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Annual Variation of Local Photon Emissions' Spectral Power within the mHz Range Overlaps with Seismic-Atmospheric Acoustic Oscillations

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ABSTRACT

Spheroidal modes of seismic and acoustic oscillations in the atmosphere occur within the 2 to 7 mHz range with peak-to-peak variations in the order of 10^{-12} to 10^{-11} m \cdot s $^{-2}$. Previous research indicated the amplitudes for 230 s and 270 s periods peak during the summer months. In the present study the amplitudes of a reliably apparent 3 mHz increment from spectral analyses of minute-to-minute measurements of background photon emissions by a photomultiplier tube housed in a dark room were sampled for a one year period. The peak increase in the power of this increment was maximal during the summer months and overlapped conspicuously with the annual variation in fundamental spheroidal modes of seismic free oscillations. Quantitative estimates indicate that relative shifts in the order of 10^{-11} W/m 2 for photon emissions may reflect the annual variation in coupled oscillations between the earth and atmosphere.

KEYWORDS

Photon Emissions; Earth Oscillations; Spheroidal Modes; Periodicity; Annual Variations

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