-e	Upper Kimmeridgian	Autissiodorensis	-	-	Solothurn, Solothurn	-	Switzerland	20.3	21.8	This study
NMS 7413	SOLp4	Pycnodontiformes	Pycnodontiformes	Actinopterygii	T-e	Upper Kimmeridgian	Autissiodorensis	-	-	Solothurn, Solothurn	-	Switzerland	19.0	27.3	This study
-	93357	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Lower-Middle Bathonian	Progracilis	-	-	Stonesfield	-	United Kingdom	20.5	20.7	Lécuyer et al. 2003
-	93360	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Upper Bathonian	post-Retrocostatum	-	-	Wiltshire	-	United Kingdom	20.5	20.7	Lécuyer et al. 2003
-	93362	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Upper Bathonian	post-Hodsoni	-	-	Indre, St-Gaultier	-	France	20.3	21.6	Lécuyer et al. 2003
-	93363	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Upper Oxfordian	Bifurcatus	-	-	Calvados, Hennequeville	-	France	18.5	29.7	Lécuyer et al. 2003
-	93364	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Upper Oxfordian	Planula	-	-	Yonne, Tonnerre	-	France	19.7	24.3	Lécuyer et al. 2003
-	AST 53	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Lower-Middle Bathonian	Progracilis-Subcontractus	-	-	Jura, Mérey-sur-Montrond	-	France	18.7	28.8	Lécuyer et al. 2003
-	AST 54	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Middle-Upper Bathonian	Hodsoni-Subcontractus	-	-	Ain, Nantua	-	France	19.6	24.7	Lécuyer et al. 2003
-	AST 55	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Lower Callovian	Bullatus	-	-	Côte d'Or, Ladoix	-	France	19.0	27.4	Lécuyer et al. 2003
-	Be-1A	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Upper Bathonian	Discus-Bullatus	-	-	Haute Saône, Merey	-	France	19.1	27.0	Lécuyer et al. 2003
-	Be-2A	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Lower Callovian	Koenigi	-	-	Doubs, Ormans	-	France	19.6	24.7	Lécuyer et al. 2003
-	Be-3A	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Lower Oxfordian	Cordatum-Mariae	-	-	Doubs, Ormans	-	France	20.9	18.9	Lécuyer et al. 2003
-	Bi	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Lower Callovian	Bullatus	-	-	Yonne, Brion	-	France	20.2	22.0	Lécuyer et al. 2003
-	D10	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Lower Callovian	Calloviense	-	-	Côte d'Or, Etrochey	-	France	18.8	28.3	Lécuyer et al. 2003
-	D103-p	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Middle Bathonian	-	-	-	Gloucester	-	United Kingdom	19.8	23.8	Lécuyer et al. 2003
-	D109-A	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Lower-Middle Bathonian	-	-	-	Cher, Vallenay	-	France	19.4	25.6	Lécuyer et al. 2003
-	D21A	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Upper Bathonian	Discus	-	-	Côte d'Or, Les Perrières	-	France	19.1	27.0	Lécuyer et al. 2003
-	D25	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Lower Callovian	Bullatus	-	-	Côte d'Or, Dijon	-	France	19.6	24.7	Lécuyer et al. 2003
-	D27	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Upper Callovian	Athleta	-	-	Côte d'Or, Talant	-	France	19.5	25.2	Lécuyer et al. 2003
-	D35	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Upper Bathonian	Discus	-	-	Boulonnais, Rinxent	-	France	21.3	17.1	Lécuyer et al. 2003
-	D36	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Upper Callovian	Athleta	-	-	Côte d'Or, Prusly-sur-Ource	-	France	18.9	27.9	Lécuyer et al. 2003
-	D37	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Middle Callovian	Coronatum	-	-	Côte d'Or, Etrochey	-	France	19.2	26.5	Lécuyer et al. 2003
-	D39	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Lower Oxfordian	Mariae	-	-	Woodham	-	United Kingdom	19.1	27.0	Lécuyer et al. 2003
-	D66	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Lower Bajocian	Sauzei	-	-	Var, Solliès-Toucas	-	France	18.7	28.8	Lécuyer et al. 2003
-	D6	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Middle Bathonian	Progracilis-Subcontractus	-	-	Côte d'Or, Vanvey	-	France	19.7	24.3	Lécuyer et al. 2003
-	D71	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Upper Bathonian	juste ante Discus	-	-	Pas-de-Calais, Locquinghen	-	France	21.7	15.3	Lécuyer et al. 2003
-	Ja1	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Upper Bathonian	Discus	-	-	Yonne, Jaulges	-	France	20.3	21.6	Lécuyer et al. 2003
-	L10	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Upper Bajocian	Acris	-	-	Saône et Loire, Hurigny	-	France	20.1	22.5	Lécuyer et al. 2003
-	L3	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Lower Oxfordian	Cordatum	-	-	Jura, Pont du diable	-	Switzerland	20.4	21.1	Lécuyer et al. 2003
-	L6-e	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Middle Callovian	Jason	-	-	Haute Saône, Authoison	-	France	19.1	27.0	Lécuyer et al. 2003
-	M2	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Middle Callovian	Coronatum	-	-	Vienne, Carrière des Loudines	-	France	19.8	23.8	Lécuyer et al. 2003
-	P11	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Lower Oxfordian	Cordatum	-	-	Calvados, Trouville-sur-Mer	-	France	20.6	20.2	Lécuyer et al. 2003

-	P12	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Upper Bathonian	ante Discus	-	-	Pas-de-Calais, Marquise	-	France	<b>22.3</b>	12.6	Lécuyer et al. 2003
-	P13	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Middle-Upper Bathonian	Hodsoni-Retrocostatum	-	-	Pas-de-Calais, Marquise	-	France	<b>20.6</b>	20.2	Lécuyer et al. 2003
-	P19	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Upper Oxfordian - Lower Kimmeridgian	Planula to Cymodoce	-	-	Saône et Loire, Flacé Macon	-	France	<b>19.7</b>	24.3	Lécuyer et al. 2003
-	P2	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Upper Callovian	Athleta	-	-	Vendée, Saint-Michel-en-l'Herm	-	France	<b>20.8</b>	19.3	Lécuyer et al. 2003
-	P3-e	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Middle-Upper Bathonian	Hodsoni-Retrocostatum	-	-	Sarthe, Mamers	-	France	<b>19.9</b>	23.4	Lécuyer et al. 2003
-	P6-e	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Middle-Upper Bathonian	Hodsoni-Retrocostatum	-	-	Aisne, Aubenton	-	France	<b>20.4</b>	21.1	Lécuyer et al. 2003
-	SERA-e	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Upper Bathonian	Retrocostatum	-	-	Côte d'Or, Nuits-St-Georges	-	France	<b>20.2</b>	22.0	Lécuyer et al. 2003
-	W46	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Upper Callovian - Lower Oxfordian	-	-	-	Vaud, Villeneuve	-	Switzerland	<b>20.5</b>	20.7	Lécuyer et al. 2003
-	93396	<i>Pycnodus</i>	Pycnodontiformes	Actinopterygii	T-e	Portlandian	-	-	-	Solothurn	-	Switzerland	<b>20.0</b>	22.9	Lécuyer et al. 2003
-	93401	<i>Pycnodus</i>	Pycnodontiformes	Actinopterygii	T-e	Middle Bajocian	Humphriesianum	-	-	Saône et Loire, Laives	-	France	<b>19.9</b>	23.4	Lécuyer et al. 2003
-	93471	<i>Mesodon gigas</i>	Pycnodontiformes	Actinopterygii	T-e	Portlandian	-	-	-	Doubs, Villers-le-lac	-	France	<b>20.6</b>	20.2	Lécuyer et al. 2003
-	93365P	Pycnodont	Pycnodontiformes	Actinopterygii	T-e	Middle-Upper Bathonian	Hodsoni	-	-	Isère, Trept	-	France	<b>19.4</b>	25.6	Lécuyer et al. 2003
-	B1p-e	Pycnodontiformes	Pycnodontiformes	Actinopterygii	T-e	Upper Oxfordian	Bimammatum	-	-	Jura, Gächlingen	-	Switzerland	<b>20.5</b>	20.7	Lécuyer et al. 2003
-	B3p	Pycnodontidae	Pycnodontiformes	Actinopterygii	T-e	Middle Oxfordian	Transversarium	-	-	Jura, St-Ursanne	-	Switzerland	<b>21.4</b>	16.6	Lécuyer et al. 2003
-	Be5-p	<i>Pycnodus gigas</i>	Pycnodontiformes	Actinopterygii	T-e	Portlandian	-	-	-	Neuchâtel, La Chau-de-Fonds	-	Switzerland	<b>21.1</b>	18.0	Lécuyer et al. 2003
-	D100-p	Pycnodont	Pycnodontiformes	Actinopterygii	T-e	Middle Oxfordian	Plicatilis-Transversarium	-	-	Yorkshire	-	United Kingdom	<b>20.5</b>	20.7	Lécuyer et al. 2003
-	D106-p	Pycnodont	Pycnodontiformes	Actinopterygii	T-e	Middle-Upper Oxfordian	Transversarium-Bifurcatus	-	-	Meuse, Verdun	-	France	<b>21.2</b>	17.5	Lécuyer et al. 2003
-	D107-p	Pycnodont	Pycnodontiformes	Actinopterygii	T-e	Lower Tithonian	Gigas	-	-	Aube, Bourguignons	-	France	<b>20.8</b>	19.3	Lécuyer et al. 2003
-	D108-p	<i>Microdon</i>	Pycnodontiformes	Actinopterygii	T-e	Upper Oxfordian	Planula	-	-	Yonne, Tonnerre	-	France	<b>20.0</b>	22.9	Lécuyer et al. 2003
-	D111-p	Pycnodont	Pycnodontiformes	Actinopterygii	T-e	Lower Bathonian	Convergens	-	-	Var, Bandol	-	France	<b>19.7</b>	24.3	Lécuyer et al. 2003
-	D11a	<i>Pycnodus</i>	Pycnodontiformes	Actinopterygii	T-e	Lower Callovian	Calloviense	-	-	Côte d'Or, Etrochey	-	France	<b>20.0</b>	22.9	Lécuyer et al. 2003
-	D19	Pycnodont	Pycnodontiformes	Actinopterygii	T-e	Upper Bathonian	Discus	-	-	Côte d'Or, Les Perrières	-	France	<b>18.8</b>	28.3	Lécuyer et al. 2003
-	D21P	Pycnodont	Pycnodontiformes	Actinopterygii	T-e	Upper Bathonian	Discus	-	-	Côte d'Or, Les Perrières	-	France	<b>18.7</b>	28.8	Lécuyer et al. 2003
-	D33	Pycnodont	Pycnodontiformes	Actinopterygii	T-e	Upper Kimmeridgian	Mutabilis or Eudoxus	-	-	Aube, Dolancourt	-	France	<b>20.0</b>	22.9	Lécuyer et al. 2003
-	D46	<i>Mesodon gigas</i>	Pycnodontiformes	Actinopterygii	T-e	Lower Tithonian	Gigas	-	-	Haute Saône, Mantoche	-	France	<b>20.1</b>	22.5	Lécuyer et al. 2003
-	D69	Pycnodont	Pycnodontiformes	Actinopterygii	T-e	Kimmeridgian	-	-	-	Haute Saône, Arc-les-Gray	-	France	<b>21.3</b>	17.1	Lécuyer et al. 2003
-	L13	Pycnodont	Pycnodontiformes	Actinopterygii	T-e	Upper Oxfordian	Bifurcatus	-	-	Meurthe et Moselle, Pagny	-	France	<b>20.6</b>	20.2	Lécuyer et al. 2003
-	L9	<i>Pycnodus</i>	Pycnodontiformes	Actinopterygii	T-e	Middle Bajocian	Humphriesianum	-	-	Saône et Loire, Sennecey	-	France	<b>20.5</b>	20.7	Lécuyer et al. 2003
-	P1	<i>Mesodon</i>	Pycnodontiformes	Actinopterygii	T-e	Middle-Upper Bathonian	Hodsoni-Retrocostatum	-	-	Calvados, Ranville	-	France	<b>21.0</b>	18.4	Lécuyer et al. 2003
-	P15p	<i>Pycnodus</i>	Pycnodontiformes	Actinopterygii	T-e	Middle Oxfordian	-	-	-	Côte d'Or, Gigny	-	France	<b>20.9</b>	18.9	Lécuyer et al. 2003
-	P16	<i>Pycnodus</i>	Pycnodontiformes	Actinopterygii	T-e	Upper Oxfordian	Bifurcatus	-	-	Yonne, Mailly-le-Château	-	France	<b>20.6</b>	20.2	Lécuyer et al. 2003
-	BG32	<i>Proscinetes</i>	Pycnodontiformes	Actinopterygii	T-e	Lower Tithonian	Mucronatum	-	-	Canjuers	-	France	<b>19.9</b>	23.4	Billon-Bruyat et al. 2005
-	BG38	<i>Proscinetes</i>	Pycnodontiformes	Actinopterygii	T-e	Lower Tithonian	Mucronatum	-	-	Canjuers	-	France	<b>19.8</b>	23.8	Billon-Bruyat et al. 2005
-	BG45	Pycnodontiformes	Pycnodontiformes	Actinopterygii	T-e	Upper Kimmeridgian - Lower Tithonian	Beckeri-Hybonotum	-	-	Cerin	-	France	<b>20.8</b>	19.3	Billon-Bruyat et al. 2005
-	BG48	Pycnodontiformes	Pycnodontiformes	Actinopterygii	T-e	Upper Kimmeridgian - Lower Tithonian	Beckeri-Hybonotum	-	-	Cerin	-	France	<b>20.8</b>	19.3	Billon-Bruyat et al. 2005
-	BG49	Pycnodontiformes	Pycnodontiformes	Actinopterygii	T-e	Upper Kimmeridgian - Lower Tithonian	Beckeri-Hybonotum	-	-	Cerin	-	France	<b>20.2</b>	22.0	Billon-Bruyat et al. 2005
-	BG67	<i>Gyrodus circularis</i>	Pycnodontiformes	Actinopterygii	T-e	Lower Tithonian	Hybonotum	-	-	Solnhofen	-	Germany	<b>19.9</b>	23.4	Billon-Bruyat et al. 2005

-	-	Pycnodont	Pycnodontiformes	Actinopterygii	T-e	Upper Kimmeridgian	-	-	-	Vaud, Ste-Croix	-	Switzerland	21.4	16.6	Dromart et al. 2003
-	-	Pycnodont	Pycnodontiformes	Actinopterygii	T-e	Upper Kimmeridgian	Mutabilis-Eudoxus	-	-	Jura, Daulencourt	-	France	20.2	22.0	Dromart et al. 2003
-	-	Pycnodont	Pycnodontiformes	Actinopterygii	T-e	Upper Oxfordian	Bimammatum	-	-	Jura, Gächlingen	-	Switzerland	20.5	20.7	Dromart et al. 2003
-	-	Pycnodont	Pycnodontiformes	Actinopterygii	T-e	Upper Oxfordian	Bifurcatus	-	-	Côte d'Or, Mailly-le-Château	-	France	20.6	20.2	Dromart et al. 2003
-	-	Pycnodont	Pycnodontiformes	Actinopterygii	T-e	Middle Oxfordian	Plicatilis/	-	-	Yonne, Gigny	-	France	20.9	18.9	Dromart et al. 2003
-	-	Pycnodont	Pycnodontiformes	Actinopterygii	T-e	Lower Callovian	Calloviense	-	-	Côte d'Or, Etrochey	-	France	20.0	22.9	Dromart et al. 2003
-	-	Pycnodont	Pycnodontiformes	Actinopterygii	T-e	Upper Bathonian	Discus	-	-	Côte d'Or, Les Perrières (Dijon)	-	France	18.8	28.3	Dromart et al. 2003
-	-	Pycnodont	Pycnodontiformes	Actinopterygii	T-e	Upper Bathonian	Discus	-	-	Côte d'Or, Les Perrières (Dijon)	-	France	18.7	28.8	Dromart et al. 2003
-	-	Pycnodont	Pycnodontiformes	Actinopterygii	T-e	Upper Bathonian	Hodsoni	-	-	Isère, Trept	-	France	19.3	26.1	Dromart et al. 2003
-	-	Pycnodont	Pycnodontiformes	Actinopterygii	T-e	Lower Bathonian	Zigzag	-	-	Var, Bandol	-	France	19.7	24.3	Dromart et al. 2003
-	-	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Lower Kimmeridgian	Planula-Platynota	-	-	Saône-et-Loire, Flacé-les-Mâcons	-	France	19.7	24.3	Dromart et al. 2003
-	-	<i>Asteracanthus ornatissimus</i>	Hybodontiformes	Chondrichthyes	T-e	Upper Oxfordian	Planula	-	-	Yonne, Tonnerre	-	France	19.7	24.3	Dromart et al. 2003
-	-	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Lower Oxfordian	Cordatum	-	-	Jura, Salins	-	France	20.4	21.1	Dromart et al. 2003
-	-	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Lower Oxfordian	Mariae/	-	-	Jura, Ornans	-	France	20.9	18.9	Dromart et al. 2003
-	-	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Callovian/ Oxfordian	Lamberti/	-	-	Vaud, Arvel	-	Switzerland	20.5	20.7	Dromart et al. 2003
-	-	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Upper Callovian	Athleta	-	-	Côte d'Or, Talant	-	France	19.5	25.2	Dromart et al. 2003
-	-	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Upper Callovian	Athleta	-	-	Côte d'Or, Prusly	-	France	18.9	27.9	Dromart et al. 2003
-	-	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Middle Callovian	Coronatum	-	-	Côte d'Or, Etrochey	-	France	19.2	26.5	Dromart et al. 2003
-	-	<i>Asteracanthus tenuis</i>	Hybodontiformes	Chondrichthyes	T-e	Middle Callovian	Jason	-	-	Côte d'Or, Authoison	-	France	19.1	27.0	Dromart et al. 2003
-	-	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Lower Callovian	Herveyi	-	-	Yonne, Brion (well)	-	France	20.2	22.0	Dromart et al. 2003
-	-	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Lower Callovian	Herveyi	-	-	Côte d'Or, Colline St-Anne	-	France	19.8	23.8	Dromart et al. 2003
-	-	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Lower Callovian	Herveyi	-	-	Côte d'Or, Ladoix	-	France	19.0	27.4	Dromart et al. 2003
-	-	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Upper Bathonian	Discus	-	-	Côte d'Or, Les Perrières (Dijon)	-	France	19.1	27.0	Dromart et al. 2003
-	-	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Upper Bathonian	Discus	-	-	Yonne, Jaulges (well)	-	France	20.7	19.8	Dromart et al. 2003
-	-	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Upper Bathonian	Orbis	-	-	Côte d'Or, Nuits-St-Georges	-	France	20.2	22.0	Dromart et al. 2003
-	-	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Middle Bathonian	Morisi	-	-	Ain, Nantua	-	France	19.6	24.7	Dromart et al. 2003
-	-	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Lower Bathonian	Tenuiplicatus	-	-	Côte d'Or, Merey	-	France	18.7	28.8	Dromart et al. 2003
-	-	<i>Asteracanthus</i>	Hybodontiformes	Chondrichthyes	T-e	Upper Bajocian	Parkinsoni	-	-	Saône et Loire, Hurigny	-	France	20.1	22.5	Dromart et al. 2003

\*eq.(1) refers to the equation of Lécuyer et al. (2013) used on fish phosphate :  $T (^{\circ}C) = 117.4(\pm 9.5) - 4.50(\pm 0.43) * (\delta^{18}O_{PO_4} - \delta^{18}O_{H_2O})$

T-b : Tooth - bulk

T-d : Tooth - dentine

T-e : Tooth - enamel