

## Gas seeps on the Eastern Sakhalin slope, Okhotsk Sea: distribution, characteristics and possible gas sources

B.V. BARANOV<sup>1</sup>, Y.-K. JIN<sup>2</sup>, H. MINAMI<sup>3</sup>, A.I. OBZHIROV<sup>4</sup>, A.S. SALOMATIN<sup>4</sup>, H. SHOJI<sup>3</sup>

<sup>1</sup> Institute of Oceanology, Russian Academy of Sciences, Russia (bbaranov@ocean.ru)

<sup>2</sup> Korean Institute of Polar Researches, Korea

<sup>3</sup> Kitami Institute of Technology, Japan

<sup>4</sup> Pacific Oceanological Institute, Far East Branch, Russian Academy of Sciences, Russia

Gas seeps on the Eastern Sakhalin Slope were found in 1987 and later on investigated in many expeditions. Most data were obtained in 2003 – 2012 in frames of two international projects: CHAOS (Hydro-Carbon Hydrate Accumulations in the Okhotsk Sea) and SSGH (Sakhalin Slope Gas Hydrates). It was established that gas seeps are spread in the northern and southern parts of the Eastern Slope and hydroacoustic anomalies (gas flares) serve as their main indicators. The most of gas flares with height of several hundred meters (~ 80%) is located on the northern part of the slope. Maximum height of gas flare (2000 m) was recorded in the southern part of the slope at maximum depth of 2200 m. Monitoring of gas seeps showed that their activity may vary significantly in time interval from days to years. Gas seeps form specific relief forms – mounds and pockmarks with height and depth up to few tens of meters. In the north the seeps are located on open continental slope; in the south they are associated mainly with canyons and in all cases are controlled by faults. Gas hydrates were obtained by sampling on 30 stations inside gas seeps. Thus it is obvious that gas seeps are associated with gas hydrates but it remains unclear if gas discharge occurs due to gas hydrates dissociation or during their formation. Question about source of the gas also remains under discussion. But taking into account that gas seeps, gas deposits and maximum thickness of sediments occur within the northern part of the slope we may suppose that they are interlinked.

**Keywords:** gas seepage, gas flares, gas hydrates, oil and gas deposits, Sakhalin slope