

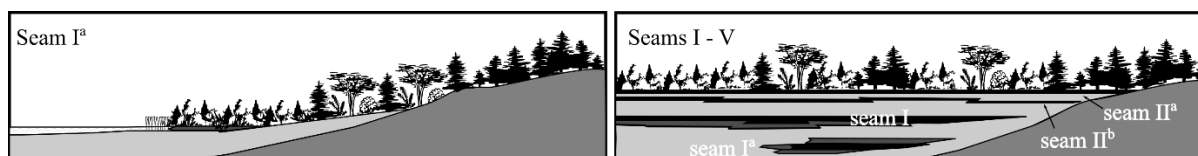
## Reconstruction of peat-forming paleoenvironments within the Oligocene Bobov Dol Basin, SW Bulgaria: Insights from organic petrology

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Up to fourteen sub-bituminous coal beds are hosted within the Oligocene Bobov Dol Basin. Among them, six (numbered I to VI from base to top) are considered economically significant. In this study, ninety samples from five of the main seams (I-V) and a locally mined sub-seam (I<sup>a</sup>) were characterized by maceral analysis and ash yield determination. The coal is composed of huminite (avg. 86.6 vol.%), liptinite (avg. 17.5 vol.%) and minor inertinite (avg. 1.5 vol.%). Maceral composition is dominated by gymnosperm-derived telohuminite (up to 72.0 vol.%) with resinite (up to 28.0 vol.%) and exsudatinitite (up to 16.0 vol.%) cell infillings, embedded in attrinitic (avg. 21.0 vol.%) or densinitic (avg. 17.0 vol.%) groundmass. Most samples also contain abundant leaf-derived huminite (phyllo-huminite, up to 29.0 vol.%) in association with cutinite (up to 8.0 vol.%) and fluorinite (up to 5.0 vol.%). Low to moderate ash yields (< 25 wt.% for most samples) coupled with low to moderate values of the maceral indices, namely TPI < 3 (for ~80% of the samples) and GI < 3 (for >53% of the samples), and low values of the GWI < 1 (for 81% of the samples), denote organic matter deposition within an oligo- to mesotrophic topogenous mire with (ground)watertable beneath the peat surface. Reconstruction of paleoenvironmental settings based on maceral analysis (Fig. 1) argues for plant matter accumulation under marginal aquatic (seam I<sup>a</sup>) and moderately wet- to dry-forested mires (seams I-V). Abundance of resinite and fluorinite-rich (phyllo-)huminite indicates development of conifer-dominated forests (likely deciduous gymnosperms), perhaps within a background of herbaceous plants and/or deciduous shrubs. The data is compatible with the previously reported preliminary organic geochemical data for part of the seams (Zdravkov et al., 2021).



**Figure 1.** Schematic diagram representing presumed environmental settings during peat formation.

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### Reference

Zdravkov, A., Bechtel, A., Gross, D., Stojanović, K.A., 2021. Peat-forming depositional environments within the Oligocene Bobov dol Basin, SW Bulgaria. In: Abstract Book, 37<sup>th</sup> TSOP Annual Meeting (Sofia, 12-14 September, 2021). pp. 123–125.