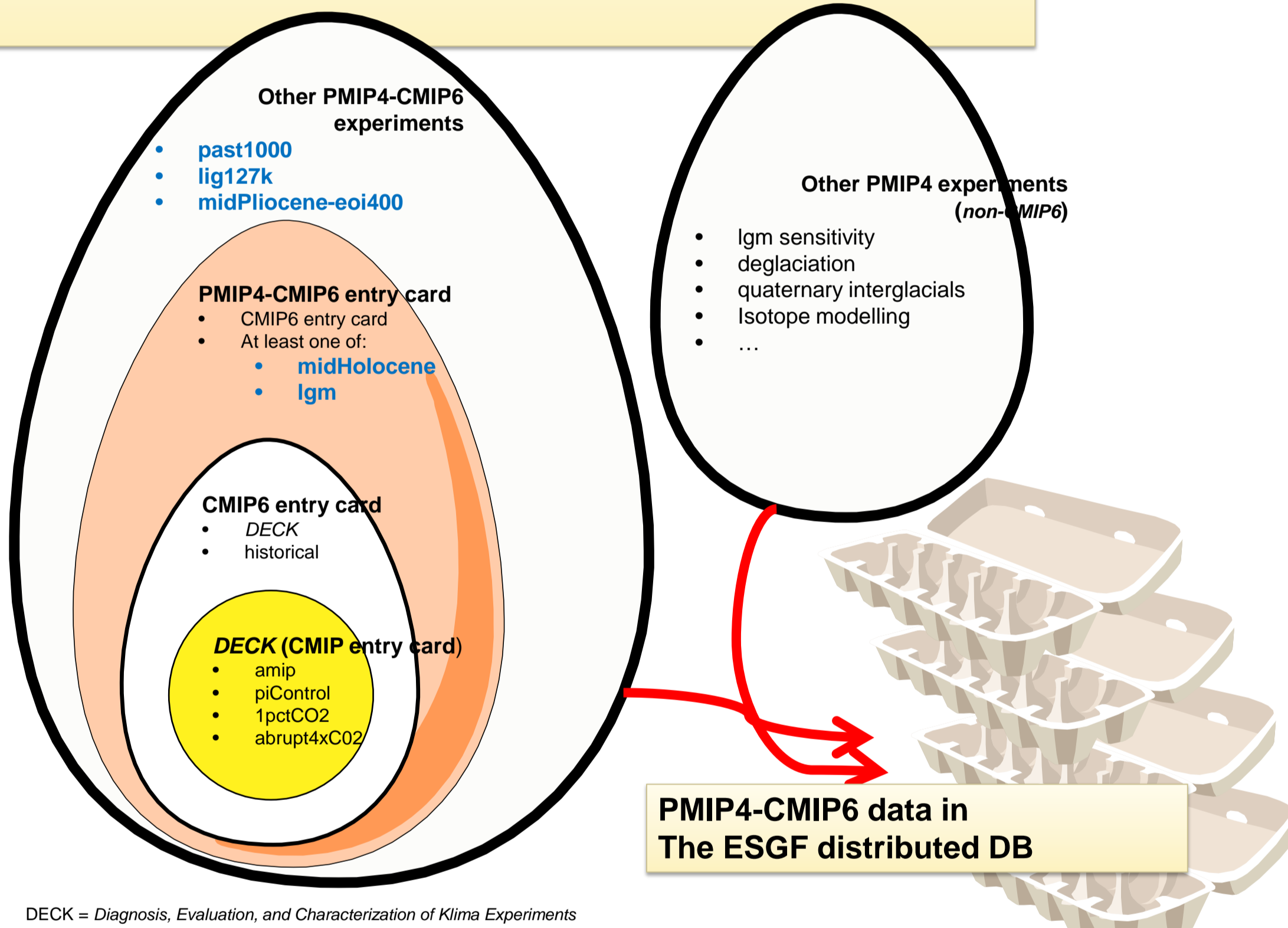


1. PMIP Database history

Phase	PMIP 1	PMIP 2	PMIP 3	PMIP 4
DB online	1996	2005	2011	2019
Size	1.7 Gb	482 Gb	distributed several Tb	distributed LOTS of Tb ...
Distribution	ftp server LSCE (+PCMDI)	DODS server LSCE	CMIP5 ESGF	CMIP6 ESGF
Number of groups/models	22	18	25	20
Number of countries	11	10	12	14
Data format & Convention	NetCDF AMIP/GDT	NetCDF CMIP+PMIP2/CF	NetCDF CMIP5/CF	NetCDF CMIP6/CF
Main experiments	Ok 21k	Same as PMIP 1	PMIP 2 + Last Millennium	PMIP3 + Last Interglacial + Mid Pliocene Warm Period + Last Deglaciation + DeepMIP + ...
Example IPSL atmos	lmcldm5 LMD 5.3 64x50 x L11	IPSL-CM4-V1-MR LMDZ 96x72 x L19	IPSL-CM5A-LR 96x95 x L39	IPSL-CM6A-LR 144x143 x L79
Example NCAR atmos	ccsm3 CCSM3 128x64 x L18	CCSM CCSM 3.0 128x64 x L17	CCSM4 288x192 x L26	CESM2 288x192 x L32

2. The PMIP4-CMIP6 experiments...

...contribute to the CMIP6 question:
 How does the Earth System respond to forcing?

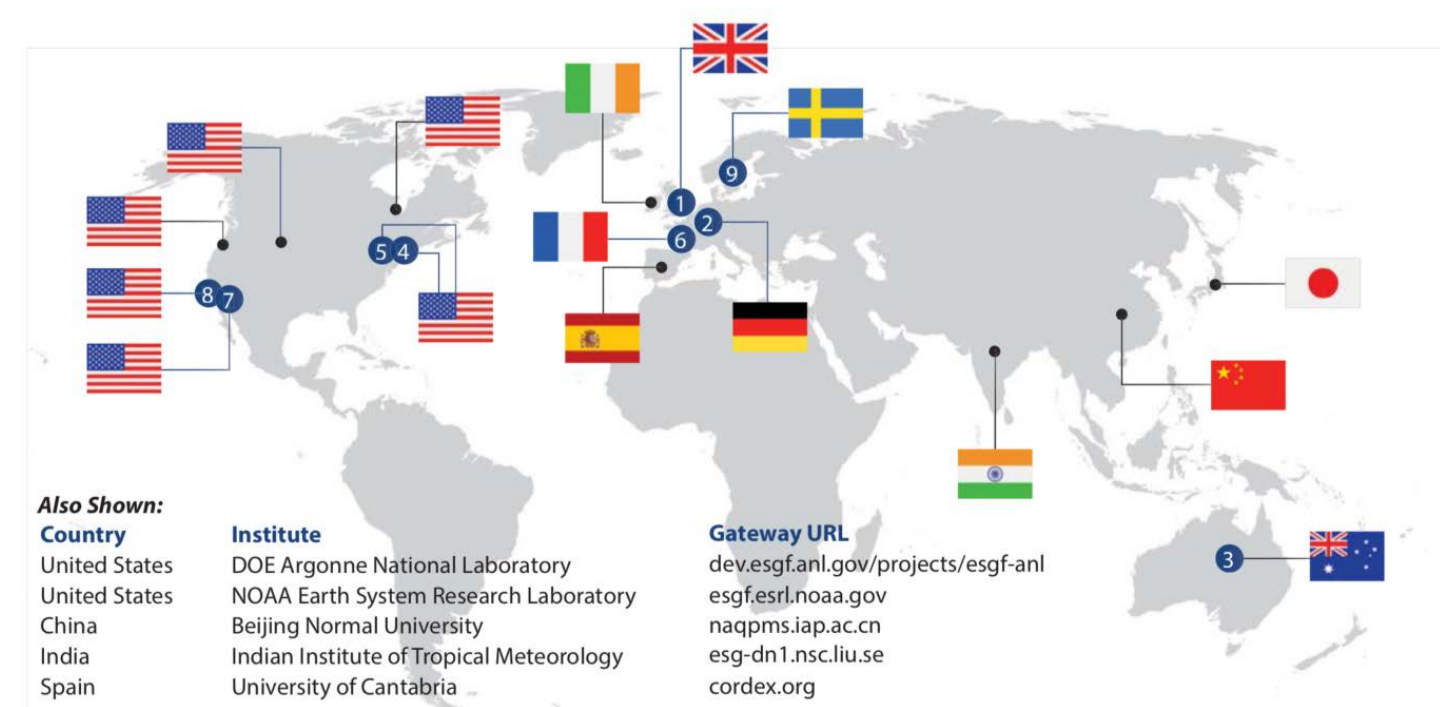


DECK = Diagnosis, Evaluation, and Characterization of Climate Experiments

3. Data files in the CMIP6 DB are

- Stored on the ESGF (Earth System Grid Federation) 21 Data Nodes
- Referenced on the ESGF Index Nodes
- Discoverable from the ESGF Gateways (or Search Nodes)
 - E.g. IPSL Gateway: <https://esgf-node.ipsl.upmc.fr/>
 - ESGF Dashboard (usage statistics, ...): <http://esgf-ui.cmc.cit.esgf-dashboards-01/>

Institution	Gateway URL	Version	Country	Project(s)	Contact
CEA	esgf-node.cea.fr	2.4.0	UK	CMIP5, CORDEX, ObsMIP, SPCCS, ESA, CCL, EUCLEIA, CLIPC	alan.wingett.cea.fr
DFZ	esgf-node.dlr.de	2.4.0	Germany	CMIP5, CORDEX, ObsMIP, IS-IPSL	berenguer@dlr.de
ANU/NCI	esgf-node.anu.edu.au	2.4.0	Australia	CMIP5	ben.vanmarle@anu.edu.au
NASA/GFDL	esgf-node.gfdl.noaa.gov	2.4.0	US	CMIP5, ncg02011, ObsMIPs	hans.vanlempelen@noaa.gov
NASA/GSFC	esgf-node.gsfc.nasa.gov	2.4.0	US	CMIP5, ObsMIPs, AwaMIPs, NEX-GOOS, NEX-DCR, CREATE-IP	daniel.duff@noaa.gov
IPSL	esgf-node.ipsl.upmc.fr	2.4.0	France	CMIP5, CORDEX, ObsMIPs	sebastien.derville@ipsl.jussieu.fr
NASA/JPL	esgf-node.jpl.nasa.gov	2.4.0	US	ObsMIPs, GASS-10TC, CMAc	luca.cinquini@jpl.nasa.gov
DOE/LNL	esgf-node.llnl.gov	2.4.0	US	CMIP5, CMIP3, InqMIPs, ACME	sasha@llnl.gov
UIU	esgf-node.uio.no	2.4.0	Sweden	CMIP5, CORDEX, SPCCS, CLIPC	pohgen@met.uio.no



Top 10 downloaded variables

Rank	Variable	Frequency
1	pr	Precipitation
2	tas	Near-Surface Air Temperature
3	tasmax	Daily Maximum Near-Surface Air Temperature
4	tasmin	Daily Minimum Near-Surface Air Temperature
5	ta	Air Temperature
6	ua	Eastward Wind
7	thetaeo	Sea Water Potential Temperature
8	hur	Relative Humidity
9	hus	Specific Humidity
10	va	Northward Wind

4. PMIP4 groups and experiments

Information as of October 24th 2020

Institute	Country	ok	LM	6k	21k	Last Interglacial	Mid Pliocene warm period	Other PMIP4 experiments	Atm	Ocn	Model id
institution_id		piControl	past1000 (1000 years)	midHolocene	lgm	lig127k	midPliocene-eo400		l_lon x j_lat x lev	l_lon x j_lat x lev	source_id
1	AWI	Germany	Done	Done	Done	Done	Done?	LIG DeepMIP	192x66 x L47	12689 x L46	AWI-ESM1-1-LR
2	CNRM-CERFACS	France	500	Done	Done	Done	Done		256 to 20px128 x L31	362x294 x L75	CNRM-CM6-1
3	CAS CAS-ESM	China	No End 2019	No End 2019	No End 2019	No End 2019	No End 2019		256x128 x L35	362x196 x L30	CAS-ESM2-0
4	CAS CAS-FGOALS	China	No end-2019	No end-2019	No end-2019	No end-2019	No end-2019		Cube96 x L32	360x218 x L30	FGOALS-G3-L
5	CSIR-WIRCS-CSIRO	South Africa							Cube192 x L35	Cube384 x L35	VRESM1-0
6	INM	Russia						DeepMIP	160x120 x L21	360x198 x L40	INM-CM4-8
7	IPSL	France	500	Done end-2019	550 2x200	No	550 200	Yes	144x143 x L79	362x332 x L75	IPSL-CM6A-LR
8	KIOST	Korea	Done	Done	No	Done	Done		96x66 x L39	182x149 x L31	IPSL-CM6A2
9	MROCC (University of Tokyo and JAMSTEC)	Japan	500	1000	100	100			Cube48 x L32	360x200 x L52	KIOST-ESM
10	MPI-M	Germany	Done November 2020	1x1000	200	?		Yes	192x66 x L47	256x220 x L40	MPI-ESM1-2-LR
11	MRI	Japan	Done	1x1000	200			historical from past1000	320x160 x L80	360x364 x L61	MRI-ESM2-0
12	NASA-GISS	USA	No	Done end-2019	550 2x200	No	550 200	PlioMIP2	128x64 x L30	144x111 x L23	MRI-CGCM2.3.2a
13	NCAR	USA	No End-2019	No End-2019	No End-2019	No End-2019	No End-2019	DeepMIP	144x66 x L32	360x384 x L70	GISS-E2-1-G
14	NCC (BCCRC)	Norway	Done	No	December 2021	No	December 2021	DeepMIP	Cube48 x L32	360x180 x L32	GISS-E2-2-G
15	NUST	China	No	No	No	No	No	DeepMIP	144x66 x L26	360x384 x L70	GISS-E3-G
16	EC-Earth Consortium (Stockholm University)	Sweden	Done	Done	Done	Done	Done	Yes	192x66 x L47	384x382 x L46	EC-Earth3
17	MOHC UK Academic Community	UK	No	Done	Running	Done	Done	Yes	192x144 x L85	360x330 x L75	EC-Earth3-VR
18	UTAS	Australia	No October 2019	No October 2019	No October 2019	No October 2019	No October 2019	Yes	192x144 x L85	360x330 x L75	EC-Earth3-Veg-LR
19	UofT	Canada	Done	Done	Done	Done	Done	Yes	192x144 x L85	360x330 x L75	EC-Earth3-Veg-LR
20	VU Amsterdam	The Netherlands	Done	Done	Done	Done	Done	Yes	192x144 x L85	360x330 x L75	EC-Earth3-Veg-LR

5. Finding available ESGF data

Example search on the IPSL node: <https://esgf-node.ipsl.upmc.fr/search/cmip6-ipsl/>

- Select facets in the categories on the left side
- Click on Search (after each facet selection)

6. Downloading ESGF data

- From the Search interface
 - a) Add Search Constraints to find the data you need
 - Download individual files by b) clicking on List Files, c) clicking on a download link
 - Or Download groups of files with a wget bash script (need an ESGF account, and a Linux, Mac or Win 10 + WSL computer to execute the script)
 - d) click on Add all displayed results to Data Cart
 - Add the results of more searches to the Data Cart, if you need more variables
 - Open the Data Cart, e) click on Select All Datasets and then on f) WGET Script
 - If the distributed data files are stored on 2 data nodes, you will get 2 scripts. Save and execute the wget script(s) to download the data files: `./wget-20201025184701.sh --s`
- Other ways to get ESGF data
 - Use `svnda` (<http://prodiguer.github.io/svnda/>) to create an ESGF mirror with the files you need
 - Maybe your institute has already created a mirror (e.g. IPSL `ciclad` server)!
 - Use Python and `esgf-pyclient`: <https://esgf-pyclient.readthedocs.io/en/latest/>
- More in the ESGF User's guide: https://esgf.github.io/esgf-user-support/user_guide.html

7. Models/MIPs/Experiments documentation

- <https://search.es-doc.org/>
- May not always be up-to-date
- Model comparator does not support CMIP6 yet

8. Dealing with errors

- If you find errors: report them to the model contacts
- If you want to know if there are some reported errors
 - Check the errata: <https://errata.es-doc.org/>

More Links!

- PMIP4: <https://pmip4.lsce.ipsl.fr>
- ESGF: <https://esgf.llnl.gov>
- CMIP6 Participation Guidance for Modelers: <https://pcmdi.llnl.gov/CMIP6/Guide/modelers.html>
- CMIP6 CV: https://github.com/WCRP-CMIP/CMIP6_CVs
- CMIP6 Data Request: <https://earthsystemcog.org/projects/wip/CMIP6DataRequest>
- es-doc: <https://es-doc.org>
- es-doc model description: <https://es-doc.org/cmip6-models/>
- QC: <https://readthedocs.org/projects/ga-dkrz>
- PID: https://esgf-data.dkrz.de/projects/esgf-dkrz/datacart_pid

