G3 Geochemistry, Geophysics, Geosystems

Supporting Information for

High-resolution isotopic variability across EPR segment 16°N: A chronological interpretation of source composition and ridge-seamount interaction

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Additional Supporting Information (Files uploaded separately)

Introduction

This document provides additional and complementary information for the manuscript titled "High-resolution isotopic variability across EPR segment 16°N: A chronological interpretation of source composition and ridge-seamount interaction". Figure S1 presents the isotopic composition of MORB samples from this study area compared to that of MORB samples from the Pacific, Indian and Atlantic oceans. The figure highlights the high isotopic variability recorded along a 15 km by 25 km portion of this EPR segment, as well the unusual isotopic compositions detected in the samples compared to other Pacific MORB. Figure S2 presents a series of complementary diagrams, which illustrate in a more extensive way the major element composition for all lavas analyzed in the study area. The color-coding for this figure is explained on the figure itself and is the same one used in all figures presented in the article. Figure S3 consists of a table in which all the parameters and starting compositions used for trace element modeling presented in Figure 9 of the article can be found. Finally, Tables S1, S2 and S3 (attached in excel format) catalogue the entire dataset collected (isotopic compositions, followed by major, and trace element compositions respectively) for all the samples analyzed in this study.

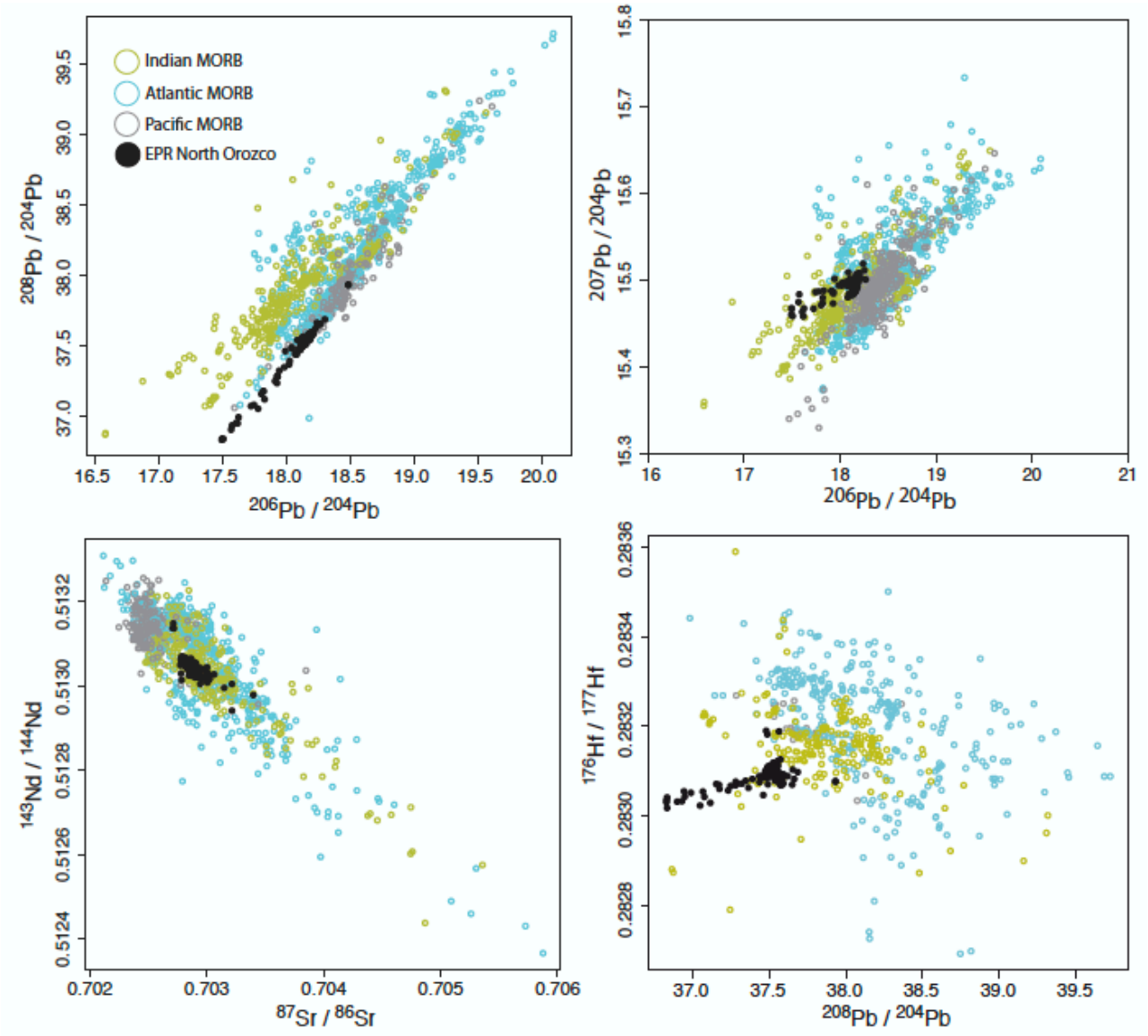

Figure S1. Radiogenic isotope compositions for basalts from the EPR North Orozco segment (this study + data from Mougel et al., 2014) compared to worldwide MORB compositions (Meyzen et al, 2007; Agranier et al., 2005).

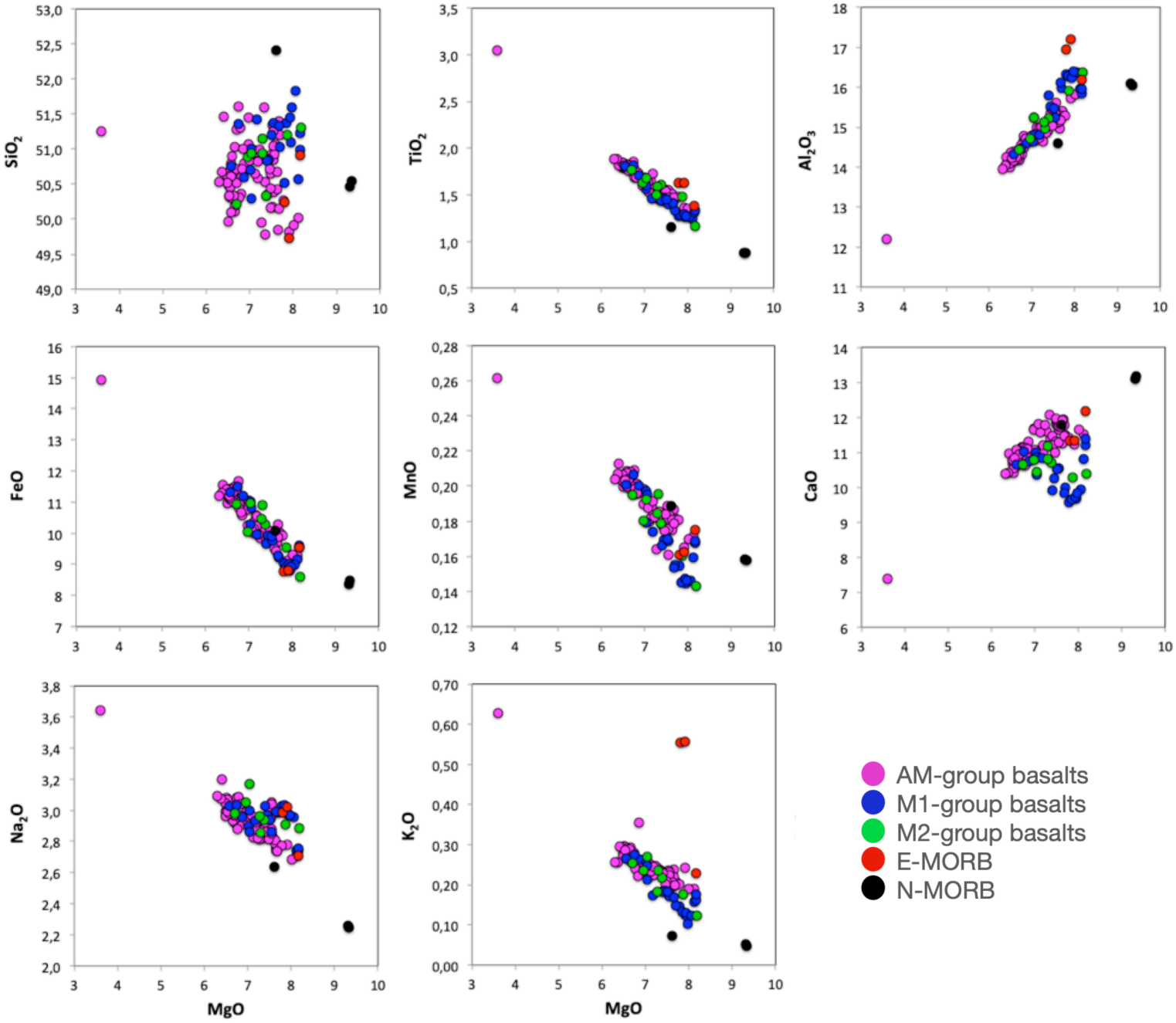

Figure S2. Major element hacker diagrams of samples from the North Orozco EPR segment (this study + data from Mougel et al., 2014).

	Eclogite[1]		Lherzolite[2]	Pyroxenite[3]						Partition coefficients[f]			
	N-MORB[a]	GlOSS[b]	DMM[c]	Gabbro[d]	AM-basalt	M1-basalt	NMORB	EMORB	WP-basalt[e]	Dol	Dcpx	Dopx	Dgt
				HR-20	Average	10PUB17-03	10PUB08-07	10PUB08-01	D42-1				
Cs	0,007	3,48	0,00073	0,001	0,024	0,010	0,004	0,072	-	0,0003	0,0004	0,0002	0,0000
Rb	0,56	57,2	0,058	0,070	3,05	1,14	0,43	6,38	44,84	0,0003	0,0004	0,0002	0,0000
Ba	6,3	776	0,63	1,100	46,4	21,6	10,0	92,7	594,6	0,0000	0,0003	0,0000	0,0001
Th	0,12	6,91	0,0083	0,010	0,321	0,131	0,062	0,910	5,254	0,0000	0,0140	0,0000	0,0014
U	0,047	1,68	0,0030	0,003	0,126	0,047	0,030	0,307	1,503	0,0000	0,0127	0,0000	0,0059
Nb	2,33	8,94	0,14	0,270	5,44	2,30	1,28	14,90	82,02	0,0001	0,0040	0,0030	0,0031
La	2,5	0,63	0,165	0,340	5,87	2,29	1,95	9,93	38,16	0,0002	0,0490	0,0031	0,0016
Ce	7,5	57,3	0,563	1,100	15,7	6,2	6,1	22,6	70,14	0,0001	0,0700	0,0021	0,0050
Pb	0,3	19,9	0,025	0,130	0,725	0,666	0,357	1,020	2,904	0,0003	0,0720	0,0014	0,0003
Nd	7,3	27	0,518	1,320	12,3	6,8	6,6	15,7	29,58	0,0004	0,1780	0,0005	0,0520
Sr	90	327	7,64	30,600	173	184	110	245	720	0,0000	0,1283	0,0007	0,0025
Zr	74	130	6,25	12,200	111	55,6	67	130	236,7	0,0010	0,1190	0,0120	0,2700
Hf	2,05	4,06	0,164	0,350	2,84	1,58	1,68	3,06	4,76	0,0011	0,2000	0,0044	0,2400
Sm	2,63	5,78	0,2180	0,500	3,88	2,46	2,35	4,09	5,85	0,0011	0,2930	0,0016	0,2500
Eu	1,02	1,31	0,089	0,220	1,35	1,06	0,88	1,41	1,98	0,0005	0,4300	0,0090	0,4000
Gd	3,68	5,26	0,339	0,799	4,96	3,15	3,24	4,77	5,69	0,0011	0,4400	0,0065	1,2000
Dy	4,55	4,99	0,478	1,060	5,48	3,35	3,84	4,94	4,76	0,0027	0,3800	0,0110	2,2000
Y	28	29,8	3,94	5,600	34,5	19,8	23,3	28,8	27,78	0,0082	0,4120	0,0150	3,1000
Er	2,97	2,92	0,348	0,670	3,39	1,99	2,51	2,92	2,64	0,0109	0,3900	0,0210	3,6000
Yb	3,05	2,76	0,388	0,650	3,13	1,80	2,39	2,66	2,49	0,0240	0,4000	0,0380	6,6000
Lu	0,455	0,413	0,062	0,100	0,463	0,269	0,351	0,400	0,378	0,0200	0,4490	0,0400	7,1000

[a] Sun and McDonough,1989; [b] Plank and Langmuir, 1998; [c] Local Depleted MORB Mantle (calculated, F= 0.1, 10PUB08-07) ; [d] Malaviarachchi et al., 2010; [e] Donnelly, 2002; [f] Compilation Salters and Stracke, 200

[1] 5% grt, 95% cpx; [2] 55% ol, 15% cpx, 28% opx, 2% sp; [3] 80% cpx, 20% opx

Figure S3. Initial compositions and parameters used for trace element modeling.

Table S1. Radiogenic isotope compositions of basaltic glasses from the transversal profile (this study).

Table S2. Major element compositions of basaltic glasses from the transversal profile (this study).

Table S3. Trace element compositions of basaltic glasses from the transversal profile (this study).