**This repository contains the scripts and data used to conduct the study**

**“What did really improve our model? - A multi-aspect analysis framework applied to a mesoscale water and sediment model”**

**By Francke et al., submitted to the journal Water Resources Research.**

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## Scripts

The presented method relies on the statistical software R for data handling, model calibration, post-processing and visualisation. The case study used the hydro-sedimentological model WASA-SED, which is supplied as a Windows and AIX executable.

All R-scripts are extensively commented and largely self-explanatory.

The supplemented file scripts.zip contains the following structure; the number indicates the order in the processing chain:

|  |  |  |
| --- | --- | --- |
| **File** | **Purpose** | **Order** |
| process\_comp\_table.R | Prepare directory structure from comparison.xlsx | 1 |
| shuffle\_best\_solutions.R | Interchange best solutions between different ME-runs | 3, 8 |
| view\_progress.R | Check results of calibration and run uncalibrated model and best parameter set | 5, 10 |
| prepare\_calib\_sedi.R | Prepare runs for sediment calibration based on calibrated water runs | 6 |
| collect\_performance\_measures.R | Extract performance measures from runs, compute IP-values and write to comparison.xlsx | 11 |
| plot\_performance\_measures.R | Produce plots from comparison.xlsx | 12 |
| runs\ | Directory holding the configurations for each ME and its calibrated / uncalibrated configurations |  |
| comparison.xlsx | Central control and data file |  |
| templates\ | Templates for generating water configurations |  |
| templates\_sed\ | Templates for generating sediment configurations |  |
| plots\ | Target directory for resulting plots |  |
| A\_u\_24\ | Exemplary directory generated by process\_comp\_table.R |  |
| calibrate\_main\_dds\_mpi.R  calibrate\_main\_dds\_mpi\_sed.R | Perform calibration for water or sediment | 2, 4  7, 9 |