



Gas hydrate environmental monitoring program in the Ulleung Basin, East Sea of Korea

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As a part of the Korean National Gas Hydrate Program, the Korea Institute of Geoscience and Mineral Resources (KIGAM) has been planned and conducted the environmental monitoring program for the gas hydrate production test in the Ulleung Basin, East Sea of Korea in 2014. This program includes a baseline survey using a KIGAM Seafloor Observation System (KISOS) and R/V TAMHAE II of KIGAM, development of a KIGAM Seafloor Monitoring System (KIMOS), and seafloor monitoring on various potential hazards associated with the dissociated gas from gas hydrates during the production test. The KIGAM also plans to conduct the geophysical survey for determining the change of gas hydrate reservoirs and production-efficiency around the production well before and after the production test. During production test, release of gas dissociated from the gas hydrate to the water column, seafloor deformation, changes in chemical characteristics of bottom water, changes in seafloor turbidity, etc. will be monitored by using the various monitoring instruments. The KIMOS consists of a near-field observation array and a far-field array. The near-field array is constructed with four remote sensor platforms each, and cabled to the primary node. The far-field sensor array will consists of four autonomous instrument pods. A scientific Remotely Operated Vehicle (ROV) will be used to deploy the sensor arrays, and to connect the cables to each field instrument package and a primary node. A ROV will also be tasked to collect the water and/or gas samples, and to identify any gas (bubble) plumes from the seafloor using a high-frequency sector scanning sonar. Power to the near-field instrument packages will be supplied by battery units located on the seafloor near the primary node. Data obtained from the instruments on the near-field array will be logged and downloaded in-situ at the primary node, and transmitted real-time to the support vessel using a ROV. These data will also be transmitted real-time to the drilling vessel via satellite.