



Insights into shallow gas systems on the continental shelf off central Israel

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The Pliocene and Pleistocene sedimentary overburden in the continental shelf off-central Israel and the adjacent Levant Basin are characterized by siliciclastic deposition from the Nile River drainage system. Gas system formations coupled by seepage signatures are prevalent within this sedimentary succession. The principle objectives of this study are to (1) define and understand the structure of the various gas systems within the Pliocene-Pleistocene succession, stressing their migration pathways and possible conjugations; and (2) create a regional flow model, spatially connecting sub Messinian sources with the shallower gas systems on the continental shelf. Seismic interpretation consists of industrial 3D seismic reflection datasets crossed by high resolution 2D seismic data. The data is complemented with 4 industrial well-logs, which enables to constrain the seismic data with the stratigraphy and lithology. Bathymetric imaging completes for gas seepage indication on the seabed.

Initial results establish evidence for potential existence of several active gas systems on the continental shelf, at N-S directivity. They consist of an enhanced reflection zone (ERZ) truncated below the Kurkar Group, at approx. 100-120 m below the seabed; an acoustic wipe-out zone (AWZ) appears beneath the ERZ down to the Messinian unconformity. We suggest that these gas systems are pumped by a seismically vertical Pre-Messinian structure, which is situated beneath them and may serve as a conduit channel for gas seepage from deeper reservoirs. Furthermore, we suggest a flowing mechanism of the gas, vertically and sub-horizontally, from sources beneath the Messinian salt of the Levant Basin and into the continental shelf.