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Confirmation of earth's closed loop orbit using tidal waves

J Munasinghe* and K I S Kekulawala

Department of Mathematics, University of Kelaniya, Kelaniya, Sri Lanka

The word 'tide' is a prevalent term used to define the alternating rise and fall in the sea level with respect to the land, produced by the gravitational attraction of the moon and the sun. To a better understanding of the tide, it is necessary to study each astronomical motion, together with its associated tide producing forces, separately. The present study was carried out with an attempt to confirm the Earth's closed loop orbit using tidal height changes due to the motion of the Sun, Moon and Earth in the Trincomalee coastal area of Sri Lanka. Tidal heights from the Mean Sea Level (MSL) were measured every fifteen minutes throughout the year 2015 (365 days) using the tide pole installed in the sea in the Trincomalee coastal area, which was built by the Hydrography Survey Unit of Sri Lanka Navy. Using the data obtained, the behavior of tidal waves was identified. The main tidal constituents were obtained using Tidal Analysis Tool (TAT). The tidal constituent 'Principal solar semidiurnal constituent' (S_2), which is the consideration of the tidal effect caused by the sun, was then chosen from TAT application because the Earth's orbit around the Sun is caused only by the forces between the Earth and the Sun. Fast Fourier Transformation (FFT) and Interpolation methods were used to analyze the chosen tidal constituent, S_2 , together with the obtained tidal data to confirm the Earth's closed loop orbit around the Sun. Meteorological factors and human errors can occur while collecting data and hence there are eighteen peaks towards the inside of the loop. The following elliptic-shaped orbit was obtained at the confidence level of 50% after removing such data.

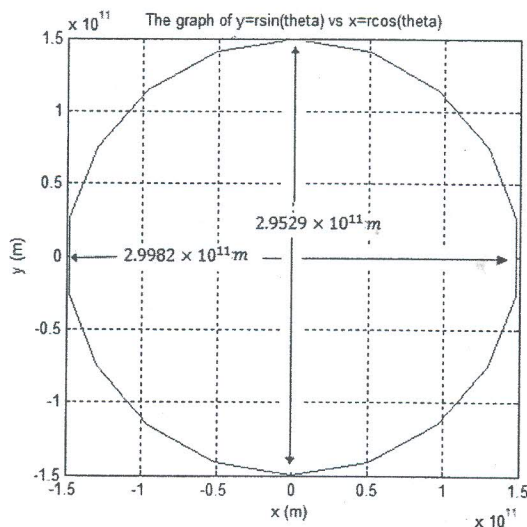


Figure 1: Earth's closed loop orbit