Paleoenvironmental significance and provenance of the Cretaceous calcareous deposits from the Djerem sub-basin (Adamawa, Cameroon) during the Gondwana evolution: Sedimentary structures and geochemical constraints

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Supplementary Material captions

Supplementary Material 1: Field photographs and photomicrographs of syn-sedimentary structures; A: Aligned pseudo-nodules structure; B: Bedding structure; C: Convolute structure; D: Lamination microstructure; E: Convolute microstructure.

Supplementary Material 2: Field and hand specimen photographs showing syn- and post-sedimentary structures; A: Splitting structures affecting the Fe-shale outcrop; B: Lenticular structure; C: Normal fault; D: Joints and faults affecting the shales outcrop; E: Post-depositional tectonic affecting the shales outcrop (Slickenside with striation).

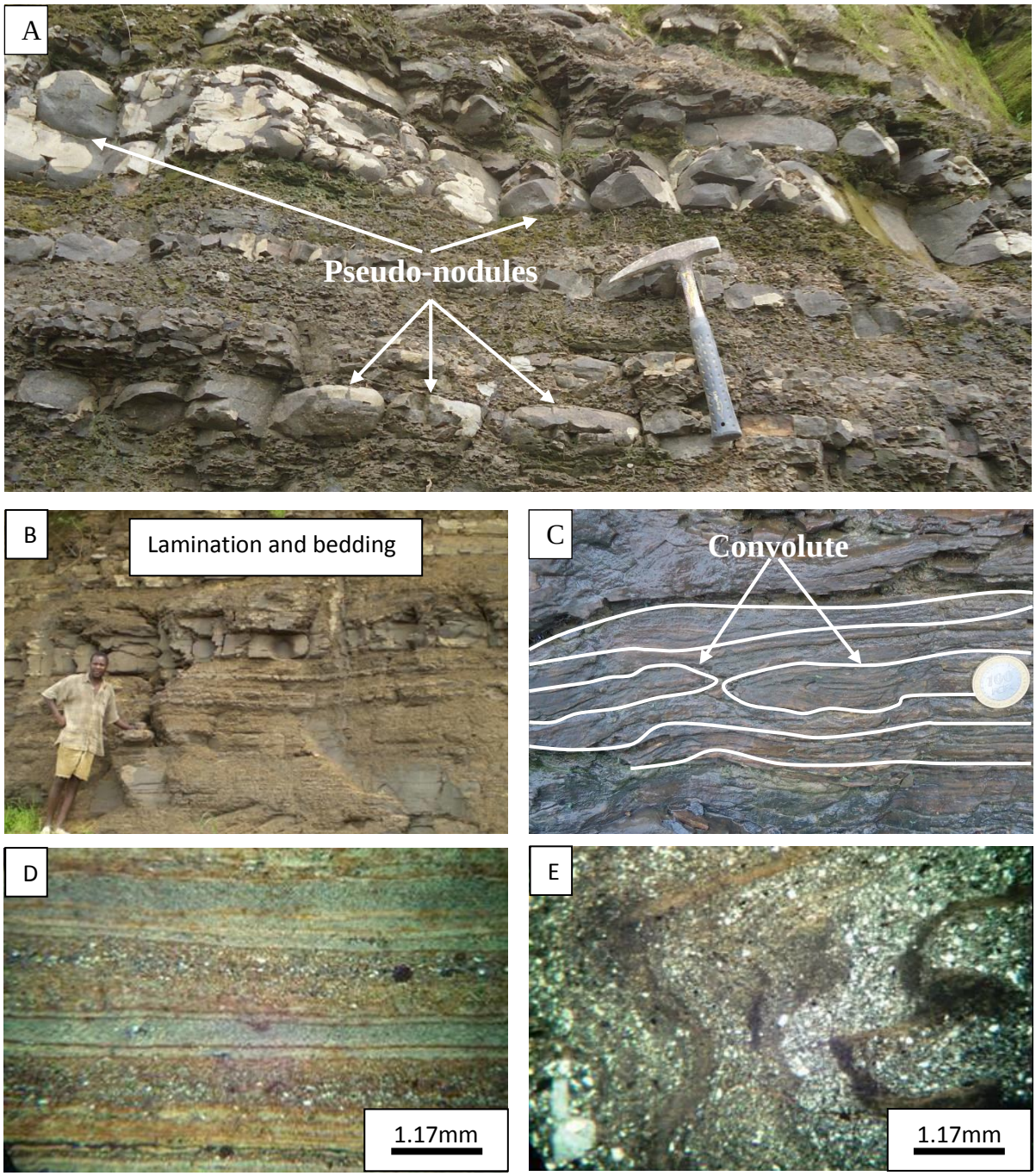
Supplementary Material 3: The pole (A), density (B) and rose win (C) diagrams of joints and faults affecting the shales deposits.

Supplementary Material 4: Microstructure photographs of studied samples; A: Undulated carbonated lens; B: Coal laminae; C: Very fine clastic iso-granular microstructure; D: Sericitization of plagioclase; E: Chloritized and warped biotite; F: Carbonated cement; G: Calcite cement with characteristic cleavage; H: Secondary silica (Cement).

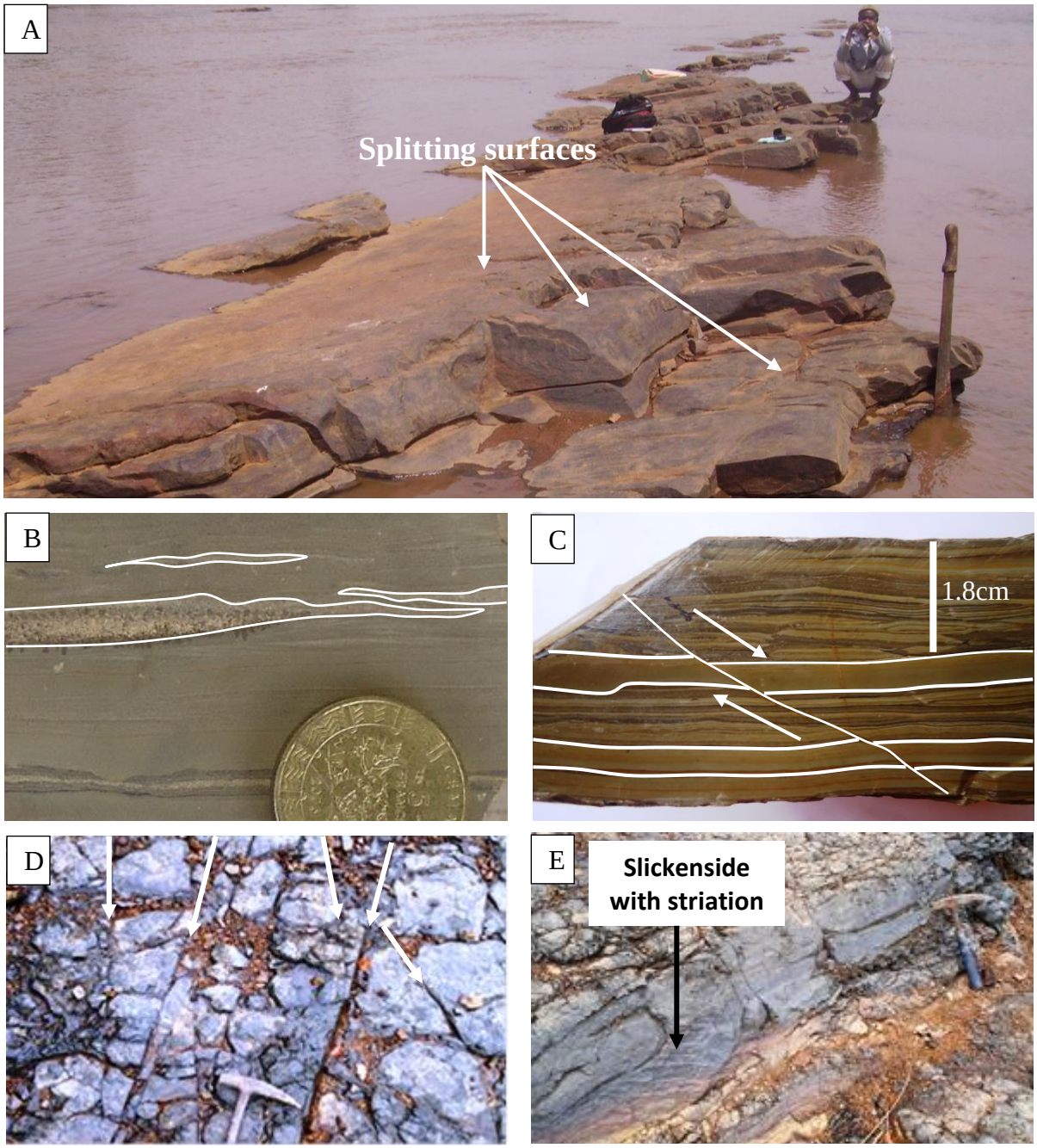
Supplementary Material 5: Major elements composition (wt. %) and elemental ratios of the studied samples

Supplementary Material 6: Pearson's inter-element correlation matrix for major elements

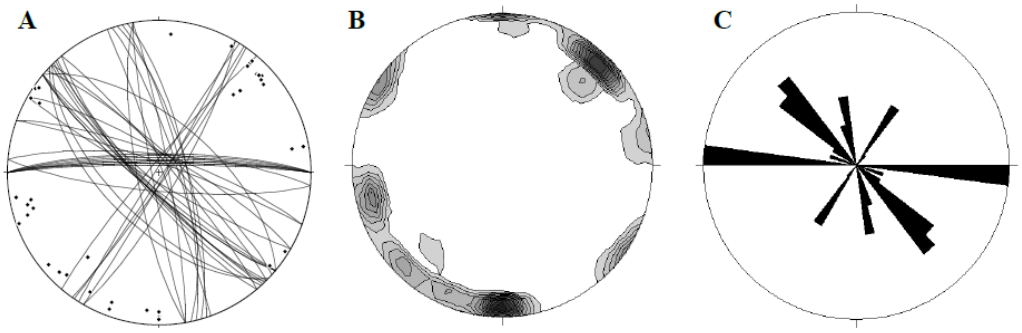
Supplementary Material 7: Trace elements composition (ppm) and elemental ratios of the studied samples



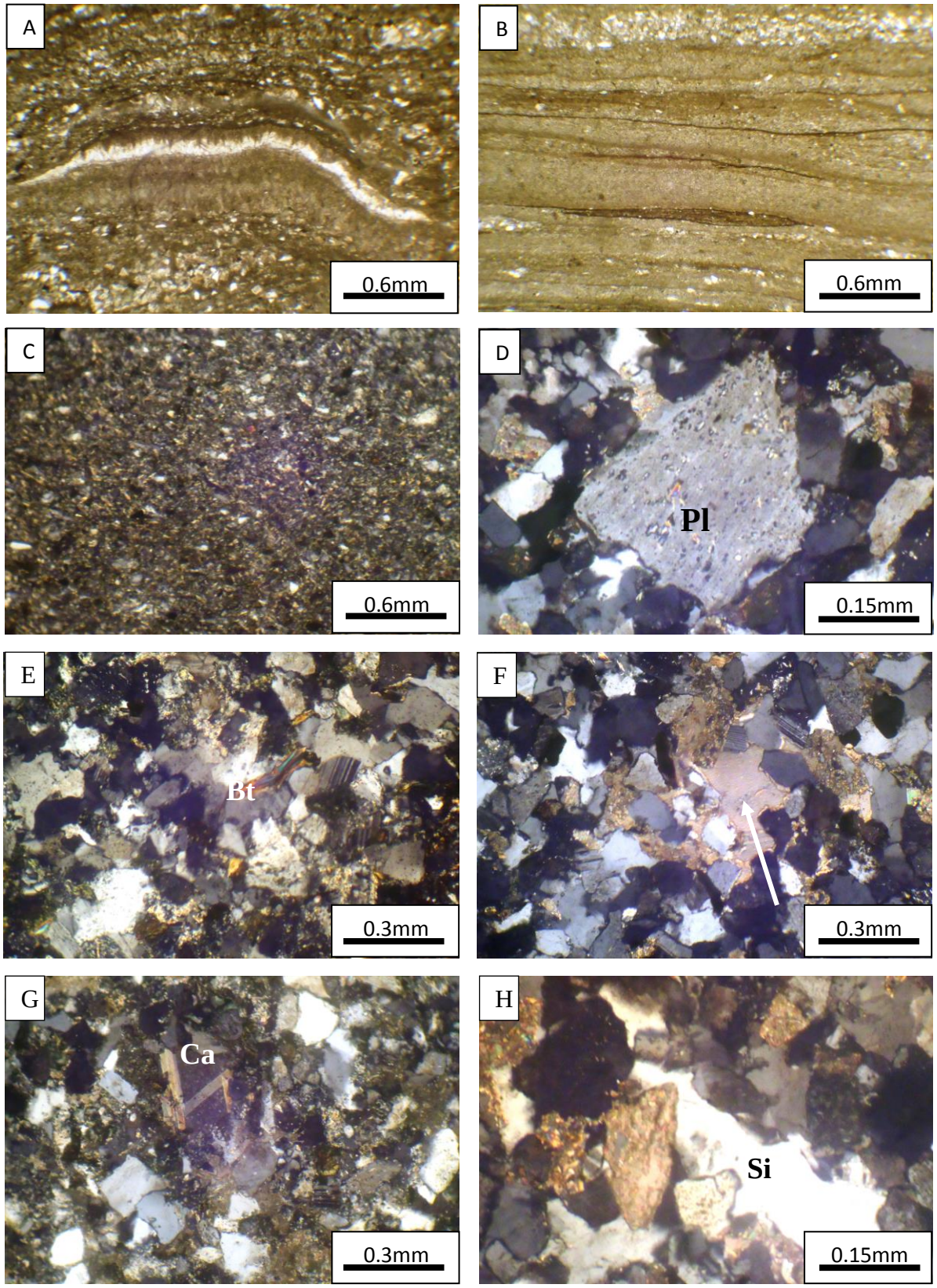
Supplementary Material 1



Supplementary Material 2



Supplementary Material 3



Supplementary Material 4

Supplementary Material 5: Major elements composition (wt. %) and elemental ratios of the studied samples

	Samples							Standard
	DT31	**DT32**	**DT55**	**DT75**	**DT76**	**DT77**	**DT78**	**DL**
SiO_2	59.92	61.34	64.01	66.68	65.56	63.97	71.53	0.01
Al_2O_3	17.28	16.09	13.38	13.99	13.13	15.04	13.39	0.01
Fe_2O_3	6.46	6.21	5.32	4.19	3.64	5.3	3.41	0.04
MgO	2.87	2.53	2.32	1.99	1.74	2.59	1.27	0.01
CaO	1.36	1.53	3.19	2.37	4.58	2.17	1.08	0.01
Na_2O	2.28	2.28	5.17	2.96	3.41	2.84	3.69	0.01
K_2O	4.34	3.79	1.23	3.3	1.92	3.25	1.66	0.01
TiO_2	0.79	0.85	0.81	0.67	0.63	0.8	0.66	0.01
P_2O_5	0.21	0.32	0.43	0.27	0.28	0.32	0.31	0.01
MnO	0.12	0.09	0.15	0.1	0.1	0.12	0.08	0.01
Cr_2O_3	0.013	0.012	0.01	0.008	0.008	0.01	0.008	0.002
LOI	4.0	4.6	3.6	3.1	4.6	3.3	2.7	-5.1
Total	99.64	99.64	99.62	99.63	99.60	99.71	99.79	-
CIA	68.41	67.92	58.25	61.85	60.04	64.55	67.56	-
PIA	78.05	98.42	64.94	86.04	72.27	88.37	80.54	-
ICV	1.05	1.07	1.35	1.11	1.21	1.13	0.88	-
CIW	82.60	80.85	61.55	72.41	62.17	75.01	73.73	-

LOI = Loss of Ignition; CIA (%) = $[Al_2O_3/(Al_2O_3 + CaO^* + Na_2O + K_2O)] \times 100$ from Nesbitt and Young (1982); PIA (%) = $[Al_2O_3 - K_2O /(Al_2O_3 + CaO^* + Na_2O - K_2O)] \times 100$ from Nesbitt and Young and Fedo et al. (1995). IVC = $(FeO_3 + K_2O + Na_2O + CaO + MgO + TiO_2)/ Al_2O_3$ from Cox et al. (1995) ; CIW = $[Al_2O_3/(Al_2O_3 + CaO^* + Na_2O)] \times 100$ from Harnois (1988). The PAAS and UCC values are cited from Taylor and McLennan (1985) and McLennan (2001)

Supplementary Material 6: Pearson's inter-element correlation matrix for major elements

	SiO_2	Al_2O_3	Fe_2O_3	MgO	CaO	Na_2O	K_2O	TiO_2	P_2O_5	MnO	Cr_2O_3	LOI
SiO_2	1											
Al_2O_3	-0.7764	1										
Fe_2O_3	-0.9109	0.8582	1									
MgO	-0.9379	0.8047	0.9442	1								
CaO	0.0117	-0.5786	-0.3675	-0.1855	1							
Na_2O	0.4132	-0.7500	-0.3828	-0.3965	0.4391	1						
K_2O	-0.6511	0.8992	0.6628	0.6896	-0.4905	-0.9078	1					
TiO_2	-0.7396	0.6454	0.9116	0.8266	-0.3660	-0.1463	0.4124	1				
P_2O_5	0.1636	-0.5114	-0.0438	-0.1058	0.2467	0.7927	-0.6790	0.3203	1			
MnO	-0.4665	0.0442	0.4409	0.5560	0.3125	0.4993	-0.1501	0.4815	0.4628	1		
Cr_2O_3	-0.8712	0.9098	0.9642	0.8652	-0.4416	-0.4479	0.6684	0.8330	-0.1762	0.3099	1	
LOI	-0.6776	0.3353	0.4173	0.3977	0.4114	-0.2971	0.2651	0.2735	-0.1353	0.0388	0.4569	1

* Correlation is significant at 0.05 (0.46 – 0.60)

** Correlation is significant at 0.01 (> 0.60)

Supplementary Material 7: Trace elements composition (ppm) and elemental ratios of the studied samples

	Samples							Standard
	DT31	**DT32**	**DT55**	**DT75**	**DT76**	**DT77**	**DT78**	**DL**
Ba	840	925	309	1688	2177	759	519	1
Ni	37.4	41	26.7	23.8	20	31.3	20	0.1
Sc	15	13	10	10	8	11	8	1
Be	8	5	1	5	3	5	3	1
Co	17.8	15.7	16.8	11.8	10.2	15.6	8	0.2
Cs	14.9	8.2	1	6.1	3.7	7.2	2.5	0.1
Ga	24.9	25.6	18.1	18.1	16.3	21.5	15.6	0.5
Hf	6.8	8.2	16.9	7	10.1	8.5	14.1	0.1
Nb	19.7	25.8	26.2	20.3	20.2	23.1	22.1	0.1
Rb	212.1	187	55.9	143	98.8	147.3	93.9	0.1
Sn	4	4	3	3	3	4	3	1
Sr	235.1	260.8	622.1	388.5	472.1	294.9	341.5	0.5
Ta	1.4	1.7	1.9	1.4	1.4	1.7	1.6	0.1
Th	22.1	27.7	39.7	21.9	25.6	29.5	33.4	0.2
U	6.7	8	8	7.6	6.3	7.8	7.8	0.1
V	103	92	103	66	52	80	58	8
W	5.1	4.7	3.5	11.8	9	15.8	2.4	0.5
Zr	249.4	276.7	629.5	253.4	383.6	319.6	539.8	0.1
Y	31.5	42.5	39	26.7	28.1	33.4	23.8	0.1
La	61.1	67.1	86.8	58	64.6	72.2	45.5	0.1
Ce	115.6	105.1	157.9	110.2	118.2	139.1	89.2	0.1
Pr	12.62	14.79	17.67	12.07	12,52	14.79	10.51	0.02
Nd	45.7	55.6	65	43.8	45.8	54.4	39.1	0.3
Sm	7.95	10.46	10.62	7.49	7.72	9.38	6.85	0.05
Eu	1.63	2.27	2.23	1.47	1.45	1.78	1.29	0.02
Gd	6.79	8.88	8.91	5.94	6.34	7.56	5.6	0.05
Tb	0.96	1.27	1.19	0.85	0.87	1.06	0.79	0.01
Dy	5.39	7.21	6.35	4.5	4.98	5.77	4.55	0.05
Ho	1.1	1.43	1.26	0.89	0.97	1.11	0.93	0.02
Er	3.14	4.3	3.6	2.67	2.78	3.23	2.78	0.03
Tm	0.45	0.59	0.54	0.37	0.39	0.49	0.44	0.01
Yb	3.11	3.9	3.58	2.53	2.65	3.16	2.96	0.05
Lu	0.48	0.58	0.59	0.4	0.45	0.51	0.49	0.01