

Instructions for the multi-box model used in ‘Stability of the marine nitrogen cycle over the past 165 million years’

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Below, there are brief technical instructions for running the multi-box model of the N cycle used in ‘Stability of the marine nitrogen cycle over the past 165 million years’ and viewing its output. Please send an e-mail to anne.omta@case.edu, in case you encounter any problems.

1 General information

The model code has been compressed into the file `NcycleModel.tar.bz2`. When working under Linux or Unix, this file can be unzipped into a directory named `NcycleModel` through the command `tar -xvf NcycleModel.tar.bz2`. The FORTRAN code is in `OMZbox.f`; the parameter values are read into the model from the file `inputparm_boxAW.dat`. The first two values in `inputparm_boxAW.dat` are the number of time steps and the time step size in seconds, respectively. The initial values of the variables are in the file `input_boxAW.dat`. The last value in `input_boxAW.dat` is the time in seconds at the beginning of the simulation. During a simulation, output is written to the file `time_boxAW.dat` for some of the variables. The parameter `write_years` in `inputparm_boxAW.dat` is the number of years between subsequent write-outs. At the end of each simulation, the values of all the variables are written to `output_boxAW.dat`.

2 Running the model

Under Unix, the code is compiled with

```
f95 -o OMZb OMZbox.f
```

and the executable OMZb is run as a background process with

```
./OMZb &
```

Before starting the simulation, the output files `time_boxAW.dat` and `output_boxAW.dat` need to be renamed or moved to a different directory. At the end of the simulation, the file `output_boxAW.dat` can be renamed `input_boxAW.dat` to be used as input file for a subsequent simulation.