

A petrographic comparison of oil-generating coals from the tropics and non oil-generating coals from the arctic

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This paper discusses the findings of a comparative study of microscopically recognisable oil-generative features observed in coals from two presently extreme climatic conditions: the arctic and the tropics. The samples investigated are from Spitsbergen, Svalbard and from Sarawak, Borneo. Both sets of coals are of Tertiary age and both were deposited in a lower coastal plain setting. The Palaeocene-Eocene coals of Spitsbergen were deposited in temperate to subarctic conditions while the Miocene coals of Sarawak were deposited in subtropical to tropical conditions. Features associated with oil-generation from the Sarawak coals include a widespread occurrence of exsudatinite veins and oil globules/haze. Hydrocarbon generation is often observed to be associated with the occurrence of a high abundance of framboidal pyrite. Coals from Spitsbergen, on the other hand, lack the oil generative features described above. Although the occurrence of oil-smears can be observed, they are not extensive and exsudatinite is rarely observed. To date, no significant oil accumulations of terrestrial origin have been discovered on or around the island of Spitsbergen. In contrast, offshore Sarawak is a prolific oil and gas producing province. Considering that the terrestrially-derived oils of the Balingian Province are sourced from stratigraphic equivalent sequences to the onshore coal-bearing sequences investigated here, it is clear that microscopical features are good indicators for the recognition of oil-prone coals.
