

Essentials

a new page for C-ESM-EP

Sebastián RIFFO¹, Patricia CADULE² & Bertrand GUENET³

Institut Pierre-Simon Laplace (IPSL)
SU¹, CNRS², ENS³

`sebastian.riffo@ipsl.fr`

13th June, 2025

OBJECTIVES

- ▶ Model validation for CMIP7
- ▶ Provide information for different *GD/GT*
- ▶ Further development for C-ESM-EP

OBJECTIVES

- ▶ Model validation for CMIP7
- ▶ Provide information for different *GD/GT*
- ▶ Further development for C-ESM-EP

C-ESM-EP RESTRUCTURATION (ORCHIDEE)

- ▶ Mapper integration
- ▶ Essentials page
- ▶ Water & carbon cycles

OBJECTIVES

- ▶ Model validation for CMIP7
- ▶ Provide information for different *GD/GT*
- ▶ **Further development for C-ESM-EP**

C-ESM-EP RESTRUCTURATION (ORCHIDEE)

- ▶ Mapper integration
- ▶ **Essentials page**
- ▶ Water & carbon cycles

An overview of the coupled model, from a summary of components pages

An overview of the coupled model, from a summary of components pages

VARIABLES

Maps

- ▶ Latent heat flux
- ▶ Sensible heat flux
- ▶ Mean albedo
- ▶ Evapotranspiration
- ▶ Leaf area index

Time series

- ▶ River discharge

An overview of the coupled model, from a summary of components pages

VARIABLES

Maps

- ▶ Latent heat flux
- ▶ Sensible heat flux
- ▶ Mean albedo
- ▶ Evapotranspiration
- ▶ Leaf area index

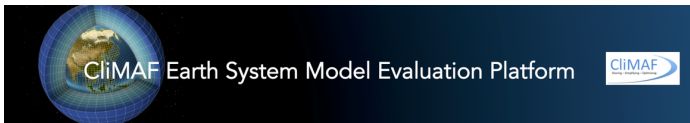
Time series

- ▶ River discharge

REFERENCES

From Mapper

- ▶ MTE
 - ▶ Id.
 - ▶ MODIS
 - ▶ GLEAM 3.3b
 - ▶ GIMMS LAI3g
-
- ▶ GRDC



Comparison setup: dev_comparisons

- [Main Time Series](#)
- [Atmosphere Surface](#)
- [NH Polar St. - Atmosphere Surface](#)
- [SH Polar St. - Atmosphere Surface](#)
- [Atmosphere Standard press. lev. - seasonal](#)
- [NH Polar St. - Atmosphere Std press levels](#)
- [SH Polar St. - Atmosphere Std press levels](#)
- [Atmosphere Zonal Mean](#)
- [NEMO general diagnostics](#)
- [NEMO - T & S @depth](#)
- [NEMO zonal means](#)
- [ENSO CLIVAR Diagnostics](#)
- [ORCHIDEE](#)
- [Atlas Explorer](#)
- [Essentials](#)
- [My own diagnostics](#)

Comparison directory: `/home/sreyes/cesmep/git/dev_comparisons`

- [C-ESM-EP Wiki - Documentation](#)
- [CliMAF documentation](#)

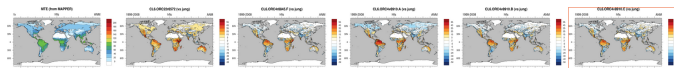
Figure 1: C-ESM-EP home page

Essentials

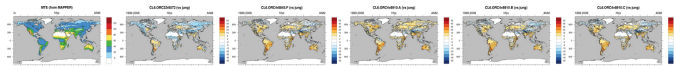
[Back to C-ESM-1P homepage of comparisons_dex_comparisons](#)

ORCHIDEE

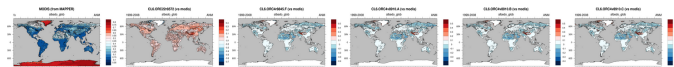
- Latent Heat Flux (hfls) ; season = ANM ; REF = MTE (from MAPPER)



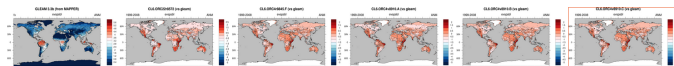
- Sensible Heat Flux (hfs) ; season = ANM ; REF = MTE (from MAPPER)



- Mean Albedo (albedo_glob) ; season = ANM ; REF = MODIS (from MAPPER)



- Evapotranspiration (evspsbl) ; season = ANM ; REF = GLEAM 3.3b (from MAPPER)



- Leaf Area Index (lai) ; season = ANM ; REF = GIMMS LAI3g (from MAPPER)

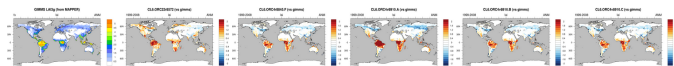
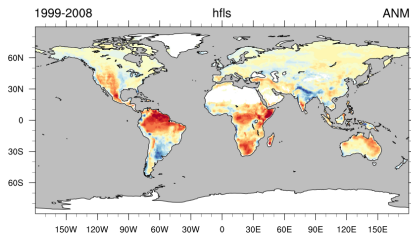
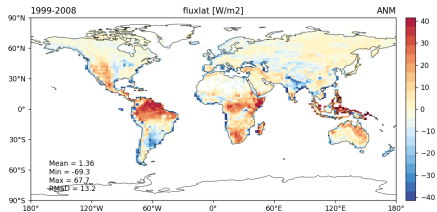


Figure 2: part of CL6 rev8910 simulations

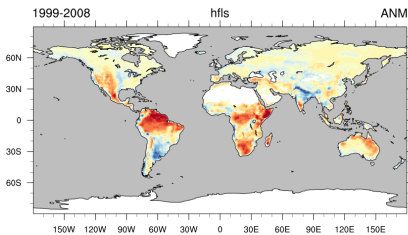


(a) C-ESM-EP

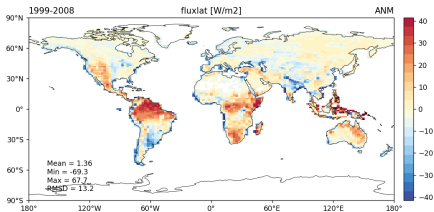


(b) Mapper

Figure 3: Difference with MTE



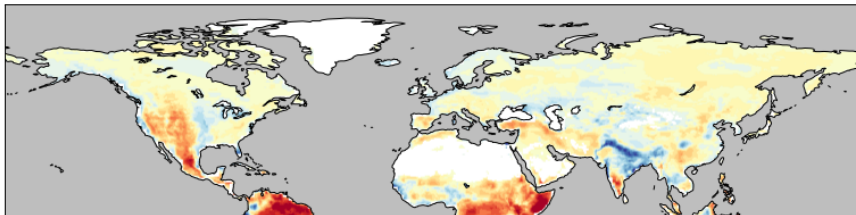
(a) C-ESM-EP



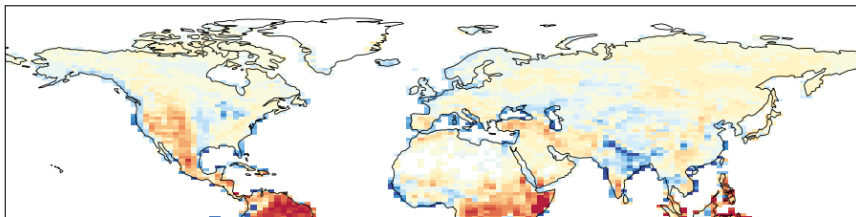
(b) Mapper

Figure 3: Difference with MTE

C-ESM-EP colorbar range was chosen to *approximate* Mapper's

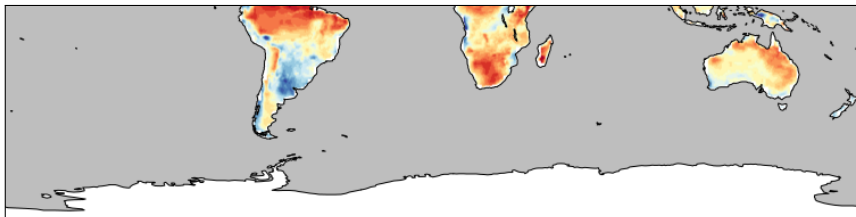


(a) C-ESM-EP

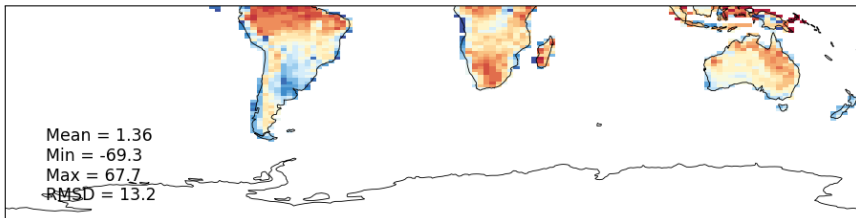


(b) Mapper

Figure 4: Difference with MTE



(a) C-ESM-EP



(b) Mapper

Figure 5: Difference with MTE

APPENDIX

COMPARISON OF RESULTS FOR CL6.ORC4V8910.B (1999-2008)

FLUXSENS/HFSS

NH & SH

EVAP/EVSPSBL

NH & SH

LAI

NH & SH

APPENDIX

COMPARISON OF RESULTS FOR CL6.ORB4v8910.B (1999-2008)

FLUXSENS/HFSS

NH & SH

EVAP/EVSPSBL

NH & SH

LAI

NH & SH

ALB_NIR/ALBNIR

NH & SH

ALB_NIR/ALBNIR

NH & SH

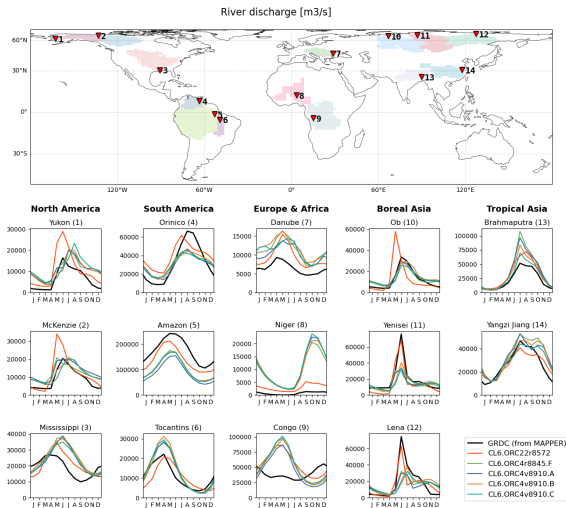


Figure 6: Mapper's river discharge adaptation to C-ESM-EP

PROJECT TIMELINE



AVAILABLE ESSENTIALS ATLASES

- ▶ [LMDZOR \(CL6 rev8910\)](#)
- ▶ [IPSL-CM](#)

GITHUB REPOSITORY

[C-ESM-EP \(sebastian_developments\)](#)

Merci de votre attention !

APPENDIX

COMPARISON OF RESULTS FOR CL6.ORB4v8910.B (1999-2008)

FLUXSENS/HFSS

NH & SH

EVAP/EVSPSBL

NH & SH

LAI

NH & SH

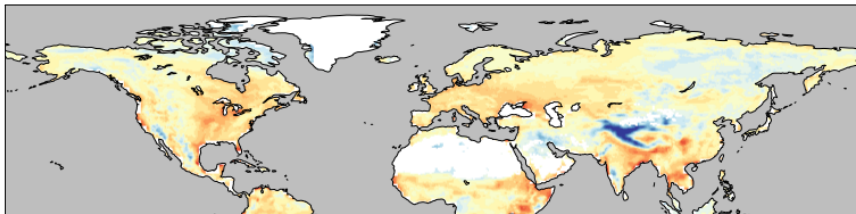
ALB_NIR/ALBNIR

NH & SH

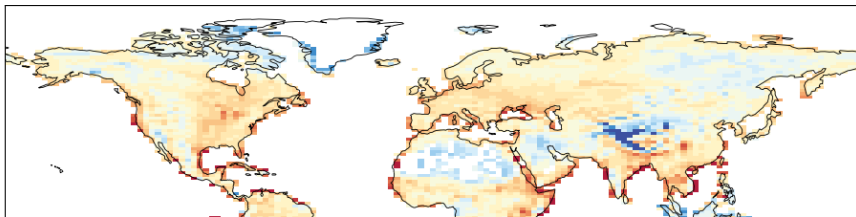
ALB_NIR/ALBNIR

NH & SH

C-ESM-EP colorbar range was chosen to *approximate* Mapper's

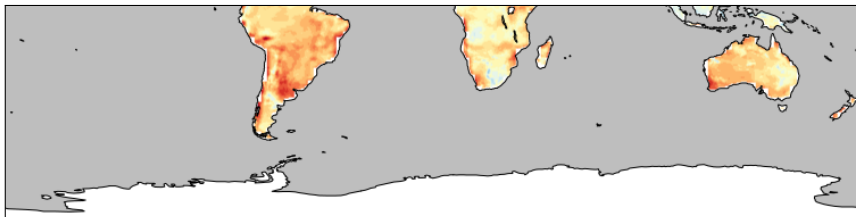


(a) C-ESM-EP

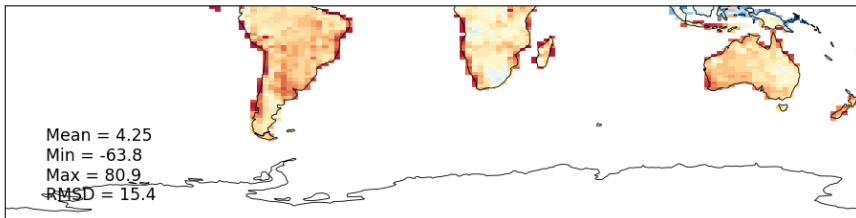


(b) Mapper

Figure 7: Difference with MTE

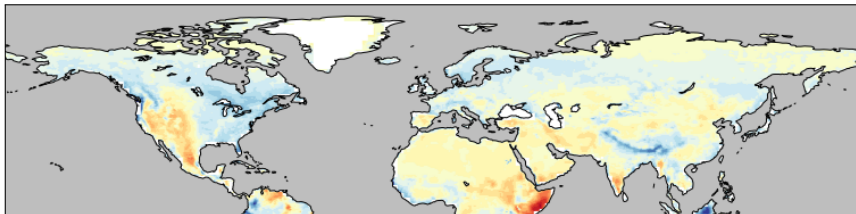


(a) C-ESM-EP

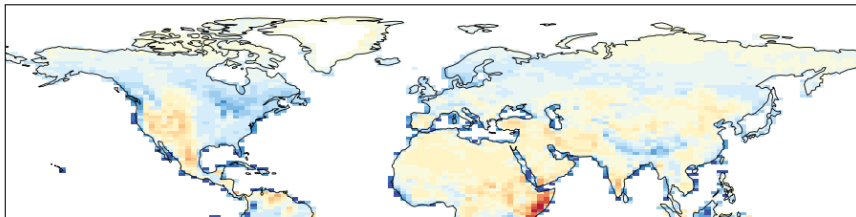


(b) Mapper

Figure 8: Difference with MTE

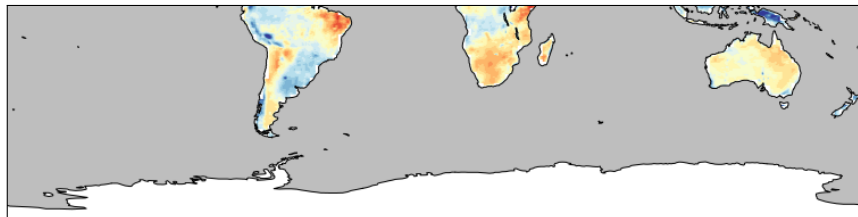


(a) C-ESM-EP

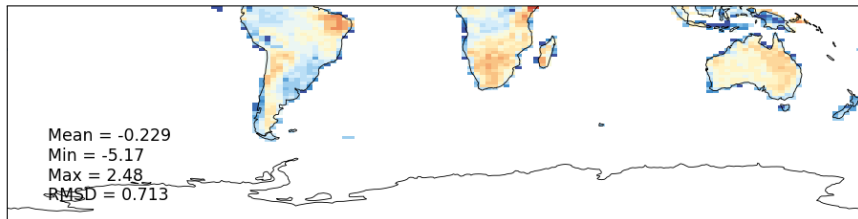


(b) Mapper

Figure 9: Difference with GLEAM 3.3b



(a) C-ESM-EP

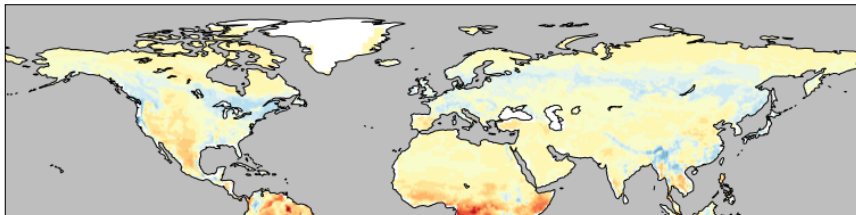


(b) Mapper

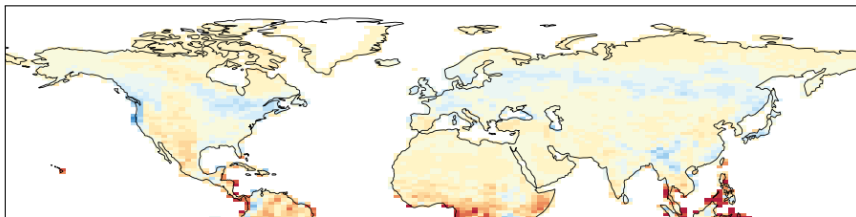
Figure 10: Difference with GLEAM 3.3b

LAI

COMPARISON OF RESULTS (NH) FOR CL6.ORB4v8910.B (1999-2008)



(a) C-ESM-EP

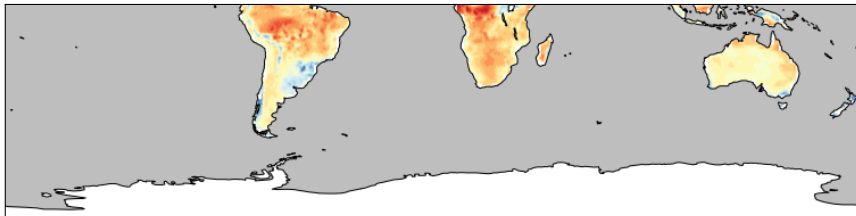


(b) Mapper

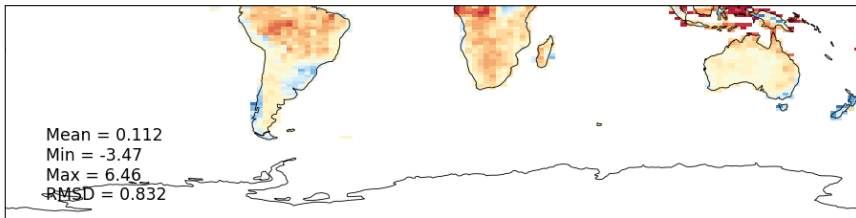
Figure 11: Difference with GIMMS LAI3g

LAI

COMPARISON OF RESULTS (SH) FOR CL6.ORB4v8910.B (1999-2008)

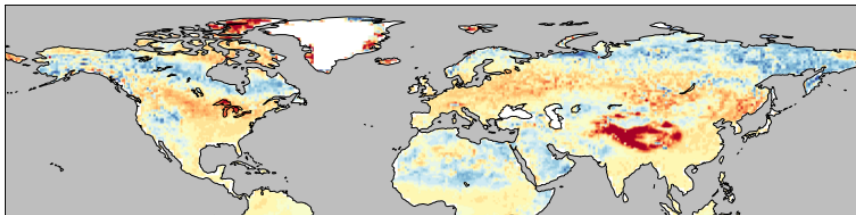


(a) C-ESM-EP

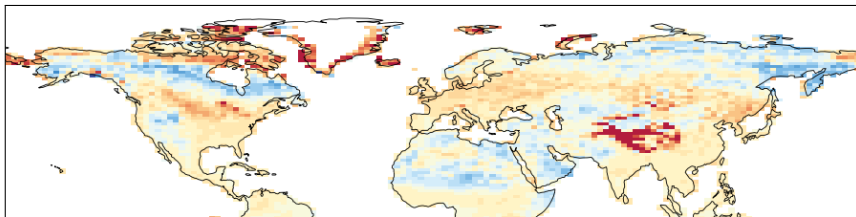


(b) Mapper

Figure 12: Difference with GIMMS LAI3g

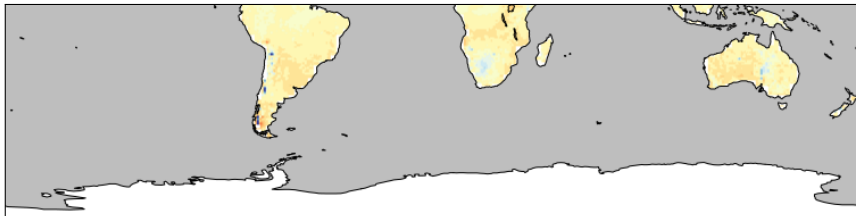


(a) C-ESM-EP

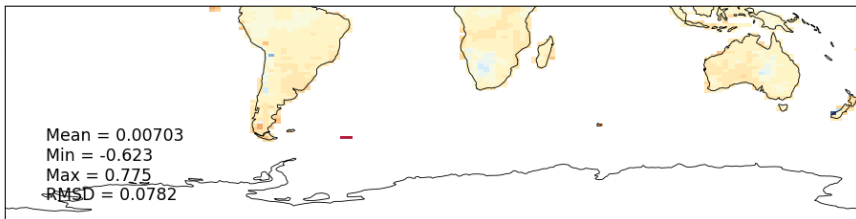


(b) Mapper

Figure 13: Difference with MODIS

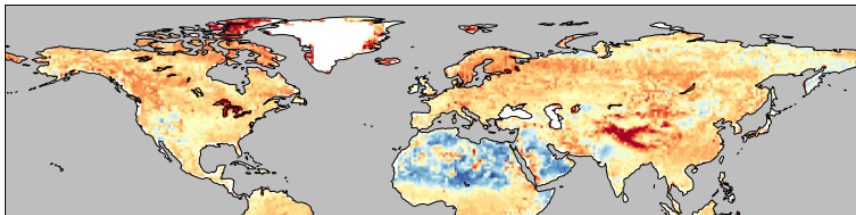


(a) C-ESM-EP

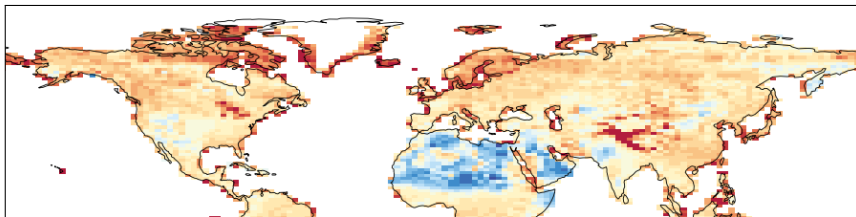


(b) Mapper

Figure 14: Difference with MODIS

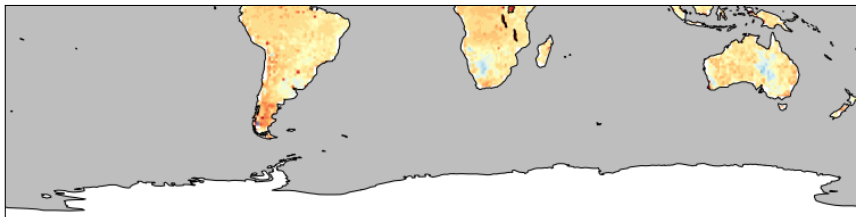


(a) C-ESM-EP

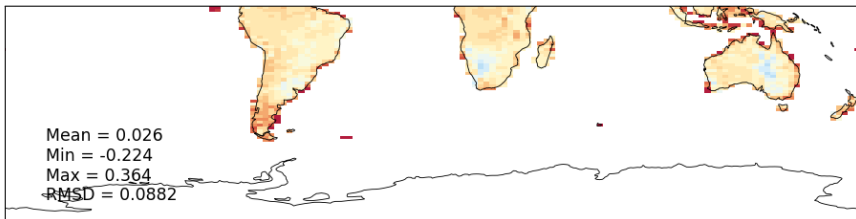


(b) Mapper

Figure 15: Difference with MODIS



(a) C-ESM-EP



(b) Mapper

Figure 16: Difference with MODIS