The main goals of this work were allocation of possible areas of gas hydrate distribution in the offshore of Eurasian Arctic, and an attempt to predict mechanisms of the gas hydrates formation in the Arctic environment. Two types of gas hydrate accumulations can be formed within the Arctic shelf: 1) near sea-bottom accumulations within concentrate gas discharge toward the seafloor; 2) within subsea relic permafrost due to exogenous cooling of sediments. Former scenario can be realized within the deep-water Western Arctic shelf (Barents and Kara Seas), whereas the latter – within the shallow Eastern Arctic (Laptev, East Siberian, and Chukchi seas). For the estimation of the areas favorable for the gas hydrate formation, consideration of data on thickness of sedimentary cover, heat flow, water depth, and hydrocarbon gases concentrations are required. Using the seafloor temperatures at the shelf seas of Eurasian Arctic (varying from -1.75 to +0.5°C), the top of the Gas Hydrate Stability Zone (GHSZ) should vary between 260 and 320 m below sea surface. In average, thickness of the gas hydrates stability zone within the shelf of Eurasian Arctic is attained ~ 300 m (assuming that water salinity is ~ 35‰ and average geothermal gradient is 2.7°/100m). Thus, shallow seated gas hydrates could be cored within the troughs or sea bottom depressions occurring at the Western Arctic shelf. Within the shallow seas of the Eastern Arctic, gas hydrate formation can takes place relatively close to the seafloor within the frozen sediments due to gas segregation during a frost penetration. When the frost will reach to a gas-impermeable horizon (trap) this process may be accompanied by pore water oversaturation under increased pressure with the gas resulted in further gas hydrate formation.