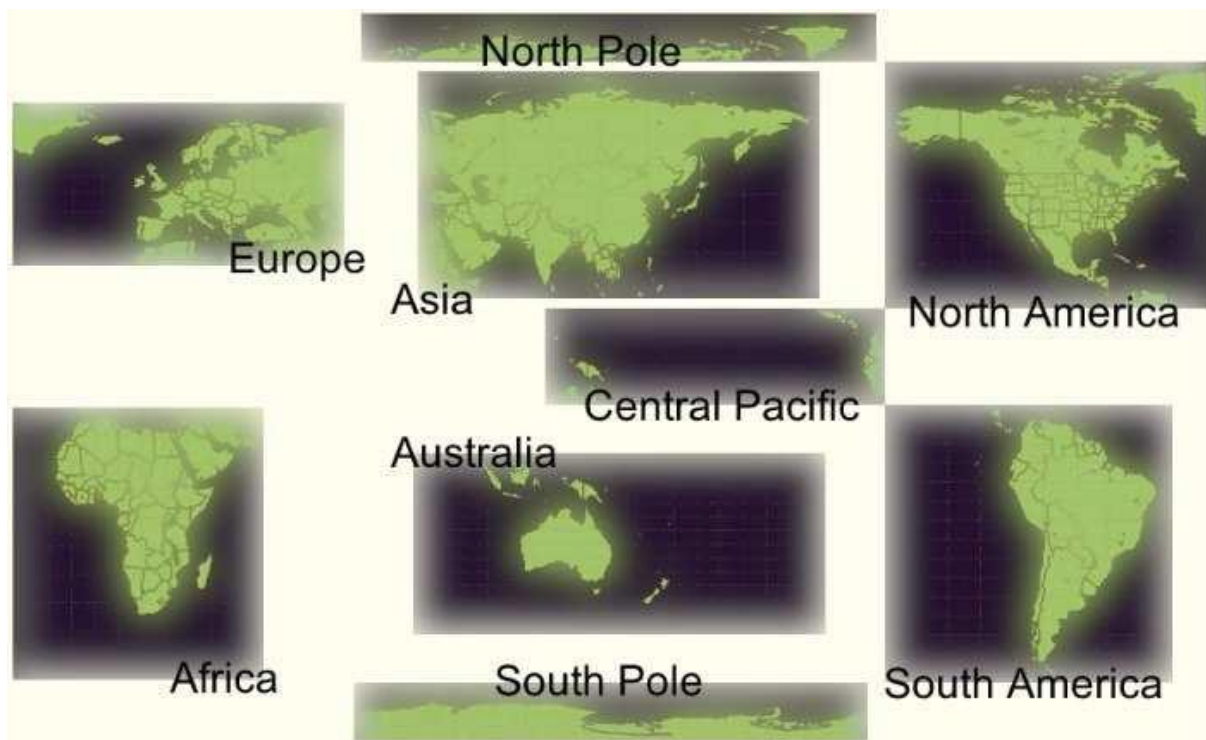


IPCC AR6 Data for Regions

M. Stockhause, 2025-02-04

Selected CMIP6 input data assessed by the IPCC Working Group I AR6 is available for 9 regions, 5 experiments, and 12 variables. These data are regional subsets of the assessed CMIP6 input data and part of the Reference Data Archive for AR6 of the IPCC Data Distribution Centre (DDC): https://browser.ipcc-data.org/browser/search?keywords=IPCC-AR6_CMIP6.

Information on regions



Region	Longitude	Latitude
Africa	35° W – 72° E	58° S – 40° N
Asia	26° E – 168° W	3° N – 83° N
North America	170° W – 45° W	5° N – 85° N
South America	120° W – 30° W	58° S – 15° N
Australia	68° E – 115° W	58° S – 8° N
Central Pacific	120° E – 70° W	20° S – 20° N
Europe	60° W – 60° E	30° N – 75° N
North Pole	180° W – 180° E	60° N – 90° N
South Pole	180° W – 180° E	90° S – 57° S

Information on CMIP6 experiments

The entry names contain the following short names for experiments (see https://wcrp-cmip.github.io/CMIP6_CVs/docs/CMIP6_experiment_id.html and O'Neill et al., 2016¹):

Experiment Short-Name	Experiment Description
historical	all-forcing simulation of the recent past
ssp126	Future scenario with low radiative forcing by the end of century. Following approximately RCP2.6 global forcing pathway but with new forcing based on SSP1. Concentration-driven. As a tier 2 option, this simulation should be extended to year 2300.
ssp245	Future scenario with medium radiative forcing by the end of century. Following approximately RCP4.5 global forcing pathway but with new forcing based on SSP2. Concentration-driven.
ssp370	Future scenario with high radiative forcing by the end of century. Reaches about 7.0 W/m ² by 2100; fills gap in RCP forcing pathways between 6.0 and 8.5 W/m ² . Concentration-driven.
ssp585	Future scenario with high radiative forcing by the end of century. Following approximately RCP8.5 global forcing pathway but with new forcing based on SSP5. Concentration-driven. As a tier 2 option, this simulation should be extended to year 2300.

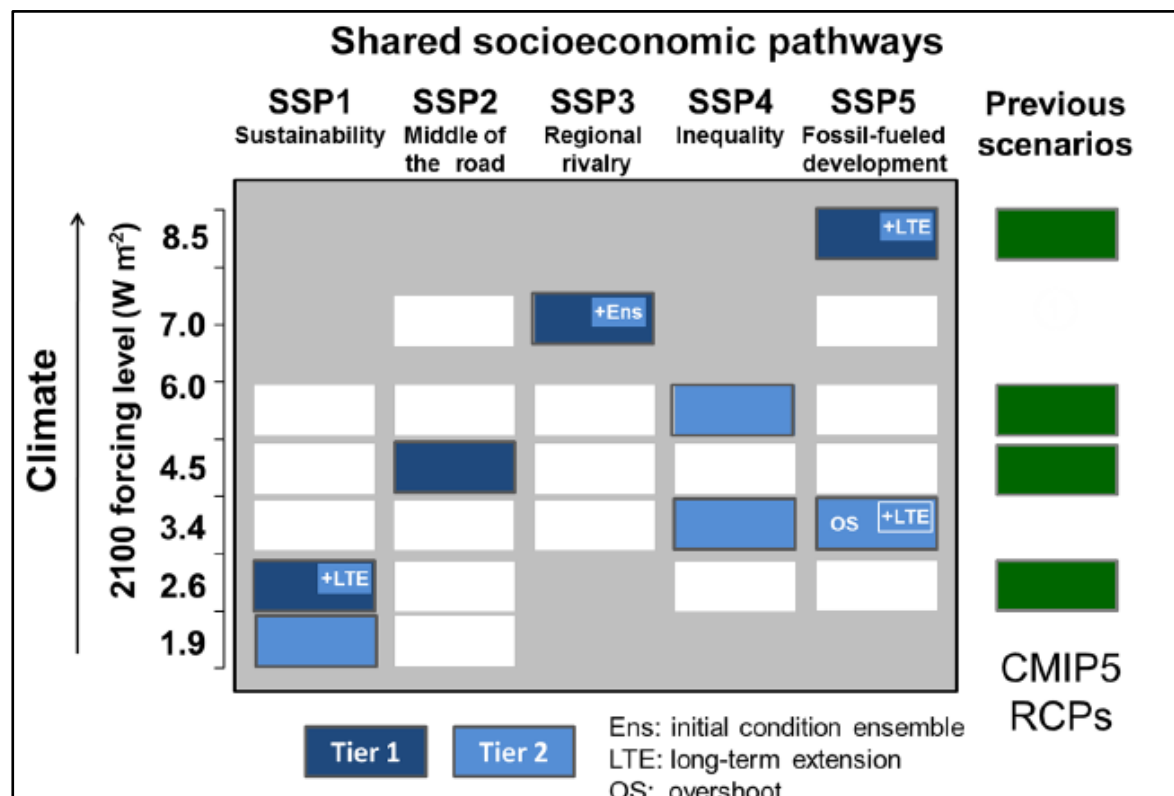


Figure 1: SSP-RCP scenario matrix illustrating ScenarioMIP simulations. Each cell in the matrix indicates a combination of socioeconomic development pathway (i.e., an SSP) and climate outcome based on a particular forcing. Dark blue cells indicate scenarios that will serve as the basis for climate model projections in Tier 1 of ScenarioMIP. CMIP5 RCPs, which were developed from previous socioeconomic scenarios rather than SSPs, are shown for comparison. (source: O'Neill et al., 2016).

¹ O'Neill, B. C et al.: The Scenario Model Intercomparison Project (ScenarioMIP) for CMIP6, Geosci. Model Dev., 9, 3461–3482, <https://doi.org/10.5194/gmd-9-3461-2016>, 2016.

Information on variables

For definitions of the Climate and Forecast (CF) Standard Name definitions please see

<https://cfconventions.org/>:

Variable Short-Name	Climate and Forecast (CF) Standard Name	Frequency
orog	surface_altitude	fx – fixed field
sftlf	land_area_fraction	fx – fixed field
sftgif	land_ice_area_fraction	fx – fixed field
psl	air_pressure_at_sea_level	mon – monthly mean
tas	air_temperature at 2m height	mon – monthly mean
tasmin	minimum air_temperature at 2m height	mon – monthly mean
tasmax	maximum air_temperature at 2m height	mon – monthly mean
uas	eastward_wind at 10m height	mon – monthly mean
vas	northward_wind at 10 m height	mon – monthly mean
huss	specific_humidity	mon – monthly mean
pr	precipitation_flux	mon – monthly mean
rsds	surface_downwelling_shortwave_flux_in_air	mon – monthly mean

Naming conventions and data structure

Entries and file names use CMIP6 conventions (see Taylor et al., 2018, <https://goo.gl/v1drZI>).

The entries are hierarchically grouped as:

1. Region, e.g. 'Africa'
2. Variable for Region, e.g. 'Africa tas'
3. Variable for Region and Experiment, e.g. 'Africa tas ssp126', which includes all time series provided by the different models.

File names are constructed as follows:

<variable>_<MIP table>_<model>_<experiment>_<ensemble member>_<grid>_<temporal extent>.nc, e.g. tas_Amon_NorESM2-LM_ssp585_r1i1p1f1_gn_201501-210012.nc

All variables are provided as monthly means (MIP table 'Amon') or fixed fields (MIP table 'fx').

A list of the models is given in the 'Appendix: Included Models'.

Data Format: NetCDF/CF

The Network Common Data Format (NetCDF; <https://www.unidata.ucar.edu/software/netcdf/>) has become a standard in Earth System Sciences together with the Climate and Forecast (CF; <http://cfconventions.org>) standard naming convention.

A collection of software packages for NetCDF data analyses is available at unidata (<http://www.unidata.ucar.edu/software/netcdf/software.html>).

DKRZ recommends and has experience with the following tool packages for NetCDF data analysis:

- **cdos (Climate Data Operators; <http://code.zmaw.de/projects/cdo>):**
Collection of operators to manipulate and analyze Climate Data files. Supported file formats include NetCDF and GRIB. Special information for the installation of cdo on windows is available at <https://code.mpimet.mpg.de/projects/cdo/wiki/Win32>.
- **ncos (NetCDF Operators; <http://nco.sourceforge.net/>):**
Package of command line operators that work on generic NetCDF files.

- **ncl (NCAR Command Language; <http://www.ncl.ucar.edu/>):** Interpreted programming language for scientific data analysis and visualization. Examples for the use of ncl at DKRZ are available at <http://www.dkrz.de/Nutzerportal-en/doku/vis/sw/ncl>.

GIS software supporting NetCDF are for example:

- **ESRI ArcGIS/ArcPro:** For ArcGIS, NetCDF data is imported as raster data with the **Multidimension Toolbox**. A tutorial on the use of Netcdf within ArcGIS is available [here](#). Information on NetCDF usage in ArcPro is provided in this [blog post](#).
- **GRASS GIS:** NetCDF data is imported as raster data using the standard gdal library with the command `r.in.gdal`. A list of supported import formats with links to additional information is available [here](#).
- **QGIS:** NetCDF data is added as raster layer. A NetCDF browsers are available as plugins.
- **Notes:**
 - Be aware that some data is on longitudes 0 to 360. The longitudes can be reset e.g. with 'cdo sellonlatbox'.
 - AR6 data is provided on model grids. Therefore you might need to regrid the data on a regular grid before importing as raster data or use additional features of your GIS software.

A Virtual Machine with a LINUX operating system enables Windows users to use LINUX command line tools.

Provenance

Data from models providing >5 of the 12 variables were included in their latest versions in case of multiple available versions. Data from IITM-ESM could not be included because the Julian calendar used is not supported by the cdo package, with which the regional files were created. The applied cdo calls are documented in the history attribute of the NetCDF file headers:

1. Merge datasets sorted by date and time

Merges all timesteps of all input files sorted by date and time.

All input files need to have the same structure with the same variables on different timesteps. After this operation every input timestep is in outfile and all timesteps are sorted by date and time.

cdo -s mergetime infile outfile

2. Select a longitude/latitude box

Selects a regular longitude/latitude box. The user has to give the longitudes and latitudes of the edges of the box. Considered are only those grid cells with the grid center inside the lon/lat box.

cdo -s sellonlatbox,lon1,lon2,lat1,lat2 infile outfile

Contact

In case of further questions or problems with the IPCC AR6 data for regions, please contact us:

data@dkrz.de .

Appendix: Included Models

Regional data for the following models is included. Please note that not all models provided all variables (see also the registered model information at https://wcrp-cmip.github.io/CMIP6_CVs/docs/CMIP6_source_id.html):

Model	Institute	Model information
ACCESS-CM2	Commonwealth Scientific and Industrial Research Organisation (CSIRO), Aspendale, Victoria 3195, Australia), Australian Research Council Centre of Excellence for Climate System Science (ARCCSS) CSIRO-ARCCSS Australia	aerosol: UKCA-GLOMAP-mode, atmos: MetUM-HadGEM3-GA7.1 (N96; 192 x 144 longitude/latitude; 85 levels; top level 85 km), land: CABLE2.5, ocean: ACCESS-OM2 (GFDL-MOM5, tripolar primarily 1deg; 360 x 300 longitude/latitude; 50 levels; top grid cell 0-10 m), sealce: CICE5.1.2 (same grid as ocean)
ACCESS-ESM1-5	Commonwealth Scientific and Industrial Research Organisation (CSIRO) CSIRO Australia	aerosol: CLASSIC (v1.0), atmos: HadGAM2 (r1.1, N96; 192 x 145 longitude/latitude; 38 levels; top level 39255 m), land: CABLE2.4, ocean: ACCESS-OM2 (MOM5, tripolar primarily 1deg; 360 x 300 longitude/latitude; 50 levels; top grid cell 0-10 m), ocnBgchem: WOMBAT (same grid as ocean), sealce: CICE4.1 (same grid as ocean)
AWI-CM-1-1-MR	Alfred Wegener Institute, Helmholtz Centre for Polar and Marine Research (AWI) AWI Germany	atmos: ECHAM6.3.04p1 (T127L95 native atmosphere T127 gaussian grid; 384 x 192 longitude/latitude; 95 levels; top level 80 km), land: JSBACH 3.20, ocean: FESOM 1.4 (unstructured grid in the horizontal with 830305 wet nodes; 46 levels; top grid cell 0-5 m), sealce: FESOM 1.4
BCC-CSM2-MR	Beijing Climate Center BCC China	atmos: BCC_AGCM3_MR (T106; 320 x 160 longitude/latitude; 46 levels; top level 1.46 hPa), land: BCC_AVIM2, ocean: MOM4 (1/3 deg 10S-10N, 1/3-1 deg 10-30 N/S, and 1 deg in high latitudes; 360 x 232 longitude/latitude; 40 levels; top grid cell 0-10 m), sealce: SIS2
CAMS-CSM1-0	Chinese Academy of Meteorological Sciences CAMS China	atmos: ECHAM5_CAMS (T106; 320 x 160 longitude/latitude; 31 levels; top level 10 mb), land: CoLM 1.0, ocean: MOM4 (tripolar; 360 x 200 longitude/latitude, primarily 1deg latitude/longitude, down to 1/3deg within 30deg of the equatorial tropics; 50 levels; top grid cell 0-10 m), sealce: SIS 1.0
CESM2	National Center for Atmospheric Research, Climate and Global Dynamics Laboratory NCAR USA	aerosol: MAM4 (same grid as atmos), atmos: CAM6 (0.9x1.25 finite volume grid; 288 x 192 longitude/latitude; 32 levels; top level 2.25 mb), atmosChem: MAM4 (same grid as atmos), land: CLM5 (same grid as atmos), landIce: CISM2.1, ocean: POP2 (320x384 longitude/latitude; 60 levels; top grid cell 0-10 m), ocnBgchem: MARBL (same grid as ocean), sealce: CICE5.1 (same grid as ocean)
CESM2-WACCM	National Center for Atmospheric Research, Climate and Global Dynamics Laboratory NCAR USA	aerosol: MAM4 (same grid as atmos), atmos: WACCM6 (0.9x1.25 finite volume grid; 288 x 192 longitude/latitude; 70 levels; top level 4.5e-06 mb), atmosChem: MAM4 (same grid as atmos), land: CLM5 (same grid as atmos), landIce: CISM2.1, ocean: POP2 (320 x 384 longitude/latitude; 60 levels; top grid cell 0-10 m), ocnBgchem: MARBL (same grid as ocean)

		as ocean), sealce: CICE5.1 (same grid as ocean)
CMCC-CM2-SR5	Fondazione Centro Euro-Mediterraneo sui Cambiamenti Climatici CMCC Italy	aerosol: MAM3, atmos: CAM5.3 (1deg; 288 x 192 longitude/latitude; 30 levels; top at ~2 hPa), land: CLM4.5 (BGC mode), ocean: NEMO3.6 (ORCA1 tripolar primarily 1 deg lat/lon with meridional refinement down to 1/3 degree in the tropics; 362 x 292 longitude/latitude; 50 vertical levels; top grid cell 0-1 m), sealce: CICE4.0
CNRM-CM6-1	Centre National de Recherches Meteorologiques (CNRM), Centre Europeen de Recherche et de Formation Avancee en Calcul Scientifique (CERFACS) CNRM-CERFACS France	aerosol: prescribed monthly fields computed by TACTIC_v2 scheme, atmos: Arpege 6.3 (T127; Gaussian Reduced with 24572 grid points in total distributed over 128 latitude circles (with 256 grid points per latitude circle between 30degN and 30degS reducing to 20 grid points per latitude circle at 88.9degN and 88.9degS); 91 levels; top level 78.4 km), atmosChem: OZL_v2, land: Surfex 8.0c, ocean: Nemo 3.6 (eORCA1, tripolar primarily 1deg; 362 x 294 longitude/latitude; 75 levels; top grid cell 0-1 m), sealce: Gelato 6.1
CNRM-CM6-1-HR	Centre National de Recherches Meteorologiques (CNRM), Centre Europeen de Recherche et de Formation Avancee en Calcul Scientifique (CERFACS) CNRM-CERFACS France	aerosol: prescribed monthly fields computed by TACTIC_v2 scheme, atmos: Arpege 6.3 (T359; Gaussian Reduced with 181724 grid points in total distributed over 360 latitude circles (with 720 grid points per latitude circle between 32.2degN and 32.2degS reducing to 18 grid points per latitude circle at 89.6degN and 89.6degS); 91 levels; top level 78.4 km), atmosChem: OZL_v2, land: Surfex 8.0c, ocean: Nemo 3.6 (eORCA025, tripolar primarily 1/4deg; 1442 x 1050 longitude/latitude; 75 levels; top grid cell 0-1 m), sealce: Gelato 6.1
CNRM-ESM2-1	Centre National de Recherches Meteorologiques (CNRM), Centre Europeen de Recherche et de Formation Avancee en Calcul Scientifique (CERFACS) CNRM-CERFACS France	aerosol: TACTIC_v2, atmos: Arpege 6.3 (T127; Gaussian Reduced with 24572 grid points in total distributed over 128 latitude circles (with 256 grid points per latitude circle between 30degN and 30degS reducing to 20 grid points per latitude circle at 88.9degN and 88.9degS); 91 levels; top level 78.4 km), atmosChem: REPROBUS-C_v2, land: Surfex 8.0c, ocean: Nemo 3.6 (eORCA1, tripolar primarily 1deg; 362 x 294 longitude/latitude; 75 levels; top grid cell 0-1 m), ocnBgchem: Pisces 2.s, sealce: Gelato 6.1
CanESM5	Canadian Centre for Climate Modelling and Analysis, Environment and Climate Change CCCma Canada	aerosol: interactive, atmos: CanAM5 (T63L49 native atmosphere, T63 Linear Gaussian Grid; 128 x 64 longitude/latitude; 49 levels; top level 1 hPa), atmosChem: specified oxidants for aerosols, land: CLASS3.6/CTEM1.2, landIce: specified ice sheets, ocean: NEMO3.4.1 (ORCA1 tripolar grid, 1 deg with refinement to 1/3 deg within 20 degrees of the equator; 361 x 290 longitude/latitude; 45 vertical levels; top grid cell 0-6.19 m), ocnBgchem: Canadian Model of Ocean Carbon (CMOC); NPZD ecosystem with OMIP prescribed carbonate chemistry, sealce: LIM2
CanESM5-CanOE	Canadian Centre for Climate Modelling and Analysis, Environment and Climate Change CCCma	aerosol: interactive, atmos: CanAM5 (T63L49 native atmosphere, T63 Linear Gaussian Grid; 128 x 64 longitude/latitude; 49 levels; top level 1 hPa), atmosChem: specified oxidants for aerosols, land: CLASS3.6/CTEM1.2, landIce: specified ice sheets, ocean: NEMO3.4.1 (ORCA1

	Canada	tripolar grid, 1 deg with refinement to 1/3 deg within 20 degrees of the equator; 361 x 290 longitude/latitude; 45 vertical levels; top grid cell 0-6.19 m), ocnBgchem: Canadian Ocean Ecosystem (CanOE) with OMIP prescribed carbon chemistry, sealce: LIM2
EC-Earth3	AEMET, Spain; BSC, Spain; CNR-ISAC, Italy; DMI, Denmark; ENEA, Italy; FMI, Finland; Geomar, Germany; ICHEC, Ireland; ICTP, Italy; IDL, Portugal; IMAU, The Netherlands; IPMA, Portugal; KIT, Karlsruhe, Germany; KNMI, The Netherlands; Lund University, Sweden; Met Eireann, Ireland; NLeSC, The Netherlands; NTNU, Norway; Oxford University, UK; surfSARA, The Netherlands; SMHI, Sweden; Stockholm University, Sweden; Unite ASTR, Belgium; University College Dublin, Ireland; University of Bergen, Norway; University of Copenhagen, Denmark; University of Helsinki, Finland; University of Santiago de Compostela, Spain; Uppsala University, Sweden; Utrecht University, The Netherlands; Vrije Universiteit Amsterdam, the Netherlands; Wageningen University, The Netherlands. Mailing address: EC-Earth consortium, Rossby Center, Swedish Meteorological and Hydrological Institute/SMHI, SE-601 76 Norrköping, Sweden EC-Earth-Consortium Europe	atmos: IFS cy36r4 (TL255, linearly reduced Gaussian grid equivalent to 512 x 256 longitude/latitude; 91 levels; top level 0.01 hPa), land: HTESSEL (land surface scheme built in IFS), ocean: NEMO3.6 (ORCA1 tripolar primarily 1 deg with meridional refinement down to 1/3 degree in the tropics; 362 x 292 longitude/latitude; 75 levels; top grid cell 0-1 m), sealce: LIM3
EC-Earth3-Veg	EC-Earth-Consortium Europe (see above)	atmos: IFS cy36r4 (TL255, linearly reduced Gaussian grid equivalent to 512 x 256 longitude/latitude; 91 levels; top level 0.01 hPa), land: HTESSEL (land surface scheme built in IFS) and LPJ-GUESS v4, ocean: NEMO3.6 (ORCA1 tripolar primarily 1 degree with meridional refinement down to 1/3 degree in the tropics; 362 x 292 longitude/latitude; 75 levels; top grid cell 0-1 m), sealce: LIM3
EC-Earth3-Veg-LR	EC-Earth-Consortium Europe (see above)	atmos: IFS cy36r4 (TL159, linearly reduced Gaussian grid equivalent to 320 x 160 longitude/latitude; 62 levels; top level 5 hPa), land: HTESSEL (land surface scheme built in IFS) and LPJ-GUESS v4, ocean: NEMO3.6 (ORCA1 tripolar

		primarily 1 degree with meridional refinement down to 1/3 degree in the tropics; 362 x 292 longitude/latitude; 75 levels; top grid cell 0-1 m), sealce: LIM3
FGOALS-f3-L	Chinese Academy of Sciences CAS China	atmos: FAMIL2.2 (Cubed-sphere, c96; 360 x 180 longitude/latitude; 32 levels; top level 2.16 hPa), land: CLM4.0, ocean: LICOM3.0 (LICOM3.0, tripolar primarily 1deg; 360 x 218 longitude/latitude; 30 levels; top grid cell 0-10 m), sealce: CICE4.0
FGOALS-g3	Chinese Academy of Sciences CAS China	atmos: GAMIL3 (180 x 80 longitude/latitude; 26 levels; top level 2.19hPa), land: CAS-LSM, ocean: LICOM3.0 (LICOM3.0, tripolar primarily 1deg; 360 x 218 longitude/latitude; 30 levels; top grid cell 0-10 m), sealce: CICE4.0
GFDL-ESM4	National Oceanic and Atmospheric Administration, Geophysical Fluid Dynamics Laboratory NOAA-GFDL USA	aerosol: interactive, atmos: GFDL-AM4.1 (Cubed-sphere (c96) - 1 degree nominal horizontal resolution; 360 x 180 longitude/latitude; 49 levels; top level 1 Pa), atmosChem: GFDL-ATM4.1 (full atmospheric chemistry), land: GFDL-LM4.1, landIce: GFDL-LM4.1, ocean: GFDL-OM4p5 (GFDL-MOM6, tripolar - nominal 0.5 deg; 720 x 576 longitude/latitude; 75 levels; top grid cell 0-2 m), ocnBgchem: GFDL-COBA1v2, sealce: GFDL-SIM4p5 (GFDL-SIS2.0, tripolar - nominal 0.5 deg; 720 x 576 longitude/latitude; 5 layers; 5 thickness categories)
GISS-E2-1-G	Goddard Institute for Space Studies NASA-GISS USA	aerosol: Varies with physics-version (p==1 none, p==3 OMA, p==4 TOMAS, p==5 MATRIX), atmos: GISS-E2.1 (2.5x2 degree; 144 x 90 longitude/latitude; 40 levels; top level 0.1 hPa), atmosChem: Varies with physics-version (p==1 Non-interactive, p>1 GPUCCINI), land: GISS LSM, ocean: GISS Ocean (GO1, 1 degree; 360 x 180 longitude/latitude; 40 levels; top grid cell 0-10 m), sealce: GISS SI
INM-CM4-8	Institute for Numerical Mathematics, Russian Academy of Science INM Russia	aerosol: INM-AER1, atmos: INM-AM4-8 (2x1.5; 180 x 120 longitude/latitude; 21 levels; top level sigma = 0.01), land: INM-LND1, ocean: INM-OM5 (North Pole shifted to 60N, 90E; 360 x 318 longitude/latitude; 40 levels; sigma vertical coordinate), sealce: INM-ICE1
INM-CM5-0	Institute for Numerical Mathematics, Russian Academy of Science INM Russia	aerosol: INM-AER1, atmos: INM-AM5-0 (2x1.5; 180 x 120 longitude/latitude; 73 levels; top level sigma = 0.0002), land: INM-LND1, ocean: INM-OM5 (North Pole shifted to 60N, 90E. 0.5x0.25; 720 x 720 longitude/latitude; 40 levels; vertical sigma coordinate), sealce: INM-ICE1
IPSL-CM6A-LR	Institut Pierre Simon Laplace IPSL France	atmos: LMDZ (NPv6, N96; 144 x 143 longitude/latitude; 79 levels; top level 80000 m), land: ORCHIDEE (v2.0, Water/Carbon/Energy mode), ocean: NEMO-OPA (eORCA1.3, tripolar primarily 1deg; 362 x 332 longitude/latitude; 75 levels; top grid cell 0-2 m), ocnBgchem: NEMO-PISCES, sealce: NEMO-LIM3
KACE-1-0-G	National Institute of Meteorological Sciences/Korea Meteorological Administration, Climate	aerosol: UKCA-GLOMAP-mode, atmos: MetUM-HadGEM3-GA7.1 (N96; 192 x 144 longitude/latitude; 85 levels; top level 85 km), land: JULES-HadGEM3-GL7.1, ocean: MOM4p1 (tripolar primarily 1deg; 360 x 200 longitude/latitude; 50 levels; top grid cell 0-10 m), sealce:

	Research Division NIMS-KMA Korea	CICE-HadGEM3-GSI8 (tripolar primarily 1deg; 360 x 200 longitude/latitude)
MCM-UA-1-0	Department of Geosciences, University of Arizona UA USA	aerosol: Modifies surface albedoes (Haywood et al. 1997, doi: 10.1175/1520-0442(1997)010<1562:GCMCOT>2.0.CO;2), atmos: R30L14 (3.75 X 2.5 degree (long-lat) configuration; 96 x 80 longitude/latitude; 14 levels; top level 0.015 sigma, 15 mb), land: Standard Manabe bucket hydrology scheme (Manabe 1969, doi: 10.1175/1520-0493(1969)097<0739:CATOC>2.3.CO;2), landIce: Specified location - invariant in time, has high albedo and latent heat capacity, ocean: MOM1.0 (MOM1, 1.875 X 2.5 deg; 192 x 80 longitude/latitude; 18 levels; top grid cell 0-40 m), sealce: Thermodynamic ice model (free drift dynamics)
MIROC-ES2L	Japan Agency for Marine-Earth Science and Technology (JAMSTEC), Atmosphere and Ocean Research Institute, The University of Tokyo (AORI), National Institute for Environmental Studies (NIES), and RIKEN Center for Computational Science (R-CCS) MIROC Japan	aerosol: SPRINTARS6.0, atmos: CCSR AGCM (T42; 128 x 64 longitude/latitude; 40 levels; top level 3 hPa), land: MATSIRO6.0+VISIT-e ver.1.0, ocean: COCO4.9 (tripolar primarily 1deg; 360 x 256 longitude/latitude; 63 levels; top grid cell 0-2 m), ocnBgchem: OECO ver.2.0; NPZD-type with C/N/P/Fe/O cycles, sealce: COCO4.9
MIROC6	Japan Agency for Marine-Earth Science and Technology (JAMSTEC), Atmosphere and Ocean Research Institute, The University of Tokyo (AORI), National Institute for Environmental Studies (NIES), and RIKEN Center for Computational Science (R-CCS) MIROC Japan	aerosol: SPRINTARS6.0, atmos: CCSR AGCM (T85; 256 x 128 longitude/latitude; 81 levels; top level 0.004 hPa), land: MATSIRO6.0, ocean: COCO4.9 (tripolar primarily 1deg; 360 x 256 longitude/latitude; 63 levels; top grid cell 0-2 m), sealce: COCO4.9
MPI-ESM1-2-HR	Max Planck Institute for Meteorology MPI-M Germany	aerosol: none, prescribed MACv2-SP, atmos: ECHAM6.3 (spectral T127; 384 x 192 longitude/latitude; 95 levels; top level 0.01 hPa), land: JSBACH3.20, landIce: none/prescribed, ocean: MPIOM1.63 (tripolar TP04, approximately 0.4deg; 802 x 404 longitude/latitude; 40 levels; top grid cell 0-12 m), ocnBgchem: HAMOCC6, sealce: unnamed (thermodynamic (Semtner zero-layer) dynamic (Hibler 79) sea ice model)
MPI-ESM1-2-LR	Max Planck Institute for Meteorology MPI-M Germany	aerosol: none, prescribed MACv2-SP, atmos: ECHAM6.3 (spectral T63; 192 x 96 longitude/latitude; 47 levels; top level 0.01 hPa), land: JSBACH3.20, landIce: none/prescribed, ocean: MPIOM1.63 (bipolar GR1.5,

		approximately 1.5deg; 256 x 220 longitude/latitude; 40 levels; top grid cell 0-12 m), ocnBgchem: HAMOCC6, sealce: unnamed (thermodynamic (Semtner zero-layer) dynamic (Hibler 79) sea ice model)
MRI-ESM2-0	Meteorological Research Institute MRI Japan	aerosol: none, prescribed MACv2-SP, atmos: ECHAM6.3 (spectral T63; 192 x 96 longitude/latitude; 47 levels; top level 0.01 hPa), land: JSBACH3.20, landIce: none/prescribed, ocean: MPIOM1.63 (bipolar GR1.5, approximately 1.5deg; 256 x 220 longitude/latitude; 40 levels; top grid cell 0-12 m), ocnBgchem: HAMOCC6, sealce: unnamed (thermodynamic (Semtner zero-layer) dynamic (Hibler 79) sea ice model)
NorESM2-LM	NorESM Climate modeling Consortium consisting of Center for International Climate and Environmental Research (CICERO), Norwegian Meteorological Institute (MET-Norway), Nansen Environmental and Remote Sensing Center (NERSC), Norwegian Institute for Air Research (NILU), University of Bergen (UiB), University of Oslo (UiO) and Uni Research (UNI) NCC Norway	aerosol: none, prescribed MACv2-SP, atmos: ECHAM6.3 (spectral T63; 192 x 96 longitude/latitude; 47 levels; top level 0.01 hPa), land: JSBACH3.20, landIce: none/prescribed, ocean: MPIOM1.63 (bipolar GR1.5, approximately 1.5deg; 256 x 220 longitude/latitude; 40 levels; top grid cell 0-12 m), ocnBgchem: HAMOCC6, sealce: unnamed (thermodynamic (Semtner zero-layer) dynamic (Hibler 79) sea ice model)
NorESM2-MM	NorESM Climate modeling Consortium consisting of Center for International Climate and Environmental Research (CICERO), Norwegian Meteorological Institute (MET-Norway), Nansen Environmental and Remote Sensing Center (NERSC), Norwegian Institute for Air Research (NILU), University of Bergen (UiB), University of Oslo (UiO) and Uni Research (UNI) NCC Norway	aerosol: none, prescribed MACv2-SP, atmos: ECHAM6.3 (spectral T63; 192 x 96 longitude/latitude; 47 levels; top level 0.01 hPa), land: JSBACH3.20, landIce: none/prescribed, ocean: MPIOM1.63 (bipolar GR1.5, approximately 1.5deg; 256 x 220 longitude/latitude; 40 levels; top grid cell 0-12 m), ocnBgchem: HAMOCC6, sealce: unnamed (thermodynamic (Semtner zero-layer) dynamic (Hibler 79) sea ice model)
TaiESM1	Research Center for Environmental Changes, Academia Sinica AS-RCEC Taiwan	aerosol: MASINGAR mk2r4 (TL95; 192 x 96 longitude/latitude; 80 levels; top level 0.01 hPa), atmos: MRI-AGCM3.5 (TL159; 320 x 160 longitude/latitude; 80 levels; top level 0.01 hPa), atmosChem: MRI-CCM2.1 (T42; 128 x 64 longitude/latitude; 80 levels; top level 0.01 hPa), land: HAL 1.0, ocean: MRI.COM4.4 (tripolar primarily 0.5 deg latitude/1 deg longitude with meridional refinement down to 0.3 deg within 10 degrees north and south of the

		equator; 360 x 364 longitude/latitude; 61 levels; top grid cell 0-2 m), ocnBgchem: MRI.COM4.4, sealce: MRI.COM4.4
UKESM1-0-LL	Met Office Hadley Centre MOHC UK	aerosol: OsloAero, atmos: CAM-OSLO (2 degree resolution; 144 x 96; 32 levels; top level 3 mb), atmosChem: OsloChemSimp, land: CLM, landIce: CISM, ocean: MICOM (1 degree resolution; 360 x 384; 70 levels; top grid cell minimum 0-2.5 m [native model uses hybrid density and generic upper-layer coordinate interpolated to z-level for contributed data]), ocnBgchem: HAMOCC, sealce: CICE