Résumé stage

A new method has received growing attention during the last decade, which uses the uptake of carbonyl sulphide (COS), a trace atmospheric sulphur compound, as a proxy for ecosystem primary gross production. In leaves, COS is taken up along with CO2 and both gases react with the same enzyme, carbonic anhydrase (CA). However, it appears that soils are also significant contributors to ecosystem COS uptake since they harbour high numbers of organisms that produce CA and CA-related enzymes. Several parameters can affect soil COS fluxes, such as temperature, pH, moisture, and even light. Our work is focused on a better understanding of microbial diversity and activity in soil influenced by light, with a special spotlight on photoautotrophic organisms and how they shape microbial communities. The goals are (1) to describe the photoautotrophic diversity present in soil, (2) to determinate whether light affects photoautotrophic, bacterial and fungal community composition and (3) to evaluate whether changes in microbial community lead to changes in ecosystem function such as soil respiration, photosynthesis rate, COS exchange and CA activity. For the experiment, four soils with different physicochemical properties were sampled and incubated to stimulate the development of native soil phototrophs. Light treatments were applied to the soils, by incubating them either in light or dark. Microbial communities in these soils were looked at through metabarcoding analysis and numbers of gene copies were estimated using quantitative PCR. Resulting data were then processed and visualized using statistical tools such as Rstudio.