

Figure F1. Location map of Expedition 385 sites in Guaymas Basin (modified from Teske et al., 2021a). DSDP = Deep Sea Drilling Project.

Figure F2. Downhole rock magnetic properties of sediment samples, Site U1549. Shipboard data are from Hole U1549A archive section half measurements. A–H. Hole U1549A oriented samples. I–L. Hole U1549B nonoriented material. SMTZ at ~28 mbsf.

Figure F3. A–L. Downhole rock magnetic properties of sediment samples, Hole U1552A. Shipboard data are from archive section half measurements. SMTZ at ~10 mbsf.

Figure F4. A–L. Downhole rock magnetic properties of sediment samples, Hole U1552C. Shipboard data are from archive section half measurements. SMTZ at ~10 mbsf.

Figure F5. Rock magnetic measurements on selected samples, Hole U1549B. A, F, K, P. ZFC and FC curves. B, G, L, Q. First derivatives. C, H, M, R. RT-SIRM during cooling and warming. D, I, N, S. Thermomagnetic curves during in-field warming and cooling cycle. E, J, O, T. FORC diagrams.

Figure F6. Rock magnetic measurements on selected samples, Hole U1552C. A, F, K, P. ZFC and FC curves. B, G, L, Q. First derivatives. C, H, M, R. RT-SIRM during cooling and warming. D, I, N, S. Thermomagnetic curves during in-field warming and cooling cycle. E, J, O, T. FORC diagrams.

Figure F7. Downhole selected pore water properties and iron and sulfur speciation results, Hole U1549B. A. Pore water sulfate, dissolved sulfide, and methane concentrations. B. Dissolved iron (Fe^{2+}) in pore water and cumulative iron con-

centrations in solid phases extracted with acetate (Fe_{ac}), dithionite (Fe_{dith}), and oxalate (Fe_{ox}). C. Iron concentrations in solid phases extracted with acetate, dithionite, and oxalate, with total iron (Fe_T). D. Percentage concentrations of CRS, pyrite, and iron in form of pyrite. SMTZ at ~28 mbsf.

Figure F8. A–C. Selected cross-plots from iron and sulfur speciation results, Holes U1549B, U1552A, and U1552C. Data in A are from Pastor et al. (2023).

Figure F9. Downhole selected pore water properties and iron and sulfur speciation results, Hole U1552A. A. Pore water sulfate, dissolved sulfide, and methane concentrations. B. Dissolved iron (Fe^{2+}) in pore water and cumulative iron concentrations in solid phases extracted with acetate (Fe_{ac}), dithionite (Fe_{dith}), and oxalate (Fe_{ox}). C. Iron concentrations in solid phases extracted with acetate, dithionite, and oxalate, with total iron (Fe_T). D. Percentage concentrations of CRS, pyrite, and iron in form of pyrite. SMTZ at ~10 mbsf. Yellow = gas hydrate stability zone (GHSZ) between (25–45 mbsf).

Figure F10. Downhole selected pore water properties and iron and sulfur speciation results, Hole U1552C. A. Pore water sulfate, dissolved sulfide, and methane concentrations. B. Dissolved iron (Fe^{2+}) in pore water and cumulative iron concentrations in solid phases extracted with acetate (Fe_{ac}), dithionite (Fe_{dith}), and oxalate (Fe_{ox}). C. Iron concentrations in solid phases extracted with acetate, dithionite, and oxalate, with total iron (Fe_T) (data from Pastor et al., 2023). D. Percentage concentrations of CRS, pyrite, and iron in form of pyrite. SMTZ at ~10 mbsf. Yellow = gas hydrate stability zone (GHSZ) (25–45 mbsf).

Figure F11. Selected key magnetic and geochemical properties. A–D. Site U1549. E–H. Site U1552.