SOLAR PARTICLE TRACKS IN GLASS FROM THE SURVEYOR 3 SPACECRAFT

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A glass filter from Surveyor 3 has been found to contain a surface density of $\sim 1 \times 10^6$ t/cm^2 from heavy solar flare particles. The variation with depth is best fit with a solar particle spectrum $dN/dE = 2.42 \times 10^6 E^{-2}$ (p/cm^2-yr-ster-MV/nuc) from 2 MV/nuc to ~ 7 MV/nuc and $dN/dE = 1.17 \times 10^7 E^{-3}$ (p/cm^2-yr-ster-MV/nuc) at higher energies. Not much difference is observed between 0.5 μ and 5 μ, indicating a lack of track registering particles below 0.5 MeV/nuc. The Surveyor data are compatible with track results in lunar rocks provided an erosion rate of $\sim 10^{-7}$ cm/yr is assumed for the latter. The results also suggest a small-scale erosion process in lunar rocks.