

Coal is a Hydrocarbon Source: Oil Contribution from Coals and Coaly Shales to the Eastern Venezuela Basin Petroleum Systems

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Although more than 10% of the petroliferous basins of the world are dominated by non-marine source rocks, the processes and critical factors that control hydrocarbon generation and expulsion in coals and associated carbonaceous shales are not completely understood. Numerous studies, however, suggested that terrestrial organic matter has the capacity to generate and expel commercial quantities of liquids.

In order to establish the generative oil potential of coals and coaly shales, several samples, spanning the Tertiary section of the Central and Eastern Mountain ranges as well as core samples from wells in the Eastern Venezuela Basin, were subjected to hydrous-pyrolysis experiments and the generated liquid and gaseous hydrocarbons collected and analyzed using a full suite of geochemical methods. This work describes the yields, the chemistry and the parent-product correlations for the various systems.

The hydrocarbon generation potential and the gas-to-oil ratios were estimated and compared and contrasted with those from hydrous pyrolysis of the oil-prone Monterey, Shublik and Green River formations. Results indicate that coals and coaly shale of the Eastern Venezuela basin are oil prone with yields comparable to worldwide known source rocks and may play an important role in the petroleum systems operating in this prolific basin.