**Running INCA from within MyLake September 26 2014**There is 3 folders in this application. Two folders containing normal model code and their applications (MyLake, INCA) and a folder with INCA post-processing and MyLake pre-processing scripts (MyLake\_to\_INCA). We assume the versions are current as of 2014 (INCA-P Branched V1.2 and MyLake 2014 DOCOMO). The key concept regarding this coupling is that everything is handled by MyLake. The user sets switches to tell Mylake to use normal inputs prepared beforehand (use\_INCA = 0) or if INCA outputs should be used as inputs for MyLake (use\_INCA = 1). If so, he users sets weather or not INCA should be run to generate these outputs (run\_INCA = 1) or if existing INCA outputs should be used instead (run\_INCA = 0). In this manual we do not discuss how to use this setup with the MCMC wrapper for MyLake, nor that do we discuss MyLake or INCA. We focus on a single automated run of both models via single click. To run the application, set the switches in “MyLake\_single\_run” and run this script.

**Troubleshooting**You need R in the system path for the R script *merge\_l\_b\_inputs.R* to run. The script will report the number of days in each script. Check that they match:   
> print(dim(data1))   
[1] 11474   
> print(dim(data2))   
[1] 11474   
If the output files from INCA and the existing MyLake input have the same number of days and can be merged. If the INCA and MyLake files are not compatible, the R script will still try to merge. However the days might not be match correctly.

**List of scripts and use** (to-do in red)

|  |  |  |
| --- | --- | --- |
| **Name** | **What it does/function call** | **What you might want to edit for the coupling application** |
| MyLake/ MyLake\_single\_run.m | Gets parameter , calls MyL\_application, outputs metrics | -*run\_INCA* (switch)  -*use\_INCA* (switch) |
| MyLake/ fn\_MyL\_application.m | *function [TP\_obs,TP\_mod,chl\_obs,chl\_mod] = fn\_MyL\_application( K\_sediments, K\_lake, use\_INCA, run\_INCA)* | -*Inputfile* if *use\_INCA=0*  -*land\_to\_vanem* if *use\_INCA = 0* |
| MyLake/ MyLake\_setPrior\_for\_MCMC.m | Prepare sediment and lake parameter array | -Parameter for sediment and lake  -(for INCA in upcoming updates) |
| MyLake/MyLake/\*.\* | MyLake model |  |
| INCA\_to\_MyLake/ fn\_INCA\_MyL.m | *function [store\_INCAP\_input, vanem\_INCAP\_input] = fn\_INCA\_MyL(run\_INCA)* | -Path to any files needed by INCA  -Name of INCA output if *run\_INCA=0*  -*formatSpec* of INCA output  -INCA command line string  -*m\_start* (this will change)  -*r\_x* (reach 1 for reach merging)  -*r\_y* (reach 2 for reach merging)  -*no\_vars* (where is temperature) |
| INCA\_to\_MyLake/ fn\_INCA\_reach\_combination.m | *function [New\_Reach] = fn\_INCA\_reach\_combination(Reach, r\_x, r\_y, no\_vars)* | -Equations to combine of various outputs (flow, concentrations, temperature, etc) |
| INCA/\*.\* | INCA model | -Everything should be ready to run a command line INCA |

Catchment-lake coupler

*Obs1, Sim1  
Obs2, Sim2*

*new inputs*

*new outputs*

*no,use own inputs*

*no, use old outputs*

*yes*

*yes*

*Branched\_INCA*

*Fn\_INCA\_MyL*

run\_INCA

MyLake

use\_INCA

*Fn\_MyL\_single*