What happens to our ISIMIP simulations when we don't calibrate our lake models?

(...and what could we do about it?)

progress update

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ISIMIP meeting (Lake Sector) 2023, Prague

eawag
aquatic research

Calibration compensates for:

model imperfections

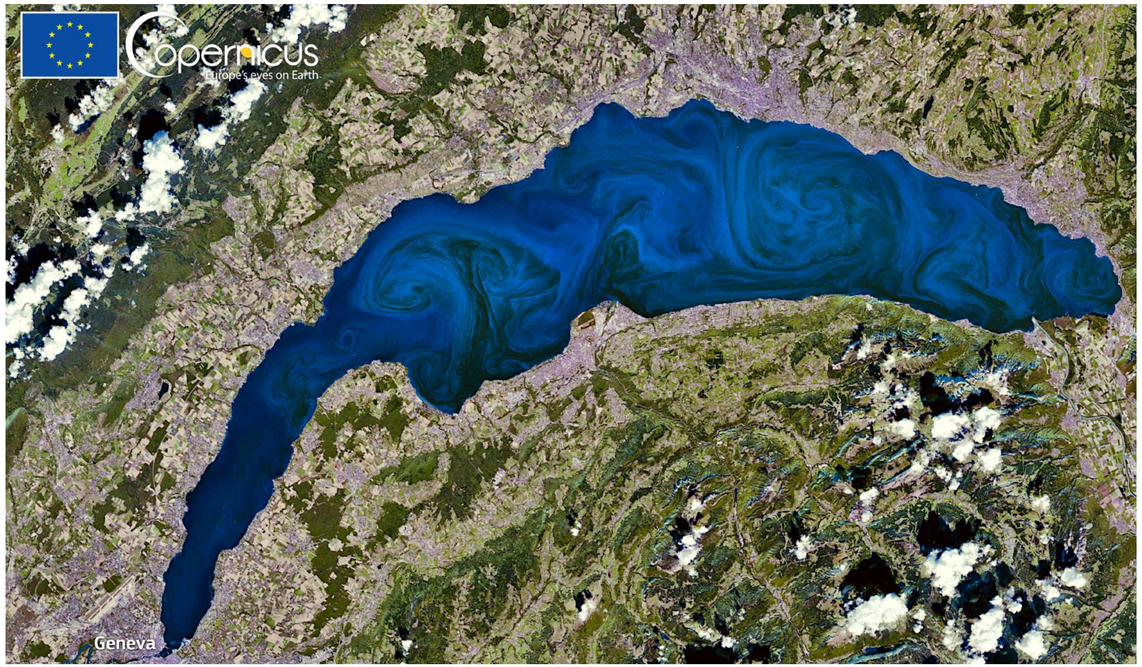


image: Copernicus

forcing imperfections

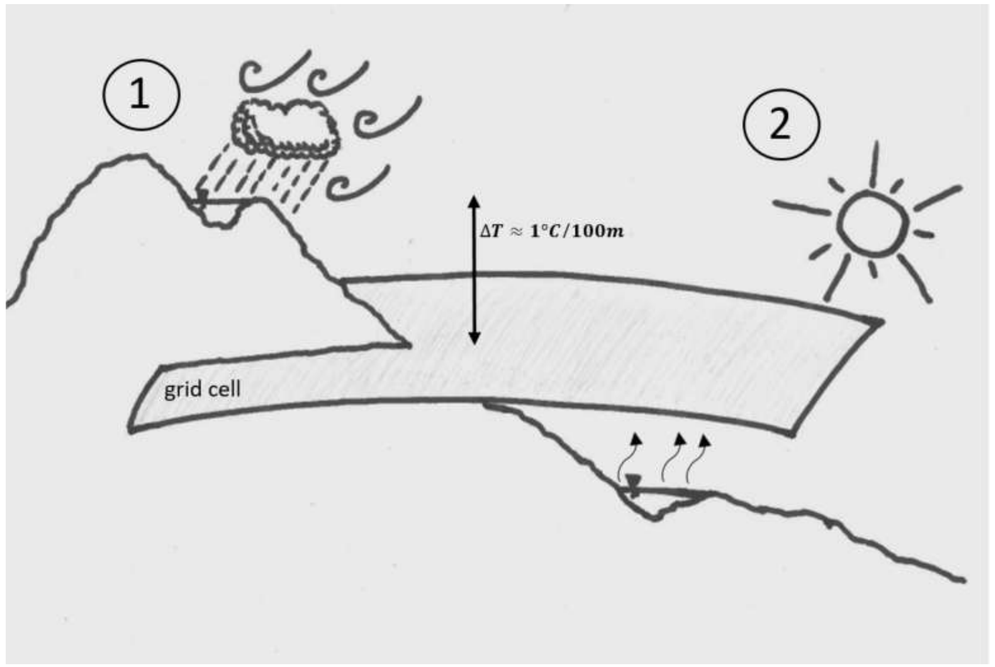
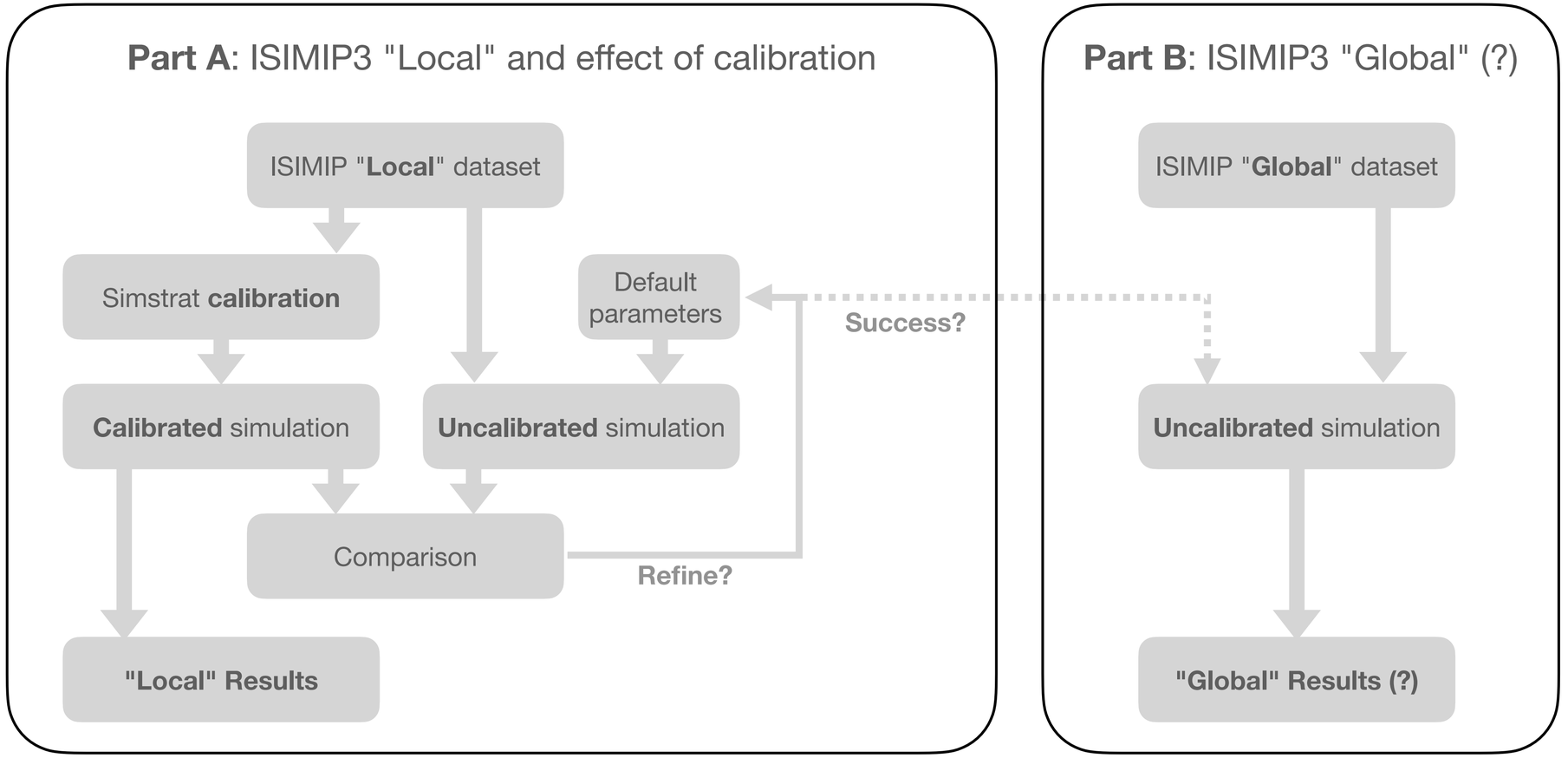


image: Marco Papetti

both of these issues will be present in the ISIMIP Global Lakes simulations...
...but without in-situ data to calibrate our models

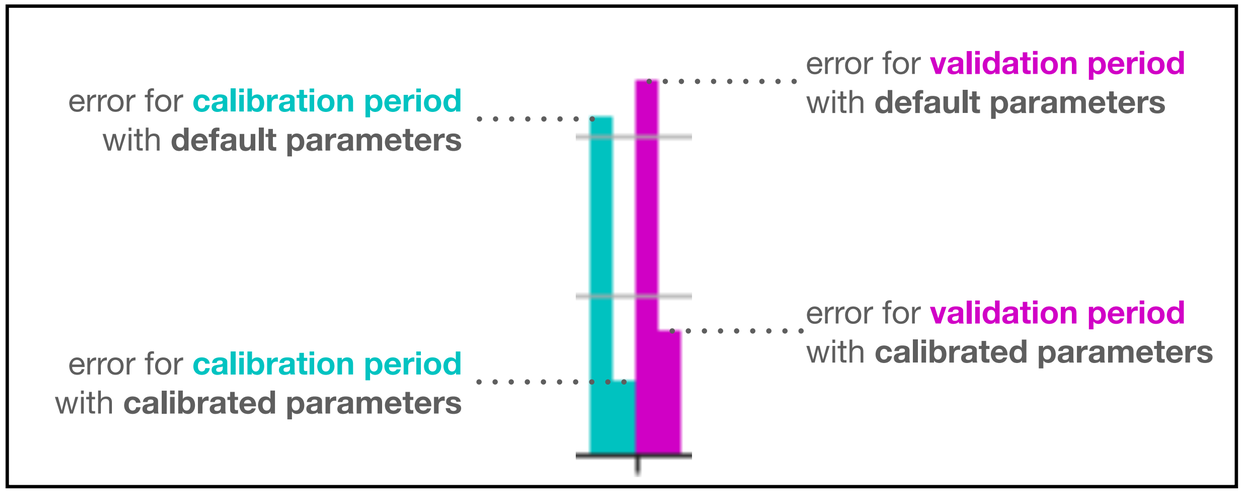
Our plan

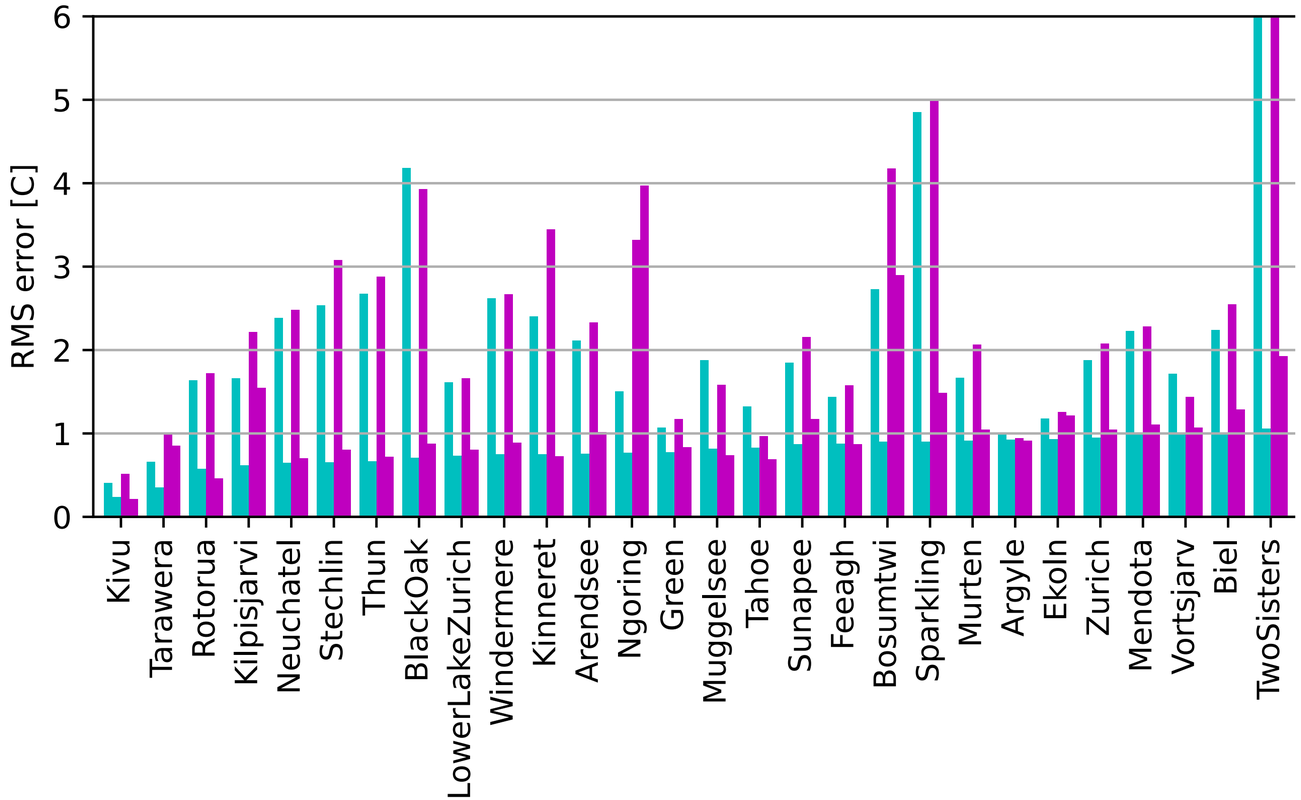

Part A: ISIMIP3 "Local" and effect of calibration
ISIMIP "**Local**" dataset
Simstrat **calibration**
Default parameters
Success?
Calibrated simulation
Uncalibrated simulation
Comparison
Refine?
"Local" Results
Part B: ISIMIP3 "Global" (?)
ISIMIP "**Global**" dataset
Uncalibrated simulation
"Global" Results (?)

What happened?

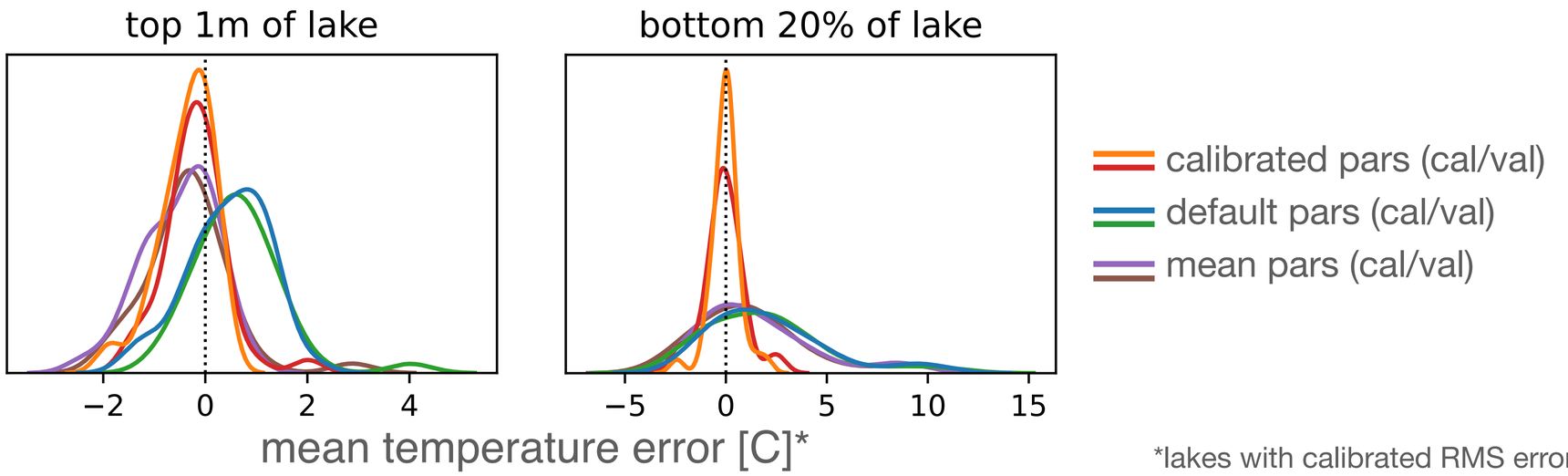
Model performance

Lake temperature data split into **calibration** and **validation** sets based on availability



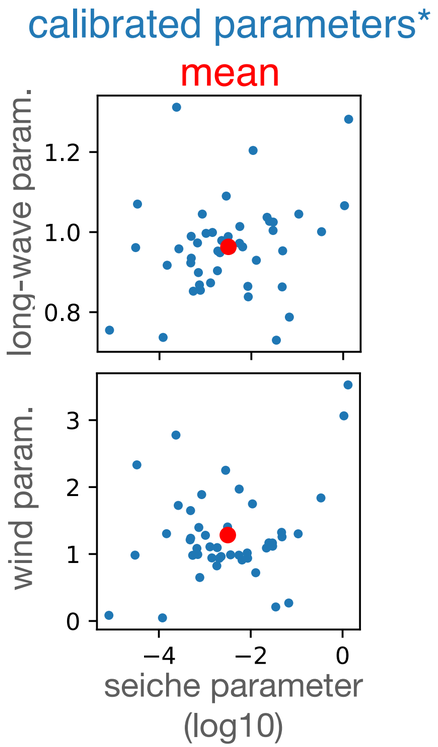


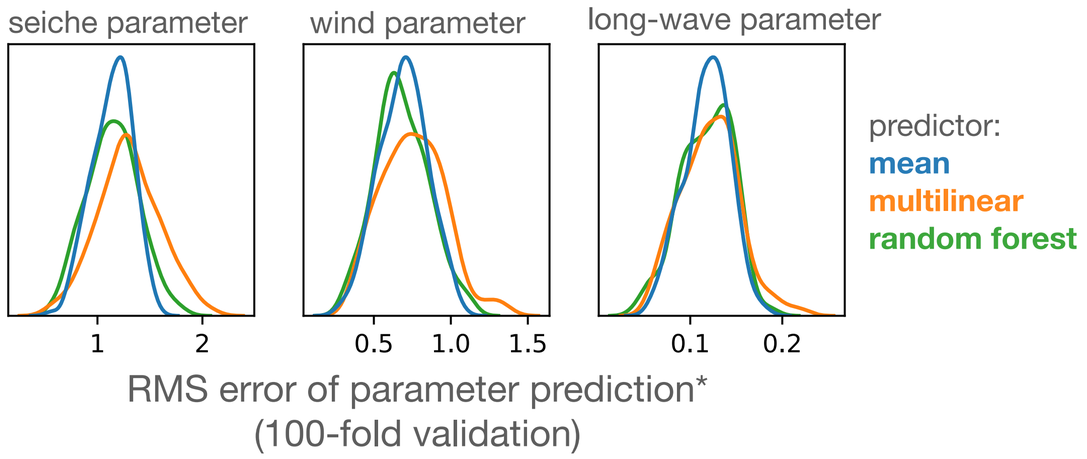
Model bias



*lakes with calibrated RMS error < 2 C

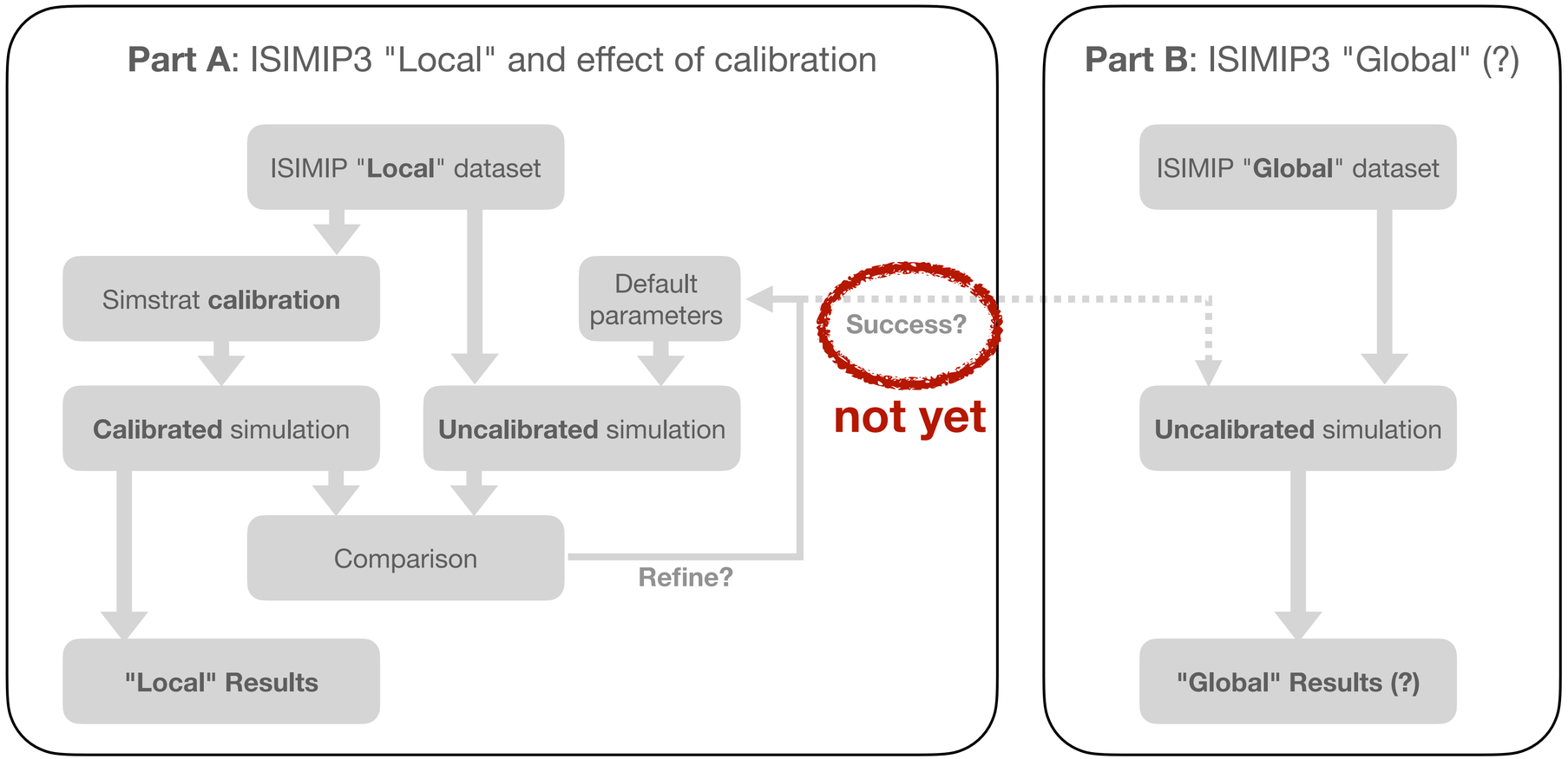
Predicting calibrated parameters





*lakes with calibrated RMS error < 2 C

Progress on the original plan

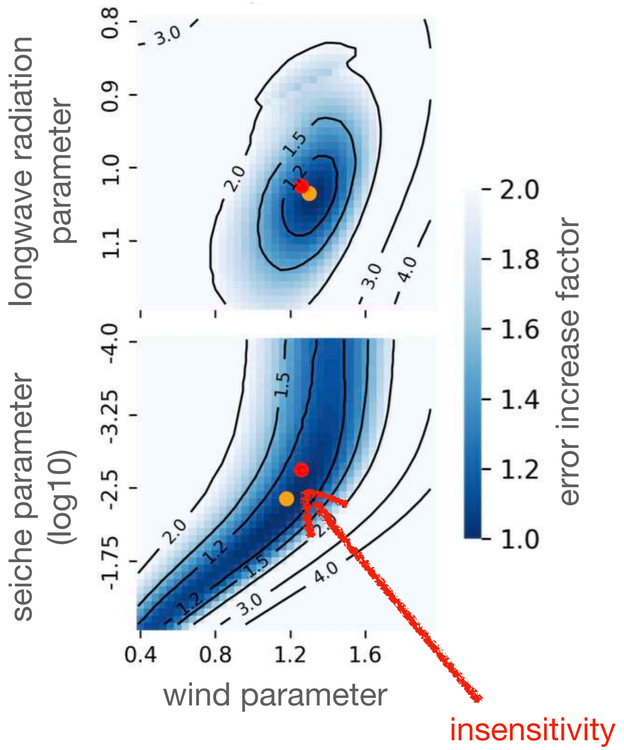


Open questions

Predict parameters based on model error?

How does this translate to other models?

How does this translate to ISIMIP 3b forcing?



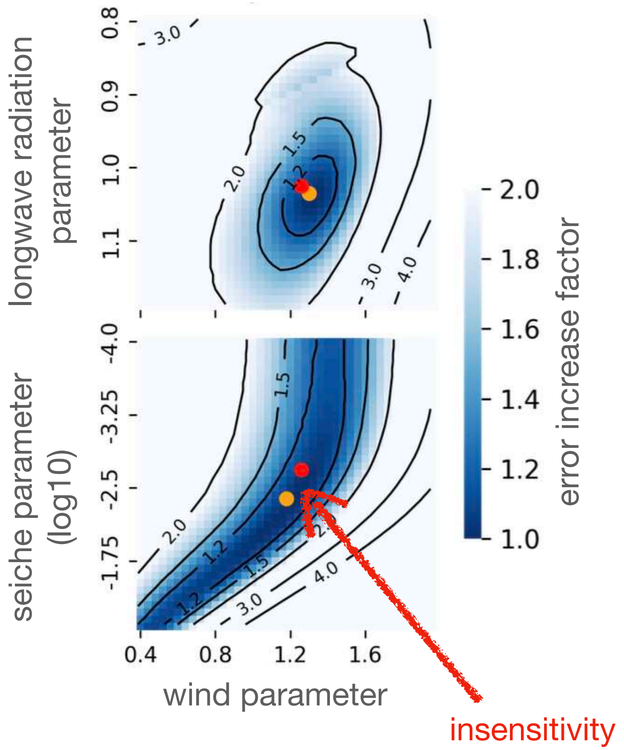
Outlook

Predict parameters based on model error?

> Yes.

How does this translate to other models?

> Joint project with other modellers arising from Girona workshop

How does this translate to ISIMIP 3b forcing?

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