

MIS004-P03

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## Theoretical study on the excitation of earth's incessant free oscillation by cumulus clouds

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It has been known recently that the earth always oscillates weakly during periods no big earthquake occurs and this phenomenon is called the earth's continuous free oscillations or the earth's 'hum'. The amplitudes of the oscillations are order of ngal in mHz band and have excess near 3.7 and 4.4 mHz. Since the frequencies of excess amplitude are same frequencies of the atmospheric acoustic gravity eigenmodes, the source of the excess amplitudes can be the source of the atmospheric modes.

One of the candidates of such a source is the effect of condensation fluctuations associated with globally distributed cumulus clouds. I therefore investigate the possibility of cumulus clouds as excitation source of the excess amplitudes by calculation of a linear response of the earth-atmosphere coupled system to global activities of cumulus clouds.

The resultant calculation reproduced general feature of the excess amplitudes: The resultant ground acceleration PSD has peaks near 3.7 and 4.4 mHz and the amplitudes are of the same order as that of observed excess amplitudes. Therefore it is highly probable that significant part of the amplitudes of excess amplitudes of the earth' continuous free oscillations are excited by global activities of cumulus clouds.

Keywords: incessant free oscillation of the earth, cumulus convection, seismology of blue earth