附件1：

**Distribution of subsurface fluid-flow systems in the SW Barents Sea**

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The SW Barents Sea is a large hydrocarbon-prone epi-continental Sea of the Norwegian Arctic region. A significant portion of the hydrocarbon gases generated in deep source rocks has leaked or migrated into the shallow subsurface and is now trapped in gas hydrate and shallow gas reservoirs. We analyze approximately 3000 2D multi-channel seismic profiles and data from 60 wells covering the entire SW Barents Sea, to identify and classify fluid-flow features, and study their relationship to tectonic elements and geological history. Gas chimneys are the most abundant feature among various other fluid-flow features such as fluid leakage along faults and fractures, seepage pipes, and high amplitude anomalies potentially indicating trapped fluids. Large fluid-flow features, covering areas as large as 600 km2, occur close to known hydrocarbon fields such as Snøhvit, Skrugard, and Havis. The fluid-flow features occur above major deep-seated faults in the area suggesting a close relation to it. The strong correlation between the locations of fluid-flow features and structural elements indicates that extensional tectonics, uplift and glaciations could have played major roles in the timing and activity of the fluid leakage, although erosion might have had an added effect.

**Keywords:** Fluid flow; Gas chimneys; Gas hydrates; Barents Sea; Seismic