

Standards and conventions in support of climate modelling

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Thank you to Bryan Lawrence, David Hassell, Karl Taylor and many others

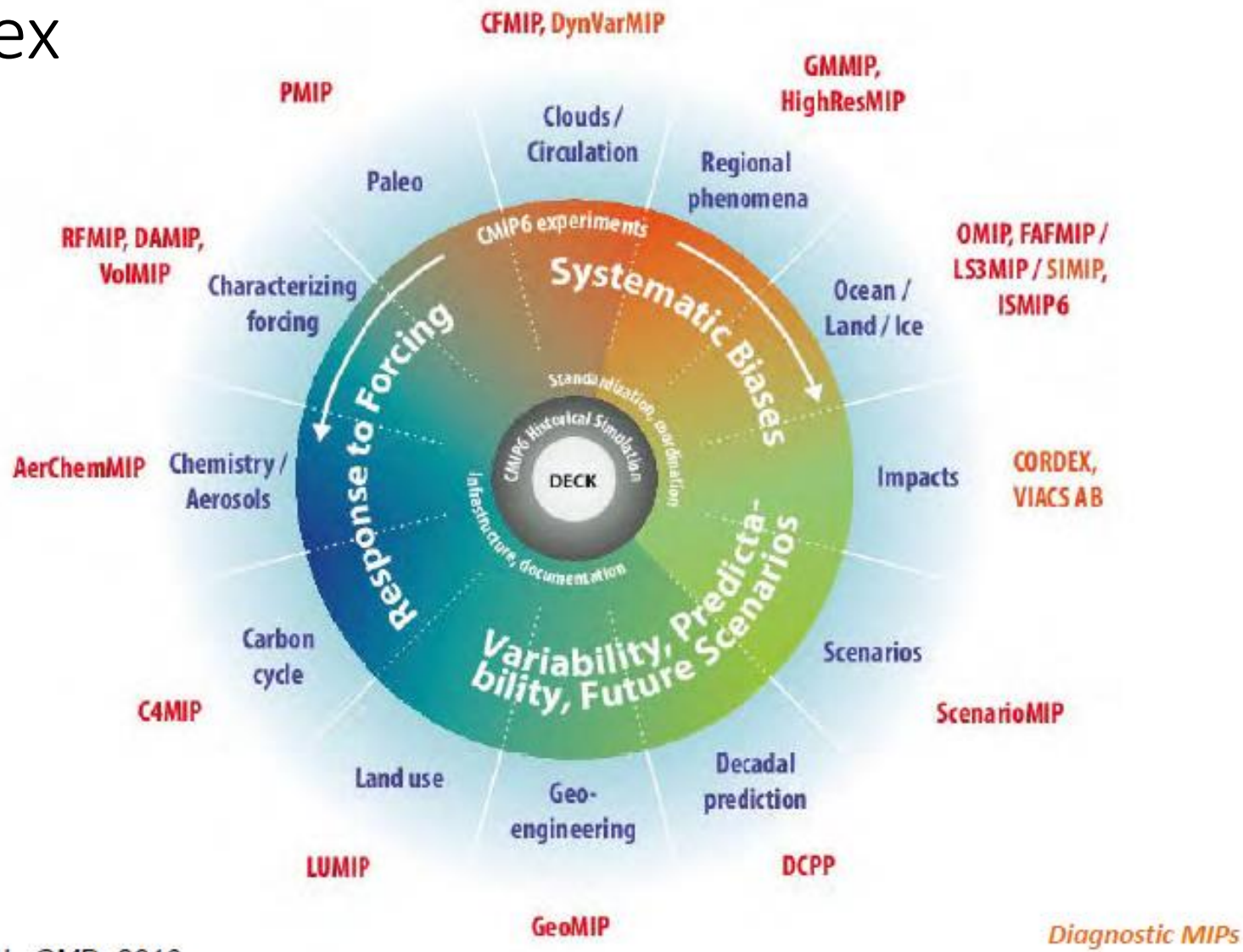


Context

- Intercomparison project (CMIP) as a key driver of conventions and standards in the climate modelling community
- Emergence of conventions: challenges and culture shifts
- Tension between curiosity driven and operations

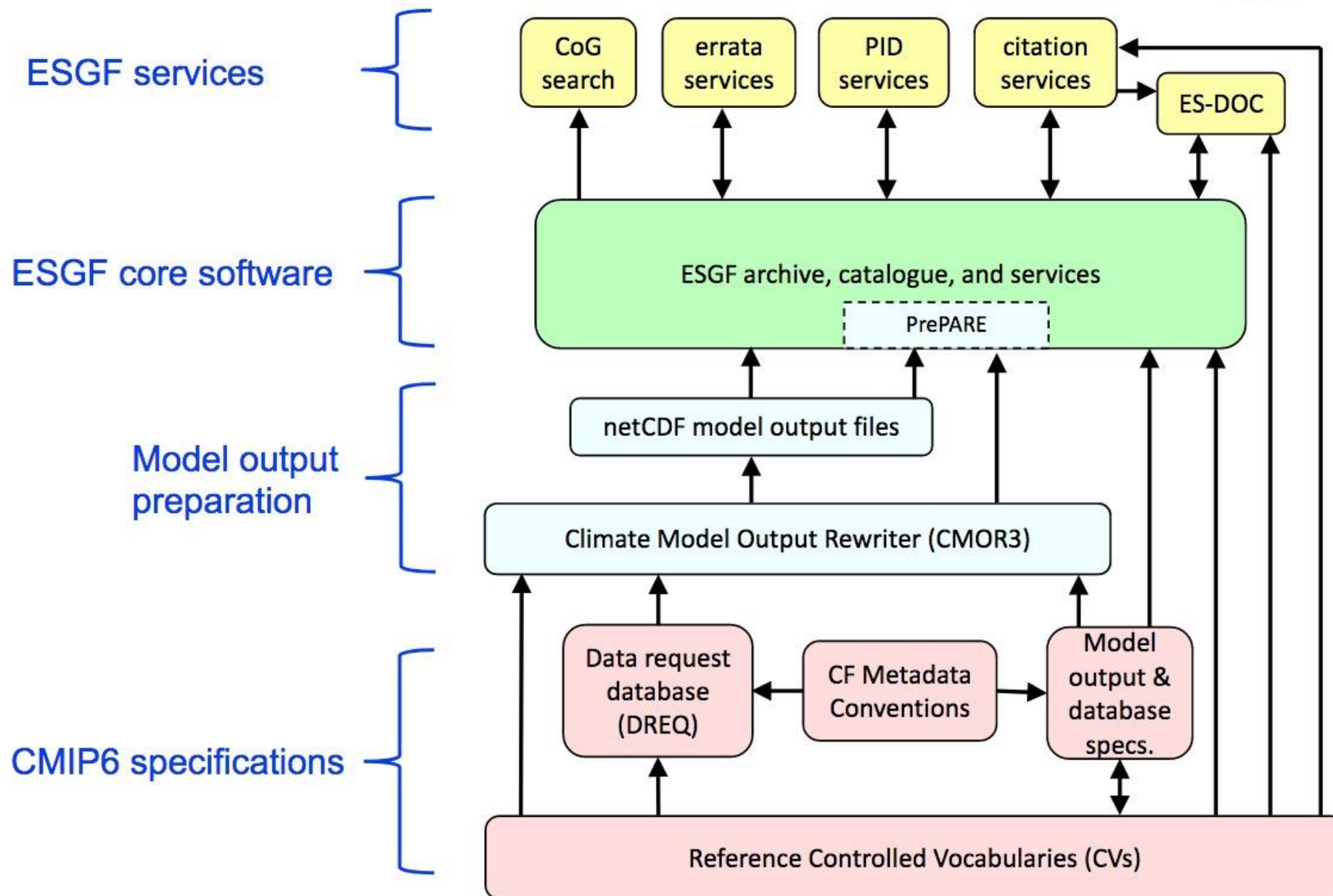
21 CMIP6-Endorsed MIPs

CMIP and Cordex

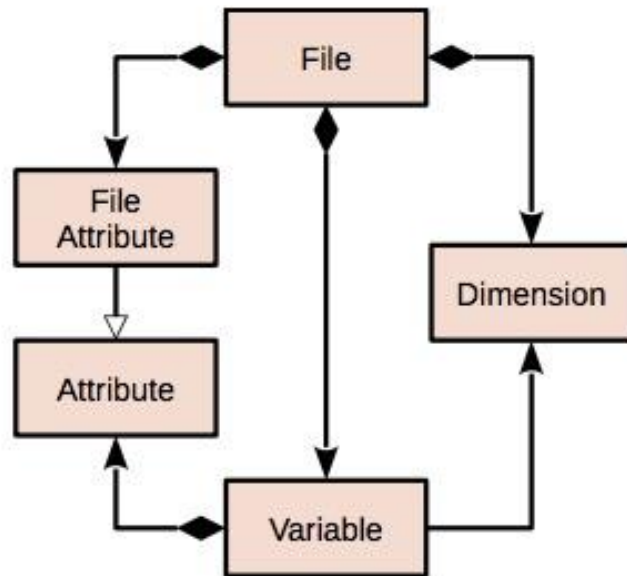


Eyring et al., GMD, 2016

ESGF

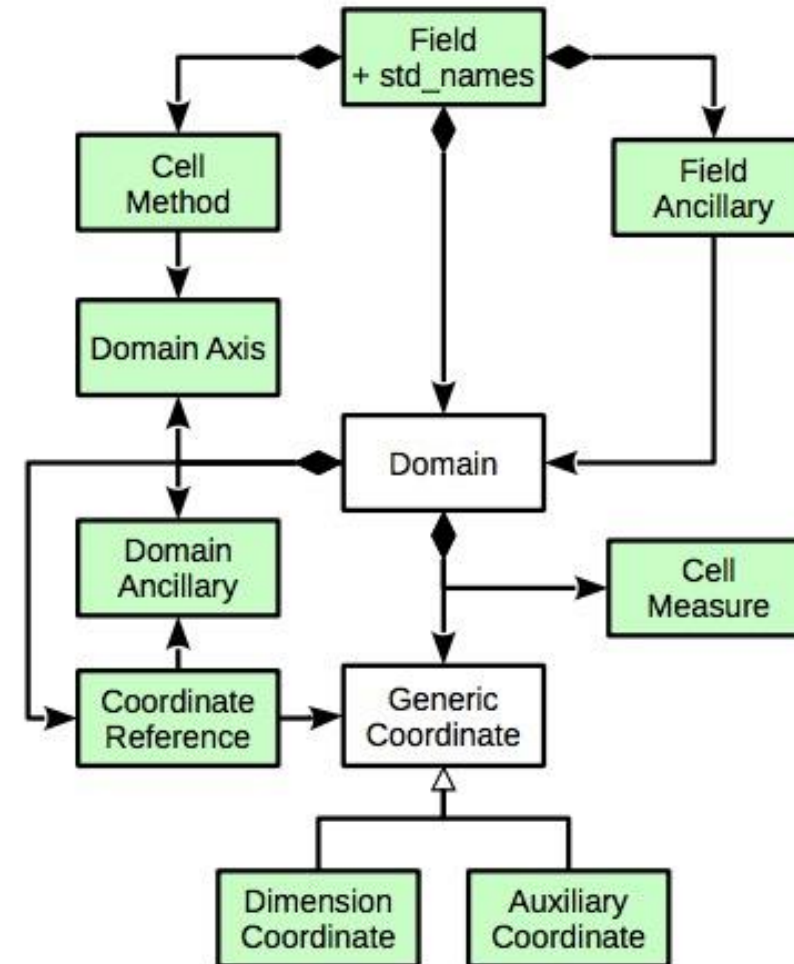


Working on the concepts of conventions



To make sense of them we need to interpret the attributes, and relationships between the variables, hence the Climate Forecast conventions!

CF Conventions



Hassel et al, 2017, GMD!


Model and experiment documentation

1. **CMIP6.CFMIP.IPSL.IPSL-CM6A-LR.abrupt-0p5xCO2.r1i1p1f1.CFmon.albiscpp.gr**
Data Node: veeg.ipsl.upmc.fr
Version: 20180605
Total Number of Files (for all variables): 1
Full Dataset Services: [\[Show Metadata \]](#) [\[List Files \]](#) [\[THREDDS Catalog \]](#) [\[WGET Script \]](#) [\[LAS \]](#) [\[Show Citation \]](#) [\[PID \]](#) [\[Globus Download \]](#)
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1. **CMIP6.CFMIP.IPSL.IPSL-CM6A-LR.abrupt-0p5xCO2.r1i1p1f1.CFmon.albiscpp.gr**
Data Node: veeg.ipsl.upmc.fr
Version: 20180605
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2. **CMIP6.CFMIP.IPSL.IPSL-CM6A-LR.abrupt-0p5xCO2.r1i1p1f1.CFmon.chcalpeo.gr**
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3. **CMIP6.CFMIP.IPSL.IPSL-CM6A-LR.abrupt-0p5xCO2.r1i1p1f1.CFmon.flucs.gr**
Data Node: veeg.ipsl.upmc.fr
Version: 20180605
Total Number of Files (for all variables): 1
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4. **CMIP6.CFMIP.IPSL.IPSL-CM6A-LR.abrupt-0p5xCO2.r1i1p1f1.3hr.rds.gr**
Data Node: veeg.ipsl.upmc.fr
Version: 20180605



CMIP6 Further Information v0.5.1.0

[Support](#)[Help](#)

Further Info URL: <https://furtherinfo.es-doc.org/cmip6.ipsl.ipsl-cm6a-lr.dcppa-hindcast-niff.s2000.r1>

ES-DOC Documentation

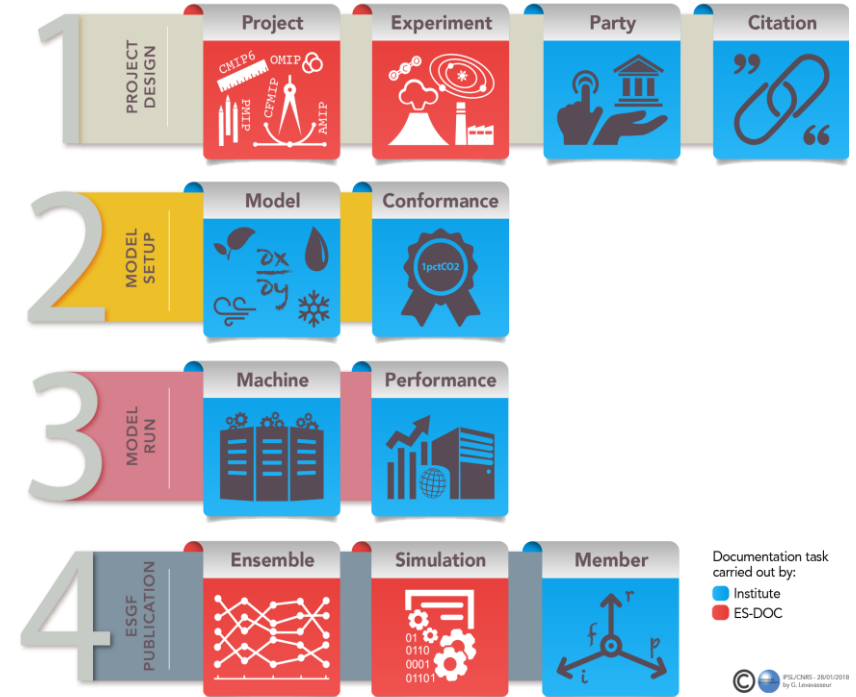
MIP Era	CMIP6
Institution	IPSL
Consortia	IPSL
Model	IPSL-CM6A-LR
Experiment	dcppA-hindcast-niff
Ensemble Description	N/A
Machine Performance	N/A

Dataset Documentation

Dataset ESGF Search	N/A
Dataset Errata	N/A
Dataset Citation(s)	https://cera-www.dkrz.de/WDCC/meta/CMIP6/CMIP6.DCPP.IPSL.IPSL-CM6A-LR.dcppA-hindcast-niff

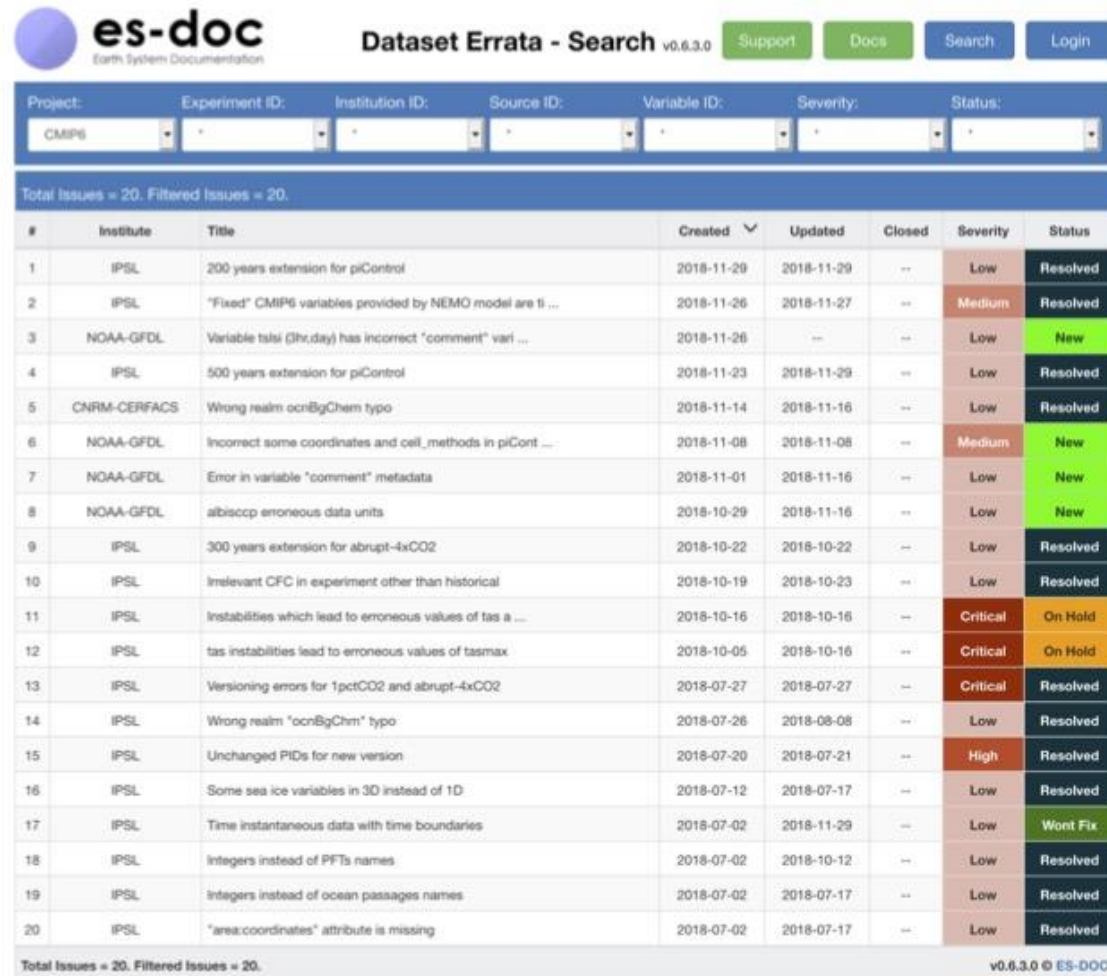
Other Documentation

WCRP CMIP6 Homepage	https://www.wcrp-climate.org/wgcm-cmip/wgcm-cmip6
ES-DOC CMIP6 Homepage	https://es-doc.org/cmip6



CMIP6 data errata is provided by ES-DOC

- Entry page <https://search.es-doc.org/>
- Any simulation/data problems must be reported using the ES-DOC errata service
- This will trigger a response (and resolution) by the contributing modelling group



The screenshot shows the ES-DOC Dataset Errata Search interface. The header includes the ES-DOC logo, the title "Dataset Errata - Search v0.6.3.0", and buttons for "Support", "Docs", "Search", and "Login". Below the header is a search filter bar with dropdown menus for Project (CMIP6), Experiment ID, Institution ID, Source ID, Variable ID, Severity, and Status. The main content area displays a table of 20 errata items, with a total of 20 issues and 20 filtered issues. The table columns are #, Institute, Title, Created, Updated, Closed, Severity, and Status. The status column uses color coding: Resolved (dark blue), New (green), On Hold (orange), and Won't Fix (light green).

#	Institute	Title	Created	Updated	Closed	Severity	Status
1	IPSL	200 years extension for piControl	2018-11-29	2018-11-29	--	Low	Resolved
2	IPSL	"Fixed" CMIP6 variables provided by NEMO model are ti ...	2018-11-26	2018-11-27	--	Medium	Resolved
3	NOAA-GFDL	Variable tsai (Jhr.day) has incorrect "comment" vari ...	2018-11-26	--	--	Low	New
4	IPSL	500 years extension for piControl	2018-11-23	2018-11-29	--	Low	Resolved
5	CNRM-CERFACS	Wrong realm 'ocnBgChem' typo	2018-11-14	2018-11-16	--	Low	Resolved
6	NOAA-GFDL	Incorrect some coordinates and cell_methods in piCont ...	2018-11-08	2018-11-08	--	Medium	New
7	NOAA-GFDL	Error in variable "comment" metadata	2018-11-01	2018-11-16	--	Low	New
8	NOAA-GFDL	albiscpp erroneous data units	2018-10-29	2018-11-16	--	Low	New
9	IPSL	300 years extension for abrupt-4xCO2	2018-10-22	2018-10-22	--	Low	Resolved
10	IPSL	Irrelevant CFC in experiment other than historical	2018-10-19	2018-10-23	--	Low	Resolved
11	IPSL	Instabilities which lead to erroneous values of tas a ...	2018-10-16	2018-10-16	--	Critical	On Hold
12	IPSL	tas instabilities lead to erroneous values of tasmax	2018-10-05	2018-10-16	--	Critical	On Hold
13	IPSL	Versioning errors for 1pctCO2 and abrupt-4xCO2	2018-07-27	2018-07-27	--	Critical	Resolved
14	IPSL	Wrong realm "ocnBgChm" typo	2018-07-26	2018-08-08	--	Low	Resolved
15	IPSL	Unchanged PIDs for new version	2018-07-20	2018-07-21	--	High	Resolved
16	IPSL	Some sea ice variables in 3D instead of 1D	2018-07-12	2018-07-17	--	Low	Resolved
17	IPSL	Time instantaneous data with time boundaries	2018-07-02	2018-11-29	--	Low	Won't Fix
18	IPSL	Integers instead of PFTs names	2018-07-02	2018-10-12	--	Low	Resolved
19	IPSL	Integers instead of ocean passages names	2018-07-02	2018-07-17	--	Low	Resolved
20	IPSL	"area.coordinates" attribute is missing	2018-07-02	2018-07-17	--	Low	Resolved

Total Issues = 20. Filtered Issues = 20.

v0.6.3.0 © ES-DOC

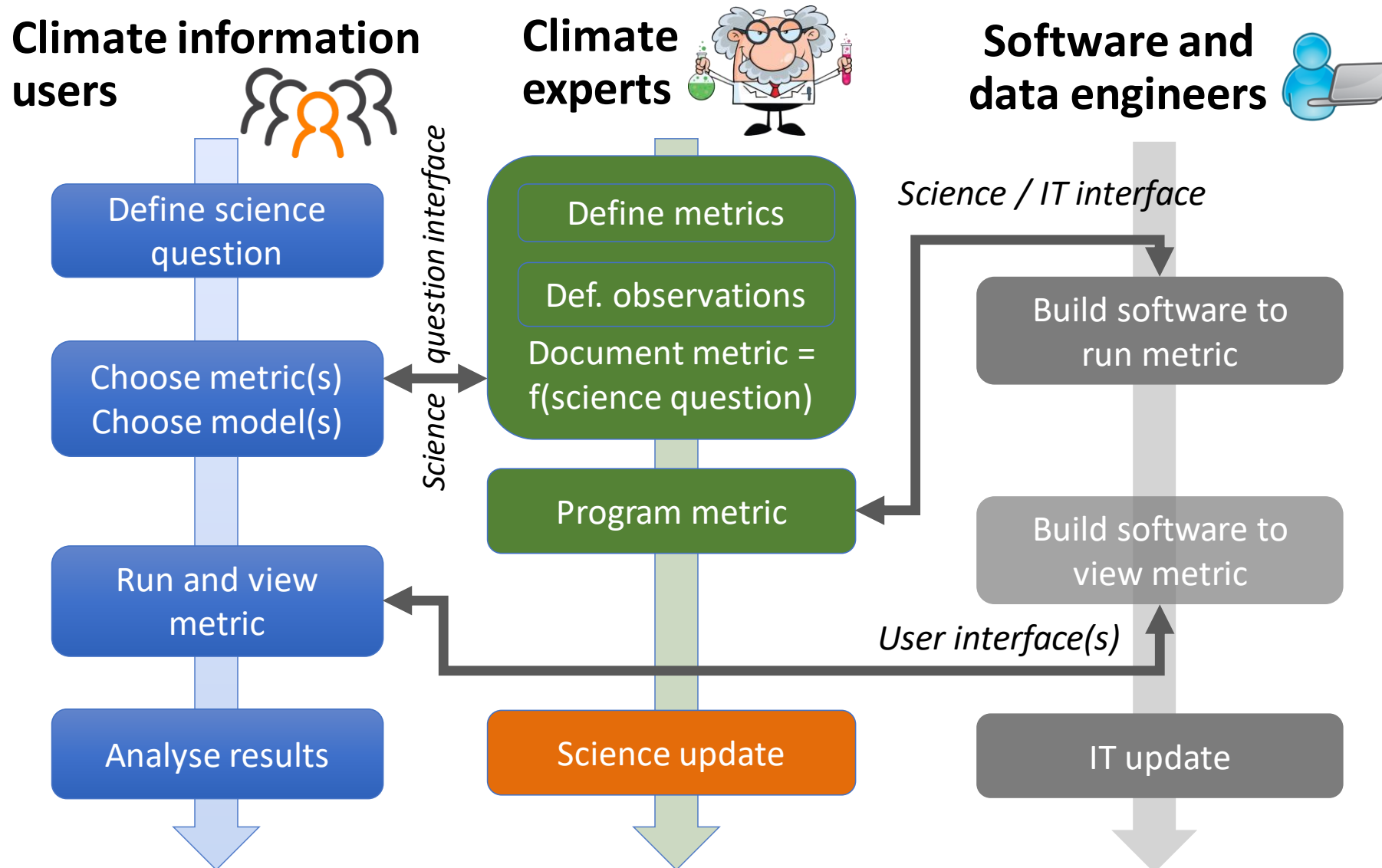
<https://errata.es-doc.org/static/index.html>



A few concluding points

- The « resistance » to standards/conventions
 - Inertia, resistance, ignorance, competing standards, lack of resources, legal barriers, etc.
 - Building trust is not easy
 - Blue sky research needs space – conventions come next
- The FAIR context: Find, Access, Interoperate, and Re-use.
- Diverse community: conventions ↔ collaboration
- The importance and role of end user in driving convention
- Next step: model evaluation

Model evaluation: the good, the bad and the ugly



Articulate different actors, different expertise and expectations