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Western and eastern margins of Pacific Ocean presents numerous gas hydrates sites, distributed as Gas hydrates Provinces (referred to the sea's title) which can be combined to Circum Pacific Gas hydrate Belt. Gas (mainly methane) hydrates accumulation induced by various active geological features determined by geodynamic and tectonic type and seismic state's of Pacific and adjoining lithosphere plate's borders. Bering Sea, Okhotsk Sea, Japan Sea, East-China Sea, Sea of Vietnam, Celebes and Sulu Seas and southward to New Zealand offshore presents Western Pacific Gas Hydrate Belt and exposed methane hydrates distribution in sediments. Hydroacoustic, seismic, coring were a prime methods applied to gas hydrate searching and exploration. Methane hydrates was explored since 88-th (Okhotsk Sea). Gas hydrates supplying fluid within the thick Cenozoic sediment basins (up to 10 km thickness) are linked to multiple hydrocarbon accumulations: mainly oil and gas deposits, and gas (methane) hydrates – proved for the Bering, Okhotsk and Japan Seas. Submarine gas seepage usually accompanied by contrast seismic and acoustic anomalies in the sediments and water column (e.x. up to 700 gas “flares” prior to 2010 indicates gas hydrate fracture type accumulation in western Okhotsk Sea). High hydrocarbons were found as well, but methane is dominated everywhere. Methane sources discussed as mixture of thermogenic and biogenic origin. Gas hydrate occupies mainly 20-45% of pore volume. BSR was found globally, but this border means not gas hydrate stability zone only. Methane resources trapped in Western Pacific gas hydrates estimated based on latest investigations at least for 5×10^{13} cubic meters.

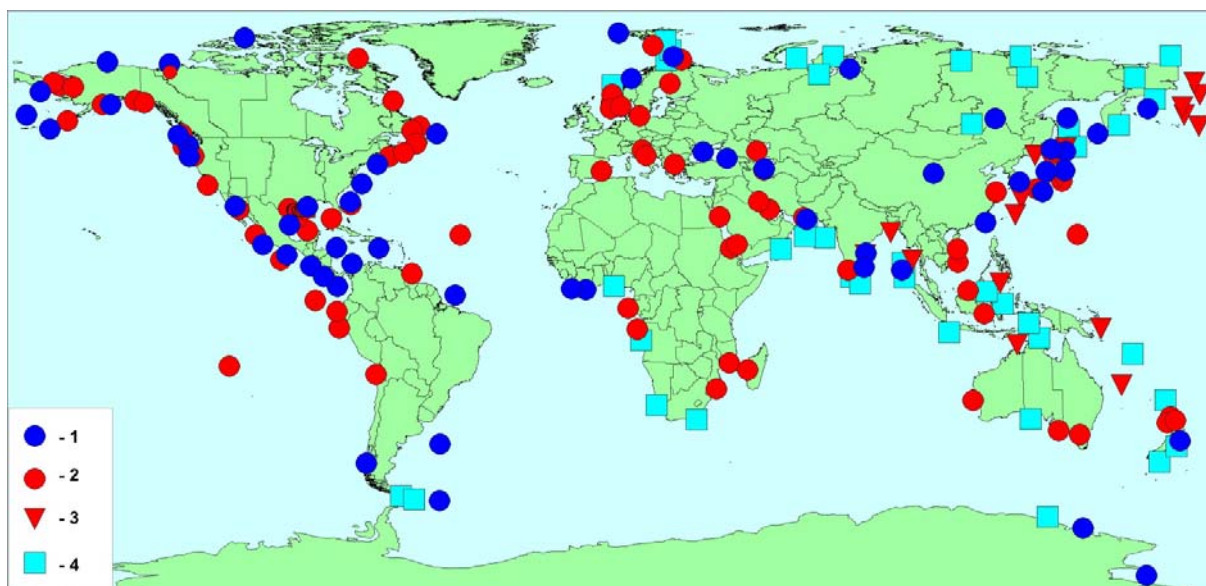


Fig. 1. Worldwide gas hydrate occurrence. 1 – recovered; 2 – hydrate sediment signs with methane leakages; 3 – inferred; 4 – potential (by BSR and geochemical anomalies).

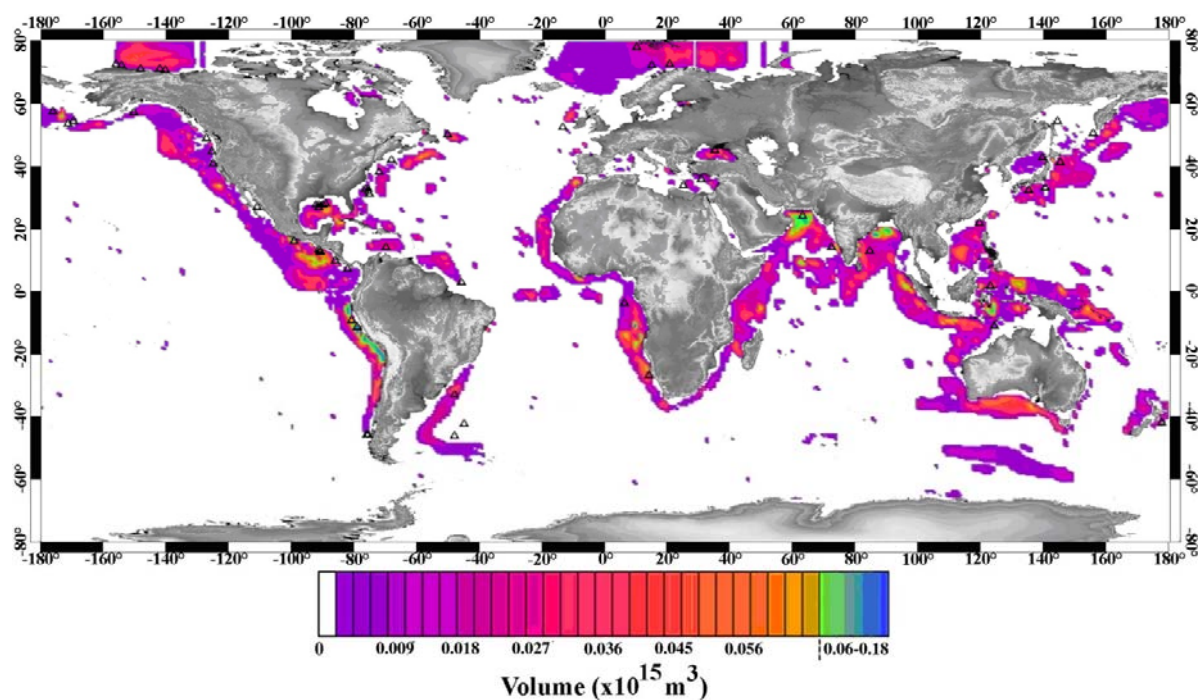


Fig. 2. Modeled gas hydrates distribution in World Ocean (Klauda J.B., 2011).

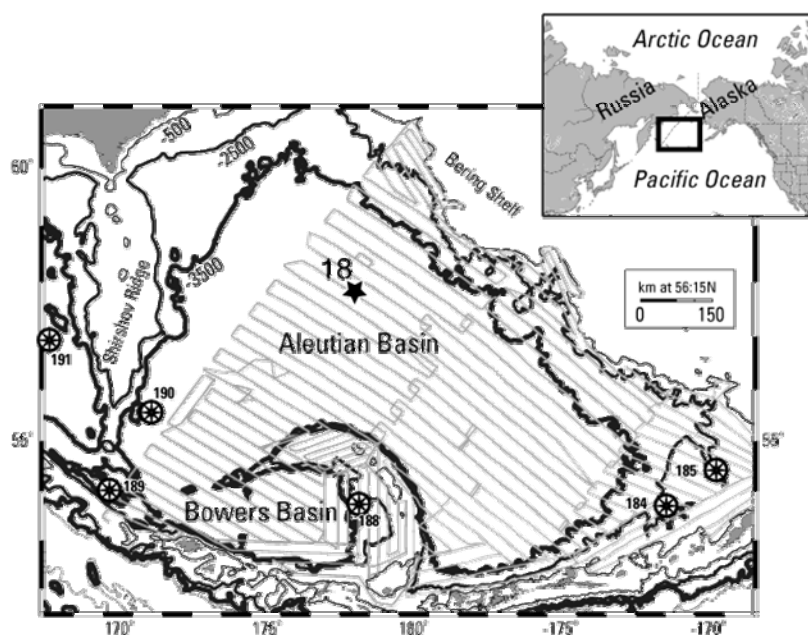


Fig. 3. Bering Sea, North Pacific Ocean. Bathymetric contour lines are in meters, with the darkest line representing 3,500-m water depth. Star, location of VAMP example; circled stars, nearest drilled wells, from Deep-Sea Drilling Program (DSDP) leg 19. Track lines (gray) represent approximately 24,000 km of digitized USGS single-channel seismic data. After Scholl et al., 2007.

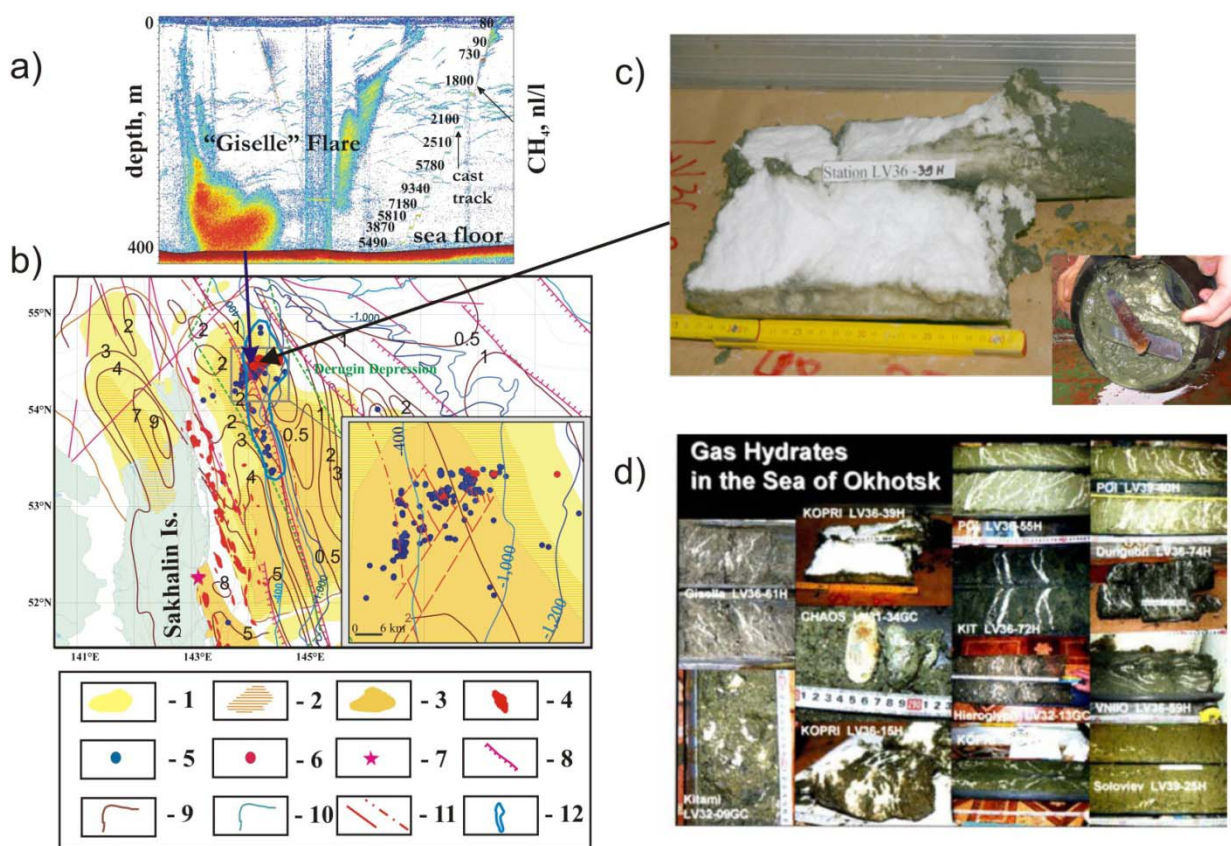


Fig. 4. Geological state of the North East Sakhalin Slope. Legend: 1,2,3 – density of the hydrocarbon generation (see Fig. 5); 4 – oil-gas deposits; 5 – methane vent/flares; 6 – methane hydrate findings; 7 – mud volcano; 8 – rift zones; 9 – isopachs; 10 – isobaths; 11 – tectonic faults; 12 – methane hydrate province proposed in 2005 and confirmed in southern part in 2009-2010.



Fig. 5. Gas hydrate from Ulleung Basin (Chun et al., 2011).

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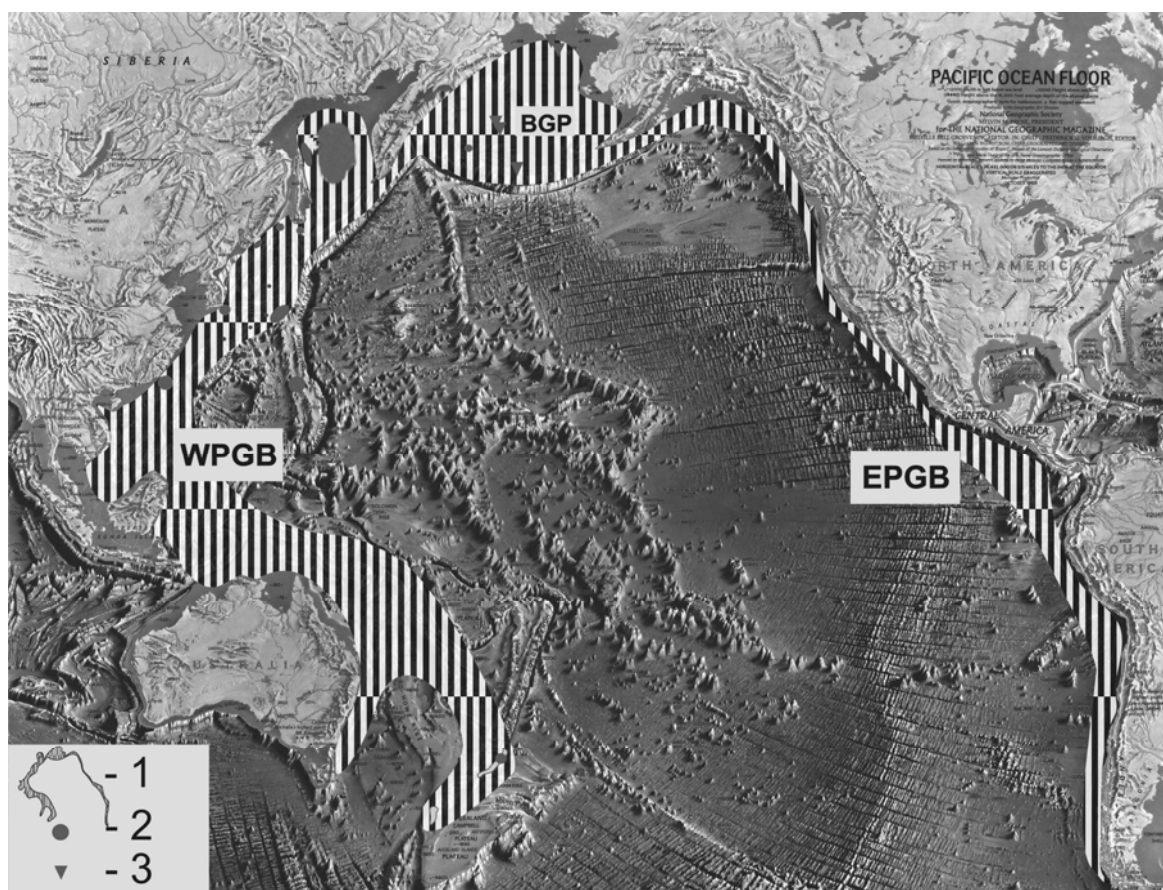


Fig. 6. Circum Pacific Gas Hydrate Belt. WPGHB – Western Pacific Gas Hydrate Belt; EPGHB – Eastern Pacific Gas Hydrate Belt; BSGHP – Bering Sea Gas Hydrate Province . 1 - Circum Pacific Gas Hydrate Belt.; 2 – inferred hydrates (examples); 3 – potential GH sites (examples).

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