

PROCLIAS TG 1.2 Automatic QC/QA tool

Application of quality control in model development – experiences with the WaterGAP global hydrology model

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Workflow

- Converted model output is routinely run through ISIMIP-QC (at our servers) to make sure that the format conventions are met □ saves transfer amount and discussion demand with / time of PIK data managers
- With the valid value ranges, ISIMIP-QC is very nice to detect errors that can stem from
 - Buggy conversion factors for unit conversion
 - Obvious bugs in the code

□ both helps a lot for checking the model and its output conversion

- WaterGAP Model output is converted to netcdf, correct folder structure is created (required by tool)
- Tool is run with a command line and can take some time (depending on the options) □ SuSe Linux
- Iteratively, conversion / content is corrected until qc does not provide an error; and in case of questions Matthias Büchner is very helpful to sort out things.
- □ subsequently, data are uploaded.

Examples

- WaterGAP violates lower boundary for actual water consumption & actual evapotranspiration and can become negative (in those cases where water demand is satisfied from the neighbouring cell and parts of it return to groundwater) □ not a bug but a feature, but data users need to be aware of it
- Runoff values can violate the upper border □ occurs in inland sinks where water from upstream flows in; during extreme wet periods in the basin this can lead to violation □ not a bug, eventually adapting upper border
- Wrongly set missing value for river temperature led to violations of the value range □ was a bug and might have detected during analyses later (or not)

Conclusions

- We either learn, document or correct the model output with the ISIMIP-QC-tool
- We save discussion time and transfer demand with PIK data managers
- In the framework of reprogramming WaterGAP, ISIMIP-QC will be routinely implemented for testing purposes.