

UT-GOM2-2 Pre-Expedition Bibliography

Top recommended reads

Boswell, R., Collett, T., Frye, M., Shedd, W., McConnell, D., and Shelander, D. (2012), Subsurface gas hydrates in the northern Gulf of Mexico, in Collett, T., and Boswell, R., eds., Resource and Hazard Implications of Gas Hydrates in the Northern Gulf of Mexico: Results of the 2009 Joint Industry Project Leg II Drilling Expedition: Journal of Marine and Petroleum Geology, v. 34, no. 1, p. 4-31. <https://doi.org/10.1016/j.marpetgeo.2011.10.003>

Flemings, P. B., Phillips, S.C., Boswell, R., Collett, T. S., Cook, A., Dong, T., & Frye, M., et al., 2020, Pressure coring a Gulf of Mexico deep-water turbidite gas hydrate reservoir: Initial results from The University of Texas-Gulf of Mexico 2-1 (UT-GOM2-1) Hydrate Pressure Coring Expedition: AAPG Bulletin, v. 104, no. 9, p. 1847-1876, <https://dx.doi.org/10.1306/05212019052>.

Malinverno, A., Goldberg, D.S. (2015), Testing short-range migration of microbial methane as a hydrate formation mechanism: Results from Andaman Sea and Kumano Basin drill sites and global implications, Earth and Planetary Science Letters, Volume 422, 15 July 2015, Pages 105-114 <https://doi.org/10.1016/j.epsl.2015.04.019>

Varona, G.H., Flemings, P.B. Portnov, A. (in press), Hydrate-bearing sands in the Terrebonne Basin record the transition from ponded deposition to bypass in the deep-water Gulf of Mexico, <https://doi.org/10.1016/j.marpetgeo.2023.106172>

Waite, W. F., et al. (2009), Physical properties of hydrate-bearing sediments, Rev. Geophys., 47, RG4003, <https://doi.org/10.1029/2008RG000279>

You, K., Flemings, P.B., Malinverno, A., Collett, T.S. Darnell, K., 2019, Mechanisms of Methane Hydrate Formation in Geological System, Reviews of Geophysics. <https://doi.org/10.1029/2018RG000638>

Additional papers in specific areas of study

LWD, JIP 1	2
Marine Temperature and Pressure Probe	2
Base of Hydrate Stability (BSR)	2
Terrebonne Basin, most recent studies.....	2
Gas Hydrates/Hydrate formation at Terrebonne	3
Microbiology of Marine Sediments	3
Gases in Marine Sediments – Pressure Cores	4
Gases in Marine Sediments – Conventional Cores	4
Marine Interstitial Waters	5
Physical Properties of Marine Sediments.....	5
Rock Magnetic Signatures in gas hydrate and gas rich marine sediments	5
Geomechanics, Permeability and Fluid Flow.....	6
Marine Sediments.....	6
Pressure Coring.....	7

LWD, JIP 1

Contact Tim Collett, USGS

Collett, T. S., Lee, M. W., Zyrianova, M. V., Mrozewski, S. A., Guerin, G., Cook, A.E., et al. (2012) Gulf of Mexico Gas Hydrate Joint Industry Project Leg II logging-while-drilling data acquisition and analysis, *Marine and Petroleum Geology* 2012 Vol. 34 Issue 1 Pages 41-61
<https://doi.org/10.1016/j.marpetgeo.2011.08.003>

Marine Temperature and Pressure Probe

Contact Brandon Dugan, Colorado School of Mines

Flemings, P. B., H. Long, B. Dugan, J. Germaine, C. M. John, J. H. Behrmann, and D. Sawyer, 2008, Erratum to "Pore pressure penetrometers document high overpressure near the seafloor where multiple submarine landslides have occurred on the continental slope, offshore Louisiana, Gulf of Mexico" [*Earth and Planetary Science Letters* 269/3-4 (2008) 309-32]: *Earth and Planetary Science Letters*, v. 274, p. 269-283. <https://doi.org/10.1016/j.epsl.2007.12.005>

Base of Hydrate Stability (BSR)

Contact Alexey Portnov, UT

Shedd, W., Boswell, R., Frye, M., Godfriaux, P., Kramer, K., 2012. Occurrence and nature of "bottom simulating reflectors" in the northern Gulf of Mexico. *Mar. Pet. Geol.* 34, 31–40.
<https://doi.org/10.1016/j.marpetgeo.2011.08.005>

Portnov, A., Cook, A.E., Sawyer, D.E., 2022. Bottom Simulating Reflections and Seismic Phase Reversals in the Gulf of Mexico. *World Atlas Submar. Gas Hydrates Cont. Margins* 315–322.
https://doi.org/10.1007/978-3-030-81186-0_26

McConnell, D. R., Kendall, B. A. (2002) Images of the Base of Gas Hydrate Stability, Northwest Walker Ridge, Gulf of Mexico, Offshore Technology Conference Houston, Texas 6-9 May 2002, <https://doi.org/10.4043/14103-ms>

Terrebonne Basin, most recent studies

Details about the site and general ideas about hydrates

Contact Alexey Portnov, UT

Meazell & Flemings, P.B. (2022) The evolution of seafloor venting from hydrate-sealed gas reservoirs, *EPSL*, <https://doi.org/10.1016/j.epsl.2021.117336>

Portnov et al. (In review) Low temperature and high pressure deepen the gas hydrate stability zone in rapidly formed sedimentary basins, *EPSL* (ask Alexey for a copy)

Gas Hydrates/Hydrate formation at Terrebonne

Contact Ann Cook, Ohio State and/or Peter Flemings, UT

Hillman, J. I. T., Cook, A.E., Daigle, H., Nole, M., Malinverno, A., Meazell, et al. (2017), Gas hydrate reservoirs and gas migration mechanisms in the Terrebonne Basin, Gulf of Mexico, *Marine and Petroleum Geology* 2017 Vol. 86 Pages 1357-1373, <https://doi.org/10.1016/j.marpetgeo.2017.07.029>

Cook, A. E., Malinverno, A. (2013), Short migration of methane into a gas hydrate-bearing sand layer at Walker Ridge, Gulf of Mexico, Vol. 14 Issue 2 Pages 283-291, <https://doi.org/10.1002/ggge.20040>

Frye, M., Shedd, W., Boswell, R. (2012), Gas hydrate resource potential in the Terrebonne Basin, Northern Gulf of Mexico, *Marine and Petroleum Geology* 2012 Vol. 34 Issue 1 Pages 150-168, <https://doi.org/10.1016/j.marpetgeo.2011.08.001>

Nole, M., Daigle, H., Cook, A.E., Malinverno, A. (2016), Short-range, overpressure-driven methane migration in coarse-grained gas hydrate reservoirs, *Geophysical Research Letters* 2016 Vol. 43 Pages 9500-9508, <https://doi.org/10.1002/2016GL070096>

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You, K., Flemings, P.B. (2018), Methane hydrate formation in thick sand reservoirs: 1. Short-range methane diffusion, *Marine and Petroleum Geology* 2018 Vol. 89 Pages 428-442, <https://doi.org/10.1016/j.marpetgeo.2017.10.011>

Microbiology of Marine Sediments

Contact Rick Colwell, Oregon State

Yoshioka, H., Mauyama, A., Nakamura, T., Higashi, Y., Fuse, H., Sakatai, S., Bartlett, D.H., 2010. Activities and distribution of methanogenic and methane-oxidizing microbes in marine sediments from the Cascadia Margin. *Geobiology* 8, 223-233. <https://doi.org/10.1111/j.1472-4669.2009.00231.x>

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Mikucki, J.A., Liu, Y., Delwiche, M.E., Colwell, F.S., Boone, D.R., 2003. Isolation of a methanogen from deep marine sediments that contain methane hydrates, and description of *Methanoculleus submarinus* sp. nov. *Appl. Environ. Microbiol.* 69, 3311-3316. <https://doi.org/10.1128/aem.69.6.3311-3316.2003>

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Gases in Marine Sediments – Pressure Cores

Contact Steve Phillips, USGS

Dickens, G.R., Paull, C.K., Wallace, P., and the ODP Leg 164 Scientific Party, 1997. Direct measurement of in situ methane quantities in a large gas-hydrate reservoir. *Nature* 385, 426-428. <https://doi.org/10.1038/385426a0>

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Moore, M.T., Phillips, S.C., Cook, A.E., and Darrah, T.H., 2022. Integrated geochemical approach to determine the source of methane in gas hydrate from Green Canyon Block 955 in the Gulf of Mexico. *AAPG Bulletin* 106, 949-980, <https://doi.org/10.1306/05272120087>

Phillips, S.C., Flemings, P.B., Holland, M.E., Schultheiss, P.J., Petrou, E.G., Waite, W.F., Jang, J., and Hammon, H., 2020. High concentration methane hydrate in a silt reservoir from the deepwater Gulf of Mexico. *AAPG Bulletin* 104, 1971-1995, <https://doi.org/10.1306/01062018280>

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Gases in Marine Sediments – Conventional Cores

Contact Steve Phillips, USGS

Bernard, B.B., Brooks, J.M., and Sackett, W.M., 1976, Natural gas seepage in the Gulf of Mexico, *Earth and Planetary Science Letters*. 31, 48-54, [https://doi.org/10.1016/0012-821X\(76\)90095-9](https://doi.org/10.1016/0012-821X(76)90095-9)

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Marine Interstitial Waters

Contact Evan Solomon, U Washington

Arndt, S., Jorgensen, B.B., LaRowe, D.E., et al., 2013. Quantifying the degradation of organic matter in marine sediments: A review and synthesis, *Earth Science Reviews*, 123, 53-86.

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Physical Properties of Marine Sediments

Contact Derek Sawyer, Ohio State

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Rock Magnetic Signatures in gas hydrate and gas rich marine sediments

Contact Steve Phillips, USGS

Larrasoaña, J.C., Roberts, A.P., Musgrave, R.J., Gràcia, E., Piñero, E., Vega, M., and Martínez-Ruiz, F., 2007. Diagenetic formation of greigite and pyrrhotite in gas hydrate marine sedimentary systems. *Earth and Planetary Science Letters*, v. 261, p. 350-366. <https://doi.org/10.1016/j.epsl.2007.06.032>

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Geomechanics, Permeability and Fluid Flow

Peter Flemings, UT

Fang, Y., P. B. Flemings, J. T. Germaine, H. Daigle, S. C. Phillips, and J. O'Connell, 2022, Compression behavior of hydrate-bearing sediments: AAPG Bulletin, v. 106, p. 1101-1126.

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Marine Sediments

Contact Joel E. Johnson, UNH

Johnson, J.E., MacLeod, D.R., Phillips, S.C., Purkey Phillips, M., Divins, D.L., 2022. Primary deposition and early diagenetic effects on the high saturation accumulation of gas hydrate in a silt dominated reservoir in the Gulf of Mexico. Marine Geology, Volume 444, Feb., 106718, <https://doi.org/10.1016/j.margeo.2021.106718>

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Pressure Coring

Contact Carla Thomas, UT

Thomas, C., Phillips, S.C., Flemings, P.B., Santra, M., Hammon, H., Collett, T.S. Collett et al. (2020), Pressure coring operations during The University of Texas-Gulf of Mexico 2-1 (UT-GOM2-1) Hydrate Pressure Coring Expedition in Green Canyon Block 955, northern Gulf of Mexico, AAPG Bulletin 2020 Vol. 104 Issue 9 Pages 1877-1901, <https://doi.org/10.1306/02262019036>