Article:
Yang, H, Zhang, P, Lu, H et al. (6 more authors) (2023) Magnetic properties of gas hydrate-bearing sediments and their association with iron geochemistry in the Sea of Marmara, Turkey. Chemical Geology, 620. 121339. ISSN 0009-2541

https://doi.org/10.1016/j.chemgeo.2023.121339

Supporting Information for

Magnetic properties of gas hydrate-bearing sediments and their association with iron geochemistry in the Sea of Marmara, Turkey

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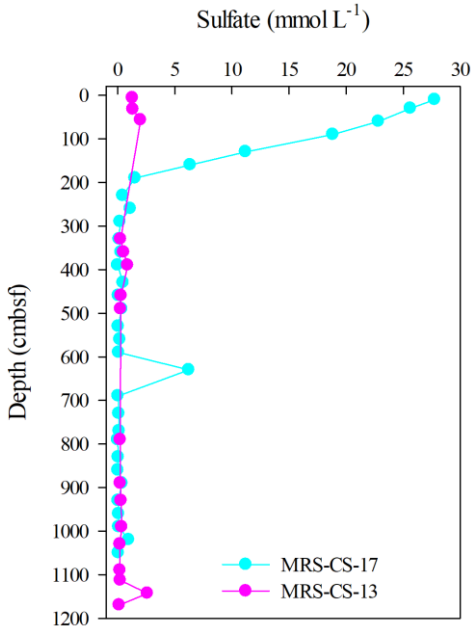

Fig. S1. Porewater sulfate concentration of core MRS-CS-13 (same site with MRS-CS-05) and MRS-CS-17 (same site with MRS-CS-16)

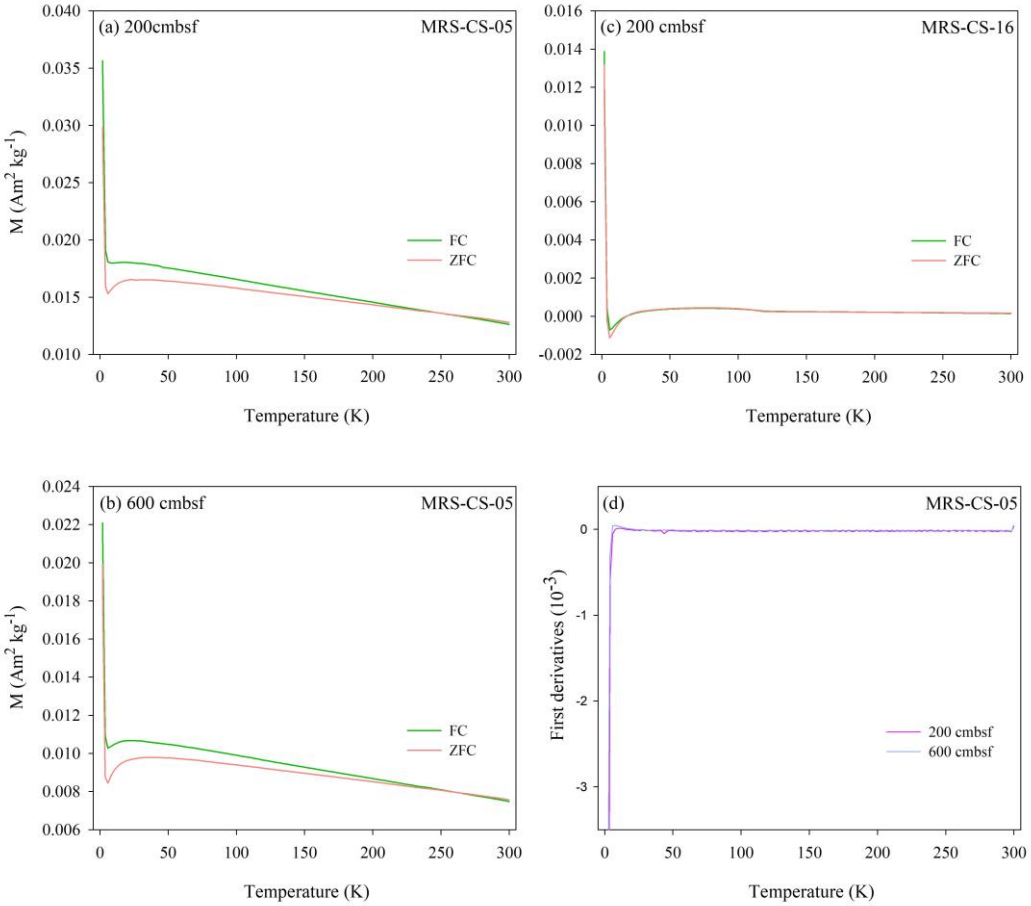

Fig. S2. Zero field-cooled (ZFC) and field-cooled (FC) curves for representative samples from the two selected cores.

Table S1 Magnetic characteristics of iron bearing minerals

Speciation	Mineral	Chemical form	Magnetic property	Magnetic susceptibility (10^{-8} m^3/kg)	Curie or Néel temperature (°C)
Iron oxides	Magnetite	Fe_3O_4	Ferrimagnetic	5−10×10^4	580
	Hematite	α-Fe_2O_3	Antiferromagnetic	58−78, 119−169	675
Iron (oxyhydr)oxides	Goethite	α-FeOOH	Antiferromagnetic	35, 38, 70, <126	120
	Ferrihydrite	$Fe_5HO_8·4H_2O$	Antiferromagnetic	100	-158−-258
	Lepidocrocite	γ-FeOOH	Paramagnetic	50−75, 69	-196
Iron carbonate	Siderite	$FeCO_3$	Paramagnetic	100	-238
Iron sulfides	Pyrite	FeS_2	Paramagnetic	30	—
	Monoclinic Pyrrhotite	Fe_7S_8, $Fe_{1-x}S$	Ferrimagnetic	5×10^3	320
	Hexagonal Pyrrhotite	Fe_9S_{10}, $Fe_{11}S_{12}$	Antiferromagnetic		
	Greigite	Fe_3S_4	Ferrimagnetic	0.5−2×10^4	330

Note: "—" no solid data

Table S2 Correlations between magnetic susceptibility (χ) values and iron mineral contents

	χ	Fe_{carb} (dominantly siderite)	Fe_{ox1} (dominantly lepidocrocite)	Fe_{ox2} (dominantly hematite)	Fe_{mag} (dominantly magnetite)
MRS-CS-05					
χ	1	0.717	0.488	-0.022	-0.464
siderite		1	0.908**	-0.560	-0.541
lepidocrocite			1	-0.636	-0.561
hematite				1	0.276
magnetite					1
MRS-CS-16					
χ	1	0.575	0.190	0.872**	-0.314
siderite		1	0.535	0.247	-0.223
lepidocrocite			1	-0.196	0.221
hematite				1	-0.372
magnetite					1

Pearson correlation matrix by SPSS statistical software; ** correlation is significant at the 0.01 level.