[EJ] Evening Poster | S (Solid Earth Sciences) | S-GL Geology

[S-GL29]Mud Volcano and Geochemical, Geological, Geomorphological, and Biological-related phenomena

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Thu. May 24, 2018 5:15 PM - 6:30 PM Poster Hall (International Exhibition Hall7, Makuhari Messe)

Mud Volcano (MV) is one of geological feature that observed over the world. The MV brings fluid and sediment from several km below the ground. A complete understanding of MVs are desired due to a point of carbon cycle from earth's depth to surface, migration of deep subsurface biosphere, impact on greenhouse warming, social disaster, civil engineering, and so on for examples. However, MVs are still not understood enough because of its diverseness.

We propose this MV session to concern MV studies from various methods, fields, and time scale, and to discuss on MVs from a multilateral perspective. We welcome scopes of discussion include their relationships to earthquakes, possible utilization for resources, as well as scientific studies on mechanisms of MVs, to understand the MV phenomena.

[SGL29-P04]Gas reservoirs around Japanese Island identified by automatic velocity analysisGas reservoirs around Japanese Island identified by automatic velocity analysis

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The submarine mud volcano could be related to the gas reservoir and hydrate widely distributed around the Japanese Island. To investigate gas reservoir, we performed a high-resolution seismic velocity analysis to 3D seismic data using a method of conventional semblance spectra via automatic velocity picking algorithm. The high-resolution velocity models allow us to elucidate several gas reservoirs around the Japanese Island. In the Kumano forearc basin off the Kii peninsula, we found several gas reservoirs as low P-wave velocity zone. The results revealed that gas hydrate-bearing sediments above the BSR and free gas-bearing sediments below the BSR are characterized by P-wave velocities of 1900-2500 m/s and 1000-1800 m/s, respectively. The P-wave velocity of gas reservoir is lower than that of seawater (1500m/s). Then, the velocity model was converted into gas hydrate and free gas saturation using rock physics approaches. The results indicated that saturation of gas hydrates ranges from 0% to 45% in the pore space, and highly concentrated around the outer ridge where faults are densely developed. Additionally, concentrations of free gas ranging from 0% to 20% in the pore space are widely distributed below BSRs and are considerably high above ridge structure generated by displacement of large fault splayed from the deep plate boundary décollement. Based on these results, we suggest that the accumulations of gas and/or hydrates are further controlled by fault movements in the accretionary prism beneath the forearc basin. Therefore, these factors generated by intensive tectonic movements in the plate subduction zone control the distribution and saturation pattern of gas hydrate and free gas formations.