Astronomical Solutions for Geological Studies.

The AstroGeo project

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According to Milankovitch's theory (1941), the large climatic changes of the past are due to the variations of the Earth's orbit and its axis of rotation, resulting from the gravitational attraction of the other planets and the Moon. These variations can be traced over millions of years (Ma) in sedimentary records, although the mechanisms that transfer insolation to geological variations are not precisely known. After the pioneering work of Hays et al (1976), the stratigraphic community has invested in the search for this astronomical imprint. In recent decades, the orbital and rotational solutions of the Earth developed in my team have been used to establish a geological time scale for the Neogene (0-23 Ma), an effort that is currently continuing towards the Paleogene (23 Ma- 66 Ma). Nevertheless, the extension of these works on the Mesozoic era (66-250 Ma) and beyond is difficult, because the movement of the solar system is chaotic. It is indeed not possible to find the precise orbital movement of the planets beyond 60 Ma from their current state. AstroGeo aims to go beyond this 60 Ma predictability horizon and to provide the basis for an astronomical solution over a large part of geological time. This will only be possible by using the input geological data, in order to constrain the astronomical solution. Geological records will be used to trace not only the evolution of Earth’s orbit, but of all the planets in the solar system.

Mots-Clés : Paleoclimates, Cyclostratigraphy, Planetary motion, Milankovitch cycles, Chaos.

Merci de ne rien inscrire dans cette zone et ne pas modifier les marges des pieds de page et entêtes.