Cryptospores and trilite spores in oceanic graptolite-bearing sediments (Saltar Formation) across the Ordovician-Silurian boundary in the West Balkan Mountains, Bulgaria

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Abstract. The purpose of this study is a refinement of the graptolite zonation and search for organic-walled microfossils in the pelitic rocks of the uppermost Ordovician and lowermost Silurian in the Svoge Anticline, West Balkan Mts. Pilot samples have been taken from the Tseretsel, Sirman and Saltar Formations. The fossiliferous lower part of the Saltar Formation is represented by lydites, silicic shales and graptolitic shales. The graptolite zones established are persculptus (Hirnantian), acuminatus-ascensus, vesiculosus and cyphus (Rhuddanian).

Two levels of the Saltar Formation have yielded palynomorphs. The lower level represents lydites from the base of the formation where immense quantity of cryptospores occur. The graptolites suggest persculptus Zone, uppermost Hirnantian. This mass occurrence of land plant derived cryptospore could be explained by the post-glacial sea level rise during
the Hirnantian. The upper sporomorh-bearing level of the Saltar formation represents silicitic shales of *vesiculosus* Zone, middle part of Rhuddanian. Trilete spores of the morphon *Ambitisporites avitis-dilutus* occur. The first occurrence of trilete spores on different palaeocontinents is not synchronous and varies from late Ashgill to early Wenlockian. The trilete spore find of the West Balkan Mts in Bulgaria is precisely dated on graptolites, represents one of the earliest known and is coeval with trilete spore first occurrences on the northern periphery of Gondwana (Libya and Saudi Arabia).

*Key words*: graptolites, cryptospores, trilete spores, Hirnantian, Rhuddanian, biostratigraphy, palaeogeography, West Balkan Mountains, Bulgaria.