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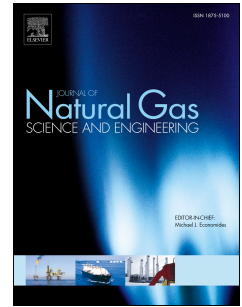
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Does the Mediterranean Sea Have Potential for Producing Gas Hydrates?

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Abstract

Gas hydrate reservoirs are considered as future global energy resource, however, minimal studies have been conducted on one of the most important historical seas to investigate the potential - the Mediterranean Sea. In this study, it is aimed to investigate this potential. According to the analyses in this study, there are many indicators of gas hydrates in the Mediterranean Sea. These indicators are mainly appropriate pressure-temperature conditions of gas hydrate formation, source gas potential, and coarse sands potential. In this study, by using the literature marine survey data and drilling data of the Mediterranean Sea such as pressure, temperature, salinity, porosity, geothermal gradient, sand content of sediments, etc., it was estimated that up to 98.2 (median) standard trillion cubic meters of methane may be available in the potential producible gas hydrates of the Mediterranean Sea. Due to the paucity of bottom simulating reflectance in the Mediterranean Sea, three hypothetical Class 3 gas hydrate reservoirs in the Mediterranean Sea conditions were simulated by using depressurization production method with/without wellbore heating with HydrateResSim numerical simulator. When the depressurization pressure is lower, much more gas is produced but until certain value. The main reason of gas production stop in these three reservoirs is hydrate reformation along the wellbore. Wellbore heating at 50°C extended gas production for a while but could not avoid hydrate reformation along the wellbore. Ice formation due to the endothermic gas hydrate dissociation is not the cause of gas production stop because the temperature of the Mediterranean Sea sediments is high.

Keywords: methane, gas hydrates, Mediterranean Sea, depressurization, HydrateResSim, sediments

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