



Astronomical control on vegetation from high to low latitudes

Qianqian Su, Anqi Lyu, Qiuzhen Yin, and André Berger

George Lemaitre Centre for Earth and Climate Research, Earth and Life Institute, Université catholique de Louvain, Louvain-la-Neuve, Belgium (qianqian.su@uclouvain.be)

It is noted that certain recurring vegetation patterns appear to be a result of climate changes linked to specific astronomical parameters. However, proxy reconstructions show that the response of vegetation to the astronomical forcing is complex and varies with regions. Our study aims at exploring how the astronomical forcing controls vegetation development in different regions and under interglacial climate. It will be based on a set of transient climate simulations of the interglacials of the last 800 ka performed with the model LOVECLIM where a dynamic vegetation model is included. We will focus on the vegetation response in several key regions from both high latitudes to low latitudes to investigate the regional diversity. By analyzing the components of vegetation in different latitudinal zones and the related changes in precipitation and temperature, which are driven by astronomically-induced insolation changes, we intend to discuss the relative role of each astronomical parameter on vegetation at different latitudes and the related mechanisms. Furthermore, through combining proxy studies in specific area, it is expected to get an improved assessment of the relationship between the astronomical parameters and vegetation along the latitudes.