

Abstract Submitted
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Tidal frequencies in the spectral analysis of time series muon flux measurements CATHERINE FELDMAN, Stony Brook University, HELIO TAKAI, Brookhaven Natl Lab — Tidal frequencies are observed in the spectral analysis of time series muon flux measurements performed by the MARIACHI experiment over a period of seven years. The prominent peaks from the frequency spectrum correspond to tidal frequencies S_1, S_2, S_3, K_1, P_1 and Ψ_1 . We will present these results and compare them to the regular density oscillations from balloon sounding data. We interpret the observed data as being the effect of regular atmospheric density oscillations induced by the thermal heating of layers in Earth's atmosphere. As the density of the atmosphere varies, the altitude where particles are produced varies accordingly. As a consequence, the muon decay path elongates or contracts, modulating the number of muons detected at ground level. The role of other tidal effects, including geomagnetic tides, will also be discussed.

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