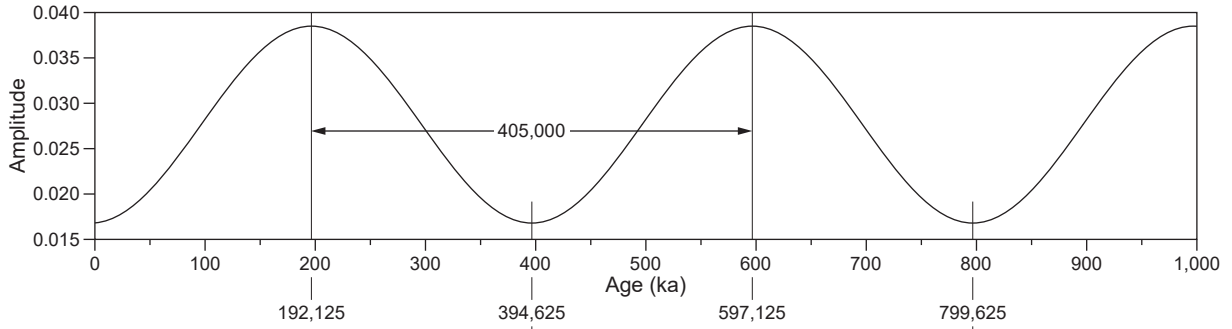
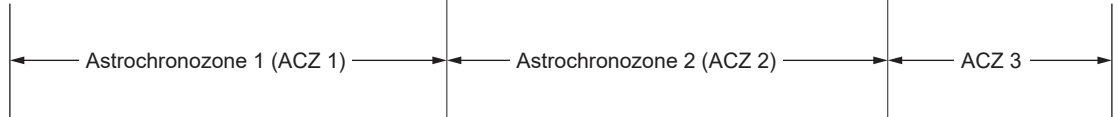


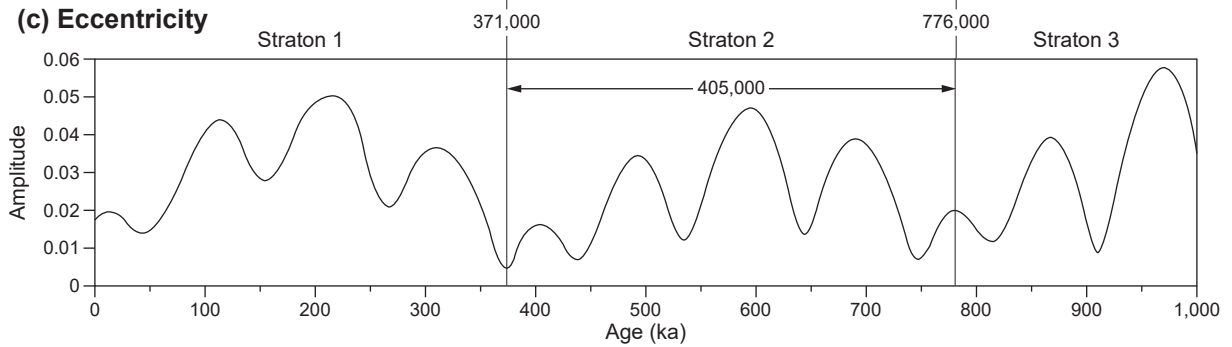
**(a) Astronomical Metronome and 405 ka E-cycle**



**(b) Geological Time Scale GTS 2020**



**(c) Eccentricity**



**Figure S2:** (a) The 'Astronomical Metronome' corresponds to the leading sinusoidal component of the Earth's eccentrical orbit around the Sun, which has a period of 405,000 years (405 ka). (b) In the 'Geological Time Scale 2020' (GTS 2020, Raffi et al., 2020, in Gradstein et al., 2020) biozones and magnetic reversals in the Neogene Period (2.59–23.04 Ma) are calibrated with 405-ka astrochronozones (ACZ) that are numbered as integers between the minima of the metronome. (c) In the orbital scale of glacio-eustasy c. 405-ka time-rock units (stratons) also occur approximately between the minima of eccentricity (Matthews and Frohlich, 2002).