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Dust storms as a means of transport for microplastics in the atmosphere

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Airborne microplastic is a new area of research in the microplastic domain. Recently, microplastic presence was reported in agricultural sources. This reveals the role of the atmosphere in the transport and dispersion of microplastics. Dust storms can associated microplastics, especially in arid and semi-arid regions. This study reports the presence, characteristics, and potter storm in Shiraz, southern Iran, in May 2018. Using the method adopted by Bergmann et al. (2019), 22 dust samples were colle Dust samples were analyzed for microplastic using the density extraction method and Raman Spectroscopy. The hybrid Lagr Single-Particle Lagrangian Integrated Trajectory) was used for back trajectory analysis in order to determine the origin of air ma

Results showed that MP concentrations ranged from 0.04 to 1.06 particles per g of dust. In total, 485 microplastics were det microplastics was fibrous and polymer makeup was dominated by nylon, polypropylene, and polyethylene terephthalate. revealed different degrees of weathering in microplastics. Results of modeling together with the geochemical evidence sugges principal distal and transboundary source. Results also estimated that about $2 * 10^{12}$ microplastics could be transported by su MP concentrations in urban dust and remote arid soils, it was estimated that between 0.1 and 5% of MPs in the dust sample remainder arose from more distant sources. The outcome of this study is proving the atmospheric transport of microplastic f for microplastics to the oceans and land through dust storm events.

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