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Indicators for drought characterization of soils in different soil types, Hungary

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Nowadays climate change is relevant problem even from the viewpoint of soil science since it exerts significant effect on most of the physical, chemical and biochemical processes within soils. During our study, after survey of the available data for several climatic parameters (annual average precipitation, aridity indices by Pálfai etc.) as well as reference data (Kreybig soil map), the study areas optimal from the viewpoint of the drought influence on soils could be delineated: in Danube-Tisza Interfluve, Bugaci Sand Ringe (around Kecel town) and Bácskai Loess Plain (around Jánoshalma) in order to detect the effects of drought and the groundwater sinking in the last 50 years on these areas' soils. 62 samples were taken from the horizons of three profiles and one core by in summer, 2011 and measured for several properties (mechanical soil type, humus, carbonate, pH(H_2O), total salt, $Na2CO_3$). In addition to results of soil properties, other influencing parameters (change in land use, sinking groundwater level, cultivation etc.) were paid heed to differentiate the best soil indicators reflecting of the drought effects. Compared reference data in the 1950's and our data of the study area, it can be established that significant change in land use and soil properties can be observed. According to the results of basic properties, pH(H_2O), total salt, $Na2CO_3$ can be considered to be the best markers of drought. Distinct ways and strength of their indication can be differed. The way can be seen either in a change in their recorded concentration values or the alteration of their vertical distribution in the profiles. Based on the strength of indication for soil parameters, strong, moderate, weak categories could be determined.