Abstract Submitted
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Cosmic Rays and Galactic Motion[1] TORI SNYDER, Presbyterian College — As the solar system travels it oscillates across the dense galactic plane with a periodicity much smaller than its galactic orbital period. Assuming current conditions, the disk crossing period is estimated between 30 and 42 Ma. This would mean that galactic cosmic ray fluxes, and other observations on our planet, might also be expected to vary on a similar cycle, with fluxes being much higher during intervals when our solar system is close to the galactic plane. On our planet, living and dead creatures connect with cosmic rays. This is because several radioactive isotopes are produced in the upper atmosphere when cosmic rays collide with atmospheric molecules at high speed. These isotopes are known as cosmogenic isotopes. The production rate of the cosmogenic isotopes depends on the strength of the cosmic radiation, which again varies with the strength of the geomagnetic field and solar activity. Therefore, the abundance of cosmogenic isotopes in fossils may give a glimpse into the radiation history of our planet. A connection between calcitic fossil shells is claimed to yield a 32 Ma oscillation which would be consistent with the galactic oscillation idea. In this project we propose to examine several datasets: first, the Phanerozoic dataset of almost 25,000 calcitic fossils with their radiogenic isotopes; second, the solar cycle dataset from the space age on planet Earth. Using these data sets we hope to be able to compare the data and learn about the effect that cosmic ray fluxes have on earth and the solar system.

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