Model-Data Assimilation with MCMC

Update 9.7.11: Linked files are available. Octave friendly files are in development.

Citation

All programs are released into the public domain by their respective creators. Please cite this manuscript if you use output from the code or portions of the code for your own research:

J.M. Zobitz, A.R. Desai, D. J. P. Moore, M. A. Chadwick, "A primer for data assimilation with ecological models using Markov Chain Monte Carlo (MCMC)" (2011) *Oecologia*, doi: 10.1007/s00442-011-2107-9
Link to journal article

IDL Files

- mcmc.pro: The MCMC estimator
- zobitz_example1_nee.pro: Code to run example 1
- zobitz_example2_mayfly.pro: Code to run example 2

Data Files For IDL Code

- temperature-ard.txt
- nwrdata.sav
- nwr0708flag.sav

See the comments with example1 and example2 to see how to compile and run.

- IDLcode.zip: Zip directory of all of the above files

The IDL programs are released as public domain by A.R. Desai.
Questions on the IDL code, please contact Ankur Desai: desai "AT" aos "DOT" wisc "DOT" edu

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Matlab Files

The Matlab files for the MCMC estimator are more separated into function files, allowing for more flexibility in running the program.

- mcmc.m: The MCMC estimator
- mcmcLikelihood.m: The default likelihood function used in the MCMC estimator
- Examples using MCMC:
    - mcmcExample.m: Code to run a simple partitioning of net ecosystem carbon exchange into photosynthesis and respiration.
        - mcmc_testmodel.m: Flux partitioning model using artificial data for testing.
    - mcmcLogisticExample.m: Simple MCMC estimation of parameters of a logistic differential equation using artifical data for testing.
        - logisticModel.m: Logistic differential Equation model using ode45, a built-in Matlab solver.
        - logisticEuler.m: Solution of the logistic model using Euler's method (improves the speed of computation)

The Matlab programs are released as public domain by J.M. Zobitz.
Questions on the Matlab code, please contact John Zobitz: zobitz "AT" augsburg "DOT" edu

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