**Readme**

**Instruction on running the coupled model**

1. In windows command prompt, run

riverware --batch CRSS\_batch\_run\_top\_2021.rcl --log log\_CRSS.txt

taskkill -f /IM riverware.exe

#--------------------------------------

1. Convert the main program (CRSS\_ABM\_Python\_Hung\_ALL\_v13.py) to .exe (already done)

* open Anoconda Prompt
* change working folder to C:\RegionalABM\CRSS
* enter: pyinstaller --onefile CRSS\_ABM\_Python\_Hung\_ALL\_v12.py --exclude-module=matplotlib

Note: # --exclude matplotlib module to avoid warmings when running with CRSS

#### Batch Run Procedure

1. Copy the initial files to the CRSS\_DB\\Initial\_Files\\All folder

2. Modify the .rcl file

- set the result dir

set dataDir\_Behav "$env(CRSS\_DIR)\\results\\Batch\_Run\\Param\_UA\\Top"

- copy the parameter file

# file copy -force $myWorkingDir\\interaction\_info\_default.txt $myWorkingDir\\interaction\_info.txt

file copy -force $myWorkingDir\\model\\parameters\_UA\\UB\_top\_ABM\_params\_cal.csv $myWorkingDir\\model\\UB\_ABM\_params\_cal.csv

file copy -force $myWorkingDir\\model\\parameters\_UA\\LB\_top\_ABM\_params\_cal.csv $myWorkingDir\\model\\LB\_ABM\_params\_cal.csv

**Main ABM program**

* CRSS\_ABM\_Python\_Hung\_ALL\_v13.py (this is converted to .exe for model coupling)

**Calibration**

* Calibration\_CRSS\_Q\_learning\_MCMC\_LB\_v2.py (for Lower Basin agents)
* Calibration\_CRSS\_Q\_learning\_MCMC\_UB\_v1.py (for the Upper Basin agents)

Validation



**Batch Run (.rcl) – top, 25p, 50p, 75p, and least are referring to the rank-quantile of the parameters sets by the KGE value.**

CRSS\_batch\_run\_top\_2021.rcl  

**Initialization program (this is also converted to .exe in /build folder)**



The main programs (.py; including calibration and validation) for uncertainty analysis paper are stored in the / Uncertainty\_Analysis folder

There are additional codes for analysis in the / PythonApplication1 folder.