CSEM imaging in the Black Sea

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The deepwater Black Sea region is both unique and in many respects unknown. We have investigated the applicability of Controlled Source Electromagnetic (CSEM) data to locate hydrocarbons in this basin. Using publicly-available data, we constructed subsurface models and 3-D synthetic surveys for a range of potential Black Sea targets. We considered the effect of background variations, including those caused by the relatively fresh water column present in the Black Sea and the potential presence of gas hydrates near the seafloor. By using 3-D anisotropic CSEM inversion to image these synthetic data, we can understand which targets can be recovered and what signal-to-noise levels would be required to retrieve each target. We also investigated the range of frequencies best suited for targets at various depths to understand how to optimize an overall CSEM campaign in the area. We present the results of these synthetic studies and comment on the applicability of CSEM as a derisking tool for hydrocarbon exploration in this basin.