Coupling global water model outputs with global lakes

WaterGAP 2.2.e

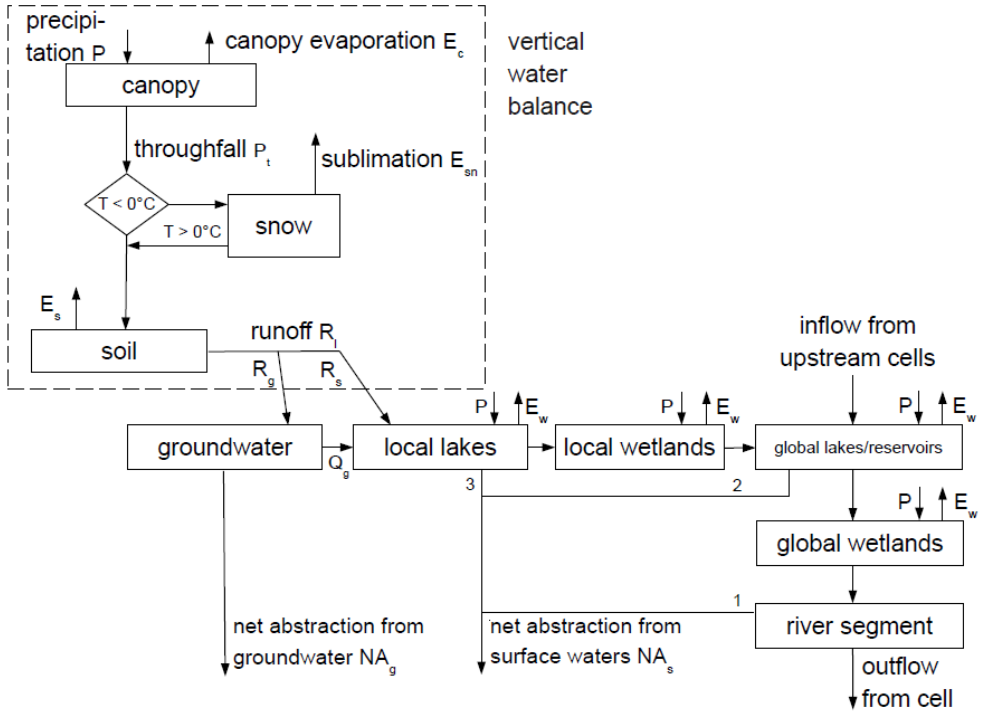
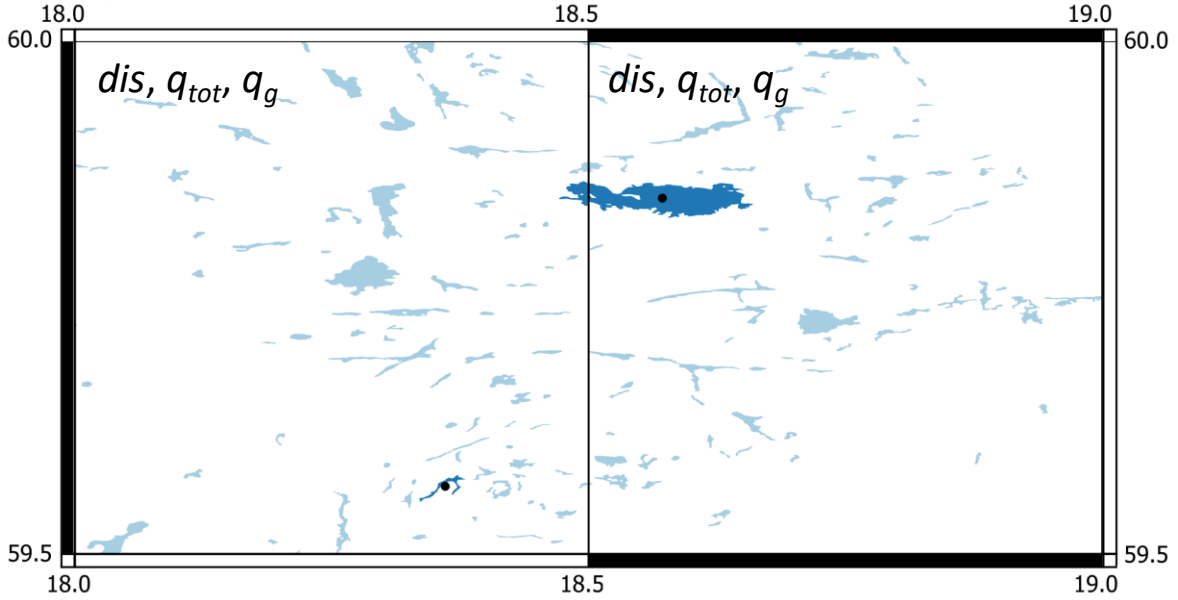


Figure A1. Schematic structure of the water fluxes and storages as computed by WGHM within each 0.5° grid cell. Boxes represent water storage compartments, arrows water fluxes (inflows, outflows). Numbers at net abstraction from surface waters (NA_S) are the order in which storage water is abstracted until demand is satisfied.

Müller et al. (2014)

ISIMIP3a obsclim_histsoc_default

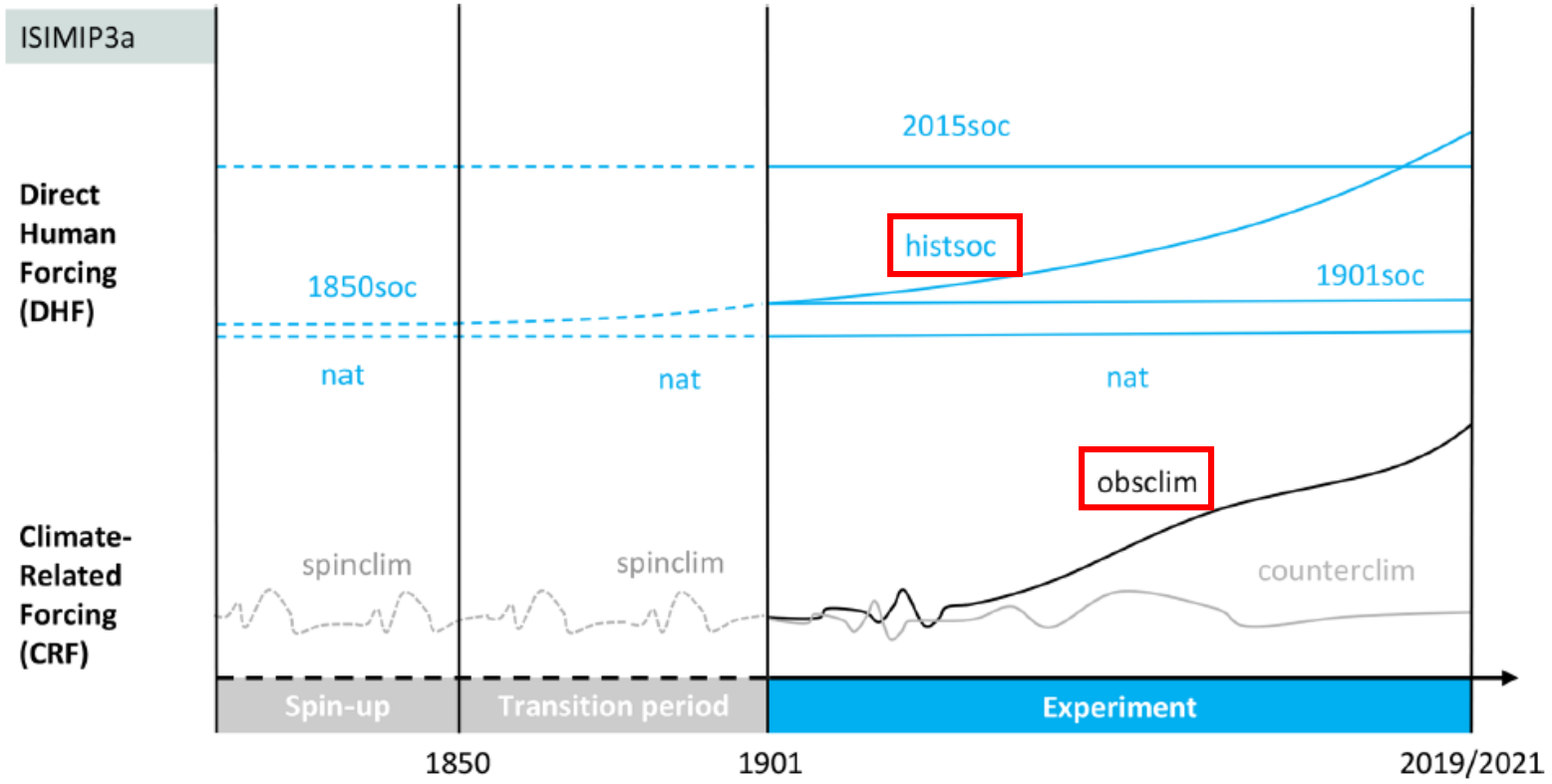


River routing: flowdir, slopes

https://data.isimip.org/

Coupling global water model outputs with global lakes

Experiment: obsclim_histsoc_default



Frieler et al. (2024)

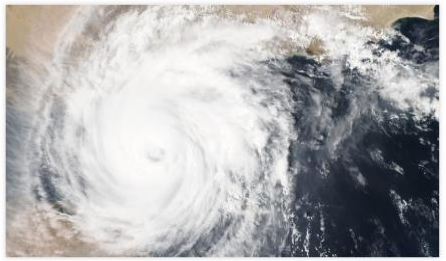
notes mailing list. The archive of this mailing list can be accessed here.

SEARCH THE ISIMIP REPOSITORY

Search for variable, sector, scenario, climate forcing, ... Search

You can use any specifier from the ISIMIP protocols, e.g. "qtot", "water_global", "rcp26", "climate", etc. You can also directly use the advanced search interface.

INPUT DATA



Climate forcing

Climate and climate-related forcing data for the ISIMIP2a, ISIMIP2b, ISIMIP3a, and ISIMIP3b simulation rounds.

Socioeconomic forcing

Socioeconomic datasets for the ISIMIP2a, ISIMIP2b, ISIMIP3a, and ISIMIP3b simulation rounds.

Static geographic information

Geographic data and information for the ISIMIP2a, ISIMIP2b, ISIMIP3a, and ISIMIP3b simulation rounds.

OUTPUT DATA

ISIMIP Repository - Search

data.isimip.org/search/tree/ISIMIP3a/InputData/geo_conditions/river_routing/

Uppsala University | Google Scholar | Web of Science | JSTOR | WordReference | Google Traslator | DeepL Translator | ELOG lake_mod | scienceOS | ChatGPT | ISIMIP-LAKE/Hackin... | Climate Change - IS... | ISIMIP_hackinglimn... | All Bookmarks

ISIMIP

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- ISIMIP2b
- ISIMIP3a
  - Input Data
    - Climate related forcing
    - Static geographic information
      - Country masks
      - Fish-MIP regions
      - Lake data
      - Land/Sea masks
      - Oceanic forcings
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ddm30_slopes_cru_neva

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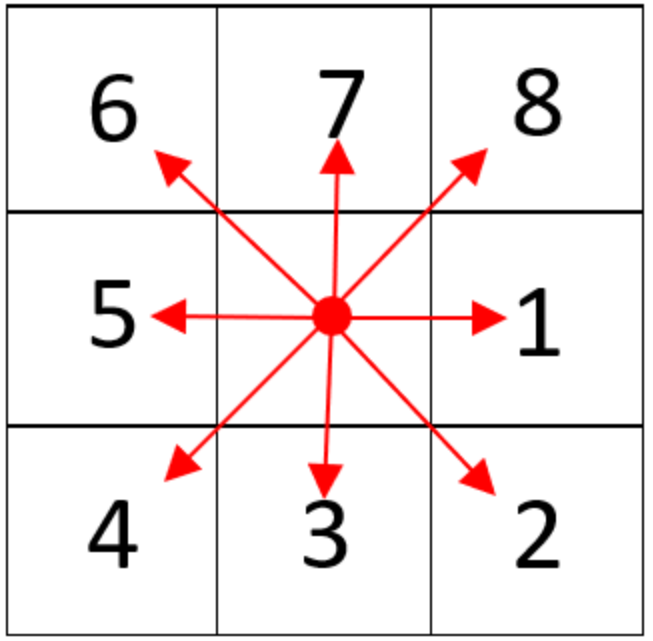

ISIMIP3 simulation protocol

Update: ISIMIP3b Group III (simulations accounting for future changes in the direct human forcing) input data are now available and simulations can be started for a set of sectors (indicated by ● III in the menu). For other sectors, some of the data are not available yet (indicated by ● III), but models not needing those data may already start. The remaining sectors (indicated by ● III) are not ready for group III yet, since most of the data are still under construction.

With Group III we introduce new **experiments** (Table 2.1), new **direct human forcing specifiers** (Table 2.3), a new **table of priorities** (Table 2.5), a new **table of requirements** (Table 2.6), and the new **input data** are added to Tables 3.1 and 3.4.

The simulation protocol describes the experiments, input data sets and output variables necessary to participate in the ISIMIP3 simulation round.

Please select the simulation round (ISIMIP3a, ISIMIP3b) and the sectors you are interested in from the menu on the right. The page will then adjust to your selection. The parts of the protocol, which are specific to a simulation round or sector are marked accordingly.

Last updated: 10 July 2024

Commit hash: 0826b77a9e463658bd0c2d8e5e44240527265229

Direct link for this selection: https://protocol.isimip.org/#/ISIMIP3a

Show protocol for:
- (●) ISIMIP3a
- ( ) ISIMIP3b [ ] only Group III

Filter for sectors:
- [ ] Agriculture ● III
- [ ] Terrestrial biodiversity ● III
- [ ] Biomes ● III
- [ ] Coastal systems ● III
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- [ ] Regional forests ● III
- [ ] Food Security and Nutrition ● III
- [ ] Groundwater ● III
- [ ] Temperature-related mortality ● III
- [ ] Labour ● III
- [ ] Lakes (global) ● III
- [ ] Lakes (local) ● III
- [ ] Fisheries and Marine Ecosystems (global) ● III
- [ ] Fisheries and Marine Ecosystems (regional) ● III
- [ ] Peatland ● III
- [ ] Permafrost ● III
- [ ] Water (global) ● III
- [ ] Water (regional) ● III
- [ ] Water quality ● III

1. Introduction

1.1 General concept

The Inter-Sectoral Impact Model Intercomparison Project (ISIMIP) provides a framework for the collation of a consistent set of climate impact data across sectors and scales. It also provides a unique opportunity for considering interactions between climate change impacts across sectors through consistent scenarios.

ISIMIP is intended to be structured in successive rounds connected to the different phases of the climate model

4.2 Output variables

Table 4.1: Output variables (`variable`).

Variable long name	Variable specifier	Unit	Resolution	Comments	Show all groups
Hydrological Variables					Hide group
Total Runoff	other: **qtot** peat: **qtot, qtot-<pt>**	kg m-2 s-1	• other: 0.5° • water_regional: 0.5° grid if possible, otherwise at gauge location • daily & monthly	water_global water_regional biomes fire peat permafrost Total (surface + subsurface) runoff (qtot = qs + qsb). Please provide both daily and monthly resolution.	
Surface Runoff	other: **qs** peat: **qs, qs-<pt>**	kg m-2 s-1	• other: 0.5° • water_regional: 0.5° grid if possible, otherwise at gauge location • monthly	biomes water_global water_regional peat permafrost fire Water that leaves the surface layer (top soil layer) e.g. as overland flow / fast runoff.	
Subsurface Runoff	other: **qsb** peat: **qsb, qsb-<pt>**	kg m-2 s-1	• 0.5° grid • monthly	water_global peat permafrost Sum of water that flows out from subsurface layer(s) including the groundwater layer (if present). Equals qg in case of a groundwater layer below only one soil layer.	
Total groundwater recharge	**qr**	kg m-2 s-1	• other: 0.5° • water_regional: 0.5° grid if possible, otherwise at gauge location • monthly	water_global water_regional For models that consider both diffuse and focussed/localised recharge this should be the sum of both; other models should submit the groundwater recharge component that the model simulates. See also the descriptions in qrf and qrd.	
Focussed/localised groundwater recharge	**qrf**	kg m-2 s-1	• 0.5° grid • monthly	water_global Water that directly flows from a surface water body into the groundwater layer below. Only submit if the model separates	

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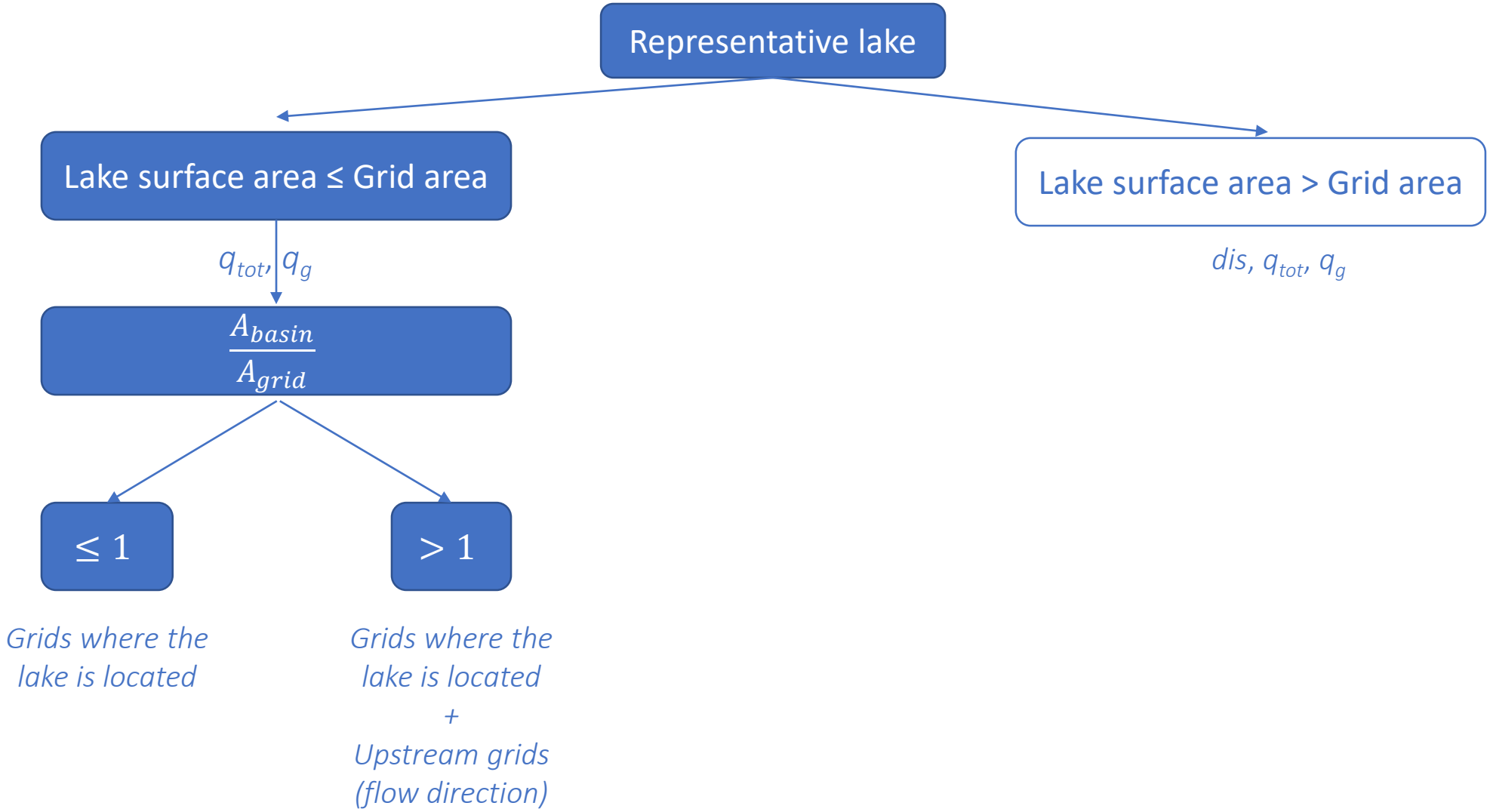

$$Q_{in}\ \left[\frac{m^3}{s}\right] = \frac{\Sigma(q_{tot}+q_g)\left[\frac{m}{s}\right]}{n} \cdot A_{basin}[m^2]$$