

Geostatistics. Throughout the geological history of karst, its morphological phenomena (doline, polja, sinkholes, obodine) were filled by sedimentation processes and hence conserved only to some extent in their particular development phases, subsequently being subjected to further morphological development in such conditions. Data on these phenomena were carefully collected for twenty years. As the number of studied elements exceeded 100000, the collected database is very large and these data are all the more significant because these morphological elements were accessible for observation and measurement only for a short time before being filled again. A geostatistical model of soil was developed using the variographic analysis on soil samples taken in three characteristic glacial areas. Scientifically established relations between the geomechanical model and parameters of geological origin were defined.

Shallow ground waters and the formation of carbonate soils in southeast Bulgaria – a study in progress

Marinela P.¹, Dimitrov I.¹ and Kashilska Z.²

¹University of Mining and Geology “St. Ivan Rilski”, 1700, Sofia, Bulgaria, idim68@abv.bg

²Regional Agency for Environment and Waters, Plovdiv, Bulgaria

Carbonate soils and indurate calcrete horizons are common in southeast Bulgaria. The carbonate accumulations are of variety of micro-structural and textural types. The calcrete usually forms lens or disk-like bodies on flat hills. The carbonate soils are observed on top of porous sediments but not on crystalline rocks. In the study area, where calcrete is common, the pH value of the agricultural land is usually above 7.5 and the surface, shallow ground and deep ground water is saturated with respect to calcium carbonate. Chemical analyses of indurate calcrete horizons, carbonate soils, rain water and ground water from southeast Bulgaria are commented in the text. It appears that competing processes of leaching and re-precipitation from waters oversaturated with respect to CaCO₃ are responsible for formation of transitional compounds - calcrete precursors, which further are transformed to calcrete. Because the rain water's acidity and ground water's degree of over-saturation, with respect to CaCO₃, vary with the season, it appears that seasonal variations in the water composition and the temperature control the net balance of soil carbonates.

Geochemical characteristics of organic matter from overcoal sediments and dump materials (Maritza-East Coal Basin, Bulgaria)

Markova K.¹, Stefanova M.², Marinov S.P.² and Milakovska Z.³

¹Departement of Geology and Paleontology, Sofia University “St. Kl. Ohridski”, 15 Tsar Osvoboditel Blvd., 1504 Sofia, Bulgaria, markova@gea.uni-sofia.bg

²Institute of Organic Chemistry with Centre of Phytochemistry, BAS, Acad. Bontchev Str., 9 Bl., Sofia 1113, Bulgaria, maia@orgchim.bas.bg

³Geological Institute, BAS, Acad. Bonchev Str., 24 Bl., Sofia 1113, Bulgaria, zlatkam@geology.bas.bg

The aims of the study were to characterize the geochemistry of organic matter from dump materials and overcoal sediments (Maritza-East Coal Basin, Bulgaria) as well as to try to find some differences among them from a chemical point of view. Three samples were studied: Sm. 1 – dump materials from “Iztok” Dump composed of a mixture of black clays and coals; Sm. 2 – gray schist-like clayey dump materials from “Staroseletz” Dump; Sm. 3 – overcoal massive black clayey sediments from “Trojanovo-3 mine”.

The samples were subsequently extracted by chloroform and ethanol-benzene (1:1, v/v). After asphaltene precipitation by *n*-hexane (1:50, v/v), the extracts were concentrated and subjected to Silicagel column chromatography separation. Solvents with increasing polarity were used for fractions preparation: *n*-hexane, for elution of alkanes/cycloalkanes (F. I); benzene for aromatic components (F. II); acetone for polar resins (F. III). Sulphur was removed from the first fraction by Cu grit treatment and thus cleaned F. I was studied by