éclaire
Effects of climate change on air pollution impacts and response strategies for European ecosystems

Project Number 282910

ÉCLAIRE

Effects of Climate Change on Air Pollution Impacts and Response Strategies for European Ecosystems

Seventh Framework Programme

Theme: Environment

D10.3 One year response data on ecosystem carbon balance responses to experimental changes and interactions with air pollution factors

Due date of deliverable: **01/04/2014** Actual submission date: **05/09/2014**
Start Date of Project: **01/10/2011** Duration: **48 months**
Organisation name of lead contractor for this deliverable :
DTU

Project co-funded by the European Commission within the Seventh Framework Programme		
Dissemination Level		
PU	Public	☐
PP	Restricted to other programme participants (including the Commission Services)	☒
RE	Restricted to a group specified by the consortium (including the Commission Services)	☐
CO	Confidential, only for members of the consortium (including the Commission Services)	☐

1. Executive Summary

We deliver data from two experiments with varieties of Barley and Oil seed rape respectively that are conducted in a phytotron. Both treatments reflect a production year for each crop with approximately 100 growing days in spring/summer.

Here we deliver 3 types of data for the phytotron data.

- **Site characteristics:** Variables describing the plant varieties and growth condition.
- **Driving variables:** Climate variables providing the "pressure" on the system.
- **Response variables:** Measurements of various growth responses by the crops as a consequence of the change in drivers.

Physical response data (hourly):

- Air temperature
- Relative humidity in air
- Ozone concentration in air
- CO_2 concentration in air

Growth response data (Oil seed rape):

- Yield, g m^{-2}, Yield (harvestable part of plant) (arable)
- Ab_Biomass_Fol, g m^{-2}, Above ground foliar biomass (which is collected at end of experimental period)
- Ab_Biomass_Stem, g m^{-2}, Above ground stem biomass (which is collected at end of experimental period)
- Ab_Biomass_100 seeds (which is collected at end of experimental period)

Growth response data (Barley):

- Yield, g m^{-2}, Yield (harvestable part of plant) (arable)
- Ab_Biomass_Tot, g m^{-2}, Above ground biomass (which is collected at end of experimental period)

The data from Oil seed rape is published. The response data are uploaded to the ECLAIRE database.

2. Deviations and reasons:

The work has been conducted and the deliverable achieved but was delayed due to restructuring within the ECO group at DTU and some recent changes in post, resulting in workload of the remaining group members increasing significantly. In the process of conducting the work, some issues in extracting the environmental data from the Phytotron database at the facility, were also found.

3. Publications:

The data from Oil seed rape has been published:

Frenck Georg, van der Linden Leon, Mikkelsen, Teis Nørgaard, Brix Hans & Jørgensen Rikke Bagger. (2013). Response to multi-generational selection under elevated [CO2] in two temperature regimes suggests enhanced carbon assimilation and increased reproductive output in Brassica napus L. Ecology and Evolution 2013; 3(5):1163–1172.

The Barley data has been submitted to a scientific journal for publication.