

README

Historical and future climate-related multi-sectoral impact indicators using ISIMIP2b projections

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This document contains descriptions of NetCDF data formats and related variables.

1. General information

- All files provide climate-related sectoral indicators at global scale.
- All indicators are extracted and calculated from ISIMIP2b (for Inter-Sectoral Impacts Models Intercomparison Project, Frieler et al. 2017) and CMIP5 (for Coupled Models Intercomparison Project, Taylor et al. 2012) datasets.
- All files are 3D Netcdf files including: 192 latitudes x 288 longitudes x ~150 years.
- Future scenario provided include RCP6.0 and RCP8.5 scenarii (for Representative Concentration Pathways, i.e. future climate warmed by +6.0 W/m² and +8.5W/m² respectively).

2. NetCDF file names

For all sectoral data provided, the nfile names nomenclature is: *[spatial extent]_[time frequency]_[future scenario]_[sectoral indicator]_[ISIMIP2b socio + co2 hypothesis]_[when applied, impact model]_[climate model]_[when applied, bias-correction method name]_[timespan].nc*

As an example, the file "global_yearly_rcp60_burntarea_2005soc_co2_LPJ-GUESS_MIROC5_ewembi_1950-2100.nc" provides the NetCDF data file at global scale, of annual values, under the RCP6.0 future scenario, of mean fraction of burned area, under the fixed 2005 socio-economical conditions but time-evolving CO2 concentrations (see Frieler et al. 2017), simulated from the LPJ-GUESS impact model, and from the MIROC5 climate model, with climate data bias-corrected using EWEMBI methods (Famien et al. 2018), covering the time period between 1950 and 2100.

3. Sectoral indicators and descriptions

Ncfile names: **lai**. Name of the variable inside the ncfile: **lai**

Annual mean Leaf Area Index (LAI). LAI can be defined as the amount of leaf area in m² per unit ground area in m² and provides information about the amount of photosynthesizing biomass.

No unit but ranges from 0 (bare ground) to 10 (dense conifer forests)

Ncfile names: **yield [crop name]**. For 4 crops: maize, soy, wheat and rice. Name of the variable inside the ncfile: **yield**

Annual crop yields. In corresponding ncfile names, "firr" means that crops are simulated under "full irrigation" conditions (oppositely to rainfed/no irrigation simulations, not provided here).

Unit is in ton/hectare/year.

Ncfile names: **burntarea**. Name of the variable inside the ncfile: **burntarea**

Annual mean value of burnt area, i.e. fraction of land that has burned.

Unit is in % (of grid cell).

Ncfile names: **98pctl_qtot**. Name of the variable inside the ncfile: **qtot**

(qtot stands for runoff). Annual 2% highest total (surface + sub-surface) daily runoff. Its evolution provides information about potential flood risks.

Unit is kg/m²/s.

Ncfile names: **2pctl_qtot**. Name of the variable inside the ncfile: **qtot**

(qtot stands for runoff). Annual 2% lowest total (surface + sub-surface) daily runoff. Its evolution provides information about potential drought risks.

Unit is kg/m²/s.

Ncfile names: **98pctl_WBGT**. Name of the variable inside the ncfile: **WBGT**

Annual highest 2% daily values of the simplified Wet-Bulb Globe Temperature (WBGT). This indicator provides a *heat stress* information on the human body (i.e. high conditions of combined temperature and humidity that limit the cooling thermoregulation of the body)

No unit, but values are close to surface air temperature in °C.

References

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