

# THESIS OFFER

We offer a master/bachelor project about mathematical indices to quantify climate modulation as part of the SoilDivTemp project<sup>†</sup>. Interested students should contact Rémy Beugnon ([remy.beugnon@idiv.de](mailto:remy.beugnon@idiv.de)).

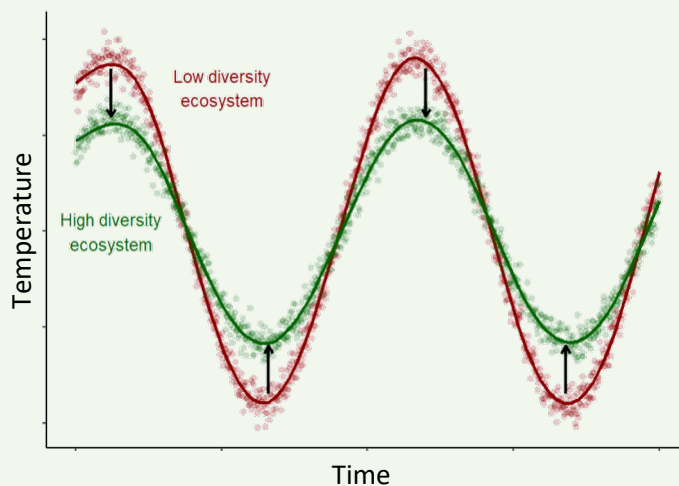
**Supervision:** Rémy Beugnon<sup>1</sup>

**Aim:** The frequency and intensity of extreme climatic events, such as heatwaves and droughts, are increasing with global warming, threatening humanity and other life on Earth. Yet, vegetation can buffer extreme temperature and humidity fluctuations near the ground compared to conditions in the free atmosphere (Fig. 1). For example, in forests, temperatures in the understory are often cooler during the day and warmer during the night compared to open areas. Buffered forest microclimates can provide shelter for vulnerable species and protect communities against climate extremes. Moreover, a diverse canopy and understory can increase primary productivity, therefore, we believe that diversity positively affects forest microclimate buffering.

In this project, we want to develop indices to capture climate modulation and identify their strength and limits using simulations.

**Project:** The student will review the literature about mathematical indices to measure climate modulation and stabilization in ecology and meteorology. Thereafter, the student will synthesize these indices, test their limits and propose the most appropriate set of indices to respond to ecological questions.

**Profile:** We are aiming for a student in ecology or meteorology with an interest in mathematical modeling.



*Fig. 1: Expected effects of vegetation diversity on temperature fluctuations. We expect vegetation diversity to reduce temperature extremes over time*

+ More information and details there: <https://remybeugnon.netlify.app/project/soildivtemp/>