



LS3MIP kickoff meeting: CMCC

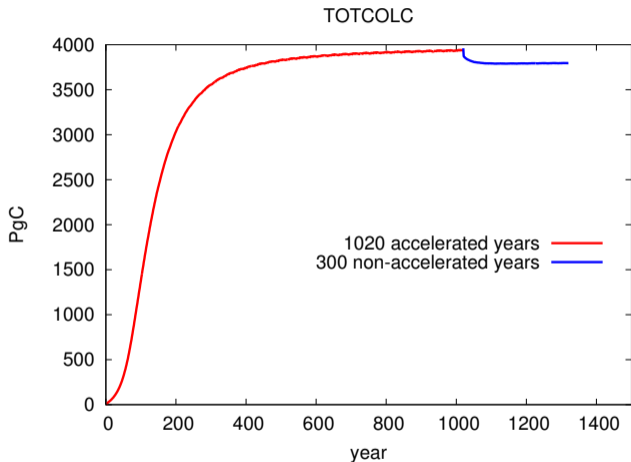
State of simulations

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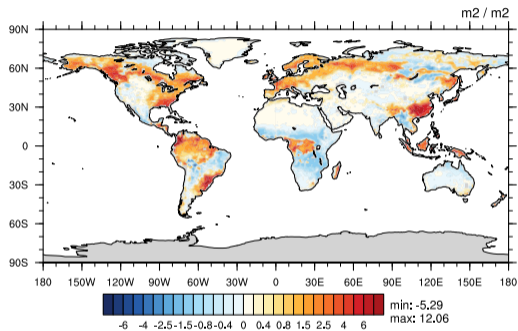
- ▶ Use of **BGC** mode of **CLM 4.5**;
- ▶ Initialization of **C** and **N** pools using a **two-phases** procedure:
 1. a **1020 years accelerated** run;
 2. a **300 non-accelerated** extra years.

Final **drift** of **~ 1.1 PgC/century**
(**$\sim 1.6\%$** of the **observed** 1960-2009 trend,
Le Quéré et al. 2015).

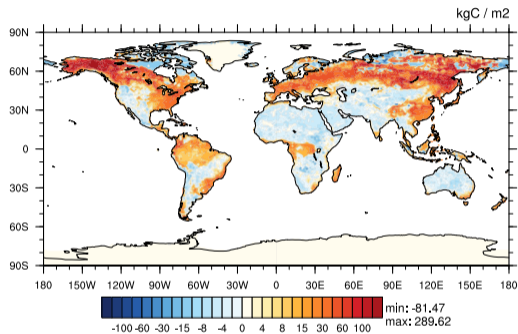
NB the step after year 1020 derives from change of land-use map (LUH \rightarrow LUH2)



TLAI: CLM 4.5 (1980-2009) - MODIS



SOILC: CLM 4.5 (1980-2009) - IGBP



- ▶ Overestimation of both LAI and Soil Carbon in the boreal regions;
- ▶ Overestimation of both LAI and Soil Carbon in the tropical regions;
- ▶ Underestimation of both LAI and Soil Carbon in the arid and semi-arid regions.

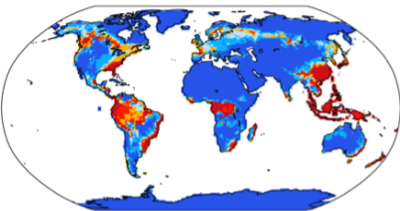


Deriving from
the spin-up
conditions.

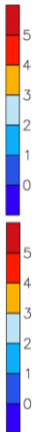
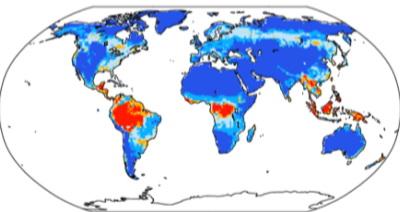


Annual Mean LAI

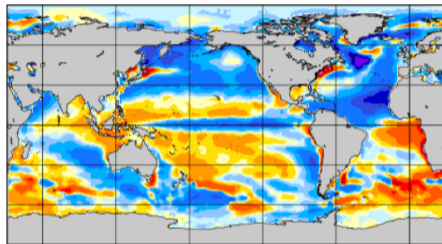
CMCC-ESM2



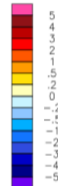
MODIS



Annual Mean SST CMCC-ESM2 - Observations



Mean = -0.20
Min = -14.66
Max = +8.50



- ▶ Coupled Land show similar biases to Offline Land;
- ▶ Each component presents some bias compared to Observations;
- ▶ These biases result reasonable → CMCC-ESM2 ready to use.



Simulation	Length	Timing	Info	State
land-hist	1850-2014	3-4d	historical land-only simulation	TBD ^{1,2}
LFMIP-pdLC	1980-2100	18d	Prescribed Land condition (1980–2014)	TBD ¹
LFMIP-rmLC	1980-2100	18d	Prescribed Land condition (30-yr run-mean)	TBD ¹

NB only Tier 1 simulations are going to be performed.

Legend:

ESM simulations;

Land-only simulations;

¹ aerosols deposition to be created;

² climate forcing GSWP3 to be finalized.



Le Quéré, C., Moriarty, R., Andrew, R. M., Peters, G. P., Ciais, P., Friedlingstein, P., Jones, S. D., Sitch, S., Tans, P., Arneth, A., Boden, T. A., Bopp, L., Bozec, Y., Canadell, J. G., Chini, L. P., Chevallier, F., Cosca, C. E., Harris, I., Hoppema, M., Houghton, R. A., House, J. I., Jain, A. K., Johannessen, T., Kato, E., Keeling, R. F., Kitidis, V., Klein Goldewijk, K., Koven, C., Landa, C. S., Landschützer, P., Lenton, A., Lima, I. D., Marland, G., Mathis, J. T., Metzl, N., Nojiri, Y., Olsen, A., Ono, T., Peng, S., Peters, W., Pfeil, B., Poulter, B., Raupach, M. R., Regnier, P., Rödenbeck, C., Saito, S., Salisbury, J. E., Schuster, U., Schwinger, J., Séférian, R., Segschneider, J., Steinhoff, T., Stocker, B. D., Sutton, A. J., Takahashi, T., Tilbrook, B., van der Werf, G. R., Viovy, N., Wang, Y.-P., Wanninkhof, R., Wiltshire, A., and Zeng, N. Global carbon budget 2014. *Earth Syst. Sci. Data*, 7:47–85, 2015. doi: 10.5194/essd-7-47-2015.

