

A Global Inventory of Natural Gas Hydrate Occurrence

ABSTRACT

Natural gas hydrate occurs worldwide in oceanic sediment of continental and insular slopes and rises of active and passive margins, in deep-water sediment of inland lakes and seas, and in polar sediment on both continents and continental shelves. In aquatic sediment, where water depths exceed about 300 m and bottom water temperatures approach 0° C, gas hydrate is found at the seafloor to sediment depths of about 1,100 m. In polar continental regions, gas hydrate can be present in sediment at depths between about 150 and 2000 m. Thus, natural gas hydrate is restricted to the shallow geosphere where its presence affects the physical and chemical properties of near-surface sediment.

This updated global inventory reports on natural gas hydrate recovered from 39 places worldwide and includes 116 places where the presence of gas hydrate has been inferred from geophysical, geochemical, and geological evidence. The potential amount of methane in natural gas hydrate is enormous, with current estimates converging around about 10 exagrams (10⁴ gigatons) of methane carbon. This large reservoir of methane, located globally within 2000 m of the solid surface, is of major interest as a potential (1) energy resource, (2) factor in global climate change, and (3) geohazard.

LEGEND

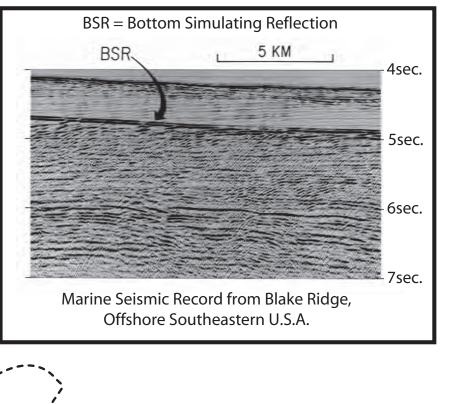
Inclusions in mud and muddy sand. Disseminated and sheets ODP Leg 170, Site 1041 Cement in coarse vitric sand DSDP Leg 84, Site 568 Inclusion in mudstone. Aggregates, layers in silt. Layers, massive in carbonate crust DSDP Leg 146, Site 892 Okhotsk Sea (Russia) Based on: Okhotsk Sea (Russia) Sahkalin Island -BSRs P20 Japan Sea (Japan) ODP Leg 127, Site 796 -Well Logs Nankai Trough (Japan) ODP Leg 131, Site 808 Peru-Chile Trench (Peru) ODP Leg 112, Site 685 Fragments in mud. DSDP Leg 96, Site 618 Nodules, crystals in mud. Nodules, layers in rubble Mississippi Canyor Mounds at seafloor. Blake Ridge (Southeastern U DSDP Leg 76, Site 533 Fragments in clay. Nodules, veins in mud. Massive core (~30 cm). Haakon-Mosby Mud Volcand Inclusions and plates. Nodules, dispersed in clay. Veinlets in silty clay. Laminated in clayey silt. Disseminated in sand, silt.

Not described.

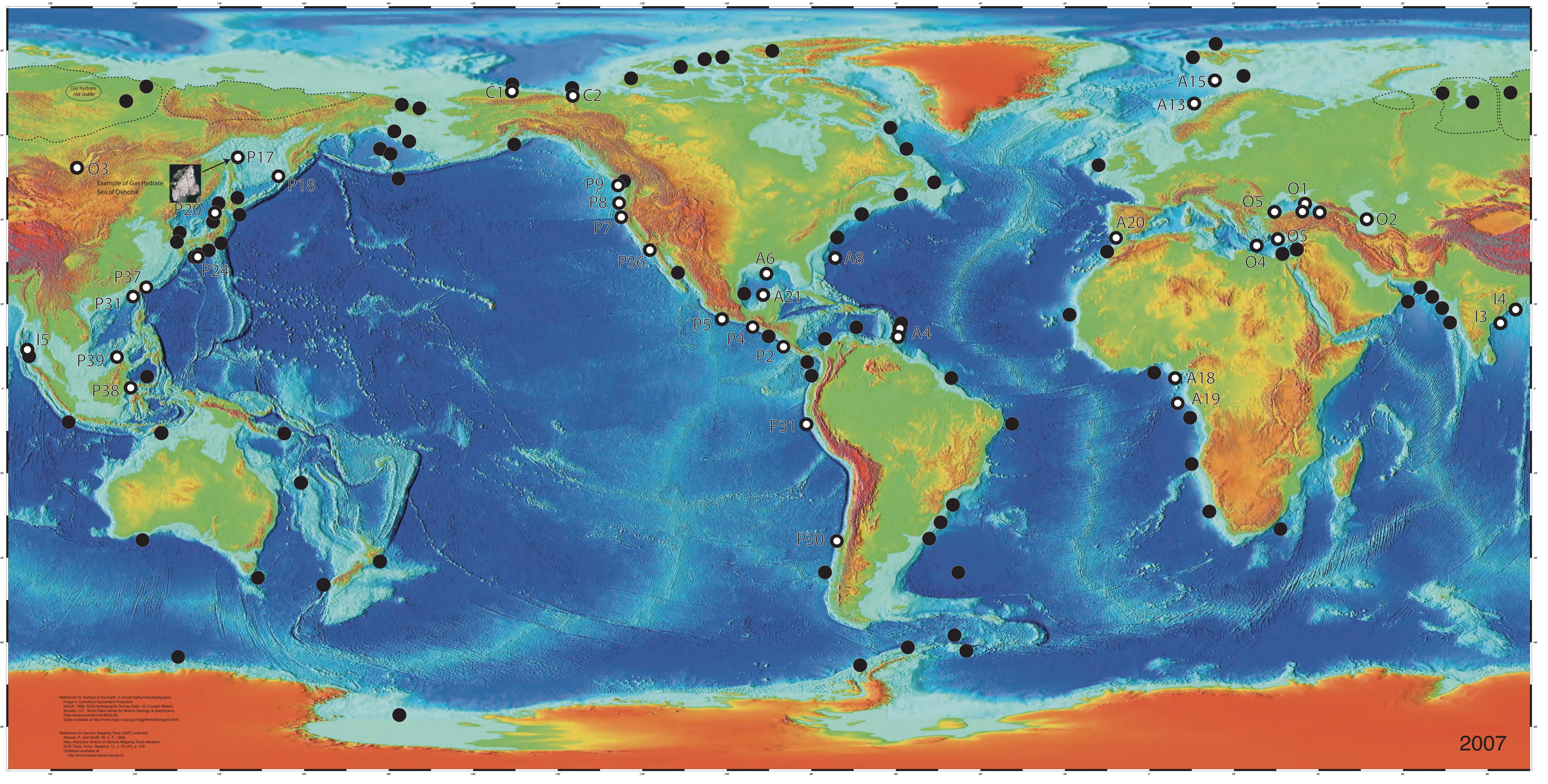
Recovered Gas **Hydrate Samples** (See Legend)

Inferred Gas Hydrate Occurrence

Example BSR



Areas of Possible Gas Hydrate Occurrence In Russia



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