



The ES-DOC (Earth System Documentation) project

A whistle-stop tour

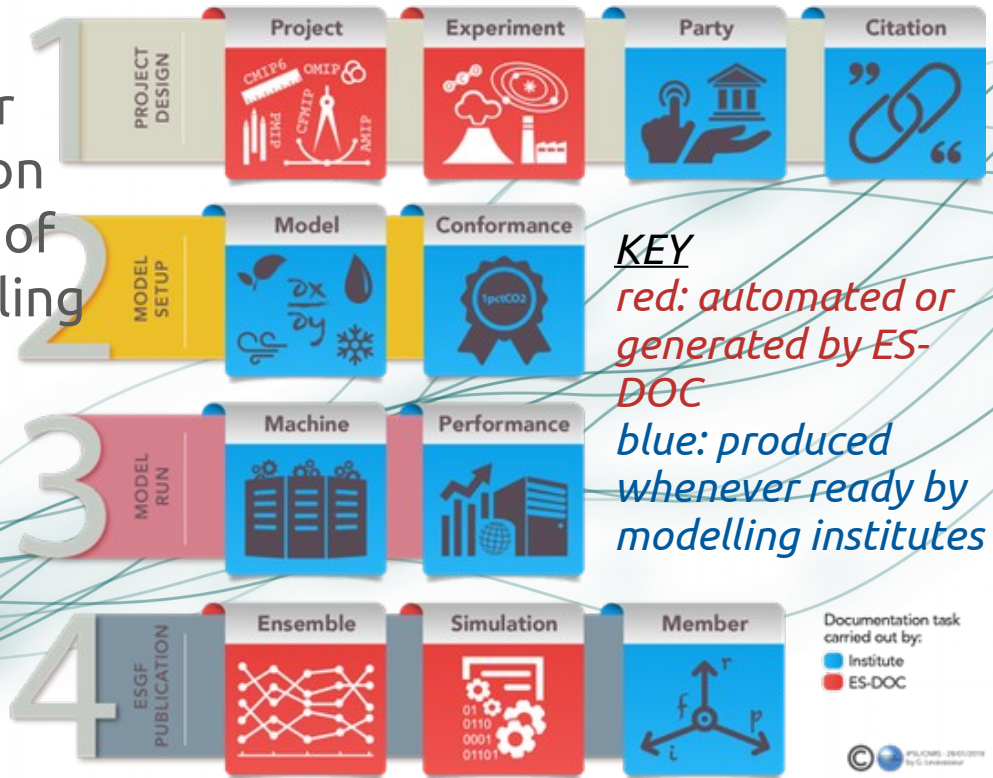
The basics: who, what, why

- International collaboration with colleagues from IPSL, DKRZ, & more.
- Some notable names (not a complete list):
 - NCAS-CMS: me, David H, Bryan
 - Wider NCAS: Charlotte Pascoe (STFC/Didcot-based)
 - Outside of NCAS: Mark Greenslade (IPSL), Martina Stockhause (DKRZ)

The basics: who, what, why

- provides ecosystem for documentation of all aspects of CMIP6 modelling workflow

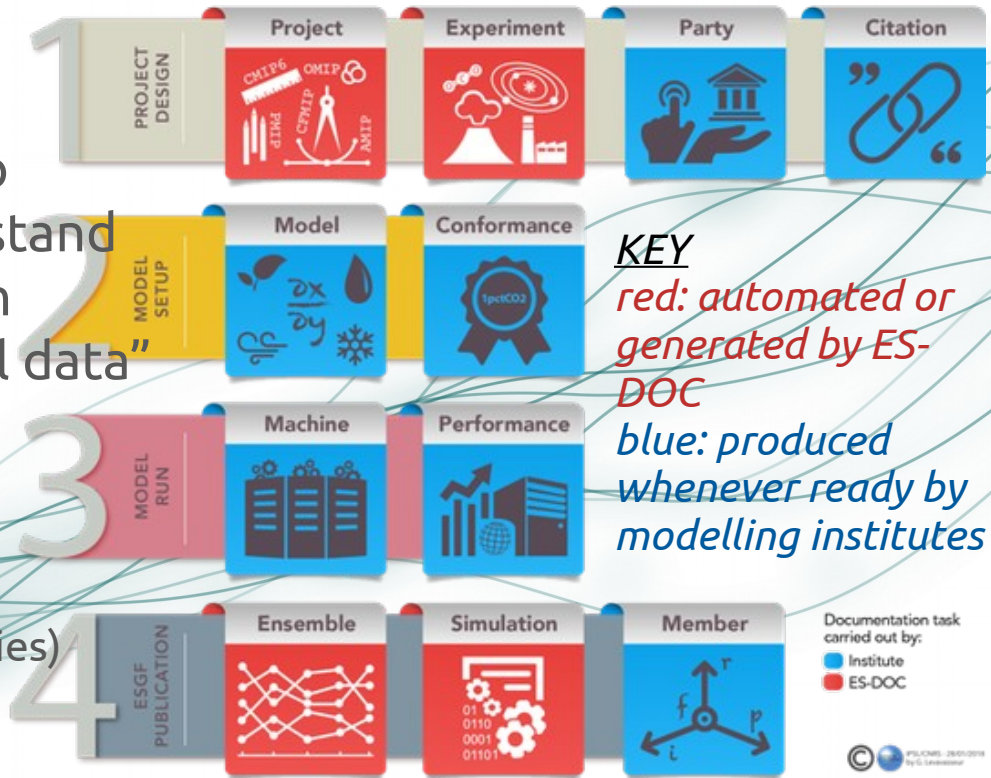
- see items in diagram
- + errata (not shown)



The basics: who, what, why

- “enables the scientific community to better understand & utilize Earth system model data”

- 23 MIPs
- 287 experiments
- ~50 modelling institutes (from >25 countries)
- O(1000) climate variables

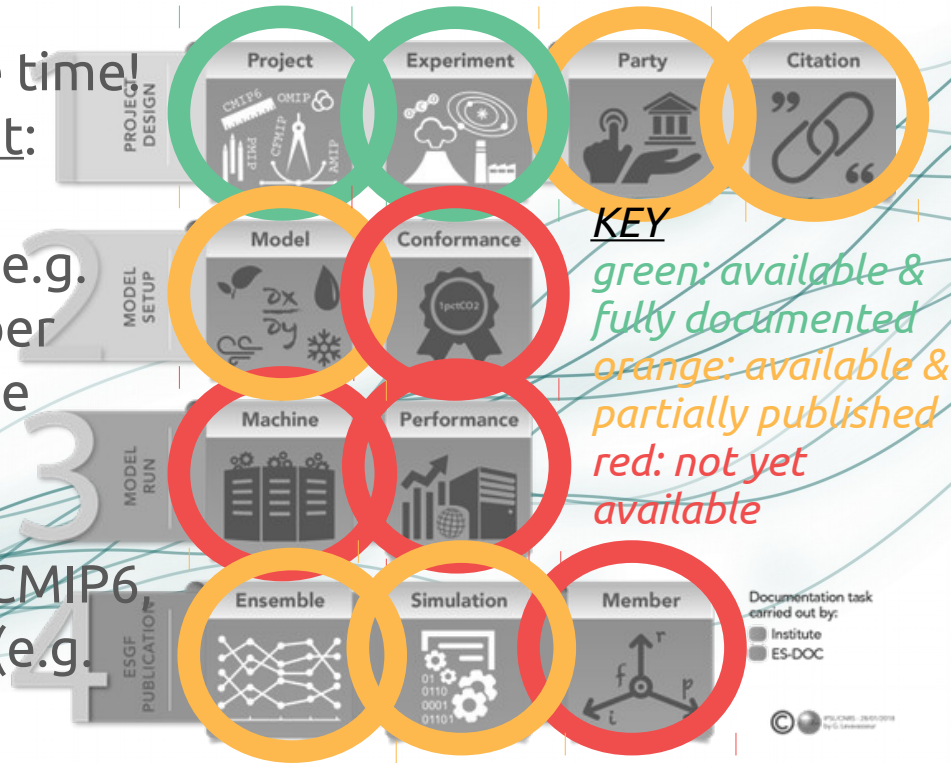


Key assets and status

- through a website & Further Info URL concept, ES-DOC provides access points & defined routes to find standardised information systematically
- more information on the infrastructure, including a nice diagram, here:
es-doc.github.io/esdoc-infrastructure/notes/architecture.html
- ES-DOC has been operational for CMIP6 since Dec. 2018
 - published documentation is available, new additions constantly added

To come in future...

- new content:
published all the time!
- different content:
further
documentation, e.g.
ensemble member
differences, to be
rolled out soon
- new features:
comparator for CMIP6
bells & whistles (e.g.
dashboard)



The ES-DOC website

- the ES-DOC site allows anyone to survey all published CMIP6 documentation: to *search, view, explore & compare* them, as well as to *discover errata & citations*
 - project & site root page: es-doc.org
 - CMIP6 overview landing page: es-doc.org/cmip6

... searching

- search web application lives at: search.es-doc.org
- allows discovery and viewing of all published documentation, e.g:
 - on all CMIP6 experiments
 - on MIPs
 - on (any published) models

... 'exploring'

- explorer web application lives at: explore.es-doc.org
 - e.g. explore all (published) model formulations
 - is also the app which displays the Further Info URL covered shortly
- renders the various documentation in a user-friendly way
- pick out metadata by:
 - institute
 - model
 - CMIP6 realm

... comparing

- the 'comparator' web application *will soon* (by end of 2020) be live on its home at: compare.es-doc.org
 - it is currently under development
 - at present, this URL provides the (fully-functional) CMIP5 comparator
- determine similarities & differences in e.g. model component properties

Web services

- errata service*:
 - found at: errata.es-doc.org
 - discover/track known issues & amendments across published datasets
- citation service†:
 - found (linked within but external to the ES-DOC site) at:
cmip6cite.wdc-climate.de (landing page) &
bit.ly/CMIP6_Citation_Search (search application)

* ESGF co-manage the errata service

† the citation service is hosted & managed outside of ES-DOC by DKRZ

Further Info URL

- a `further_info_url` property is defined in the header of *all* CMIP6 netCDF files!
- about, with a working example:
es-doc.org/cmip6-ensembles-further-info-url
- with your netCDF manipulation tool of choice you can access this netCDF global attribute & open it in a browser to see all metadata, e.g:
 - command line (-m1 optional, stops after one find): `$ ncdump <filename>.nc | grep [-m1] further_info_url`
 - Python via `cf-python` (or `cfdm`), minimal example on a field:

```
>>> import cf
>>> f0 = cf.read('<filename>.nc')[0]
>>> f0.properties()['further_info_url']
```

Summary / quick links

- ES-DOC website (also has context, user guidance and much more):
 - project & site root page: es-doc.org
 - CMIP6 overview landing page: es-doc.org/cmip6
 - search app (discover & view all documentation): search.es-doc.org
 - explorer (model formulations + F.I.URL): explore.es-doc.org
 - comparator: coming soon (mid-late 2020) at compare.es-doc.org
- Further Info URL (grab it from your CMIP6 netCDF files!):
 - about, with a working example:
es-doc.org/cmip6-ensembles-further-info-url