GSA Data Repository 2019065

Coltat, R., et al., 2019, Syntectonic carbonation during synmagmatic mantle exhumation at an ocean-continent transition: Geology, https://doi.org/10.1130/G45530.1

APPENDIX

Extensional and hybrid shear extensional veins were sampled along the section as well as shear bands, with a total of 55 samples. Powders were recovered through micro-drilling on freshly cut surfaces. These were reacted with anhydrous orthophosphoric acid at 50.0°C for a few hours. The liberated CO_2 was measured on a VG Optima triple collector mass spectrometer. In house (Prolabo) and international (NBS 18) standards were analysed continuously. The results are reported in Table DR1 using the delta notation, vs. SMOW (O) and PDB (C). Analytical precision is ±0.1‰ for $\delta^{13}C$, ±0.2‰ for $\delta^{18}O$.

APPENDIX 2. $\delta^{13}C$ vs. $\delta^{18}O$ discriminant diagram showing the different isotopic compositions of the carbonates from modern and ancient (Alps and Apennines) ophicalcites. The shaded box corresponds to typical $\delta^{13}C$ signatures of Jurassic seawater (Podhala et al., 1998).

REFERENCES

Barbieri, M., Masi, U., and Tolmeo, L., 1979, Stable isotope evidence for a marine origin of ophicalcites from the north-central Apennines (Italy): Marine Geology, v. 30, p. 193-204, doi:10.1016/0025-3227(79)90015-X

Lafay, R., Baumgartner, L.P., Schwartz, S., Picazo, S., Montes-Hernandez, G., and Vennemann, T., 2017, Petrologic and stable isotopic studies of a fossil hydrothermal system in ultramafic environment (Chenaillet ophicalcites, Western Alps, France): Processes of carbonate cementation: Lithos, v. 294-295, p. 319-338, doi:10.1016/j.lithos.2017.10.006

Podhala, O.G., Mutterlose, J., and Veizer, J., 1998, Preservation of $\delta^{18}O$ and $\delta^{13}C$ in Belemnite rostra from the Jurassic/Early Cretaceous successions: American Journal of Science, v. 298, p. 324-347

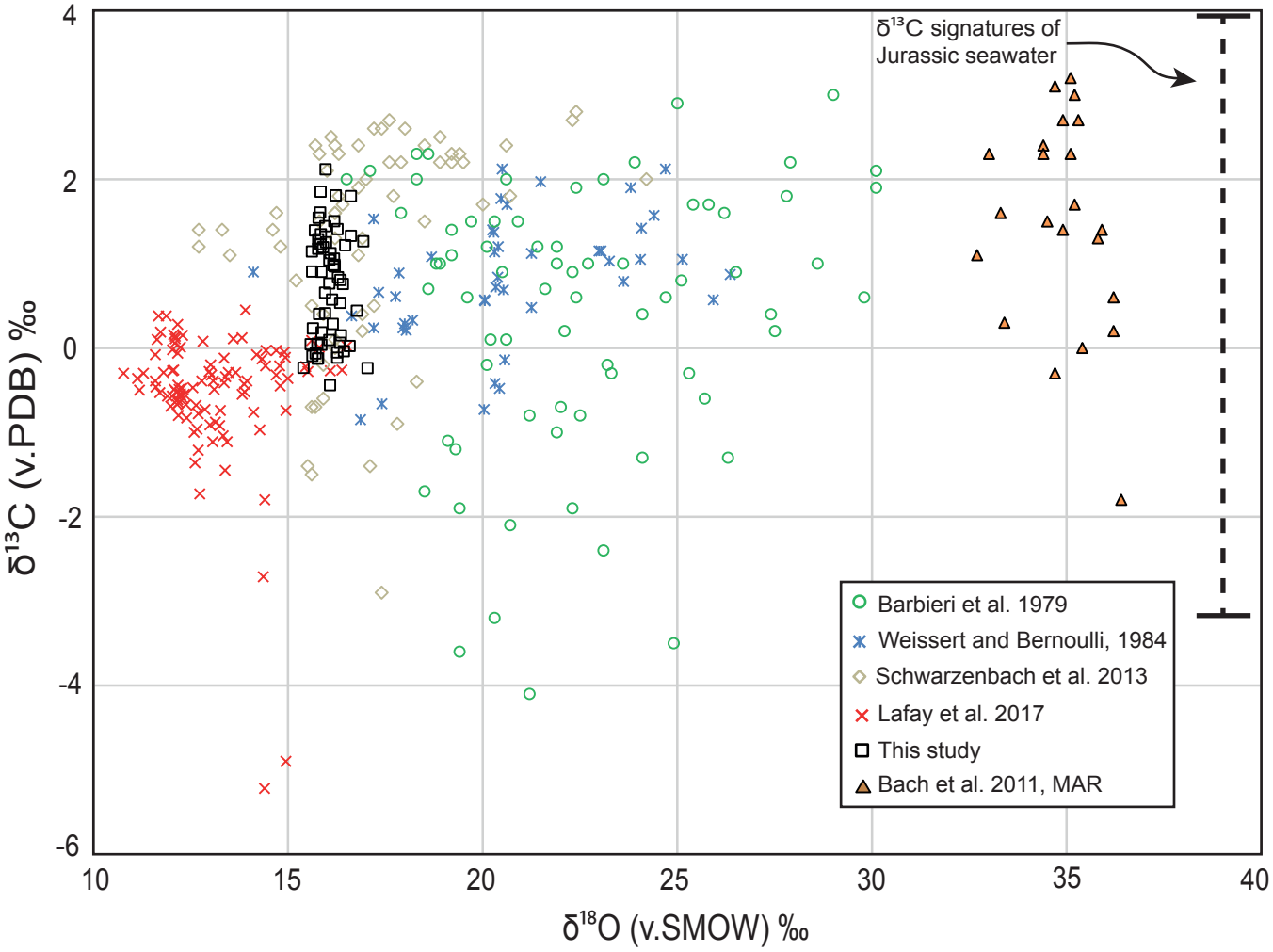
δ13C signatures of
Jurassic seawater
Barbieri et al. 1979
Weissert and Bernoulli, 1984
Schwarzenbach et al. 2013
Lafay et al. 2017
This study
Bach et al. 2011, MAR
δ13C (v.PDB) ‰
δ18O (v.SMOW) ‰
4
2
0
-2
-4
-6
10
15
20
25
30
35
40

Fig. DR1

TABLE DR1. STABLE ISOTOPE COMPOSITIONS (O AND C) OF THE CARBONATED SAMPLES FROM THE FALOTTA CROSS-SECTION (46°32'N; 9°39'E). DISTANCE TO PALEO-SEAFLOOR IS INDICATED.

Sample	Unit	Type	Distance to paleoseafloor (m)	$\delta^{18}O$ (‰) (V.SMOW)	$\delta^{13}C$ (‰) (V.PDB)
Fal17_49b	Basalt	Cal+Ep EV	14.2	15.8	1.61
Fal17_52	Basalt	Cal EV	14.1	15.8	1.85
Fal17_50	Basalt	Cal+Ep EV	14	15.8	1.54
Fal17_51	Basalt	Cal EV	13.5	15.8	2.12
Fal17_41	Basalt	Cal SV	13	16.2	1.81
Fal17_42	Basalt	Cal+Ep EV	13	15.6	1.14
Fal17_40	Basalt	Cal SV	12	16.6	1.33
Fal17_35	Basalt	Cal+Ep EV	11	16	1.45
Fal17_36	Basalt	Cal+Ep EV	10	15.8	1.18
Fal17_37	Basalt	Cal+Ep EV	9	15.8	1.23
Fal17_30	Basalt	Cal+Ep SV	7	16.2	1.06
Fal17_29	Basalt	Cal+Ep SV	6	15.8	1.35
Fal17_33	Basalt	Cal+Ep SV	5.5	16.8	0.44
Fal17_31	Basalt	Cal+Ep SV	5.3	15.8	0.9
Fal17_32	Basalt	Cal+Ep SV	5	16.1	1.12
Fal17_53	Oph.	Cal EV	4	15.7	1.39
Fal17_54	Oph.	Cal EV	3.7	16	1.25
Fal17_69	Oph.	Cal EV	0	15.6	-0.09
Fal17_68	Oph.	Cal EV	-2	16.3	0.15
Fal17_67	Oph.	Cal SV	-3	17	-0.24
Fal17_66	Oph.	Cal SB	-4	16.1	0.77
Fal16_25a	Oph.	Cal EV	-4.5	15.8	-0.13
Fal16_25b	Oph.	Cal EV	-4.5	15.8	-0.12
Fal16_24a	Oph.	Cal EV	-4.6	16.3	0.06
Fal16_24b	Oph.	Cal EV	-4.6	16.3	-0.05
Fal17_65	Oph.	Cal SB	-6	16.4	0.76
Fal16_23a	Oph.	Cal SB	-7.5	15.9	1.2
Fal16_23b	Oph.	Cal SB	-7.5	16.4	1.22
Fal17_64	Oph.	Cal SB	-8	16.3	0.54
Fal16_22	Oph.	Cal SB	-8.5	16.1	0.58
Fal16_21a	Oph.	Cal SB	-8.6	16.1	1.04
Fal17_63	Oph.	Cal SB	-9	16.2	0.97
Fal16_20b	Oph.	Cal SB	-10	16.2	0.99
Fal16_19a	Oph.	Cal EV	-11	16.4	-0.04
Fal16_19b	Oph.	Cal EV	-11	16.3	-0.12
Fal16_18	Serp.	Cal EV	-11	15.6	0.23
Fal16_17	Serp.	Cal EV	-13	15.4	-0.23
Fal16_14	Serp.	Cal EV	-14.5	16.1	0.1
Fal16_13	Serp.	Cal EV	-15	15.7	-0.06
Fal17_28	Serp.	Cal EV	-19	15.9	0.19
Fal17_27	Serp.	Cal EV	-20	15.8	0.04
Fal16_12a	Serp.	Cal SB	-21	16.3	1.41
Fal16_12b	Serp.	Cal SB	-21	16.2	1.5
Fal16_12c	Serp.	Cal SB	-21	16.6	1.8
Fal16_12d	Serp.	Cal SB	-21	16.2	1

Fal16_11	Serp.	Cal EV	-22	16.9	1.27
Fal16_10a	Serp.	Cal EV	-23	16.3	0.84
Fal16_10b	Serp.	Cal EV	-23	16.3	0.81
Fal16_8	Serp.	Cal EV	-24	15.8	0.4
Fal16_6b	Serp.	Cal SB	-24.9	15.6	0.91
Fal16_7	Serp.	Cal SV	-25	15.6	0.05
Fal17_26	Serp.	Cal EV	-25	16.6	0.03
Fal16_4	Serp.	Cal EV	-25.5	15.8	1.29
Fal16_3b	Serp.	Cal EV	-25.7	15.9	0.66
Fal16_2	Serp.	Cal SB	-25.9	16.1	-0.44
Fal17_25	Serp.	Cal SV	-26	15.9	0.41

Oph=Ophicalcite, Serp=Serpentinite, Cal=Calcite, Ep=Epidote, EV=Extensional veins, SV=Hybrid shear extensional veins, SB=Shear bands.