

**E1-07 : ON THE FIRST THREE HARMONICS OF THE
TROPICAL ATMOSPHERE**

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Outgoing long-wave Radiation (OLR) and First GARP (Global Atmospheric Research Programme) Global Experiment (EGGE) level III b wind data were used

to study the spatial and temporal distribution of first three harmonics (in the time domain) in the tropics.

Amplitude of first and second harmonics of low zonal wind are largest over monsoon regions of the eastern hemisphere and account for more than 80% of the variance. First harmonic shows standing character. However the second and third harmonics are characterized by cross equatorial and clockwise phase propagation which clearly indicates the onset of the Asian and the Australian summer monsoons. First, second and third harmonics are "phase locked" in the monsoon region of the eastern hemisphere during summer. Third harmonic is strong over Central America, but phase shift between harmonics indicates weak monsoon there. Amplitude of the first harmonic of low level V is prominent at the Somalia coast and Malaysia. Amplitude variation of the first and second harmonics of upper level zonal wind exhibits the response of subtropical jet streams to monsoon and inter-monsoon convective activity.

First harmonic of OLR shows largest amplitudes over the continental regions between 10-15 degrees from the equator. Summer/winter standing type oscillation is evident in the monsoon region. Amplitude, and phase propagation of the second harmonic is closely associated with the low level zonal wind field. Amplitude is fairly strong over the equatorial land areas where rainfall maxima area is found in the transition periods.