

Assessing the morphological characteristics and formation time of the Deliblato Sands, Serbia

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The Deliblato Sands is among the largest uniform fixed sand dune areas of Europe, with a highly distinct morphology from its loess covered surroundings. Moreover, its dune forms, concerning their horizontal extension and relative height, are outstanding in the Pannonian Basin and reflect intensive Aeolian processes in the past. As such, the Deliblato Sands is considered to be a sensitive landscape, and therefore it can provide important information for understanding the morphological development of the Southern Banat Region.

So far there has been a limited data concerning the morphological parameters of dune forms in the area and previous research, in the lack of numerical age data, hypothesised various timing in terms of major aeolian phases. Consequently, the aim of the present research is to determine the morphological units of Deliblato Sands by analysing the spatial distribution of different dune forms and their horizontal morphological parameters, and to provide the first ages for the identified dune associations. Morphological mapping was made by using topographical and military maps and satellite images. The dominant direction of dune ridges was also compared to the present day prevailing wind direction. Ages were determined by OSL from four drill cores made on dunes representing major dune types. To assess the suitability of Deliblato sediments for luminescence dating several tests have been performed.

Based on the first results, in general a longitudinal and a transversal parabolic dune association have been identified in the area, the later being morphologically superimposed on the previous one. Longitudinal forms fit well to the present day prevailing SE wind, Kosava, however transversal forms assume a slightly different direction during their formation. The ages received for longitudinal dunes are older than previous authors suggested and place the development of these forms to the Boreal and Preboreal. Meanwhile the transversal dune association is post Atlantic in age, which thought to be earlier the major formation time of the entire Deliblato landscape. These new findings raise further questions concerning the stability and the development rate of dunes and concerning the role of Danube shifts in providing source material for dune initiation.