

ExpeER
Distributed Infrastructure for EXPERimentation
in Ecosystem Research

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SEVENTH FRAMEWORK PROGRAMME

Capacities

Integrating activities: Networks of Research Infrastructures(RIs)

Theme: Environment and Earth Sciences

DELIVERABLE 9.1

Library of currently available ecosystem parameters

Abstract:

The report summarises the strategy and work to provide a parameter guidelines and database for setting up models to be applied at the EXPEER sites.

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Dissemination level:

PU Public (must be available on the website)	[X]
PP Restricted to other programme participants (including the Commission Services)	[]
RE Restricted to a group specified by the consortium (including the Commission Services) (precise to whom it should be addressed)	[]
CO Confidential, only for members of the consortium(including the Commission Services)	[]

1 Executive summary

To facilitate application of the three models to data from EXPEER sites and experiments, a library of currently available parameters is needed as part of the model toolbox. This database was originally planned as an independent library. However, the work with the three models have shown, that this strategy is not suitable because many of the parameters are model specific. An independent library is therefore of little general use. Instead model parameter settings and libraries will be integrated into each of the models as part of the model toolbox.

2 Parameter selection tools

All three models to be included in the EXPEER model toolbox, COUP, LPJ-guess and JULES will require characterisation parameters describing the different entities of the ecosystems (e.g. soil and plant characteristics). The type and number of parameters needed differ among the three models but for some of them the number of parameters is substantial.

These parameters are mandatory in order to set up and run the models for a given site, but in most cases all the parameters are not all available from either the monitoring or experimental sites. The lack of these site- and ecosystem characteristics and parameters will be an obstacle and prevent the application of the models.

A way to circumvent this problem is to rely on similar parameters measured elsewhere assuming that given physical and biological entities in the ecosystem share characteristics. Especially if the missing parameters can be obtained from measurements at a different site but in similar plants or soils, these may be acceptable to use. If for example the model requires water retention curves for the soil, and these were not measured, water retention curves may be “taken” from another soil with identical texture.

Therefore, and because several of the parameters are model specific, it will be of little value to create an independent database with these parameters. Instead the library of parameters for model application will consist of:

- Parameter selection tools and guidelines integrated into the EXPEER models. These are tools or “semi databases” with instructions on model parameters and their ranges which can be used to facilitate the model parameter settings in case these were not measured at the site.
- References to global databases exists, for example the TRY database with plant traits. Such data bases does not necessarily include exactly the parameters needed by the models but may nevertheless be useful to obtain model parameters needed.
- Parameter files for each of the models for each of the model applications in the gradient application which will be part of the toolbox. This will provide a parameter dataset for each of grid cells in which an EXPEER site is present. This will provide a significant potential to get the model application started. From this parameter file the parameters can be enhanced based on site measurements or parameter settings from other applications in equivalent ecosystems.
- Parameter files from previous model applications for each model and covering a range of ecosystem conditions. This will serve as a ground for parameter enhancement.

The toolbox will be an integrated part of the models and the model toolbox (Del. 9,4), and no separate library will be developed.

	Generic data	Site specific data	Ecosystem relevant data
Model parameter selection tools and guidelines	X	-	-
Parameter files from grid application	-	-	-
Global databases	X	-	X
Parameter files from previous model applications	X	-	X

Table 9.1

The 4 parts of the library which will be integrated into the toolbox (Del. 9.4)