

Determination of CO₂ Baseline Concentrations in Shallow Marine Sediments in the US Deep-Water Gulf of Mexico

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9.29.2020 - 10.1.2020 - AAPG Annual Convention and Exhibition 2020, Online/Virtual

Abstract

Dissolved interstitial CO₂ concentrations from over 1,000 piston cores are displayed to illustrate baseline levels of naturally-occurring CO₂ in shallow marine sediments throughout the US deep-water Gulf of Mexico. Measured CO₂ concentrations display a wide range of values, from less than 500 to over 150,000 ppmV, and vary spatially with isolated anomalies dispersed throughout, but a cluster of elevated concentrations in the abyssal plain are observed. Given the recent rise in interest for carbon capture and storage (CCS) programs in the Gulf of Mexico, it is essential to establish baseline levels of CO₂ in marine sediments, which will enable us to better constrain pre-existing natural leakage, identify sites that may serve as natural laboratories for further investigation, and guide efforts into potential CCS site selection.