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Gas Hydrate in the Caspian Sea and Assessing the Effects of Global Warming on it.

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Abstract

Accumulated Gas Hydrates in seafloor sediments can be released in the atmosphere and the greenhouse effect of methane can exacerbate global warming. It is possible to estimate the stability of methane hydrate in the different physicochemical conditions by using physicochemical equations. In this study, by using a physicochemical equation and data of 641 points, stability of methane hydrate in different depth and locations of the Caspian Sea were calculated and potential maps of gas hydrate formation were presented. In the next stage, methane hydrate stability was measured in the different conditions in that the mean temperature of the Caspian Sea is increased 0.6 to 2 ^{o}C by global warming and then the thickness changing of the methane hydrate zones was calculated. Then, based on the calculated thickness variations and geophysical evidences of gas hydrate in the Caspian Sea, released gas in the atmosphere for different scenarios were estimated. Result showed that a huge amount of methane gas, maybe around 369×10^{12} to 984×10^{12} m^3, can be released in the atmosphere.

Keywords: *Gas Hydrate, Methane, Global Warming, Caspian Sea.*