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# Dan H. Yaalon Symposium, 8<sup>th</sup> – 11<sup>th</sup> April, 2015

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#### **Multidisciplinary Investigations of Saharan Dust Events in the Mediterranean and in the Carpathian Basin (Central Europe)**

**Keywords:** Saharan dust, aeolian dust deposits, red soils

Several hundred tons of windblown dust material is transported every year from Saharan dust source areas to Europe, modifying important climatic and other environmental processes of distant areas. Saharan dust addition have played crucial role in the unique Mediterranean terra rossa formation.

NASA's daily aerosol indices (from 1979 to 2012) were employed to estimate atmospheric dust amount in the study areas. Daily geopotential height (at 700 mb), wind vector and meridional flow data of the distinguished dust events were obtained from the NCEP/NCAR Reanalysis project to compile mean synoptic composite maps. In order to identify the transportation routes and source areas, the backward trajectories were plotted on multiple trajectory maps (NOAA HYSPLIT model). Samples were also taken from red (paleo)soils and recently deposited Saharan dust material; granulometric properties of these samples were analysed by using an electron microscope (SEM) and a Malvern Mastersizer 3000 (Hydro LV) laser particle size analyser.

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#### **The Negev Loess Deposits – an Archetype of Desert Loess**

**Keywords:** desert loess, dust sources, silt grains, arid lands

Despite intensive research on loess formation the question of silt production in deserts is an ongoing debate in sedimentology. We analyzed primary hilltop loess sequences in the Negev, Israel, and found that both content and mode of the quartz-rich coarse silts gradually increased during the late Pleistocene. As the bedrock is carbonate, these trends are explained by the advancement of the quartz-rich sands into Sinai and the Negev concurrently to the loess accretion. As no silt grains exist in the dunes, these silts were most likely formed through aeolian abrasion of sand grains, in accordance with experiments. A detailed examination of late Pleistocene loess regions in the Sahara, Arabia and China demonstrates that all are located downwind of adjacent sand seas, exhibit similar mineralogy and show contemporaneous activities. Our results stress the primary role of active ergs and aeolian abrasion associated with frequent strong winds in the formation of desert loess.