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Photoenhanced ozone uptake onto humic acid films and aerosols

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Ozone is a key player in the gas-phase atmospheric chemistry; it is a greenhouse gas, a radical precursor, leading to OH radical formation, and a strong oxidant. Dry deposition is, in addition to photochemical destruction and chemical loss, a major global loss process of tropospheric ozone. Its depletion at ground level has been observed over continental areas and shows a diurnal cycle. The present study reveals an enhanced ozone uptake on various organic substrates (Humic acid, Pahokee peat, Elliot soil and Leonaridite) in the presence of both Ultra-Violet and Visible light. The results presented here are relevant for both airborne particles and macrosurfaces and suggest that the ozone diurnal cycle observed over agricultural or natural terrain could be partly explained by the presence of photoreactive humic substances on these surfaces.