



Geogenic methane emissions in central and eastern Romania

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Relatively often, the hydrocarbon reservoirs are not completely sealed, thus permitting the channeling to the surface of various amounts of gas, mainly consisting of methane and homologues. When important volumes of gas are released, features as mud volcanoes and everlasting fires may occur. When the gas amount is low, the degassing can be revealed by instrumental means only. The gas seeps may be useful as indicators in the hydrocarbon exploration, but may be also hazardous when gas is accumulating in closed spaces. Additionally, the geogenic methane degassing represents an important contribution to the atmospheric budget of greenhouse gases. Romania is one of the European important hydrocarbon producers, with oil and gas deposits in different geologic and tectonic contexts. As well, the frequency of gas emitting features and seepage areas is high. Some relevant hydrocarbon-prone areas from Romania, namely the Neogene Transylvanian Basin, the Carpathian Foredeep, and the Moldavian Platform, are comparatively analysed within the current work from the point of view of methane emissions. The Carpathian Foredeep hosts the most impressive mud volcanoes and everlasting fires in Romania, classified among the biggest in Europe. The degassing area also extends in the Carpathian Flysch zone. The Transylvanian Basin hosts numerous gas-bearing structures, mainly of biogenic origin. With some exceptions, the methane-emitting features are small, releasing relatively low amounts of gas. A relatively high number of seeps have been described on the Moldavian Platform, although no commercial hydrocarbon reservoirs have been identified. The seeps are small, and they are releasing low amounts of methane. However, it is important to notice that the investigated zone partly corresponds to an area of interest for shale gas, related to the deep-seated Silurian shales. For all mentioned areas, the main geochemical characteristics of gas, and the total output have been estimated. Based on the results obtained, an interactive database of the known gas seeps in Romania has been built, that is freely available on the Internet: <http://hydrocarbonseepage.blogspot.ro>.

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