

Availability of counterfactual climate forcing for ISIMIP3a attribution runs

The revised version of the associated paper has just been submitted to GMD.

- Improvements of the de-trending approach considered important enough to replace the old counterfactual data. The new data will become available in the couple of days.
- We will provide counterfactuals for other observational data sets considered in ISIMIP3a or ISIMIP2a
- We are happy to share the draft with people interested in starting the simulations soon. Updates will also be presented in the climate data session on Thursday morning.

High resolution climate forcing

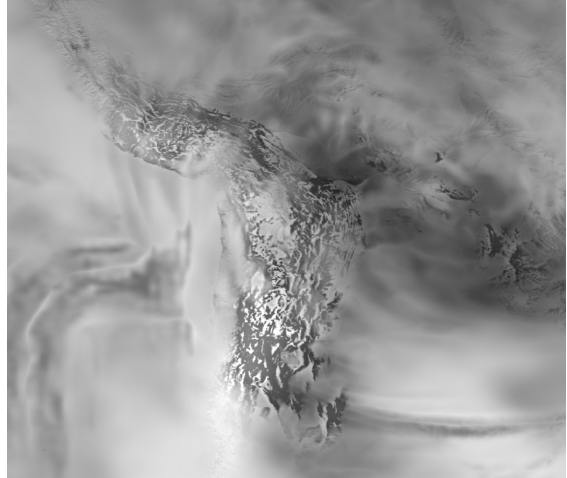
Dirk Karger is downscaling ISIMIP3 daily climate to 1 km:

- W5E5, 5 GCMs (historical, 3 RCPs)
- pr, rsds, tas, tasmin, tasmax
- CHELSA method (talk by Dirk later today)

still to do:

- method description paper
- most of the data processing
- how to provide the data (> 100 TB)
- path and file naming patterns

0.5° remains standard climate input res but runs based on high-res inputs could be done in a limited set-up.



Water global sector highlights

Sector coordinators: Hannes Müller-Schmied, Simon Gosling

First ISIMIP3 model output data submitted by the global water sector

Telteu et al., "Understanding each other's models: a standard representation of global water models to support improvement, intercomparison, and communication", GMD, submitted (based on 16 ISIMIP2b simulations)

Pokhrel et al., "Global Terrestrial Water Storage and Drought Severity under Climate Change", NCC, accepted (first use of new water storage output, ISIMIP2b)

Krysanova et al., How evaluation of global hydrological models can help to improve credibility of river discharge projections under climate change.

Gädeke et al., Evaluation of 9 global models in six large Pan-Arctic watersheds.

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Contribution to Special Issue on
Model evaluation in
Climatic Change
led by the regional water sector

Water regional sector highlights

Sector coordinators: Valentina Krysanova, Fred Hattermann

Idea for Special Issue on Impact Attribution within the ISIMIP3a set-up

Special Issue in Climatic Change on „**How evaluation of hydrological models influences results of climate impact assessment**”, testing model evaluation methods and their effects on projected impacts. Special Issue includes **11 papers!**

- Regional-scale hydrological models:

New evaluation approaches reduce the spread of future projections compared to conventional evaluation. Projection considered more trustworthy.

- Global-scale hydrological models

Using models with satisfactory performance and weighting according to performance in the historical period seems to allow for more reliable future impact projections compared to the ‚raw‘ ensemble mean.

Lakes sector highlights

Sector coordinator Rafael Marce, Don Pierson, Malgorzata Golub, Wim Thiery

Upload of lake sector simulation for ISIMIP2a/b:

- Global lakes: 6 models (ISIMIP2b) + 1 model (ISIMIP2a)
- Local lakes: 8 models (ISIMIP2b)

Vanderkelen et al., “Global heat uptake by inland waters”, GRL

Grant et al. "Attribution of global lake systems change to anthropogenic forcing“, based on ISIMIP2b, submitted

Woolway et al. “More intense and longer lasting lake stratification during the 21st century”, based on ISIMIP2b, submitted

Special issue in GMD/TC/ESD on 'Modelling inland waters in a changing climate', submissions accepted until 31 August

Biomes sector highlights

Sectoral coordinator P. Ciais, C. Reyer

ISIMIP3a/b simulations have been started, 9 models plan to participate!

4 ISIMIP2b papers published in 2020:

Ito et al., “Pronounced and unavoidable impacts of low-end global warming on northern high-latitude land ecosystems”, ERL

Xu et al., Reducing uncertainties of future global soil carbon responses to climate and land use change with emergent constraints, Global Biogeochemical Cycles

Pan et al., “Climate extreme versus carbon extreme: Responses of terrestrial carbon fluxes to temperature and precipitation”, JGR Biogeosciences

Lange et al., “Projecting exposure to extreme climate impacts events across six event

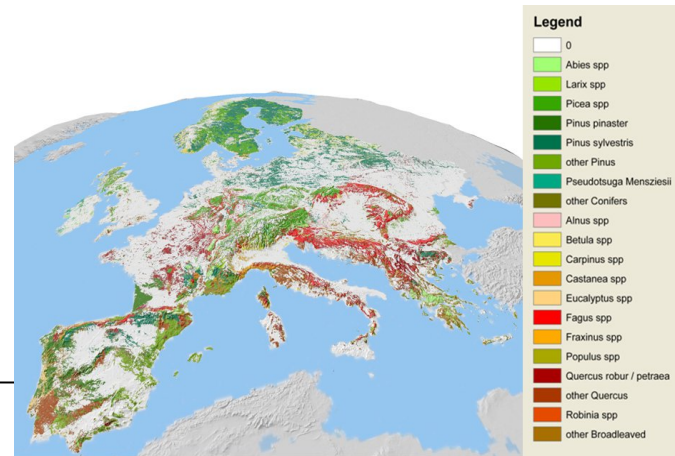
Forest sector highlights

Sector coordinator: Christopher Reyer

Database paper published for supporting ISIMIP2a and 2b simulations:
Reyer et al., „The PROFOUND database for evaluating vegetation models
and simulating climate impacts on European forests“, ESSD

Ongoing ISIMIP2 analyses, e.g. Mahnken et al., „Evaluating the structure
and carbon and water fluxes modelled by 12 vegetation models across
nine forest sites in Europe“

Preparing to switch from plot to
country-scale simulations in ISIMIP3



Fire sector highlights

Sector coordinators: Stijn Hantson, Chantelle Burton, Fang Li

Fire sector is included into the ISIMIP3a/b protocols!

New ISIMIP fire sector and plans have been presented to the fire modeling community at a meeting in October.

Number of models: 13 (starting from ISIMIP3a, ISIMIP3b added later)

>10 papers planned:

“How will fire regimes change in future?” (Stijn Hantson, Fang Li, Chantelle Burton)

“Afforestation scenarios - resilience of carbon stocks in afforested regions to future fire: Inter-sectoral study: Fire, Biomes, Agriculture.” (Thomas Hickler, Almut Arneth, Sam Rabin, et al.)

Permafrost sector highlights

Sector coordinator: Anne Gädeke, Kirsten Thonicke

Plans for ISIMIP3a/b simulations have just been discussed in the morning. We will keep you posted...

Gädeke et al., "Climate change reduces winter overland travel across the Pan-Arctic even under low-end global warming scenarios", based on ISMIP2b, submitted to ERL

Josefine Kirchner defended her MSc thesis "Linking Observed Permafrost Warming to Anthropogenic Climate Change" at HU Berlin, cooperation with Lukas Gudmundsson (ETH Zurich), using ISIMIP2b data

Harmonization of ISIMIP3a/b protocol across the sectors "fire-permafrost-biome"

Agriculture sector highlights

Sector coordinators: Jonas Jägermeyr, Sam Rabin

ISIMIP3b simulations have been done by 10 modeling teams (> 30 teams interested)

Jägermeyr et al., “Climate change signal in global agriculture emerges earlier in new generation of climate and crop models”, Nature Food, under review, **based on ISIMIP3b, submitted in time for AR6**

Müller et al., “Exploring uncertainties in global crop yield projections in a large ensemble of crop models and CMIP5 and CMIP6 climate scenarios”, ERL, accepted, emulator-based evaluation of crop/climate model uncertainty

Zabel et al., “Large potential for crop production adaptation depends on available future varieties”, in revision, emulator-based variety adaptation potentials (-> AR6)

Marine Ecosystems and Fisheries highlights

Sector coordinators: Julia Blanchard, Tyler Eddy, Eric Galbraith, Derek Tittensor

ISIMIP3b: 46 global and 26 regional simulation runs across 9 global and 14 regional models completed, including 3 new global and 2 new regional models, at least 2 more regional simulations in progress

Open science: FishMIP Github organisation to share new tools and code resources

SOC Driver dataset: Standardised historical global fishing effort and catch datasets (1950-2015) provided to modellers and ISIMIP. Steps towards pre-1950 has begun. Future Scenario work is underway

IPCC AR6 Papers: 1 key paper (on disentangling drivers of model variation has been submitted), 4+ papers in draft.

Energy Sector

Sector coordinators: Michelle van Vliet, Detlef van Vuuren, Victhalia Zapata Castillo

ISIMIP2b papers:

Track A on energy potentials:

- Gernaat et al., „Climate change impacts on renewable energy supply“, NCC
- Zapata et al., „Climate change impacts on energy systems: A model comparison“

Track B on energy system effects

- Silvia da Silva et al., “Power sector investment implications of climate impacts on renewable resources in Latin America and the Caribbean”

With ISIMIP3 a third component may be added on the impacts of weather fluctuations and extremes on the Energy Sector

Health sector highlights

Sector coordinators: Veronika Huber, Joacim Rocklöv, Kristie Ebi

Special Issue in the Lancet Planetary Health:

5 ISIMIP2b-based papers currently under review,
covering 5 health sub-sectors (water-borne diseases, labour productivity,
temperature-related mortality (2x), non-cholera vibrio, vector-borne
diseases);
papers will be presented during the health sector meeting on Wednesday, 13
January, at 2 pm

Biodiversity sector highlights

Sector coordinator Thomas Hickler

- ISIMIP2b papers published

Hof et al, „Bioenergy cropland expansion may offset positive effects of climate change mitigation for global vertebrate diversity“, PNAS

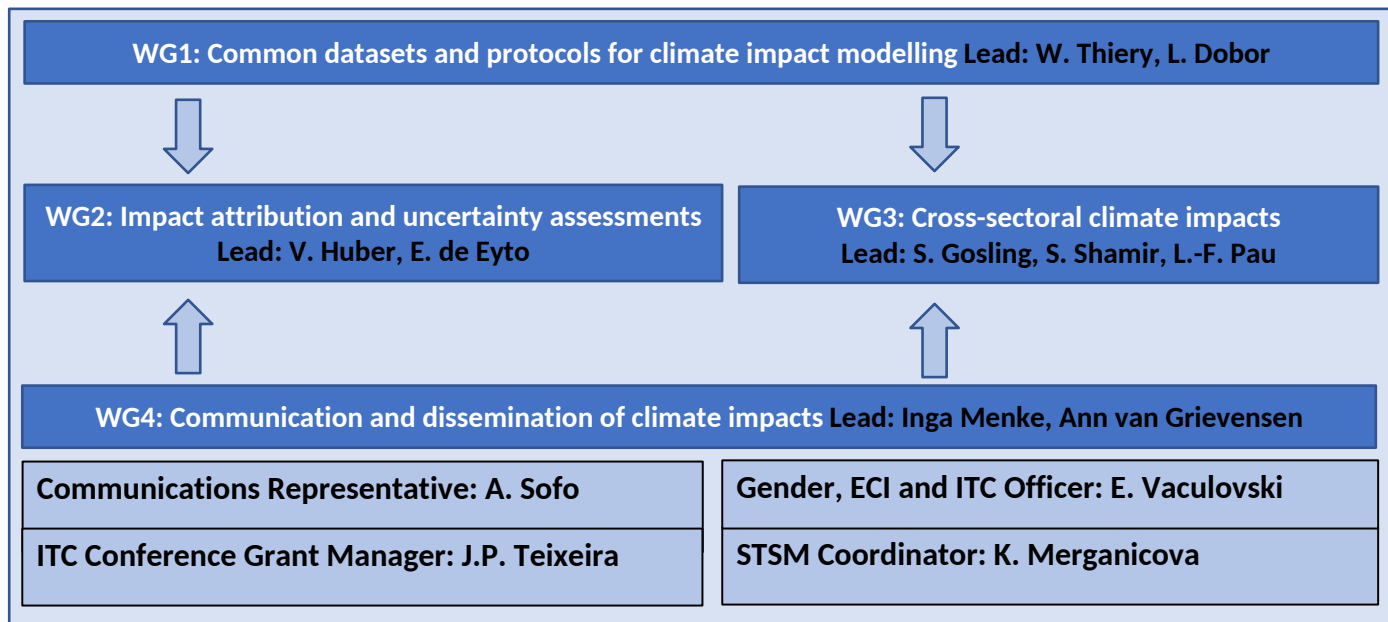
Biber et al., A comparison of macroecological and stacked species distribution models to predict future global terrestrial vertebrate richness

- Runs for ISIMIP3 planned with Species Distributions Models and potentially a wider range of “Global Biodiversity Models”

Cost Action CA19139 – Process-based models for climate impact attribution across sectors (PROCLIAS)

PROcess-based models for CLimate Impact Attribution across Sectors (PROCLIAS)

Chair: C. Reyer / Vice-Chair: V. Huber



PROCLIAS Aim: “Develop **common protocols**, **harmonized datasets** and a joint understanding of how to conduct **cross-sectoral**, **multi-model climate impact studies** at regional and global scales allowing for **attribution** of impacts of recent climatic changes and robust **projections** of future climate impacts”

Learn about PROCLIAS and get involved

Wednesday 13-1-2021 from 10:15-11:45 am CET

general introduction to PROCLIAS, presentation of aims and objectives of each WG

Thursday 14-1-2021 from 2-3:30 pm CET: break out session on tasks and ideas for:

WG1 “Common datasets and protocols for climate impact modelling”

WG2 “Impact attribution and uncertainty assessments”

Friday 15-1-2021 from 11:15-12:45 pm CET break out session on tasks and ideas for:

WG3 “Cross-sectoral climate impacts”

WG4 “Communication and dissemination of climate impacts”

Friday 15-1-2021 from 2-3pm CET

results of WG meetings and next steps

**zoom links to the sessions in
ISIMIP workshop Agenda**

Agenda and housekeeping announcements

- The up to date workshop program can be downloaded from:

<https://www.isimip.org/outcomes/upcoming-cross-sectoral-isimip-online-workshop-2021/>

- Zoom links are only available upon registration and should not be further shared
- Social break-out groups will be set up on Tuesday 11:00-12:00 am and 4:00-5:00 pm:
 - join general session via link in the agenda and ask for a break-out group>
 - further social break-out groups can be set up upon request (please get in touch 1 day in advance)
- Please get the latest version of Zoom to easily access break-out groups
- Recorded keynotes and presentations will be shared for the duration of the workshop
- All presenters are welcome to make their slides available on the ISIMIP website
- In case of any questions refer to martin.park@pik-potsdam.de