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# Iberulites deposition on soils of Granada (South Spain)

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Erosion, atmospheric transport, and dust-sized soil particles deposition to earth's surface are important process in aeolian environments. Atmospheric dust is associated to global climate change. Iberulites (atmospheric aerosols) are a particular type of microspherulites that develop in the atmosphere (troposphere), finally falling to the earth's surface. The name comes from the Iberian Peninsula where they were discovered (1). An iberulite is a co-association with axial geometry, consisting of well-defined mineral grains, together with non-crystalline compounds, structured around a coarse-grained core with a smectite rind, only one vortex and pinkish color formed in the troposphere by complex aerosol-water-gas interactions. The aqueous interphase hypothesis has been suggested as the mechanism for tropospheric formation of iberulites: interactions between water droplets and Saharan aerosols create complex hydrodynamic conditions causing the possibility of collisions that produce the "precursor water droplets" of the iberulites. The movement of this water drop to lower tropospheric levels implies either simultaneous or consecutive processes such as coalescence, formation of vortex and downdraught. During this phase the iberulites acquire their spherical shape and internal structure (core and rind).

In this work, we estimated the total dust amount provided in 14 events ranging from July, 5th to November, 20th (2010), from an experimental plot in the plain of the Genil River (Granada, South of Spain). We studied the particle size (weight %) of atmospheric dust and its distribution in size fractions (> 500 [U+F06D]m, 500-200 [U+F06D]m and < 200 [U+F06D]m), isolating and characterizing the iberulites present in each of these fractions.

The fraction > 500 [U+F06D]m represented in all samples less than 5% of the total and corresponded to the local deposition (re-mobilization of the material by saltation, creeping, deflation, etc.). The fraction 500-200 [U+F06D]m included the atmospheric deposition of short- and medium-distance, and not exceeded 11% in any sample. Finally, the fraction < 200 [U+F06D]m, corresponding to long atmospheric transport, represented in all samples > 85%. All iberulites were concentrated in the latter fraction, in percentages ranging between 1 and 5% of the weight of this fraction and showed a composition rich in silicates (quartz, smectite and micaceous phases), sulfates, halides, oxides and phosphate-vanadates.

(1) Díaz-Hernández, J.L. and Párraga J. (2008). The nature and tropospheric formation of iberulites: Pinkish mineral microspherulites. Geochimica et Cosmochimica Acta, 72: 3883-3906.