ISIMIP data for NEVERMORE

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ISIMIP

The Inter-Sectoral Impact Model Intercomparison Project

"ISIMIP offers a framework for consistently projecting the impacts of climate change across affected sectors and spatial scales. An international network of climate-impact modelers contribute to a comprehensive and consistent picture of the world under different climate-change scenarios."

`https://www.isimip.org`

ISIMIP

Similar to CMIP, but for impacts models instead of climate models.

Facilitates *cross-sectorally consistent climate-impacts* simulations by providing

- common climate scenarios (daily, gridded data)
- common data sets describing socio-economic conditions (population, GDP, land-use etc.)
- common, detailed protocol specifying simulations

Structure

- there are rounds, currently relevant rounds are ISIMIP2 and ISIMIP3
- each round is split into and a and b section
  - a section: drive models with observations, enable model evaluations
  - b section: drive models with projections / model output, provide impact projections
- models are organized into sectors,* i.e. global hydrology, forestry, etc.

* difficult and not clear-cut

Climate Input data ISIMIP2

ISIMIP2a

- 6 observation data sets (WATCH-WFDEI, GSWP3-W5E5, GSWP3-EWEMBI, GSWP3, PGMFD v2.1 (Princeton), WATCH (WFD))
- tas, pr, rhs, rlds, rsds, ps, wind
- daily values on a global 0.5°× 0.5° grid, 1901 … 2010ish

ISIMIP2b

- 4 GCMs (IPSL-CM5A-LR, GFDL-ESM2M, MIROC5, HadGEM2-ES) from CMIP5, picked to map the model output range
- bias-adjusted hurs, huss, pr, prsn, ps, psl, rlds, rsds, sfcWind, tas, tasmax, tasmin
- 5 scenarios with daily data on a global 0.5°× 0.5° grid
  - preindustrial, 1661–2300*
  - historical, 1860–2005
  - RCP2.6, RCP6.0, RCP8.5, 2006–2100/2300
- also ocean data

* preindustrial data is surrogate data and assignment to years is arbitrary

Climate Input data ISIMIP3a

ISIMIP3a

- 6 observation data sets (gswp3-w5e5, 20crv3-w5e5, 20crv3-era5, 20crv3, chelsa-w5e5*, gfdl-mom6-cobalt2)
- hurs, huss, pr, prsn, ps, rlds, rsds, sfcwind, tas, tasmax, tasmin
- daily values mostly on a global $0.5° \times 0.5°$ grid, 1901 … 2015ish
- furthermore there is counterfactual (= detrended) climate data for attribution studies

* highly resolved 1 km data

Climate Input data ISIMIP3b

ISIMIP3b

- 5 GCMs (GFDL-ESM4, UKESM1-0-LL, MPI-ESM1-2-HR, IPSL-CM6A-LR, MRI-ESM2-0) from CMIP6, picked to map the model output range (CMIP6 ≠ AR6)
- bias-adjusted hurs, huss, pr, prsn, ps, rlds, rsds, sfcWind, tas, tasmax, tasmin
- 5 scenarios of daily data on a global 0.5° × 0.5° grid
  - preindustrial, 1601–2100*
  - historical, 1850–2014
  - SSP1-2.6, SSP3-7.0, SSP5-8.5, 2015–2100
- also ocean data

* assignment to years is arbitrary

Socioeconomic and other input data

Socioeconomic data

- landuse, fishing, n-fertilizer, population, GDP, water abstraction …
  - ISIMIP2: observations and only SSP2
  - ISIMIP3: observations and SSP1, SSP3 and SSP5

Other data

- location of lakes, soil maps, country maps …

Impact simulations

- experiments (climate scenario + socioeconomic scenario + CO_2 scenario) are prescribed in the protocol
- output variables are specified in the protocol
- standard grid is global $0.5° \times 0.5°$
- various temporal resolution (daily, monthly, annual)
- data receive a DOI, can be downloaded from the portal
- standard data format is NetCDF

Important links

website:	https://www.isimip.org
protocols:	https://www.isimip.org/protocol/
download portal:	https://data.isimip.org
general contact:	info@isimip.org
support with data:	isimip-data@isimip.org