

Report from
the French modelling groups:
IPSL and CNRM

Masa Kageyama, Sandrine Bony,
Olivier Boucher (IPSL), Sébastien Denvil
(IPSL), David Salas-Mélia (CNRM)

CNRM-CERFACS models

	Standard resolution A: 1.4°L91 O: ORCA1°L75	High resolution A: 0.5°L91 O: ORCA0.25L75
AOGCM = ARPEGE + NEMO + GELATO	CNRM-CM6-1	CNRM-CM6-1-HR
ESM = AOGCM + interactive carbon cycle (PISCES for the ocean, ISBA_CC for land surface) + interactive aerosols + stratospheric chemistry except for ESMHR	CNRM-ESM2-1	CNRM-ESM2-1-H

- 3D aerosols for AOGCM:
 - concentrations computed at 1.4° resolution from CMIP6 emissions (in-house climatology called TACTIC)
 - interpolation at 0.5° for HR model
- All models include a model for stratospheric ozone → CMIP6 climatologies not used.

CNRM-CERFACS schedule

- Very tight! Strong constraints on super-computing
- The CNRM runs should start at the end of November 2016 at the latest

URGENT NEEDS

- the Data Request.
 - By default, data will be published on their native grid.
 - If requested by CMIP6, possible interpolations to regular grids, online (i.e. no additional data after a run is finished)
 - urgent request for a definition of the aimed regular grids and which variables need to be interpolated to these grids before late November 2016.
 - need for a stabilized variable request for every MIP by then.
- a technical specification of the needed output (DRS, CMIP6 CV).
question: will these change during the exercise?

List of IPSL-CM6 models

IPSL-CM6-LR: evolution of LMDz-5B at 144x142x79 resolution, NEMO 1°, ORCHIDEE 11 layers, interactive or climatological aerosols, marine and terrestrial C cycles, but few other ES processes. Runs at ~7 years/day.

IPSL-CM6-MR: medium resolution version of the above (250x250x79 + NEMO 1° or 1/4 ° at some point)

IPSL-CM6-ESM-LR: same as above but with more ES

IPSL-CM6-VLR: low resolution version of the above (for now IPSL-CM5A2-VLR bit not “CMIP6-compliant”, runs at ~60 years/day)

Status and timeline

Many interim versions of IPSL-CM6-LR

Tuning of IPSL-CM6-LR automated

Freezing and spin-up expected for early 2017

An aerosol simulation is needed

Solar, GHG, aerosol emissions, stratospheric aerosol forcings in place, testing of ozone and LU forcings

Implementing CDR could be the limiting factor...

Model Name: **IPSL-CM6**; Institution: **IPSL**; Country: **France**

Forcing Dataset	Will be used (YES/NO)	Pre-industrial	Historical
SLCF Emissions	YES	Testing	Preliminary
BB emissions	YES	Testing	Preliminary
GHG Emissions	YES	Not available yet	Not available yet
Land-use	YES	Testing	Testing
GHG concentrations	YES	Looks OK but still testing	Looks OK but still testing
Ozone concentrations	YES	Testing	Testing
Nitrogen deposition	YES	Preliminary	Preliminary
Simple plume aerosol	??	Unknown	Unknown
Solar	YES	Looks OK but still testing	Looks OK but still testing
Stratospheric aerosol	YES	Looks OK but still testing	Looks OK but still testing
AMIP SST and SIC	YES	Testing	Testing

KEY: OK Testing Preliminary Unknown

See CMIP Panel website at <https://www.wcrp-climate.org/wgcm-cmip/wgcm-cmip6> for details

Please insert any additional feedback on the forcings or other comments for WGCM here

- Model-tailored **stratospheric aerosol datasets do not include information on the 550 nm extinction coefficient**, yet stratospheric aerosol optical depth at 550 nm is a variable requested by several MIPs. It cannot be delivered with precision in the current state of play.
- **The stratospheric aerosol dataset include some upper tropospheric aerosols** in a way that is not consistent over time, yet it does not include information on the tropopause height so we have no other solution at the moment than using the model tropopause height (either interactive or climatological) to mask tropospheric aerosols. This issue has been flagged to ETZH, but has received no answer (even a “not possible” one).
- The **daily solar forcing** could be useful to study high-frequency variations in the stratosphere but requires adopting a **Gregorian calendar** for historical and future simulations (and hence on piControl?), a CMIP6 panel recommendation on this would be welcomed.
- The **biomass burning emission dataset has a monthly resolution** and relies on observations, hence includes real-world interannual variability that would not necessarily be in phase in *historical* simulations. It makes sense to smooth the BB emission data and a CMIP6 panel recommendation on this would be welcomed.
- Most forcing datasets are **not documented** and have not undergone any sort of review process. What if reviews on the forthcoming GMD forcing papers request corrections to the datasets.
- **Emissions for future scenarios are not yet available**. There is of course a requirement of continuity in the emissions in 2014, but it would be nice if there is also a requirement of continuity in the first derivative (to avoid unrealistic scenarios that have a change of slope in 2014).