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.

1.1 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