



Cold seeps in the eastern Mediterranean a quantitative geological-biological-chemical investigation of causes, processes and implications– a preliminary seismic study

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Cold seepage of gas/water from the seafloor is one of the most important indications of active processes occurring in the subsurface of continental margins. The location and development of these seeps is, among other things, associated with mass sedimentary transport, resulting from slope failure (e.g. submarine landslides). Studies have shown that endemic ecological systems tend to develop in the shallow subsurface and seafloor near these sites, whose existence is directly related to utilization of the escaping gas. A large and unknown part of the carbon cycle is connected to the reduction and release of methane to the water column. However a precise evaluation of the fraction that eventually reaches the atmosphere as an important greenhouse gas is unknown.

During the past few years a number of studies around the world have focused on the combination of geological, biological and chemical aspects of cold seeps. Despite this, many questions still remain unanswered, such as the geological mechanisms generating the seeps, the chemical composition of the seeps, which biological ecosystems base their existence on the seeps and how microbiological process in the subsurface effect the composition and rate of gas release. The eastern Mediterranean basin is one of the most interesting and least studied regions as far as cold seep systems are concerned. The basin is considered to be an “ecological desert” with respect to available nutrients and biological diversity.

Here we present new results from a high-resolution Sparker seismic survey carried out offshore northern Israel to map the location of gas seepages on the seafloor. A number of shallow cores were extracted from the target areas and water was sampled for chemical analysis. These data will be integrated as a pilot for a larger, interdisciplinary study to identify, map and characterize the geology, biology and chemistry of gas seepages in the eastern Mediterranean.