

Facilitating the integration of recent data in hydrological modelling workflows

EGU 2022, HS2.1.5, 24/05/2022

Beatrice Marti¹, Dirk Karger², Tobias Siegfried¹

¹: hydrosolutions GmbH, Zurich, Switzerland, ²: WSL, Birmensdorf, Switzerland

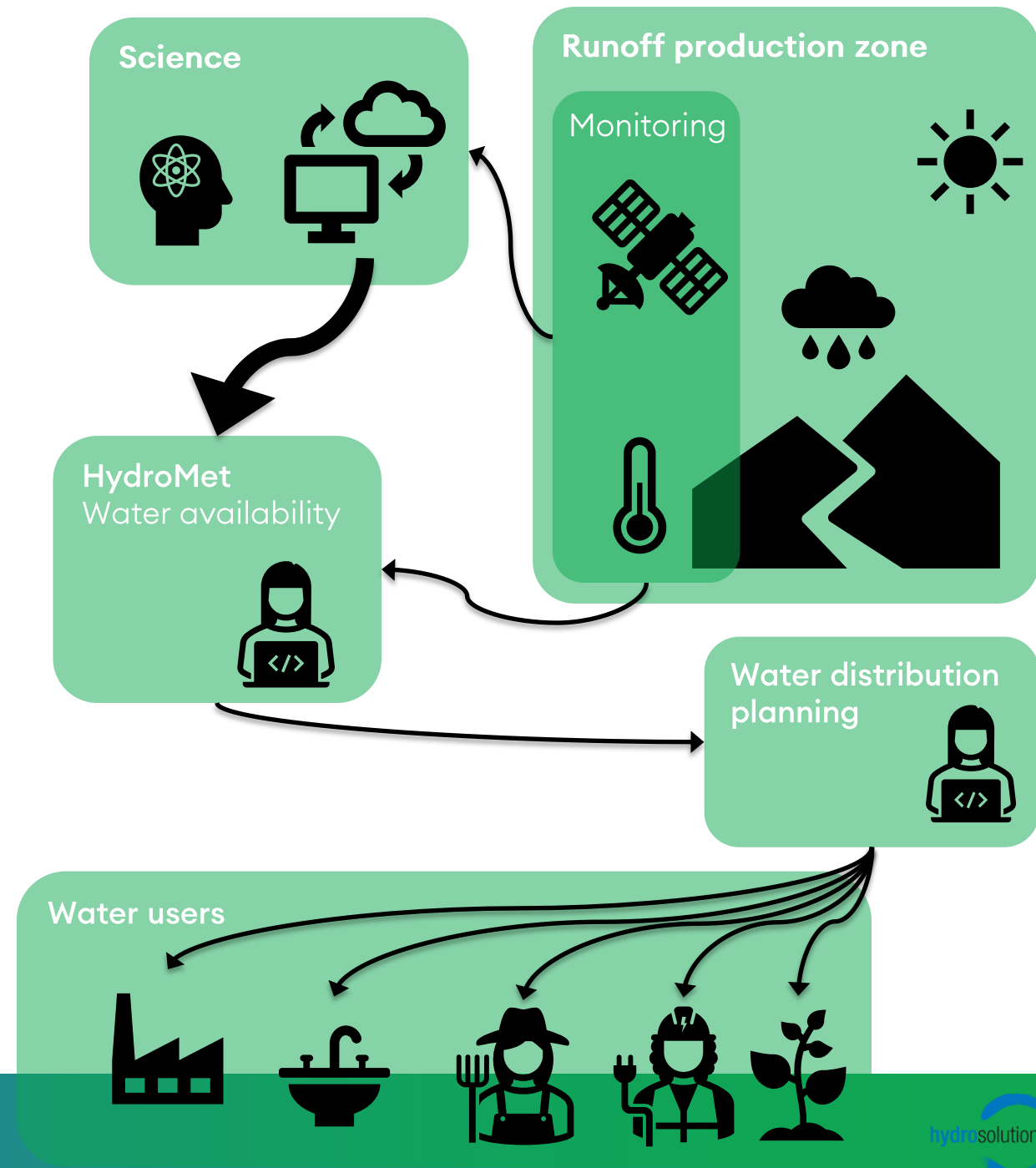
Towards integrative workflows

- Light-weight, accessible
- Regional hydrological models for assessment of future water availability
- Reference book:
Modeling of Hydrological Systems in Semi-Arid Central Asia
https://hydrosolutions.github.io/caham_book/
- R package: riversCentralAsia, available from github

CAHAM book



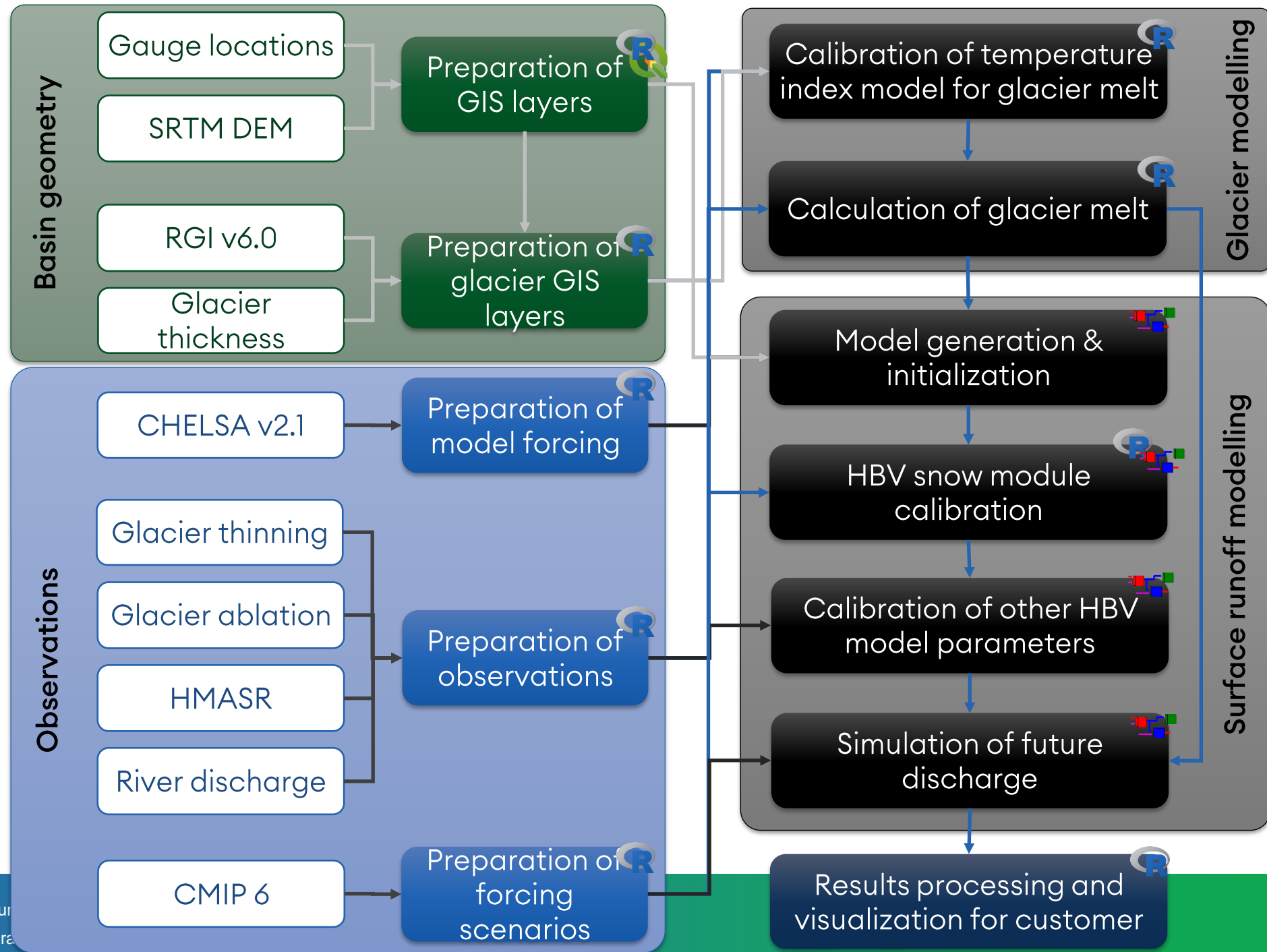
riversCentralAsia
R package



Workflow

Please refer to last slide for references to data and software used.

Described in the CAHAM book chapter on hydrological modelling
https://hydrosolutions.github.io/caham_book/hydrological_modeling.html



References

Data

- SRTM DEM, Jarvis
10.5067/MEaSURES/SRTM/SRTMGL1.003
- River discharge: Kyrgyz HydroMet (Atbashy case study)
- Randolph Glacier Inventory RGI v6.0
10.3189/2014JoG13J176
- V-A scaling: Erasov 1968
- Glacier thickness: Farinotti et al., 2019
10.1038/s41561-019-0300-3
- Glacier thinning rates: Hugonnet et al., 2021
10.1038/s41586-021-03436-z
- Glacier ablation rates: Miles et al., 2021
10.1038/s41467-021-23073-4
- CHELSA v2.1: Karger et al. 2017, 2021
10.1038/sdata.2017.122
- CMIP6 GCM model outputs for 4 SSP (126, 245, 370, 585)
isimip.org, model selection following ISIMIP3b

Software

- MS Minerve: CREALP and partners
crealp.ch
- R statistical software & multiple open-source packages
(tidyverse, raster, sf, exactextract, qmap, forecast, broom, GA,
...)
r-project.org
- QGIS 3
qgis.org
- CAHAM book: hydrosolutions
https://hydrosolutions.github.io/caham_book/
- riversCentralAsia R package: hydrosolutions
<https://github.com/hydrosolutions/riversCentralAsia/>





Contact:

Beatrice Marti
marti@hydrosolutions.ch

Website: hydro4u.eu

