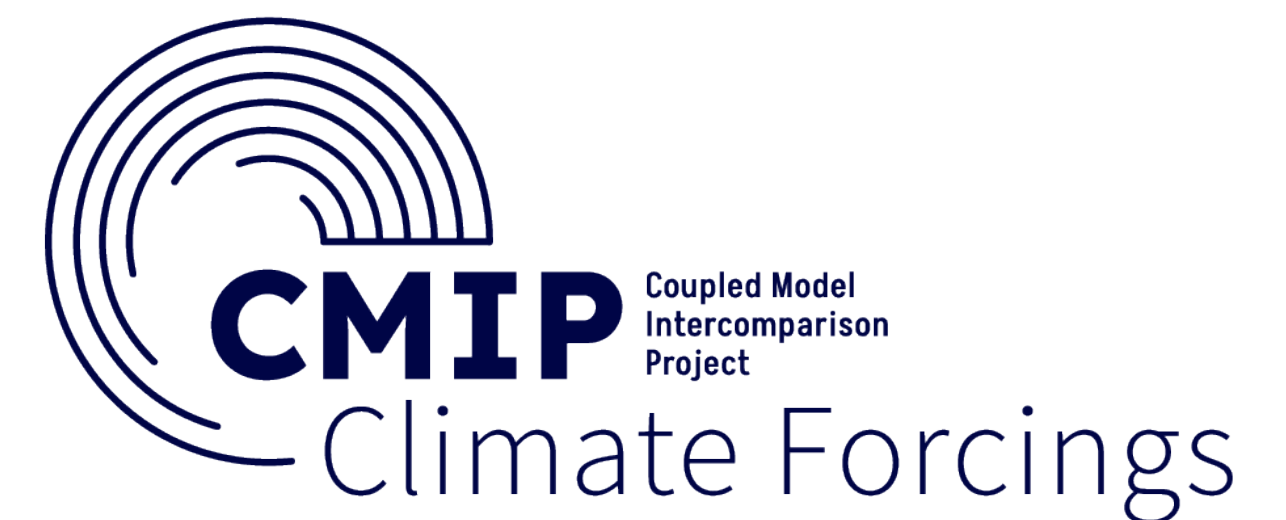


CMIP7 DECK Forcings: drop in session

Tuesday 11th March 2025, 13:00-14:00 UTC

Paul J Durack, Vaishali Naik and Zebedee Nicholls (CMIP Forcing TT co-leads) and task team members



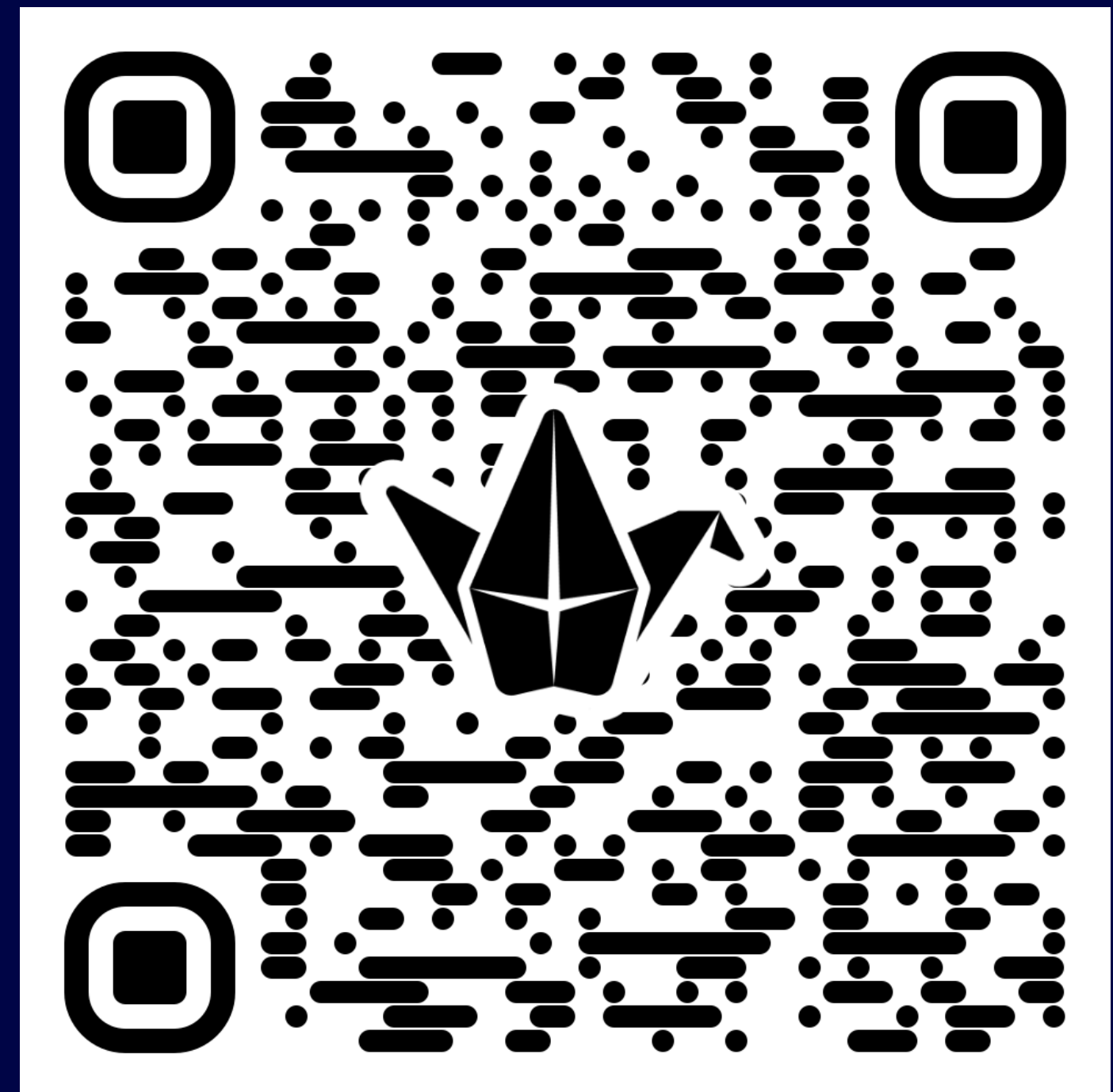
Housekeeping

- We ask all participants to adhere to the [WCRP code of conduct](#)
- This drop-in session is being recorded, and recordings will be published on the CMIP website - if you do not wish to appear in the video, do not turn your video on.
- During discussion and when raising a point/question for presenters, we encourage videos to be on but otherwise please feel free to turn your video off.
- Please raise your hand to ask questions or add to the Padlet at <https://bit.ly/forcings-drop-in-March-25>,
- If Padlet is blocked by your organisation, you can raise a question in the WEBEX chat by putting QUESTION: followed by your question.
- Note the Webex chat will only be monitored for technical issues and questions.
- Be mindful of non-native English speakers - use plain English (short and direct) and avoid unnecessary jargon and acronyms.

Agenda

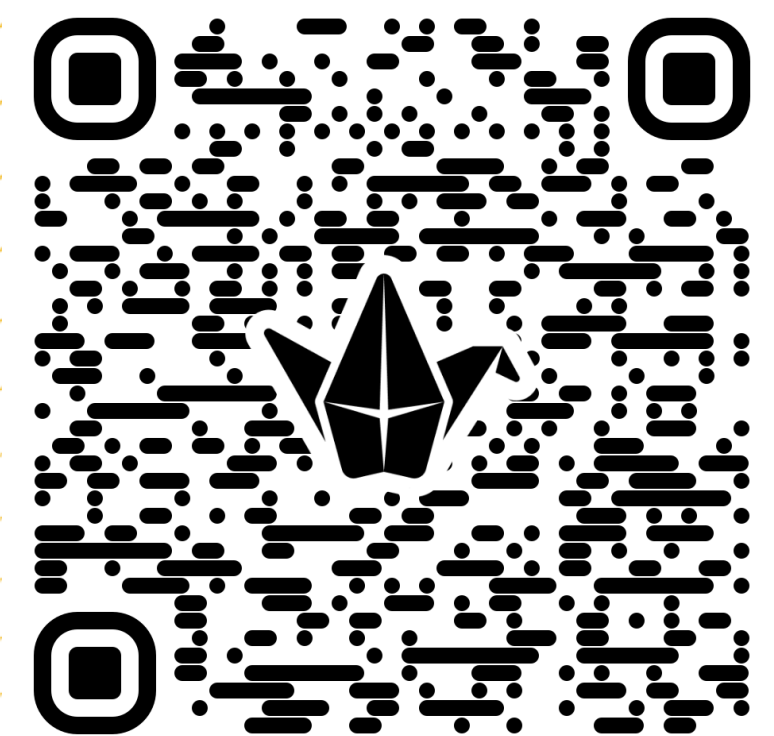
- CMIP7 DECK forcing status
- How to access data
- Documentation
- What changed from CMIP6?
- Update plans
- What about scenarios?
- Communication
- Q&A

Padlet QR code



CMIP7 DECK Forcing Status

Padlet QR code



THANK YOU!

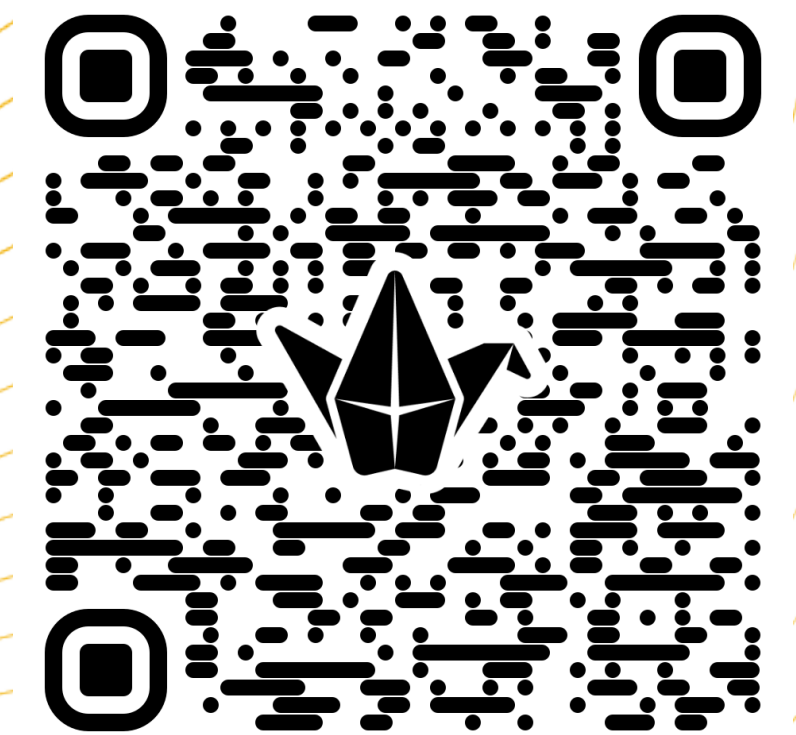
- Data providers
- Forcing Task Team Membership
- Modelling groups and early data testers
- Fresh Eyes on CMIP Forcing Subgroup
- Funding agencies
- Everyone who's helped
- Many more..

CMIP7 DECK forcing status

Dataset	CMIP7 ESGF Publication Status	CMIP6Plus (testing) scenarios forcing availability
Anthropogenic short-lived climate forcer (SLCF) and CO2 emissions	Expected: March 14, 2025	April 2025
Open biomass burning emissions	Available: DRES-CMIP-BB4CMIP7-2-0 (1750-01 to 2023-12)	April 2025
Land use	In publication queue: UofMD-landState-3-1 (850-2024)	April 2025
Greenhouse gas concentrations	Available: CR-CMIP-1-0-0 (0001-01 to 2022-12)	April 2025
CO ₂ isotopes	Data in preparation	
Stratospheric volcanic SO₂ emissions and aerosol optical properties	Available: UOEXETER-CMIP-2-0-0 (1750-01-01 to 2023-12-01)	April 2025
Ozone concentrations	Expected: piControl (early April), historical (mid June)	Expected after dependent datasets (timeline TBC)
Nitrogen deposition	Awaiting finalisation of upstream forcings: SLCF emissions, land use	
Solar	Available: SOLARIS-HEPPA-CMIP-4-6 (1850-01-01 to 2023-12-31)	June 2025
AMIP sea-surface temperature and sea-ice boundary forcing	Available: PCMDI-AMIP-1-1-9 (1870-01 to 2022-12)	Not required
Aerosol optical properties/SPv2	Expected: end March Awaiting finalisation of upstream forcing: SLCF emissions	Expected a month after dependent datasets
Population density	Data provider to be determined	

How to access the data

Padlet QR code



How to access the data?

The screenshot shows the ESGF search interface with the following details:

- Search Results:** 11,817 results found for 'input4MIPs'. Query String: latest = true.
- Table Headers:** Cart, Dataset ID, Files, Total Size, Version, Download Options, Globus Ready.
- Table Rows (Sample):**

Cart	Dataset ID	Files	Total Size	Version	Download Options	Globus Ready
<input type="checkbox"/>	input4MIPs.CMIP6.C4MIP.ImperialCollege.ImperialCollege-REMINO-MAGPIE-ssp585-1-0.atmos.yr.Delta14co2_in_air.gm	1	24.01 KB	20200914	wget	<input checked="" type="checkbox"/>
<input type="checkbox"/>	input4MIPs.CMIP6.C4MIP.ImperialCollege.ImperialCollege-AIM-ssp370-1-0.atmos.yr.delta13co2_in_air.gm	1	24.01 KB	20200914	wget	<input checked="" type="checkbox"/>
<input type="checkbox"/>	input4MIPs.CMIP6.OMIP.MRI.MRI-JRA55-do-1-5-0.atmos.fx.areacella.gr	1	57.08 KB	20200916	wget	<input checked="" type="checkbox"/>
<input type="checkbox"/>	input4MIPs.CMIP6.OMIP.MRI.MRI-JRA55-do-1-5-0.ocean.fx.areacello.gr	1	78.33 KB	20200916	wget	<input checked="" type="checkbox"/>
<input type="checkbox"/>	input4MIPs.CMIP6.OMIP.MRI.MRI-JRA55-do-1-5-0.land.day.frivier.gr	63	3.33 GB	20200916	wget	<input checked="" type="checkbox"/>
<input type="checkbox"/>	input4MIPs.CMIP6.OMIP.MRI.MRI-JRA55-do-1-5-0.atmos.3hrPT.huss.gr	63	98.75 GB	20200916	wget	<input checked="" type="checkbox"/>
<input type="checkbox"/>	input4MIPs.CMIP6.OMIP.MRI.MRI-JRA55-do-1-5-0.landIce.day.licalvf.gr	63	626.37 MB	20200916	wget	<input checked="" type="checkbox"/>
<input type="checkbox"/>	input4MIPs.CMIP6.OMIP.MRI.MRI-JRA55-do-1-5-0.atmos.3hr.prra.gr	63	74.92 GB	20200916	wget	<input checked="" type="checkbox"/>
<input type="checkbox"/>	input4MIPs.CMIP6.OMIP.MRI.MRI-JRA55-do-1-5-0.atmos.3hr.prsn.gr	63	31.56 GB	20200916	wget	<input checked="" type="checkbox"/>
<input type="checkbox"/>	input4MIPs.CMIP6.OMIP.MRI.MRI-JRA55-do-1-5-0.atmos.3hrPT.psl.gr	63	70.16 GB	20200916	wget	<input checked="" type="checkbox"/>
- Filters:** Filter By Transfer Options (Any, Only Globus Transferrable), Filter with Facets (General, Identifiers, Classifications, Additional Properties, Filename).
- Additional Properties:** MIP Era, Target MIP List, Dataset Status, Data Node, Version Type (Latest), Result Type (Originals and Replicas), Version Date Range.
- Page Info:** 10 / page, 1182 results.

Active

LLNL USA, California West Coast
<https://aims2.llnl.gov/search/input4MIPs>

DKRZ Germany, Hamburg
<https://esgf-metagrid.cloud.dkrz.de/search/input4MIPs>

Planned

CEDA UK, Didcot
<https://esgf-ui.ceda.ac.uk>

How to access the data?

The screenshot shows the ESGF search interface. On the left, there are filters for 'MIP Era' (CMIP6, 10401), 'Dataset Status' (CMIP6Plus, 907), and 'Data Node' (CMIP7, 509). The main area displays 11,817 results for 'input4MIPs'. A table lists dataset entries with columns for Dataset ID, Files, Total Size, Version, Download Options, and Globus Ready. The table includes entries from Imperial College and MRI.

Dataset ID	Files	Total Size	Version	Download Options	Globus Ready
input4MIPs.CMIP6.C4MIP.ImperialCollege.ImperialCollege-REMIND-MAGPIE-ssp585-1-0.atmos.yr.Delta14co2_in_air.gm	1	24.01 KB	20200914	wget	✓
input4MIPs.CMIP6.C4MIP.ImperialCollege.ImperialCollege-AIM-ssp370-1-0.atmos.yr.delta13co2_in_air.gm	1	24.01 KB	20200914	wget	✓
input4MIPs.CMIP6.OMIP.MRI.MRI-JRA55-do-1-5-0.atmos.fx.areacella.gr	1	57.08 KB	20200916	wget	✓
input4MIPs.CMIP6.OMIP.MRI.MRI-JRA55-do-1-5-0.ocean.fx.areacello.gr	1	78.33 KB	20200916	wget	✓
input4MIPs.CMIP6.OMIP.MRI.MRI-JRA55-do-1-5-0.land.day.friver.gr	63	3.33 GB	20200916	wget	✓
input4MIPs.CMIP6.OMIP.MRI.MRI-JRA55-do-1-5-0.atmos.3hrPT.huss.gr	63	98.75 GB	20200916	wget	✓
input4MIPs.CMIP6.OMIP.MRI.MRI-JRA55-do-1-5-0.landIce.day.licalvf.gr	63	626.37 MB	20200916	wget	✓
input4MIPs.CMIP6.OMIP.MRI.MRI-JRA55-do-1-5-0.atmos.3hr.prra.gr	63	74.92 GB	20200916	wget	✓
input4MIPs.CMIP6.OMIP.MRI.MRI-JRA55-do-1-5-0.atmos.3hr.prsn.gr	63	31.56 GB	20200916	wget	✓
input4MIPs.CMIP6.OMIP.MRI.MRI-JRA55-do-1-5-0.atmos.3hrPT.psl.gr	63	70.16 GB	20200916	wget	✓

Active

LLNL USA, California West Coast

<https://aims2.llnl.gov/search/input4MIPs>

DKRZ Germany, Hamburg

<https://esgf-metagrid.cloud.dkrz.de/search/input4MIPs>

Planned

CEDA UK, Didcot

<https://esgf-ui.ceda.ac.uk>

How to access the data?

The screenshot shows the ESGF search interface. On the left, there are filters for 'MIP Era' (CMIP7, 509 results), 'Target MIP List' (CMIP, 509 results), and 'Institution ID' (UOEXETER-CMIP-2-0-0, 15 results). A red circle highlights the 'Institution ID' filter. The main area displays 509 results for 'input4MIPs' with a table of dataset entries. The table has columns for 'Dataset ID', 'Files', 'Total Size', 'Version', 'Download Options', and 'Globus Ready'. The first few rows show datasets from UOEXETER-CMIP-2-0-0.atmos.mon.ssa.gn.z, UOEXETER-CMIP-2-0-0.atmos.mon.sad.gn.z, and UOEXETER-CMIP-2-0-0.atmos.mon.ref.f.gn.z.

Dataset ID	Files	Total Size	Version	Download Options	Globus Ready
input4MIPs.CMIP7.CMIP.uoexeter.UOEXETER-CMIP-2-0-0.atmos.mon.ssa.gn.z	1	2.53 GB	20250227	wget	✓
input4MIPs.CMIP7.CMIP.uoexeter.UOEXETER-CMIP-2-0-0.atmos.mon.sad.gn.z	1	63.64 MB	20250227	wget	✓
input4MIPs.CMIP7.CMIP.uoexeter.UOEXETER-CMIP-2-0-0.atmos.mon.ref.f.gn.z	1	63.64 MB	20250227	wget	✓
input4MIPs.CMIP7.CMIP.uoexeter.UOEXETER-CMIP-2-0-0.atmos.mon.vd.gn.z	1	63.64 MB	20250227	wget	✓
input4MIPs.CMIP7.CMIP.DRES.DRES-CMIP-BB4CMIP7-2-0.atmos.mon.C2H6percentageSAVA.gn	1	775.58 MB	20250227	wget	✓
input4MIPs.CMIP7.CMIP.DRES.DRES-CMIP-BB4CMIP7-2-0.atmos.mon.C2H6SpercentageDEFO.gn	1	299.82 MB	20250227	wget	✓
input4MIPs.CMIP7.CMIP.DRES.DRES-CMIP-BB4CMIP7-2-0.atmos.mon.C2H6SpercentageAGRI.gn	1	800.66 MB	20250227	wget	✓
input4MIPs.CMIP7.CMIP.DRES.DRES-CMIP-BB4CMIP7-2-0.atmos.mon.C2H6percentageDEFO.gn	1	299.78 MB	20250227	wget	✓
input4MIPs.CMIP7.CMIP.DRES.DRES-CMIP-BB4CMIP7-2-0.atmos.mon.C2H6SpercentageBORF.gn	1	307.87 MB	20250227	wget	✓
input4MIPs.CMIP7.CMIP.DRES.DRES-CMIP-BB4CMIP7-2-0.atmos.mon.C2H6percentageTEMF.gn	1	317.55 MB	20250227	wget	✓

Active

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DKRZ Germany, Hamburg
<https://esgf-metagrid.cloud.dkrz.de/search/input4MIPs>

Planned

CEDA UK, Didcot
<https://esgf-ui.ceda.ac.uk>

How to navigate the data?

input4MIPs Controlled Vocabularies (CVs)

Usage as a data user

The most important thing: if there is something that isn't clear to you, please [raise an issue](#) (if you don't know who else to tag, please tag @durack1 and @znicholls). If you have a question, it is very likely that someone else is asking the same thing so please don't hesitate to ask.

The datasets

An overview of each dataset, with links to further information, can be found in [dataset overviews](#).

Navigating the database

The database tracks all of the files¹ being managed in the input4MIPs project². In general, as a user, you won't be interested in information at the level of individual files, hence we provide different views. An overview of these is given in the [database views homepage](#). Here we provide some more targeted guidance for users of the data.

If you want to know about the latest status of each dataset, have a look at [the delivery summary](#). This page provides, for each forcing dataset:

- its current status (see the `Status` column)
- the unique identifier of its latest version (see the `Source ID` column)
- if the data has been published on ESGF (see the `ESGF publication status` column), a hyperlink to a pre-filled search on the ESGF is included (just click on the information in this column). The pre-filled search can help with downloading data and knowing what to search for on the ESGF.
- if the dataset has an external URL which provides more information, this is provided as a hyperlink on the forcing dataset's name (see the `Forcing dataset` column), i.e. if you can click on the forcing dataset's name, it will take you to that forcing dataset's home page, where ever that is.

How can I get more information about each dataset?

Beyond the overviews above, you can also use the different views of our database. If you are interested in the status of different versions of a particular dataset, then it is worth looking at [the source ID level view](#). Within this view, the search bar can be used to filter just for the dataset you're interested in. Once this filtering is done, a few columns are particularly relevant:

<https://input4mips-cvs.readthedocs.io/en/latest/usage-data-user/>

How to navigate the data?

<https://input4mips-cvs.readthedocs.io/en/latest/usage-data-user/>

The screenshot shows the 'Usage as a data user' page. The left sidebar contains a navigation menu with items like 'Usage', 'As a data user', 'Overview', 'Downloading data', 'As a data producer', 'Dataset overviews', 'Database views', 'Repository overview', 'Contributing', 'Versioning', and 'Changelog'. The main content area is titled 'Usage as a data user' and contains the following text:

The most important thing: if there is something that isn't clear to you, please [raise an issue](#) (if you don't know who else to tag, please tag @durack1 and @znicholls). If you have a question, it is very likely that someone else is asking the same thing so please don't hesitate to ask.

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The screenshot shows the 'Downloading data' page. The left sidebar is identical to the previous page. The main content area is titled 'Downloading data' and contains the following text:

Here we provide some examples of how to download data. They are not meant to be exhaustive, but they may help.

Understanding what you need

Unfortunately, given the variety of models, approaches and requirements, there is no uniform set of flags that can be used across all datasets to 'just get the latest CMIP DECK data'. Instead, please see the specific details of each dataset for details about what is available. These pages include information about available grids and frequencies and what to use for the pre-industrial control experiments. [The datasets overview page is here](#), from which you can access the information page for each individual dataset.

esgpull - commandline ESGF download software

It is possible to download datasets using [esgpull](#). The installation instructions are [here](#).

Having installed esgpull, make sure it is configured on your system with

```
esgpull self install
```

Then, we found that we had to set our data node correctly first in order for esgpull to find input4MIPs data.

```
esgpull config api.index_node esgf-node.llnl.gov
```

Data can then be downloaded as shown below. The key thing is to make sure that you are getting the source ID you are interested in. (The below example uses the shell commands. Obviously you can drive the shell in your programming language of choice, which might be a more convenient option, particularly if you require specific combinations of grids and variables.)

```
CMIP7_VERSION_PROJECT="input4MIPs"
# The MIP era will need to be changed to "CMIP7" when the final data is published
# (for now, all testing data is published under "CMIP6Plus").
CMIP7_VERSION_MIP_ERA="CMIP6Plus"
# The source ID you're interested in.
CMIP7_VERSION_SOURCE_ID="CR-CMIP-0-4-0"
SEARCH_TAG="cmip7-${CMIP7_VERSION_SOURCE_ID}"

esgpull add --tag ${SEARCH_TAG} --track project:${CMIP7_VERSION_PROJECT} mip_era:$
```

How to navigate the data?

<https://input4mips-cvs.readthedocs.io/en/latest/database-views/>

input4MIPs Controlled Vocabularies (CVs) Usage as a data user

input4MIPs Controlled Vocabularies (CVs) Table of contents

input4MIPs CVs The datasets

Usage Navigating the database

As a data user

Overview

Downloading

As a data prod

Dataset overview

Database views

Repository overview

Contributing

Versioning

Changelog

input4MIPs Controlled Vocabularies (CVs) Downloading data

input4MIPs Controlled Vocabularies (CVs) Table of contents

input4MIPs CVs Understanding what you need

input4MIPs CVs esgpull - commandline ESGF

input4MIPs CMIP7 source IDs: v6.6.12a1

[Home](#) | [Delivery summary view](#) | [Source ID-level view CMIP7](#) | [Dataset-level view CMIP7](#) | [File-level view CMIP7](#) | [Source ID-level view CMIP6Plus](#) | [Dataset-level view CMIP6Plus](#) | [File-level view CMIP6Plus](#)

Show entries Search:

default_sort_index	ESGF URL	mip_era	source_id	latest	publication_status	comment_post_publication	contact	doi	dataset_category	further_info_url	institution_id	license_id	source_version
0	Published	CMIP7	CR-CMIP-1-0-0	True	published	None	zebedee.nicholls@climate-resource.com;malte.meinshausen@climate-resource.com	https://doi.org/10.5281/zenodo.14892947	GHGConcentrations	https://github.com/climate-resource/CMIP-GHG-Concentration-Generation	CR	CC BY 4.0	1.0.0
1	Published	CMIP7	DRES-CMIP-BB4CMIP7-2-0	True	published	None	Margreet.vanMarle@Deltares.nl, Guido.vanderWerf@wur.nl	10.25981/ESGF.input4MIPs.CMIP7/2524040	emissions	http://www.globalfiredata.org	DRES	CC BY 4.0	2.0
2	Published	CMIP7	DRES-CMIP-BB4CMIP7-2-0	True	published	None	Margreet.vanMarle@Deltares.nl, Guido.vanderWerf@wur.nl	10.25981/ESGF.input4MIPs.CMIP7/2524040	emissions	http://www.globalfiredata.org	DRES	None	2.0
3	Published	CMIP7	SOLARIS-HEPPA-CMIP-4-6	True	published	None	bernd@iaa.es	10.25981/ESGF.input4MIPs.CMIP7/2522675	solar	https://www.solarisheppa.kit.edu/75.php	SOLARIS-HEPPA	CC BY 4.0	4.6
4	Published	CMIP7	UOEXETER-CMIP-2-0-0	True	published	None	t.aubry@exeter.ac.uk	10.25981/ESGF.input4MIPs.CMIP7/2522673	aerosolProperties, emissions	https://input4mips-controlled-vocabularies-cvs.readthedocs.io/en/latest/dataset-overviews/stratospheric-volcanic-so2-emissions-aod/	uoexeter	CC BY 4.0	2.0.0

Showing 1 to 5 of 5 entries Previous Next

[latest](#)

How can I get more information about each dataset?

Beyond the overviews above, you can also use the different views of our database. If you are interested in the status of different versions of a particular dataset, then it is worth looking at [the source ID level view](#). Within this view, the search bar can be used to filter just for the dataset you're interested in. Once this filtering is done, a few columns are particularly relevant:

```

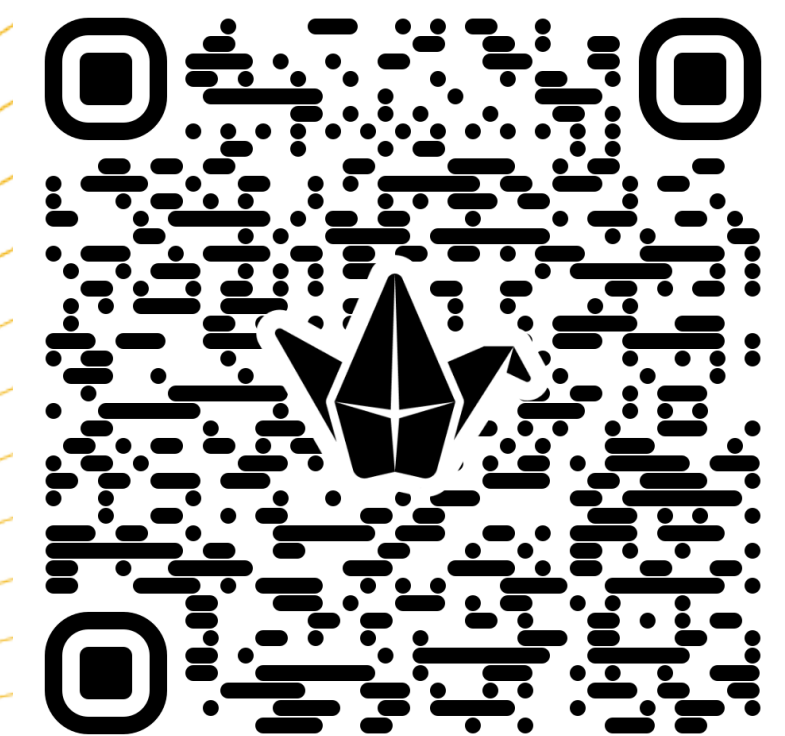
CMIP7_VERSION_PROJECT= input4MIPs
# The MIP era will need to be changed to "CMIP7" when the final data is published
# (for now, all testing data is published under "CMIP6Plus").
CMIP7_VERSION_MIP_ERA="CMIP6Plus"
# The source ID you're interested in.
CMIP7_VERSION_SOURCE_ID="CR-CMIP-0-4-0"
SEARCH_TAG="cmip7-${CMIP7_VERSION_SOURCE_ID}"

esgpull add --tag ${SEARCH_TAG} --track project:${CMIP7_VERSION_PROJECT} mip_era:$
    
```

[latest](#)

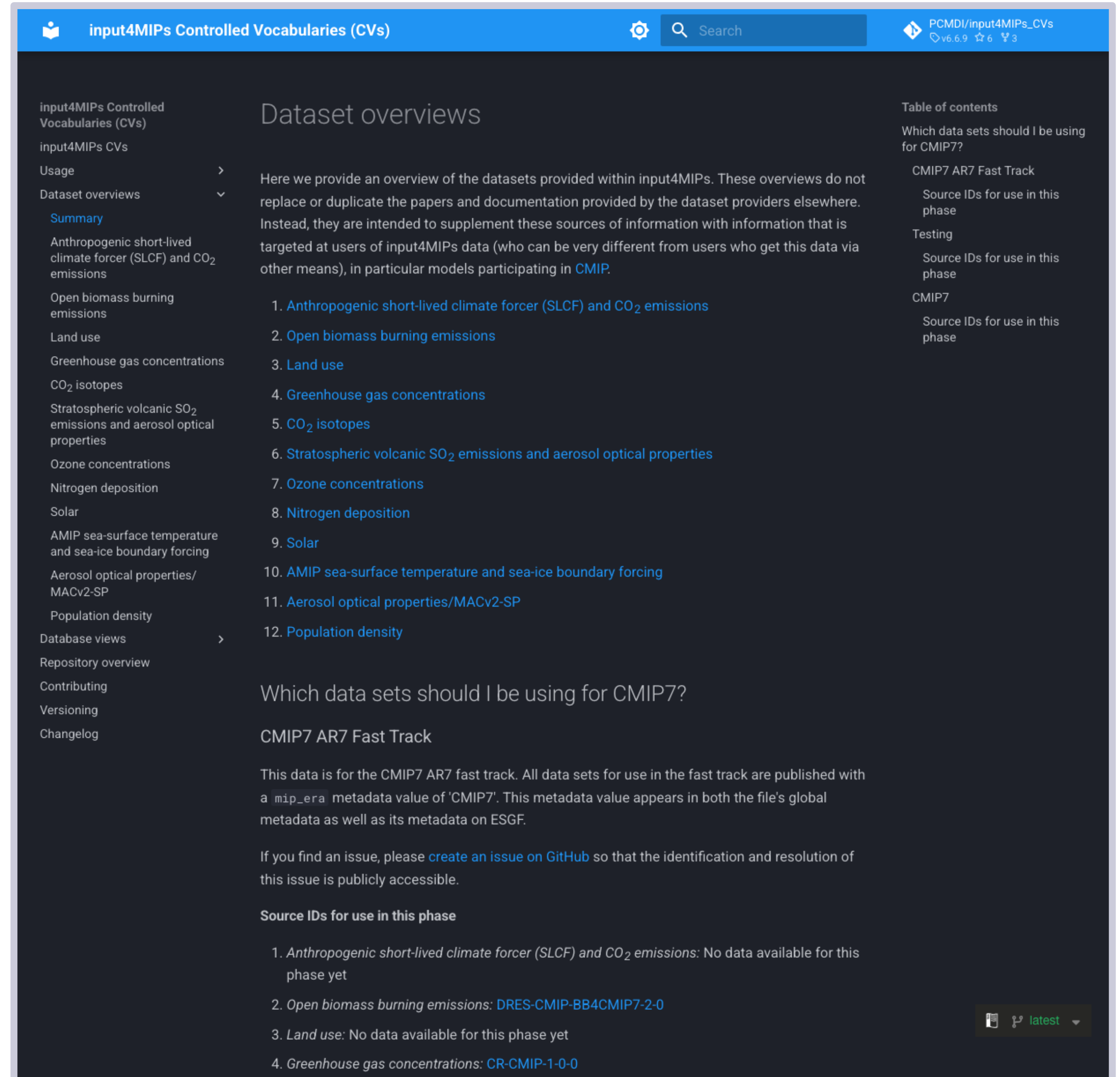
Documentation and discussion

Padlet QR code



Documentation

<https://input4mips-cvs.readthedocs.io/en/latest/dataset-overviews/>



The screenshot shows the 'input4MIPs Controlled Vocabularies (CVs)' documentation page. The page has a dark theme and a blue header. The main content area is divided into three columns. The left column is a navigation menu with items like 'input4MIPs Controlled Vocabularies (CVs)', 'input4MIPs CVs', 'Usage', 'Dataset overviews', 'Summary', 'Anthropogenic short-lived climate forcer (SLCF) and CO₂ emissions', 'Open biomass burning emissions', 'Land use', 'Greenhouse gas concentrations', 'CO₂ isotopes', 'Stratospheric volcanic SO₂ emissions and aerosol optical properties', 'Ozone concentrations', 'Nitrogen deposition', 'Solar', 'AMIP sea-surface temperature and sea-ice boundary forcing', 'Aerosol optical properties/MACv2-SP', 'Population density', 'Database views', 'Repository overview', 'Contributing', 'Versioning', and 'Changelog'. The middle column is titled 'Dataset overviews' and contains a paragraph explaining that these overviews supplement other sources of information. Below this is a numbered list of 12 dataset categories: 1. Anthropogenic short-lived climate forcer (SLCF) and CO₂ emissions, 2. Open biomass burning emissions, 3. Land use, 4. Greenhouse gas concentrations, 5. CO₂ isotopes, 6. Stratospheric volcanic SO₂ emissions and aerosol optical properties, 7. Ozone concentrations, 8. Nitrogen deposition, 9. Solar, 10. AMIP sea-surface temperature and sea-ice boundary forcing, 11. Aerosol optical properties/MACv2-SP, and 12. Population density. The right column is titled 'Table of contents' and lists sections: 'Which data sets should I be using for CMIP7?', 'CMIP7 AR7 Fast Track', 'Testing', and 'CMIP7'. The bottom right corner of the page has a 'latest' dropdown menu.

Documentation

<https://input4mips-cvs.readthedocs.io/en/latest/dataset-overviews/>

The screenshot shows the 'Dataset overviews' page. The main content area contains a list of 12 dataset categories, each with a numbered link to its overview page:

1. [Anthropogenic short-lived climate forcer \(SLCF\) and CO₂ emissions](#)
2. [Open biomass burning emissions](#)
3. [Land use](#)
4. [Greenhouse gas concentrations](#)
5. [CO₂ isotopes](#)
6. [Stratospheric volcanic SO₂ emissions and aerosol optical properties](#)
7. [Ozone concentrations](#)
8. [Nitrogen deposition](#)
9. [Solar](#)
10. [AMIP sea-surface temperature and sea-ice boundary forcing](#)
11. [Aerosol optical properties/MACv2-SP](#)
12. [Population density](#)

The left sidebar contains a navigation menu with items like 'Usage', 'Dataset overviews', 'Summary', and 'Table of contents'. The top navigation bar includes a search bar and version information (v6.6.9).

The screenshot shows the 'Greenhouse gas concentrations' page. The main content area includes:

- Key contacts:**
 - Names: Zebedee Nicholls, Malte Meinshausen
 - Emails: zebedee.nicholls@climate-resource.com; malte.meinshausen@climate-resource.com
- Summary:** Testing versions of the greenhouse gas concentrations are [available on the ESGF](#). These versions are for testing only, do not use them for any simulations you're not willing to throw away. If you find any issues, please [create an issue](#).
- Source IDs for CMIP7 phases:** The source ID that identifies the dataset to use in the different phases of CMIP7 is given below.
- CMIP7 AR7 fast track:** For the CMIP7 AR7 fast track phase of CMIP7, use data with the source ID [CR-CMIP-1-0-0](#).
- Testing:** For the testing phase of CMIP7, use data with the source ID [CR-CMIP-0-4-0](#).

The right sidebar contains a 'Table of contents' with links to various sections like 'Key contacts', 'Summary', 'Source IDs for CMIP7 phases', 'Testing', 'CMIP7', 'Navigating the data', 'Recommendation for pre-industrial control', 'Grids and frequencies provided', 'Species provided', 'Equivalence species', 'Option 1', 'Option 2', 'Uncertainty', 'Examples of working with the data', 'Differences from CMIP6 or other previous versions', 'File formats and naming', 'Variable name mapping', 'Data', 'Revision history', 'CR-CMIP-0-4-0', and 'CR-CMIP-0-3-0'. The top navigation bar includes a search bar and version information (v6.6.9).

Discussions/Issues

https://github.com/PCMDI/input4MIPs_CVs/discussions

The screenshot shows the GitHub interface for the repository `PCMDI / input4MIPs_CVs`. The top navigation bar includes links for Code, Issues (11), Pull requests (3), Discussions, Actions, Projects, Wiki, Security, Insights, and Settings. A search bar is present with the text "Type / to search".

The main content area features a welcome message: "Welcome to input4MIPs Discussions!" with a sub-header "Announcements · durack1". Below this is a search bar with the filter "is:open label:'Testing and Evaluation'", a "Sort by: Latest activity" dropdown, a "Label" dropdown, a "Filter: Open" dropdown, and a "New discussion" button.

The "Discussions" section is active, showing a list of discussions. The first discussion is titled "CMIP7 historical stratospheric aerosol optical properties and volcanic stratospheric sulfur emissions" with a "Testing and Evaluation" label, started by `thomasaubry` on Jan 6 in the "General" category, and has 17 replies. The second discussion is titled "CR-CMIP-0-4-0: greenhouse gas concentrations - feedback, observations and issues" with a "Testing and Evaluation" label, started by `znichollscr` on Dec 20, 2024 in the "General" category, and has 5 replies.

Discussions/Issues

https://github.com/PCMDI/input4MIPs_CVs/discussions

CMIP7 historical stratospheric aerosol optical properties and volcanic stratospheric sulfur emissions #175

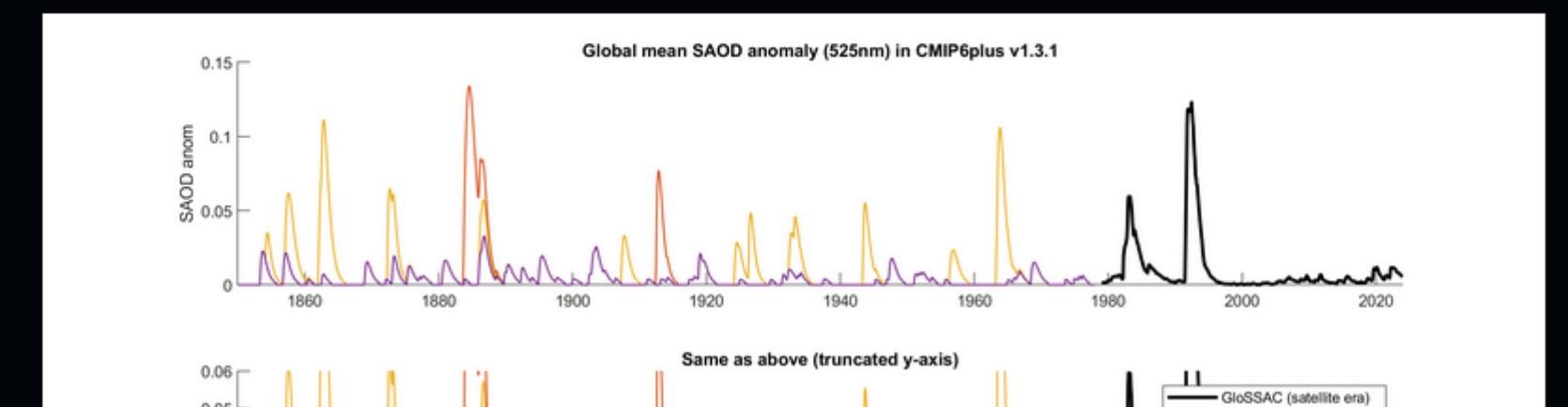
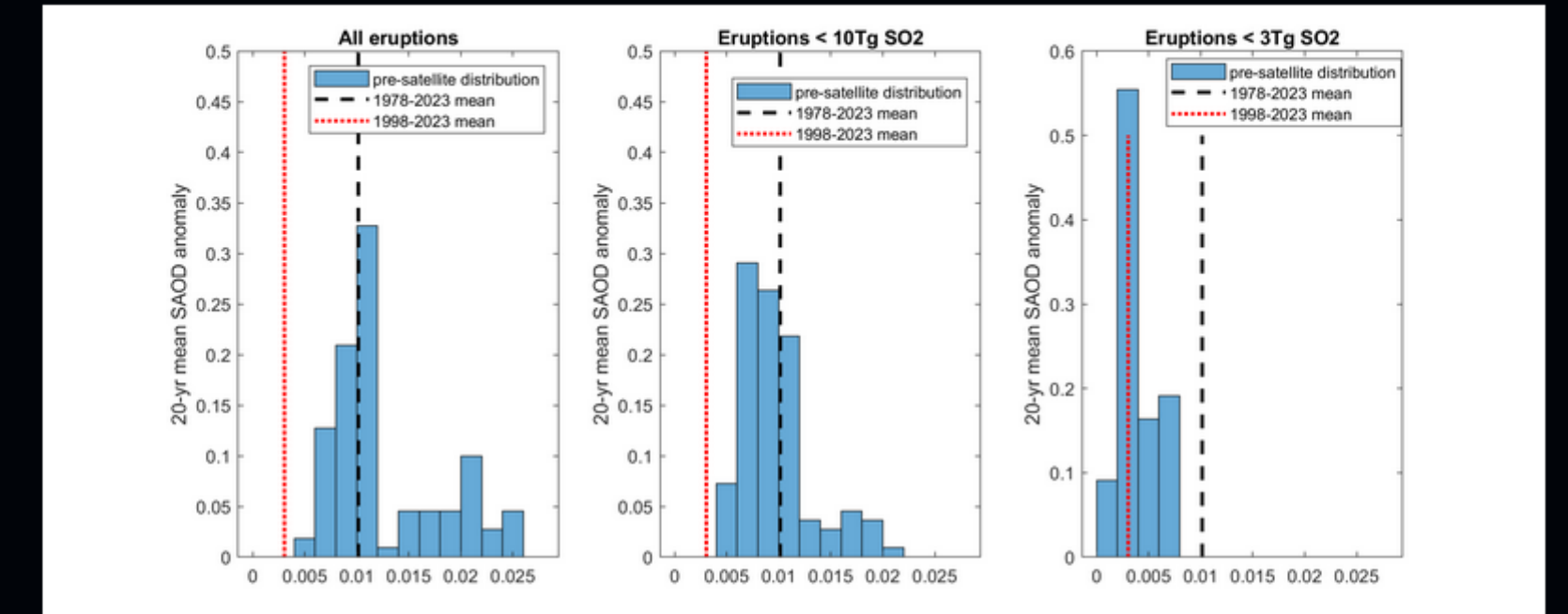
thomasaubry on Jan 6 · 5 comments · 12 replies

thomasaubry 3 weeks ago Author

Thanks Vaishali! I include some plot below for SAOD anomaly (not including the not volcanic background in our dataset) and for the global mean SAOD. To help explain my reply, I've also made SAOD timeseries for the pre-satellite era only using eruptions injecting <3 Tg SO₂ and <10 Tg SO₂ (for reference the largest eruption of the satellite era post Pinatubo is 2Tg SO₂). Two main points:

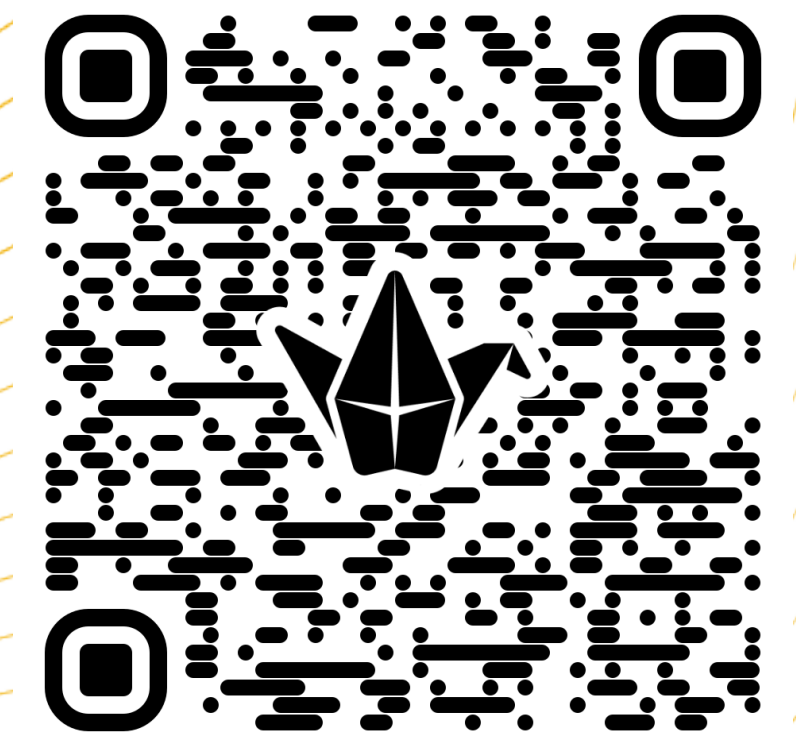
1. If you consider all eruptions, the satellite-era period is indeed low in terms of volcanic forcing. This is not a surprise, Pinatubo is not a particularly big eruption and the 19th century was very active volcanically. I don't think there is any controversy here and our ice-core datasets should be relatively reliable in capturing past large eruptions (and we don't have other good sources of information). So yes in terms of large eruption, the satellite era is quiet.
2. If you are specifically concerned about the post-pinatubo period and the representation of small-magnitude eruptions in the dataset, have a look at the panels for eruptions <3Tg SO₂ on first figure below. Most eruptions in our datasets have masses directly constrained from ice-core, but some small-magnitude eruptions are not recorded in ice-core and we had to give them a default mass depending on their volcanic explosivity index (VEI). These default masses were chosen so that the mean SAOD anomaly associated with <3Tg SO₂ eruption for 1850-1979 is equal to the mean SAOD anomaly for 1998-2023, our best estimate for the forcing associated with small eruptions. So in terms of mean forcing for small eruptions, we actually designed the dataset specifically to have a zero bias. One caveat is that the geological (VEI) record is also affected by under-recording, so that in practice we lack small-magnitude eruptions, and their individual forcing on average is likely a bit too big. You can see that on the second figure below, especially in the bottom panel where you will notice that the purple curve (eruption <3 Tg SO₂ pre-satellite) has typical peaks a bit higher than observed post-pinatubo (1998-2023), but also a lot of year with zero anomaly which pretty much never happens over the satellite era. You can also see the yearly SAOD distribution on the bottom right panel of figure 2 in our rough documentation (<https://docs.google.com/document/d/1blX5kv0We1BteqWzMKs0OuhazAcAonay>) which shows the same point. But we are talking about very small forcing signal, and again we think we did our best to avoid any bias in terms of time-average forcing for small eruptions.

Does this make sense?



Update plans

Padlet QR code



input4MIPs data updates

https://github.com/PCMDI/input4MIPs_CVs/releases

The screenshot shows the GitHub release page for the repository `PCMDI / input4MIPs_CVs`. The page is dark-themed and displays the following information:

- Release:** `v6.6.11` (Latest)
- Announcements:**
 - Updated repo to capture dataset DOIs
- Changelog:**
 - Features:**
 - Added the "authors" field to each source ID. This field provides a machine-readable set of information about the author of the dataset identified by each source ID. (#195)
 - Improvements:**
 - Added an "authors" field to the source ID entries to allow DOI entries to be auto-generated (underlying discussion: #177). (#195)
 - Update the source ID CVs so they contain all information required for creating DOIs. (#200)

On the left side of the release page, there is a sidebar with the following details:

- 3 minutes ago
- github-actions
- v6.6.11
- 9bf20be
- Compare

input4MIPs data updates

https://github.com/PCMDI/input4MIPs_CVs/tags

This screenshot shows the GitHub repository page for PCMDI/input4MIPs_CVs. The 'Releases' tab is active, displaying the details for the latest release, v6.6.11, which was published 3 minutes ago by github-actions. The release includes an announcement: 'Updated repo to capture dataset DOIs'. The changelog and features sections are also visible, detailing updates to the 'authors' field and source ID entries.

Releases Tags

[Draft a new release](#)

3 minutes ago

github-actions

v6.6.11

9bf20be

[Compare](#)

v6.6.11 Latest

Announcements

- Updated repo to capture dataset DOIs

Changelog

NEW Features

- Added the "authors" field to each source ID. This field provides a machine-readable set of information about the author of the dataset identified by each source ID. ([#195](#))

Improvements

- Added an "authors" field to the source ID entries to allow DOI entries to be auto-generated (underlying discussion: [#177](#)). ([#195](#))
- Update the source ID CVs so they contain all information required for creating DOIs. ([#200](#))

This screenshot shows the GitHub repository page for PCMDI/input4MIPs_CVs, displaying a list of releases. The releases are listed in descending order of time, from v6.6.11 (2 weeks ago) to v6.6.2 (Dec 19, 2024). Each release entry includes the version number, the time since release, the commit hash, and links for downloading source code (zip, tar.gz) and release notes.

PCMDI / input4MIPs_CVs

Code Issues 11 Pull requests 3 Discussions Actions Projects Wiki Security Insights Settings

Releases **Tags**

v6.6.11

2 weeks ago 9bf20be zip tar.gz Notes Downloads

v6.6.10

2 weeks ago 978e54a zip tar.gz Notes Downloads

v6.6.9

3 weeks ago abce296 zip tar.gz Notes Downloads

v6.6.8

last month 965e784 zip tar.gz Notes Downloads

v6.6.7

last month c8e1422 zip tar.gz Notes Downloads

v6.6.6

on Feb 3 a022a3d zip tar.gz Notes Downloads

v6.6.5

on Jan 8 b256abf zip tar.gz Notes Downloads

v6.6.4

on Jan 7 6d26766 zip tar.gz Notes Downloads

v6.6.3

on Dec 20, 2024 b734c62 zip tar.gz Notes Downloads

v6.6.2

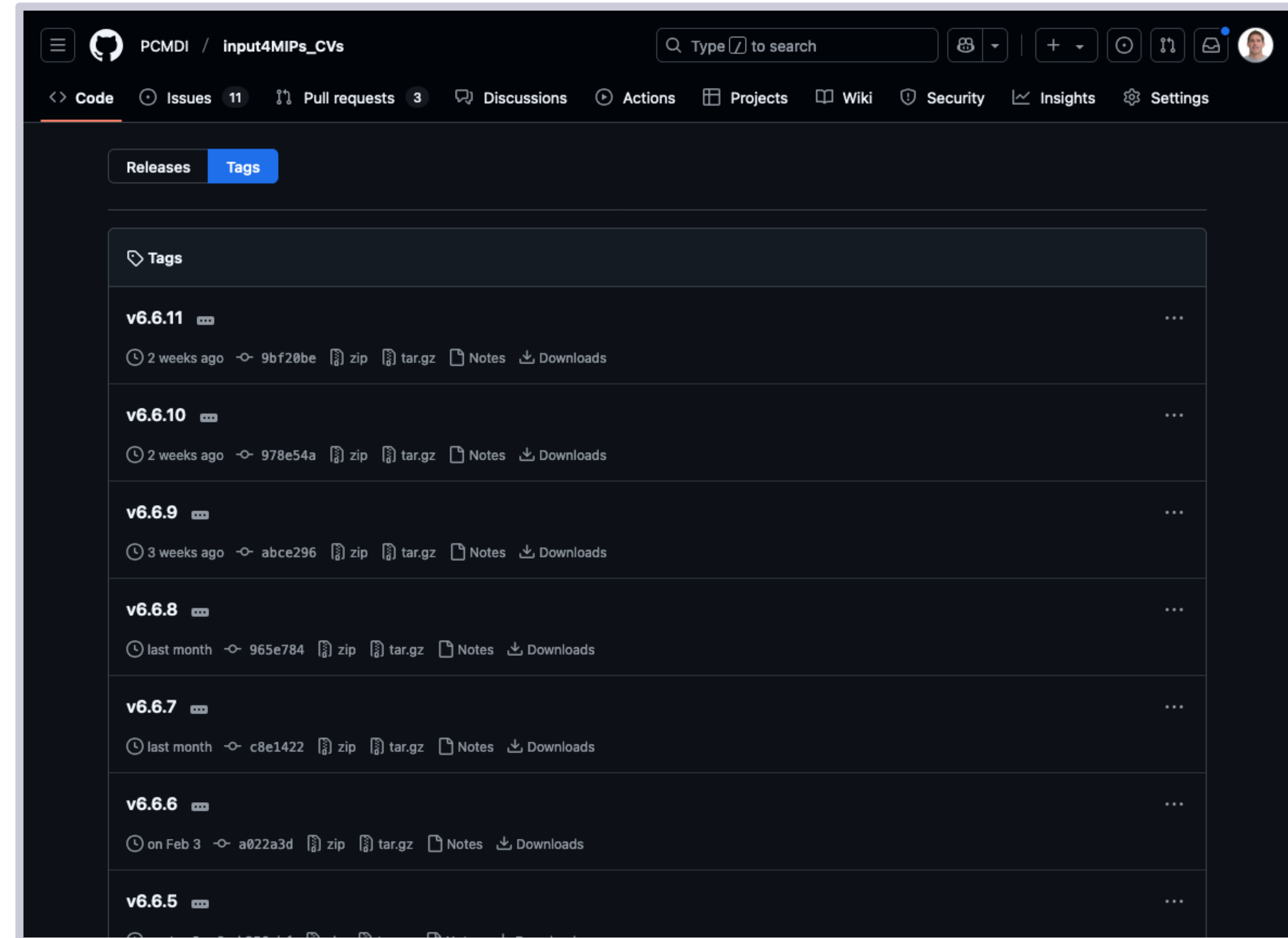
on Dec 19, 2024 fa9fee zip tar.gz Notes Downloads

[Previous](#) [Next](#)

input4MIPs data updates

https://github.com/PCMDI/input4MIPs_CVs/tags

- When all DECK data collection tagged
6.6.x -> 7.0.0
- All subsequent updates increment version
7.0.0 -> 7.0.1
- If DECK dataset issue found that impact
simulations underway, new data will be
published, old retracted and version number
incremented
7.0.1 -> 7.1.0
- All new data published will increment versions
7.1.0 -> 7.1.1, 7.1.2, 7.1.3, etc



input4MIPs data updates

<https://aims2.llnl.gov/search/input4MIPs>

- We also expect forcing data from Community MIPs as occurred in CMIP6
 - AerChemMIP, C4MIP, CMIP, DAMIP, DCP, FAFMIP, GeoMIP, HighResMIP, ISMIP6, LS3MIP, LUMIP, OMIP, PAMIP, RFMIP, ScenarioMIP
- Started receiving the first round for testing
 - CMIP6Plus - AerChemMIP2
- Expect ScenarioMIP - CMIP6Plus testing data April 2025
- Once testing completes, data will be published into mip_era = CMIP7

Filter with Facets Expand All

MIP Era

Target MIP List

Dataset Status

Data Node

> Identifiers

> Classifications

Additional Properties

Version Type

Result Type

Version Date Range →

> Filename

Filter with Facets Expand All

General

MIP Era

Target MIP List

Dataset Status

Data Node

> Identifiers

> Classifications

Additional Properties

Version Type

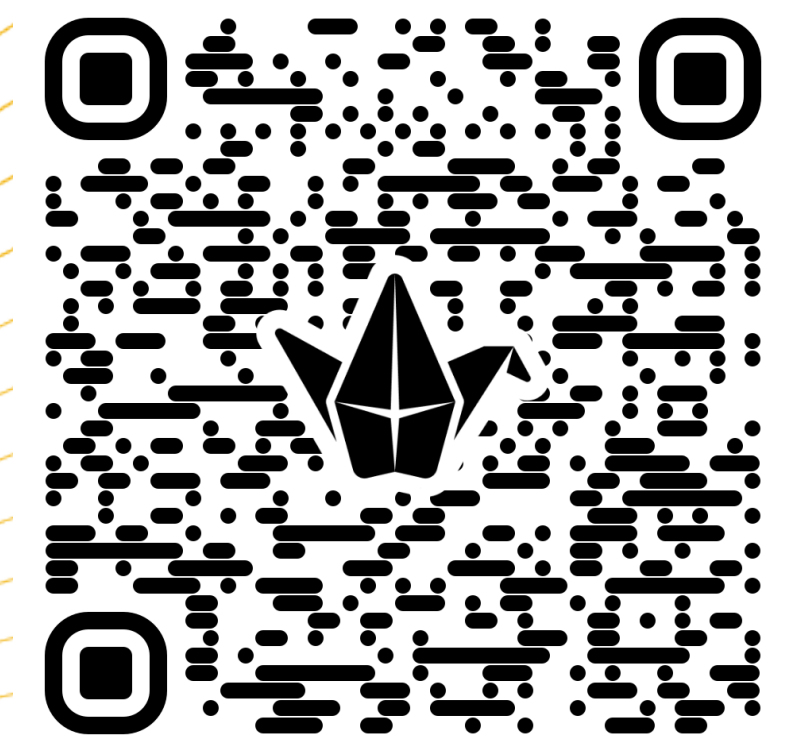
Result Type

Version Date Range →

> Filename

What has changed from CMIP6?

Padlet QR code



What changed from CMIP6?

Dataset	Changes through the overlapping historical period (year to year % change)
Anthropogenic short-lived climate forcer (SLCF) and CO₂ emissions	Updated upstream data, methodology (https://github.com/JGCRI/CEDS/wiki/Release-Notes) (2021, provisional data to 2023)
Open biomass burning emissions	No differences 1850–2014 (https://www.globalfiredata.org/related.html#bb4cmip) (2023)
Land use	Updated upstream data, methodology? (2024)
Greenhouse gas concentrations	Small changes (2022)
Stratospheric volcanic SO₂ emissions and aerosol optical properties	New data provider, new methodology (more information here) (2023)
Ozone concentrations	Updated methodology and upstream data (expected 2021)
Nitrogen deposition	
Solar	Updated methodology and upstream data (https://gmd.copernicus.org/articles/17/1217/2024/) (2023)
AMIP sea-surface temperature and sea-ice boundary forcing	no differences 1870–2016 (2022)
Aerosol optical properties (SPv2)	Updated upstream data (https://zenodo.org/records/14512962) (2020, update expected)

What changed from CMIP6?

Stratospheric Volcanic Forcing

Period	Global mean SAOD 550nm		Global mean ERF (W/m ²)	
	CMIP7 v2.0.0	CMIP6	CMIP7 v2.0.0	CMIP6
1850-2014	0.0141	0.0107	-0.23	-0.16
1850-2021	0.0138	NA	-0.23	NA
1750-2023	0.0207	NA		NA

Table 4: Global mean SAOD at 550 nm and global mean effective radiative forcing (ERF), averaged over three different time periods. Numbers in bold are the global mean SAOD for the recommended piControl climatology for CMIP6 and CMIP7. Note the ~30% increase in CMIP7.

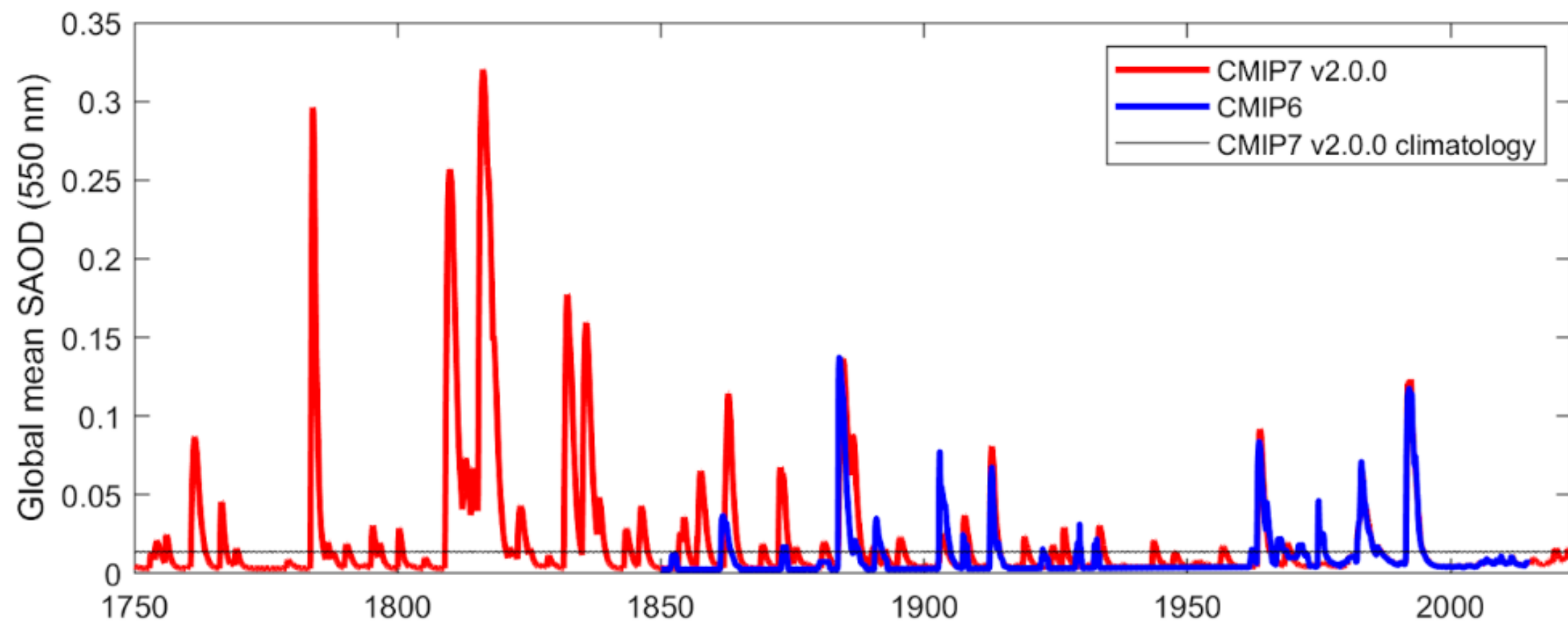


Figure 3: Global mean SAOD at 550nm.

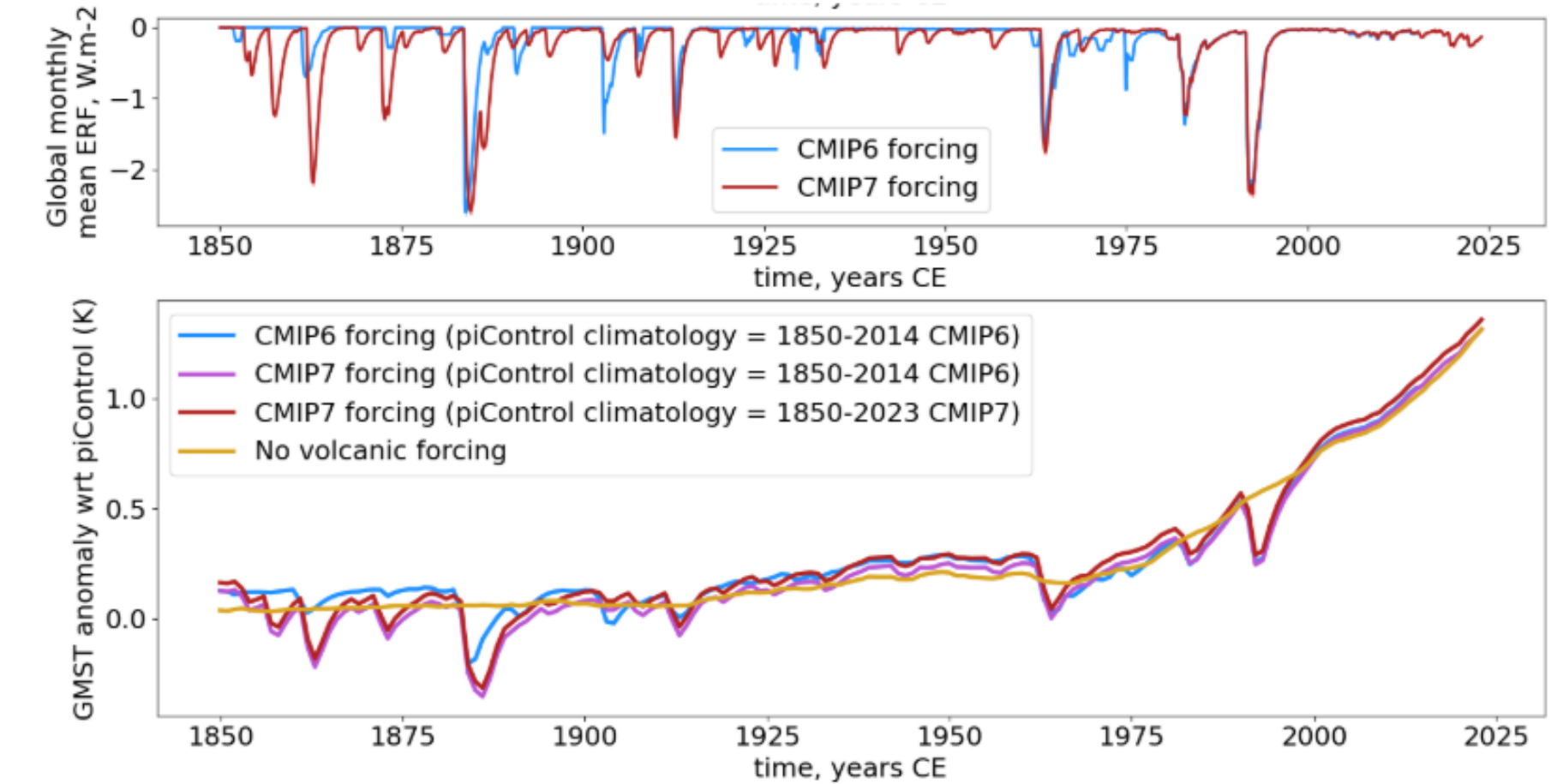


Figure 5: Global mean surface temperature (GMST) anomaly wrt piControl, for CMIP6 and CMIP7 v2.0.0. Two simulation ensembles were run with the CMIP7 stratospheric aerosol forcing: i) with the CMIP7 climatology implemented in the piControl run (showing how our new dataset will affect temperature anomalies); ii) with the CMIP6 climatology implemented in the piControl run (showing our new dataset will affect temperature, in absolute terms). Simulation ensembles were run with the FaIR model (version 2.1.4, Smith et al., 2018, Leach et al., 2021), sampling 1000 different model parameter sets (calibration v1.4.2, Smith et al. 2024). Volcanic forcing is estimated based on the gmSAOD time series (exponential scaling from Marshall et al., 2020), for other forcings, we use the estimated emissions, concentrations and forcing from RCMIP (Nicholls et al., 2020). Ensemble mean values are shown.

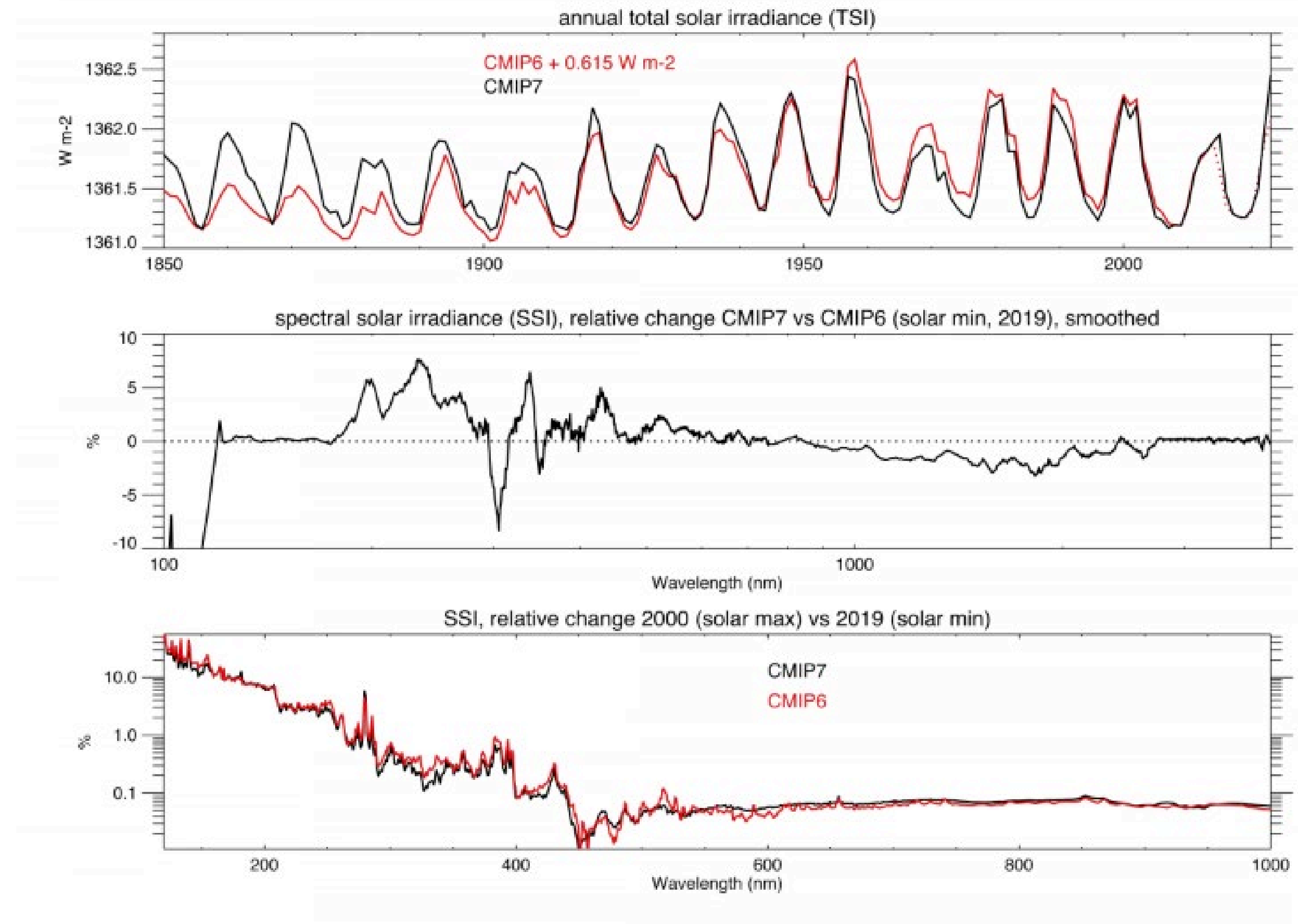
Period	CMIP7 v2.0.0 (CMIP7 climatology in <u>piControl</u>)	CMIP7 v2.0.0 (CMIP6 climatology in <u>piControl</u>)	CMIP6
1850-1899	0.02	-0.02	0.08
1900-1949	0.17	0.12	0.16
1950-1999	0.34	0.29	0.30
2000-2014	0.92	0.88	0.88

Table 5: Global mean surface temperature anomaly wrt piControl for 1850-1899, 1900-1949, 1950-1999 and 2000-2014, for CMIP6 and CMIP7 v2.0.0, for the simulations shown in figure 5. Comparing the 2nd and 4th column, note the relatively cooler 1850-1900 period in CMIP7, and the warmer 1950-present day period.

What changed from CMIP6?

Solar

- Increase in total annual solar irradiance of 0.615 W / m^2 , plus other variations
- Driven by changes in data sources and analysis techniques
- Depending on implementation, may require particular attention

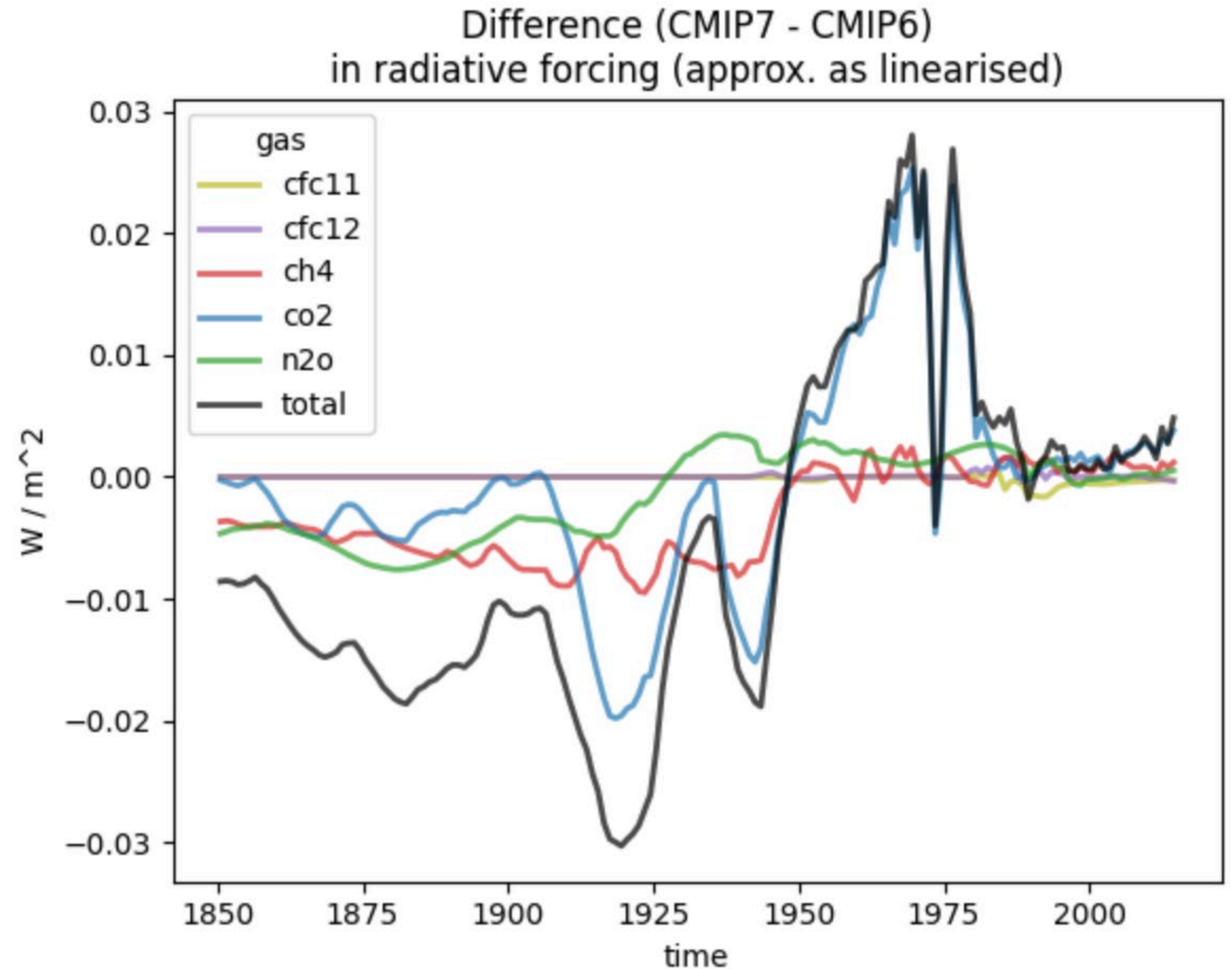


<https://www.solarisheppa.kit.edu/75.php>

What changed from CMIP6?

Greenhouse gas concentrations

- Change in ERF terms of 0.03 W / m^2 or less
- Lower forcing in pre-industrial, higher forcing in 1950 to 1980
- Driven by changes in CO_2 from
 - updated ice cores (also updated for CH_4 and N_2O)
 - better use of the observational record from 1959



Additional information on specific forcings

- **Biomass burning emissions:**

- Additional smoothed CMIP7 BB emissions data to address interannual variability discontinuity pre- to satellite period (see [#138](#)) will be provided as an option for modellers (expected end of March 2025)

- **Volcanic SO₂ emissions and aerosol optical properties:**

- Additional concentration variable requests (see [#175](#))

Protocols:

- Background baseline averaging period (piControl) same as CMIP7 historical, i.e., 1850–2021
- Addressing small eruption discontinuity from pre- to satellite era, include volcanic SO₂ emissions from Greenland ice cores and geologic records - magnitude for pre- and satellite period small volcanoes is similar

- **Land use change:**

- Some data spikes since 1950 related to upstream data changes addressed using temporal smoothing (see [#141](#))

- **Population Density:**

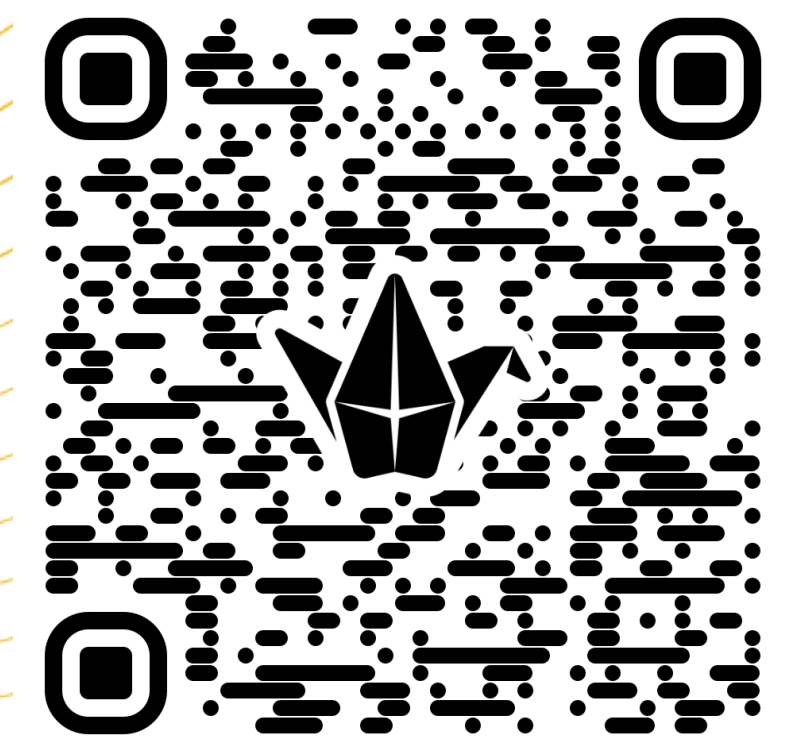
- [Options](#) for historical and scenarios are being explored, more after a meeting (see [#188](#))

- **Ozone Concentration:**

- High frequency dataset to be provided as an option to better capture natural variability

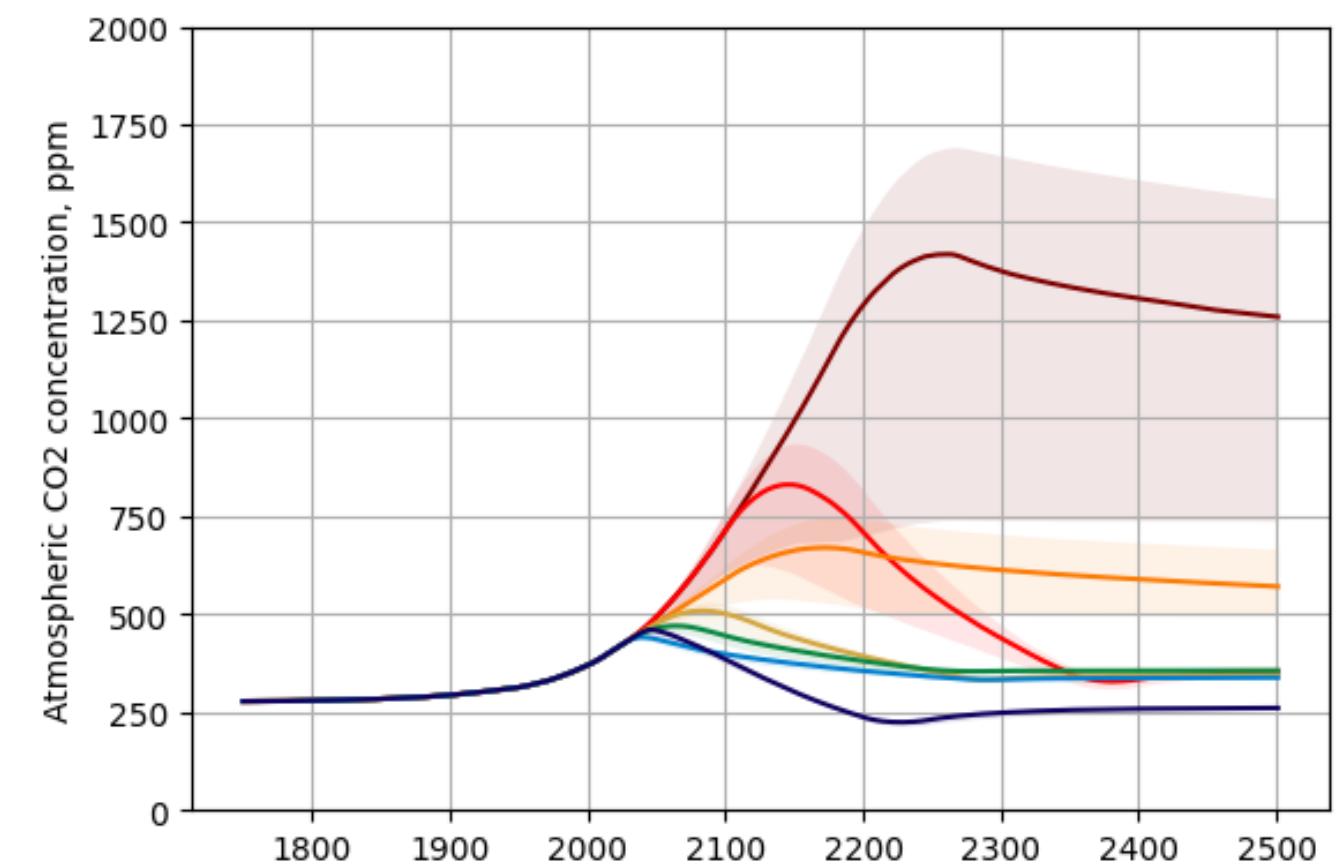
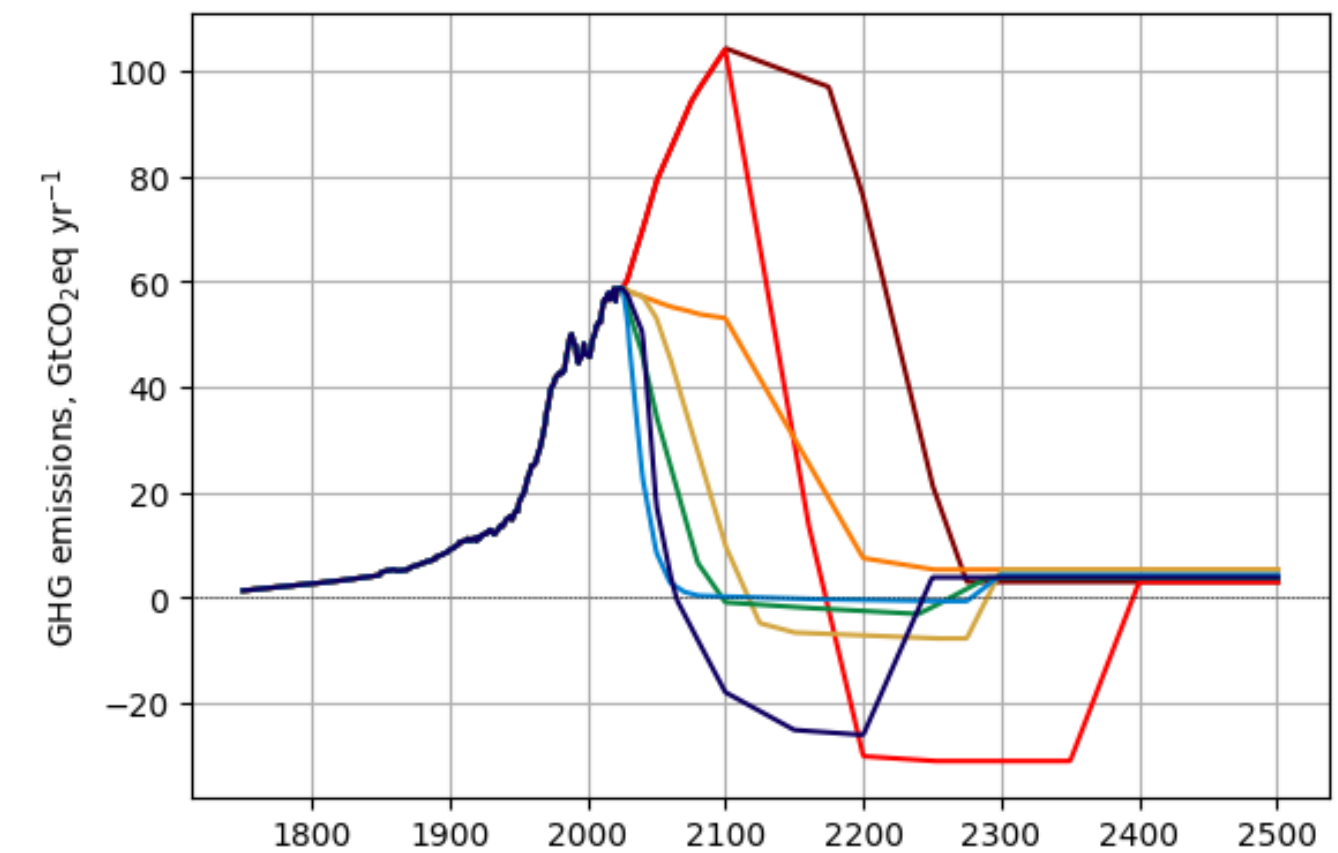
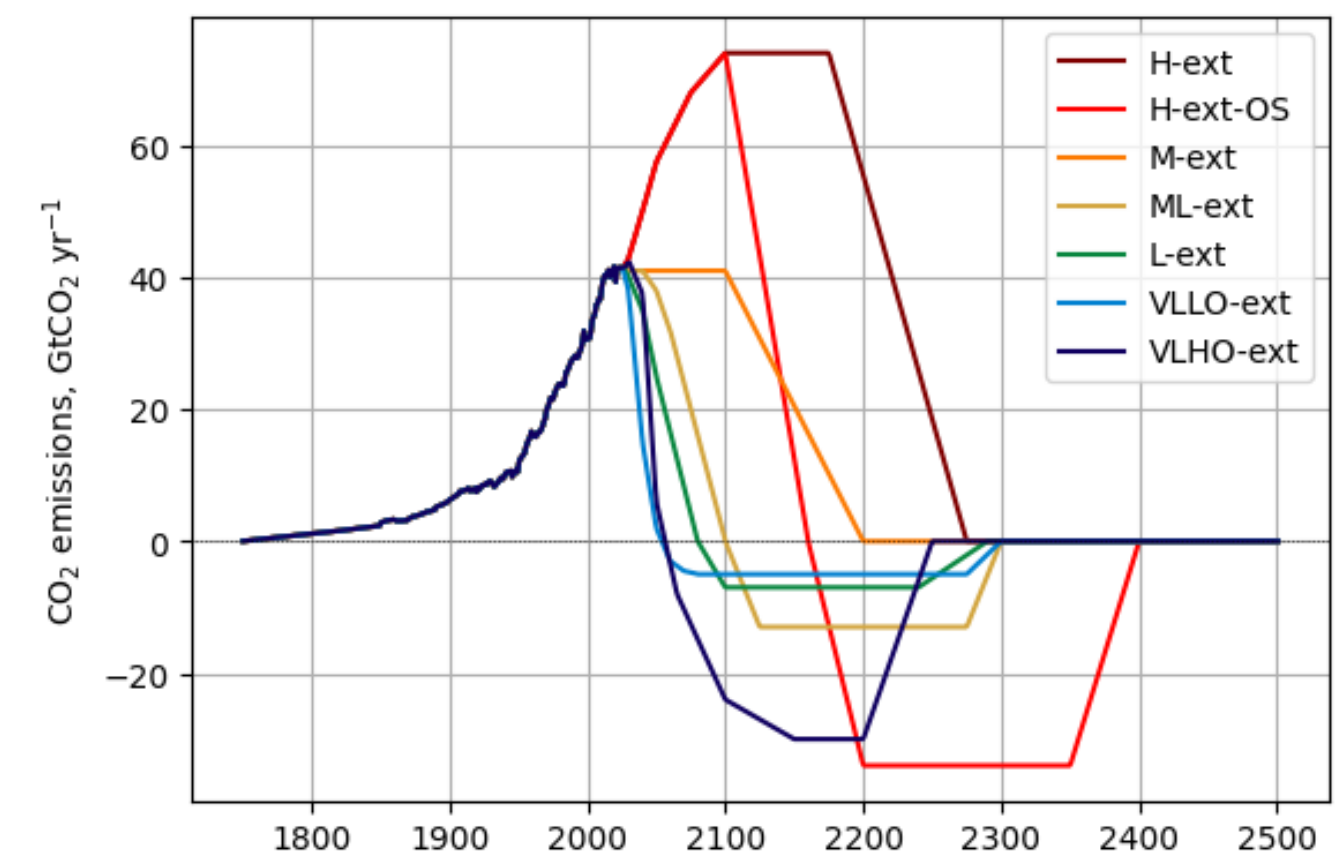
What about scenarios?

Padlet QR code



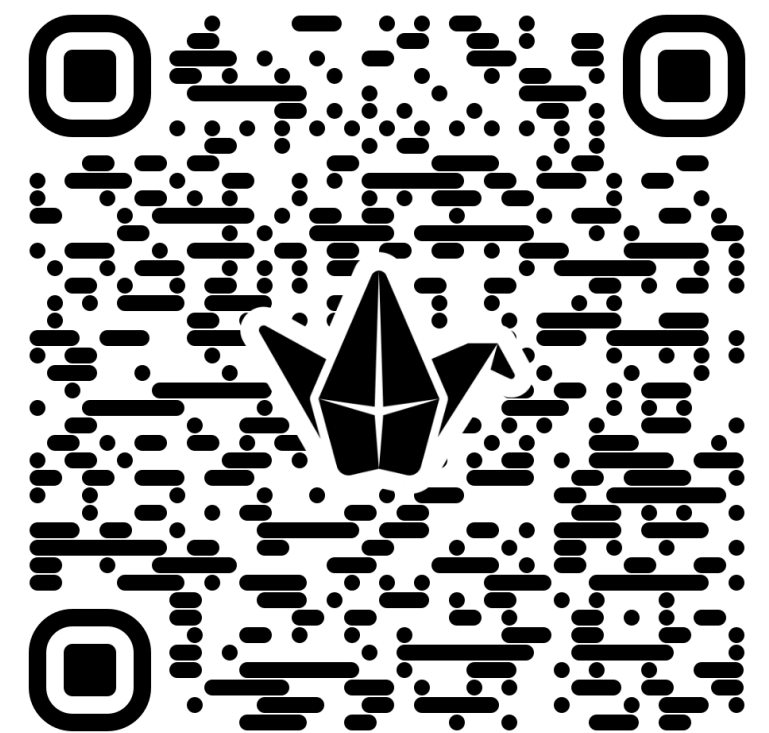
CMIP7 ScenarioMIP data

- Aiming to release datasets for testing in April
 - Looking for volunteers to provide feedback, please reach out
- Expect final scenarios to be selected in May, with final scenario data available on ESGF in July
 - Selection of scenarios is an ongoing (separate process, proposal from the paper shown on the right)
- Final ozone and other dependent data sets will follow (timeline TBC)
- Like historical/piControl, data will be released via input4MIPs
 - Initially as testing datasets under the CMIP6Plus MIP era, then under CMIP7 MIP era
 - Consistent with CMIP6, each scenario will be released under its own source ID (e.g. CR-CMIP-vllo-IAM-1-0-0, CR-CMIP-low-IAM-1-0-0, CR-CMIP-medium-low-IAM-1-0-0). Details of naming scheme and ID TBD
 - ❖ We considered updating the naming scheme to make use easier but shelved the idea to avoid problematic downstream consequences (https://github.com/PCMDI/input4MIPs_CVs/discussions/64)



Communication - how to keep up-to-date

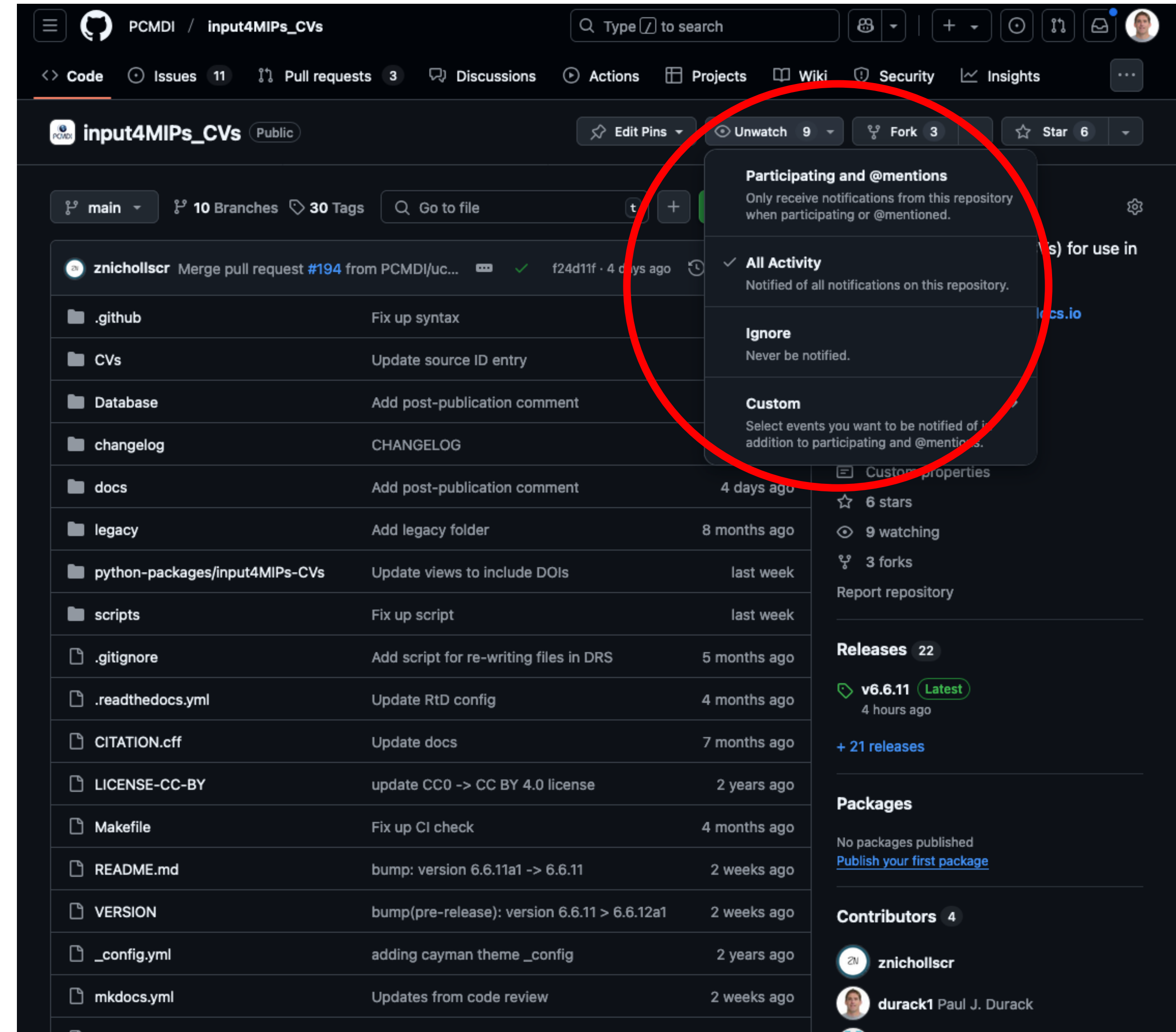
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input4MIPs communications

https://github.com/PCMDI/input4MIPs_CVs

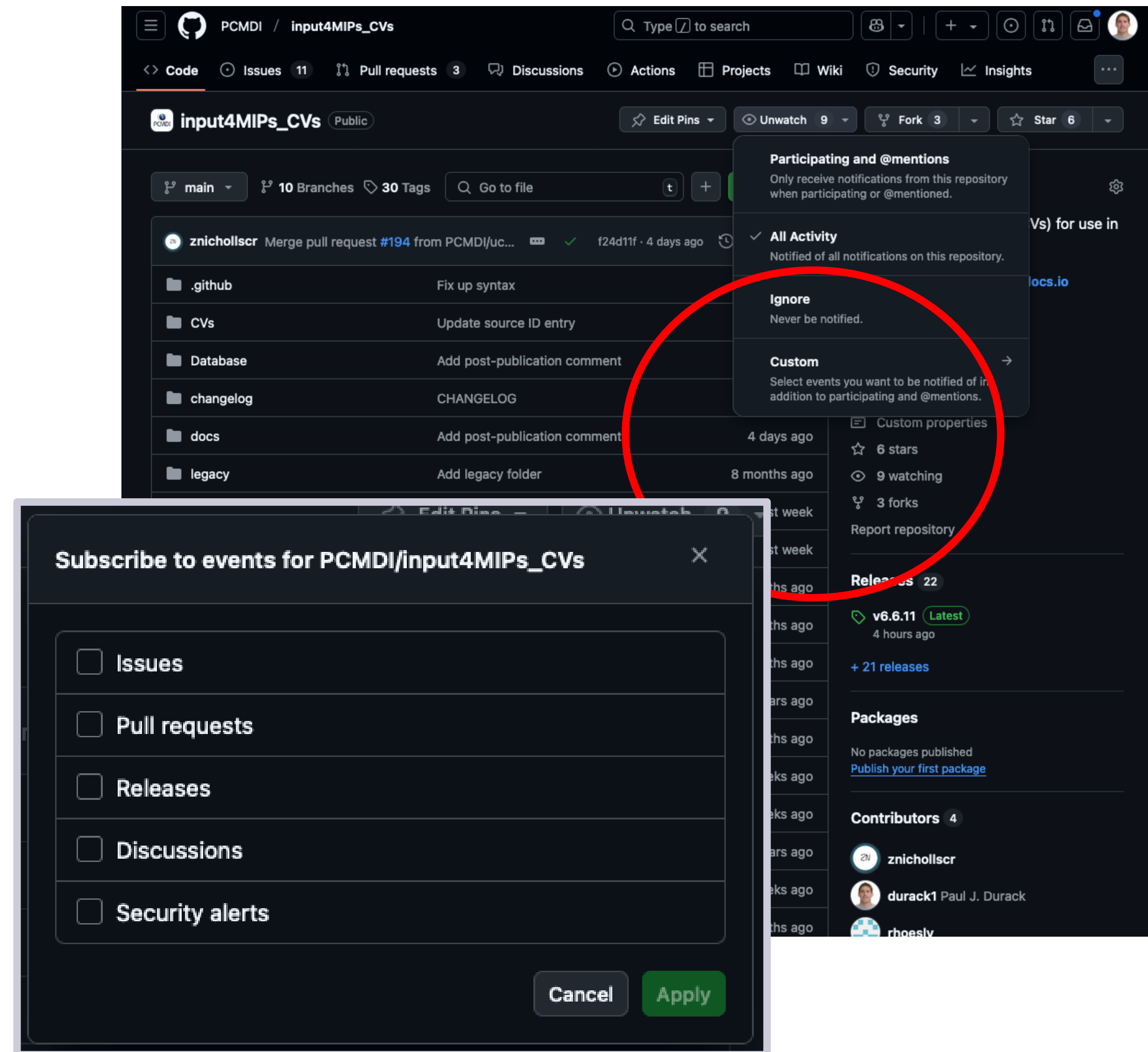
- All update activity is being captured in GitHub repository actions
- All new datasets noted by a release
- Release information most often contains links to discussions/issues associated with the data generation
- Please engage/create discussions as you start to interrogate data
- Questions?



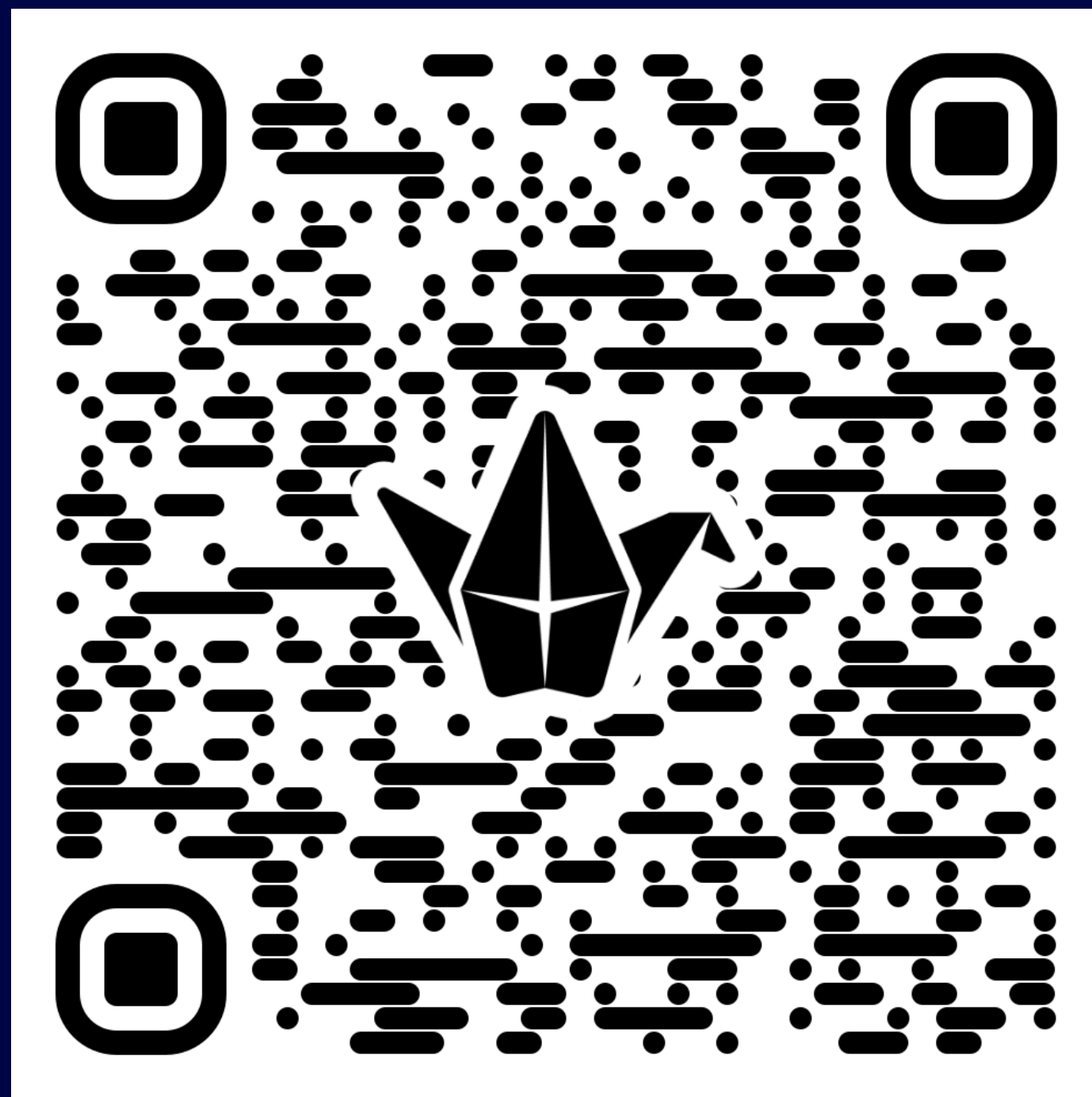
input4MIPs communications

https://github.com/PCMDI/input4MIPs_CVs

- All update activity is being captured in GitHub repository actions
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- Questions?



Thank You



Padlet QR code

Questions?

Padlet open until 25th March 2025:

<https://bit.ly/forcings-drop-in-March-25>