

## **A geochemical approach to formation of the Tinaztepe cave soil, Seydisehir, Konya, Turkey**

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The geochemical transformation during cave soil formation in Tinaztepe Cave, and mass- and volume- changes related to them were evaluated geochemically by comparing the limestone of the Upper Cretaceous Mortas formation and the cave soil developed in it by leaching during the Pleistocene - Quaternary period in an area located 20 km to south of Seydisehir (Konya, Central Turkey).

In the study area, recent- and paleo-karstic structures are common especially in the limestone of the Mortas Formation. The entrance of Tinaztepe Cave is located in western slope of Tinaz Hill. It was developed between 1480-1520 m altitude. The length of the cave is approximately 2000 m, and it can be explained as through cave. Sometimes wideness of the cave rises 30 m, but generally participate in 10 m. There is little or much water in the cave all season (Guldali, 1984; Temur et al, 2005). There are cave soil and collapse breccia as cave deposit in Tinaztepe Cave. The cave soil is found only 500 m from entrance of the cave. This is muddy, semi-compact, dark brown – black colored soil. The color of the dried cave soil samples is gray, dark gray, dark brown. Their thickness is generally 0.5 m, rarely 1 m. In the process of the transformation from limestone to soil, the element ratios in the cave and limestone show that, P, Ni, Ba, Cu, Si, Rb, Cr, Zr, K, Ga, Nb, Co, Ti, Mn, Fe, Th and Al were enriched together by staying in-situ. All the lanthanides show similar behavior, but the HREEs, were consumed fast during soil formation relative to the LREEs. The association and the enrichment of P as well as Ni, Cu, Si, Rb, Cr, Zr, K, Ga, Nb, Co, Ti, Mn, Fe, Th in soil relative to the limestone are interpreted as being resulted from organic activity and supplement of the Dipsizgol Ophiolite. The averages of Ti/Zr ratio for limestone (147) and cave soil (33) verify the possibility of exotic addition. Ca, Hg, Sb, As, Sr and U were found to be the most mobile elements during soil formation. According to main oxide composition ratios of the limestone and cave soil, the soils were described as representing a partly washed soil progressing the leaching and accumulation phase, but not beginning the silicate chemical decomposition phase. In the processes of soil formation, 73.2% of the limestone was washed away; only 26.8% of the rock was deposited as soil. Therefore, 4 times mass reduction was realized.

**Güldali, N., 1984**, Relationship between the Seydişehir and Akseki district bauxite deposits and paleokarstic features of Taurus Belt; Bull. Mineral Res. Expl. Inst. of Turkey, 102, 1-18 (In Turkish)

**Temur, S., Orhan, H., Deli, A., Karadag, M. M., 2005**, The soil chemistry in Tinaztepe Cave (Seydişehir – Konya) and its environ and the relations of similar soils with

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