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# CARBON ISOTOPE ANOMALIES NEAR THE K/T BOUNDARY AT THE AERTASI SECTION, XINGJIANG, CHINA

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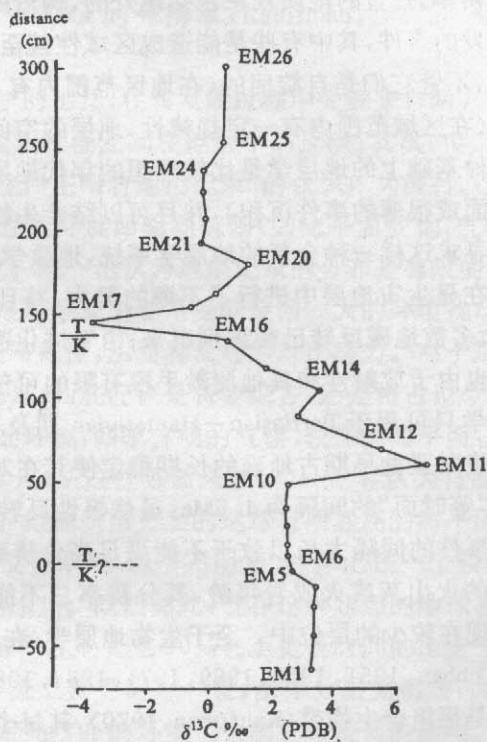
The well-exposed Aertasi K/T boundary lies about 100km southwest of Shaodong County, Tarim, Xingjiang. The strata under the boundary belong to the Upper Cretaceous Ygezya Member, a relatively thick limestone, above the boundary are mudstones and siltstones of the Lower Paleocene Tuylouk Member grading upsection into mudstones and sandy limestones of the Aertasi Member. There has been a long dispute over the age of the Tuylouk Member. In 1990, we sampled the boundary profile for the purpose of stable isotope research and the subsequent results of carbon isotope analyses show that the carbon isotope  $\delta^{13}\text{C}$  values are positive from 1.3m above the base of the Tuylouk Member (sample EM 16) down to the Ygezya Member (see Table 1, Text-fig. 1). Although the lithologies of the two members are quite different, their  $\delta^{13}\text{C}$  values are very similar.

At 1.4m above the base of the Tuylouk (sample EM17) carbon isotope values suddenly turn to a negative value of  $-3.79\text{‰}$ . At 1.6m the carbon isotope values change from  $-1\text{‰}$  to  $1\text{‰}$ , but above the values are again negative.

The variation in  $\delta^{13}\text{C}$  values reflects the temporary violent change in the geological environment between samples EM16 and EM17 (see Text-fig. 1), coinciding with the base of the Tuylouk Member. The change of carbon isotope composition from positive to negative or vice versa indicates variations in the gross amount of biomass. The negative peak of the carbon isotopes near the boundary is related to mass death and mass extinction and reflects the sudden decrease in the gross amount of biomass. This phenomenon of carbon isotope anomalies is one of the important markers for catastrophic events in the geological history. Similar phenomena are also found at other boundaries such as the Precambrian/Cambrian, O/S, F/F, D/C, P/T and K/T boundaries.

Tab. I Carbon isotope ratios of rock samples near K/T boundary at Aertasi

	distance (cm)	samples (No.)	$\delta^{13}\text{C}$ (PDB)
Tertiary Formation	300	EM26	0.16
	252	EM25	0.07
	237	EM24	-0.49
	222	EM23	-0.52
	207	EM22	-0.43
	192	EM21	-0.63
	177	EM20	0.92
	162	EM19	0.00
	152	EM18	-0.82
	142	EM17	-3.79
	132	EM16	0.34
	117	EM15	1.63
	102	EM14	3.42
	87	EM13	2.59
	67	EM12	5.59
	57	EM11	6.77
	47	EM10	2.38
Cretaceous Yegzya Fm.	32	EM9	2.44
	22	EM8	2.33
	12	EM7	2.35
	5	EM6	2.42
	-5	EM5	2.66
	-15	EM4	3.40
	-25	EM3	3.32
	-45	EM2	3.36
-65	EM1	3.31	



Text-fig. 1 Carbon isotope ratios of whole rock samples across K/T boundary at Aertasi Section