Mid-Eocene Thermals record in Istrian Paleogene Basin (Outer Dinarides, Croatia), Neotethys

Galović, Ines; Lukić, Renata; Mužek, Katja; Pezelj, Đurđica; Petrinjak, Krešimir; Horvat, Marija; Ćosović, Vlasta

Data management plan / Plan upravljanja istraživačkim podacima

Geochemical analyses were performed only on selected samples from two sections, Racani and Jakomići I. The criteria for sample selection were based on observation of the textural characteristics of the sediments. Those sediments that exhibited discernible color differentiation (related to organic matter content), were extremely fine-grained, and had layer-thickness of less than 1 mm were subjected to this analysis. Chemical analyses of two samples (RAC2c and J3) were performed using XRF and ICP-AES/MS in Bureau Veritas laboratories, Vancouver, Canada. XRF was used for major and ICP techniques for trace element determination, including rare earth elements. The relative standard deviation for major elements was 0.01 %, whereas for trace elements it was within the range of 0.01-8 ppm. The reliability of the results was checked by standards and duplicate sample analysis by sessions. The LECO method (estimating total organic carbon (TOC) uses an instrument known as a LECO carbon analyser to measure TOC values by combusting the organic carbon and measuring the resulting carbon dioxide produced) were used for carbon and sulphur measurement, respectively. Both have done in Bureau Veritas laboratories, Vancouver, Canada. The CaCO3 content has been determined by calcimetry, in the Department of Geology, Faculty of Science University of Zagreb.

	RAC 2c	**J3**	Detection limit
TOT/C (%)	7.25	6.77	0.02
TOT/S (%)	0.29	0.02	0.02
$CaCO_3$ (%)	61.86	55.41	-
Al_2O_3 (%)	7.01	7.99	0.01
TiO_2 (%)	0.34	0.40	0.01
Mn	0.12	0.08	-
Fe	2.11	2.41	-
Sr (ppm)	686.6	699.9	0.5
Ba (ppm)	247	176	1
Th (ppm)	4.4	5.2	0.2
U (ppm)	1.4	1.4	0.1
Th/U	3.14	3.71	-
Sr/Ba	2.78	3.98	-

Isotopic results - Seven samples from Jakomići and Racani sections were analysed for their oxygen and carbon isotope signatures at the Bloomsbury Environmental Isotope Facility (BEIF) of Department of of Earth Sciences, University College London, on a Nu Perspective mass spectrometer attached to a NuCarb preparation device. Standard and unknown sample material (equivalent of 100µg +/-20 of carbonate) were weighed into individual vials. The vials were loaded in the Nu Carb where each vial is in turn evacuated and acidified at 60°C. The gas released from the sample is then trapped and purified via a series of cryo-traps before being introduced into the Dual Inlet System, where it is measured alternatively against a reference gas.

Precision of all internal (BDH, NCM) and external (NBS19, NBS18) standards is better than ±0.4 for δ13C and ±0.8 for δ18O. All values are reported in permil in the Vienna Pee Dee Belemnite notation (VPDB) relative to NBS19.

Sample Name	$\delta^{13}C$ VPDB	$\delta^{18}O$ VPDB
J1	**1,17**	**-1,07**
J2	**0,88**	**-1,39**
J3	**0,59**	**-1,81**
Rac 2B	**0,67**	**-1,33**
Rac 2C	**0,62**	**-1,43**
Rac 2D	**0,64**	**-1,49**
Rac 3	**0,74**	**-0,97**
KOZ 1	**0,68**	**-1,68**
KOZ 2	**0,86**	**-1,06**
KOZ 3	**0,61**	**-1,73**
KOZ 4	**0,85**	**-1,06**
KOZ 5	**0,62**	**-1,66**
J1-R	**1,14**	**-1,18**
Rac 2B-R	**0,65**	**-1,39**
KOZ 1-R	**0,73**	**-1,59**
	2,09	**-1,84**
	2,11	**-1,83**
	1,94	**-2,22**
	1,96	**-2,32**
	1,92	**-2,30**
error	*0,04*	*0,08*

NCM lab standard

$\delta^{13}C$	$\delta^{18}O$
2,1	-1,9

NBS19 accepted values

$\delta^{13}C$	$\delta^{18}O$
1,95	-2,2

Carbon isotope signatures of samples in Istria compared with regional (Mediterranean) to global data (N to S Atlantic).