



Organic facies characteristics of the Miocene Soma Formation (Lower Lignite Succession-KM2), Soma Coal Basin, western Turkey

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The Soma coal basin is one of the largest economic lignite-bearing alluvial basins of western Turkey. The Miocene succession (Soma Formation) of the coalfield contains two lignite seams successions; Lower Lignite, Middle Lignite. The Lower Lignite (KM2) is a seam 15 m thick and found in contact between siliciclastic and carbonate deposits (marlstones). Detailed data from thick Miocene sediments (Soma Formation) made it possible to construct an organic facies framework using different zonations. Organic matter is composed predominantly of woody material. Kerogen in the deposits is type III, as indicated by organic petrographic observations and Rock-Eval data. Total organic carbon (TOC) values are generally between 28.45 and 72.66 %, but reach 73.38 % in the formation. Tmax values vary between 403 and 429 °C, confirming maturation trends indicated by vitrinite reflectance data (between 0.35-0.48 Ro %). Organic facies type C and CD were identified in the investigated units. Organic facies C and CD are related to clayey coal and coal lithofacies. These facies are characterized by average values of HI around 126 mg HC/g TOC (equivalent to type III kerogen), TOC around 56.61 %, and an average of S2 of 72.4 mg HC/g of rock. The organic matter is partly oxidized/oxidized and reworked.

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