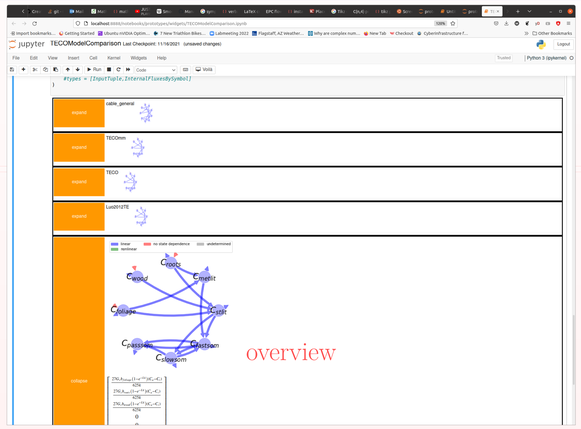
My Important Project

title

Hans.Mustermann@deepthought.university

Overview

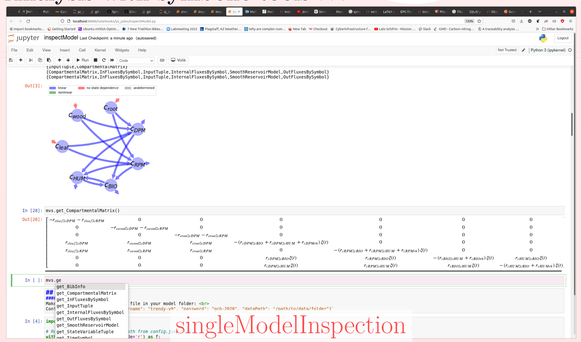


overview

1. bgc md2 is an open source python package availabe on GitHub, developed at the Max-Planck-Institut for BioGeoChemistry in Jena and more recently in Yiqi Luo's Ecolab at NAU in Flagstaff and Cornell in Ithaca
2. A set of libraries that can be used in other python scripts or interactively (jupyter or IPython) The picture shows a jupiter widget showing a table of models. The orange buttons can be clicked to expand or collape a more detailed view of the particular model.
3. $>$ 30 published vegetation, soil or ecosystems models in a format that for symbolic and numeric computations
4. A set of special datatypes that describe components of the models and functions that operate on these datatypes
5. A userinterface that uses a graph library to compute what is computable and can be used for comparisons.

Single Model Inspection

Analysis with symbolic tools . . .



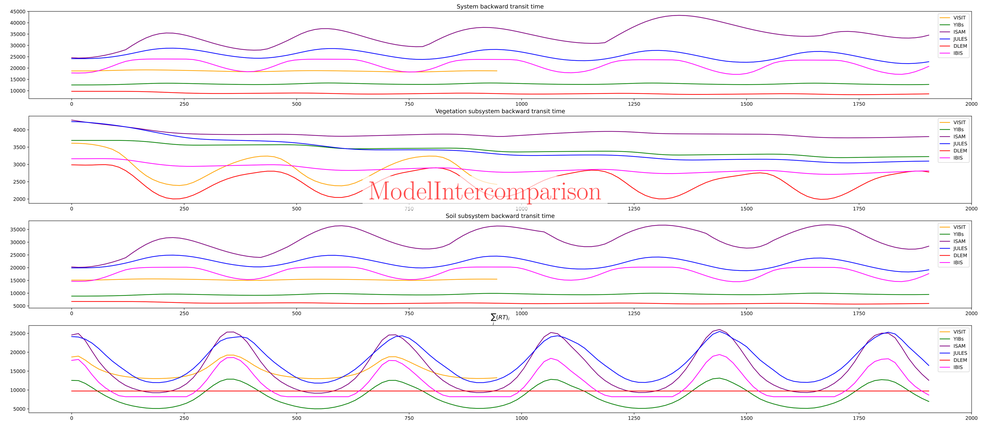
singleModelInspection

1. the structure (graph both in the mathematical and visual sense) can be derived from the symbolic description
2. other properties are flux equations the compartmental matrix

or numerically . . .

1. the symbolic model description can be parameterized and transformed into a numeric model
2. The picture shows the data assimilation result for the above model using trendy data.

Intercomparison



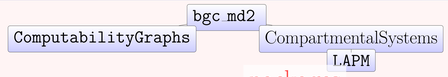
ModelIntercomparison

Internal Structure

internalStructure

1. `bgc md2` is not just a collection of models, that are represented as sets of varible of special type like fluxes or matrice, but also a collection of functions whose arguments and return values have these types. These functions are here called `computers` and use python type annotations. The computability graph used in the user interface and queries is derived from the annotations of a set of functions. The set of properties (defined by the types) is growing as well as the functions connecting them.

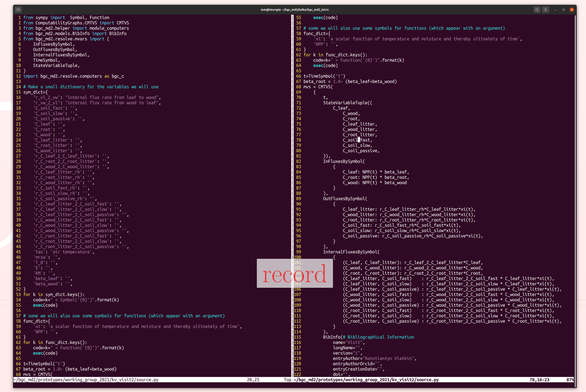
Python Packages



packages

1. The graph computation is outsourced into our package `ComputabilityGraphs`
2. Many of the advanced diagnostic variables (age and transittime distributions) are computed using our other packages `LAPM` and `CompartmentalSystems` for which `bgc md2` acts as interface.

A record



record

1. The picture shows the screen shot of the source code of the above model using sympy and some datatypes provided by `bgc md2` .
2. The entries of the database dont even have to be complete models. They are implemented in normal python and have in common that they define a set of model properties and a set of functions to connect them. There is no special format necessary. The creation of the symbolic formulation can be automated bye all means available in python. Extra information can but does not have to be provided.

References

references

Contact

contact

blablalllllllllllllllllllllllllll