In the context of future climate change our study aims to reveal possible compensation of increasing CO$_2$ concentration on drought and heat wave effects mainly on:
- root system
- botanical composition

This has as goal to:
- Improve pasture models such as PaSim
- Clarify the role of temperate grassland ecosystems as sink for future increases of CO$_2$ concentration
- Evaluate vulnerability of grassland ecosystems to future climate change

**Experimental set up**

**Plant material**
- Grassland monoliths are coming from an upland site in central France
- The experiment is performed at the European Ecotron of Montpellier

**Future climate treatment**
The chosen scenario, 2040-2060 corresponds to:
- a CO$_2$ concentration of 500 ppm
- an increase in mean annual temperature of 2.3°C
- a decrease in annual precipitation of 11%

**Summer extreme event treatments**

- **Heat wave**
  - 1-15 August +3.5°C

- **Drought**
  - 2040-2060 with drought
  - 0 mm rain 1-15 August
Since April 2010 monoliths were exposed to climate conditions of the scenario 2040-2060, but no extreme events were applied.

Above-ground biomass and root growth have been followed during this summer.

Next year, extreme treatment effects will be studied.