ESCRIME

Etude des Scénarios Climatiques
Réaliséspar l'IPSLet Météo-France

French groups:
IPSL
Meteo-France

P. Braconnot for the ESCRIME consortium

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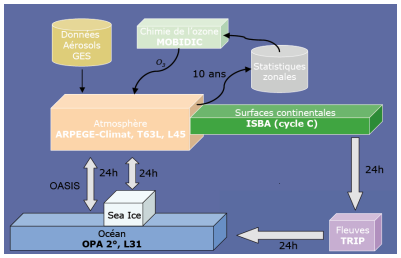
French participation to CMIP5

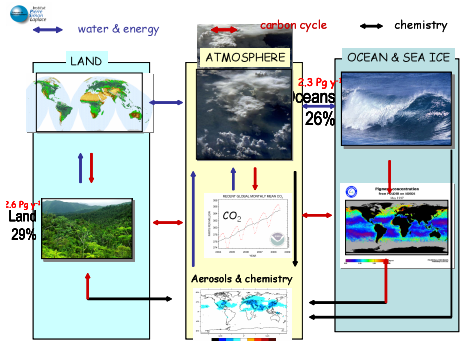
- Collaboration IPSL, Météo-France, Cerfacs

Modèle CNRM



•New model version (OA)
•Improved horizontale and vertical resolution

Modèle IPSL



•ESM = with carbon (aerosols) interactive
•Improved resolution
•All CMIP5 simulations

•ESM only physical part at high resolution
•Subset of simulations

•New model physic
•Subset of simulations

•CNRM simulations « long term », no carbon cycle
•CERFACS short term
• about 16 to 20 nods of Meteo-France SX8

•IPSL IGCM group coordinates the simulations across 5 labs
•A dedicated computer (SX9 ccrt)

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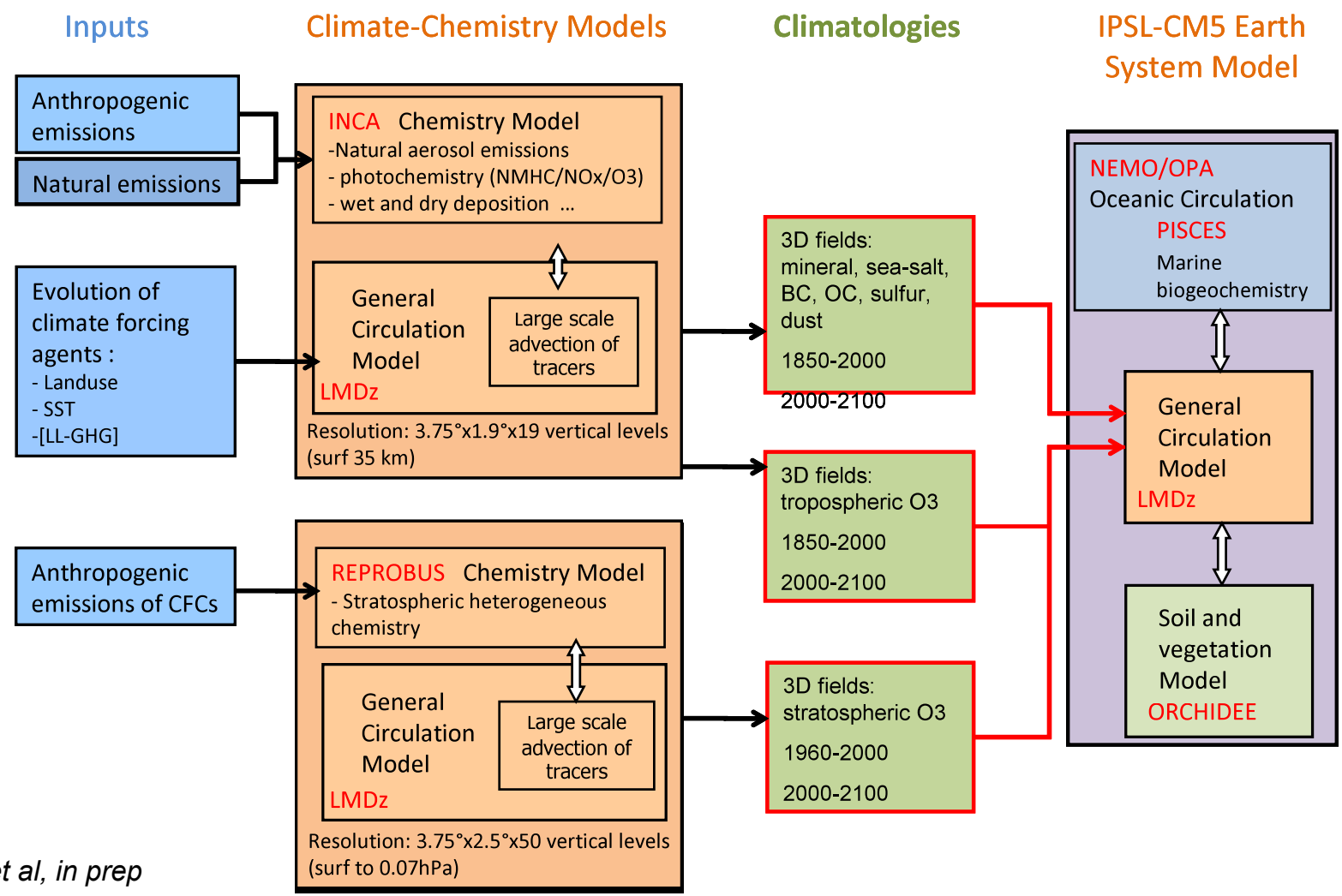
Réalisés par l'IPSL et Météo-France

Aerosol and Ozone changes as forcing for Climate Evolution between 1850 and 2100



Szopa et al, in prep

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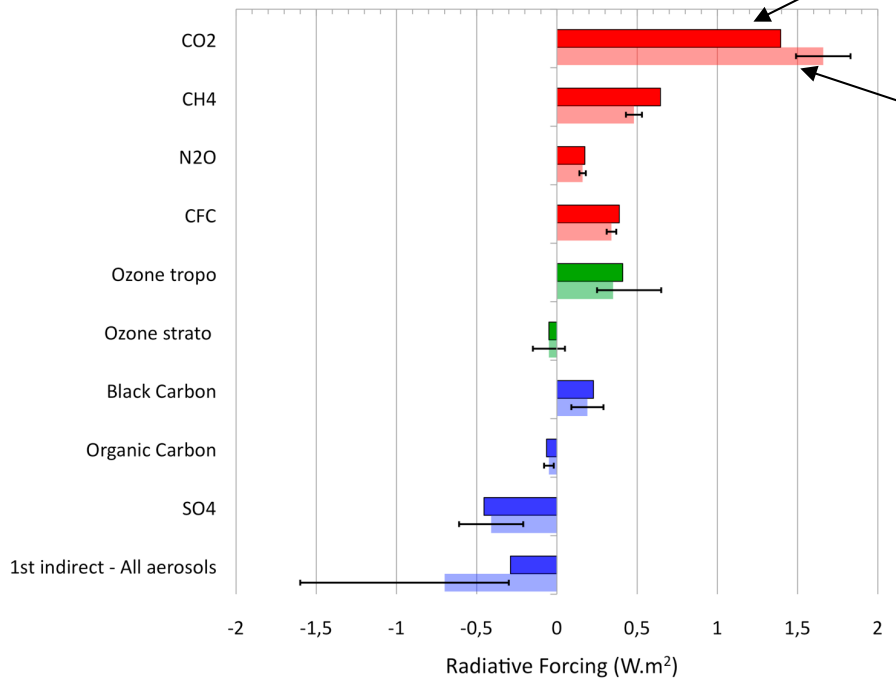
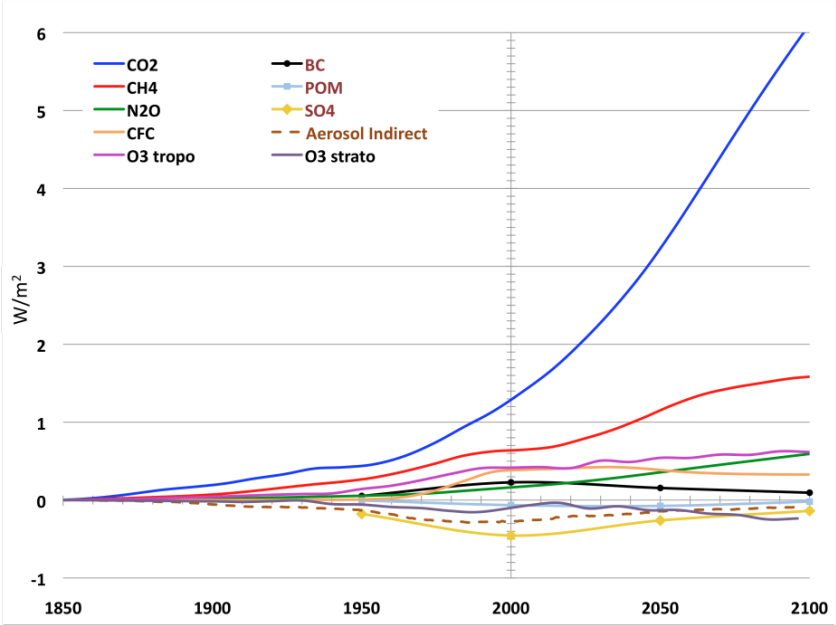
Radiative forcing estimates

LMDzORINCA

IPCC AR4



RCP85



Computed off line using
LMDz radiative code

Szopa et al, in prep

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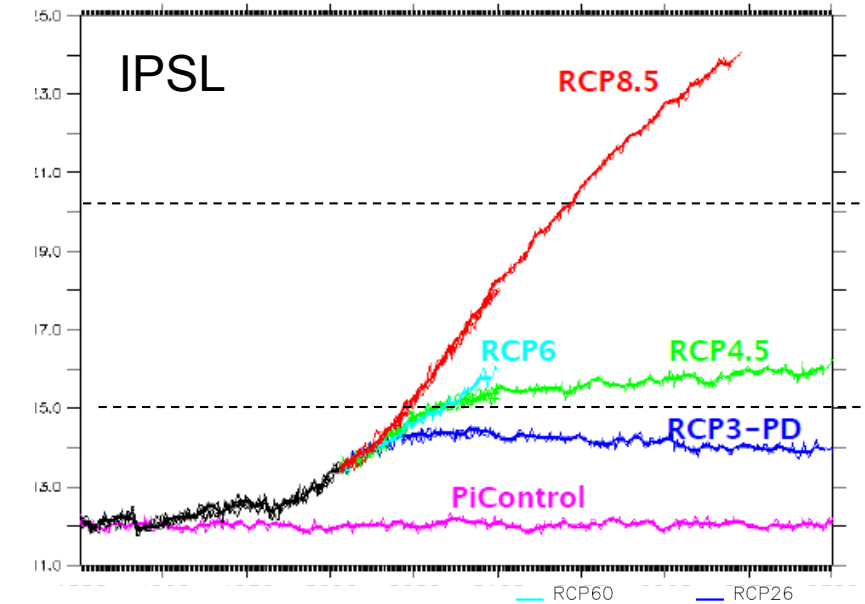
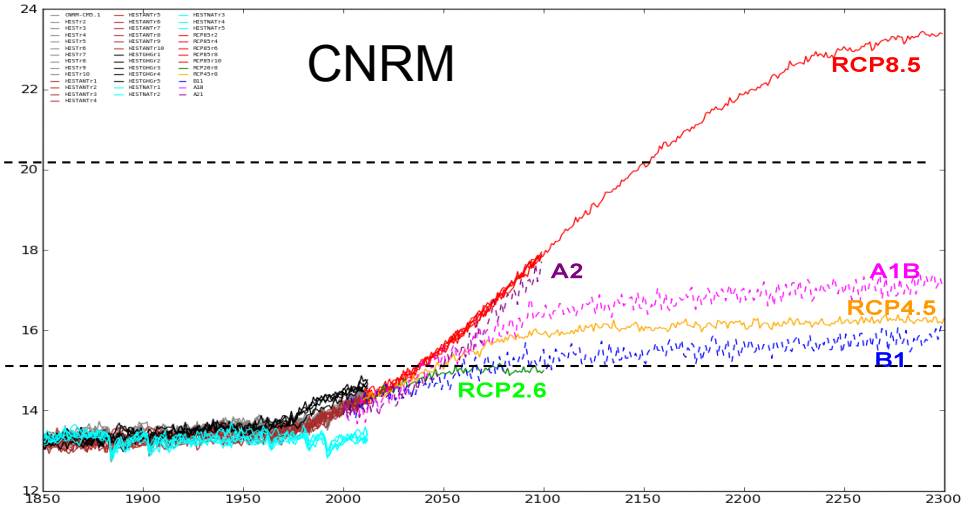
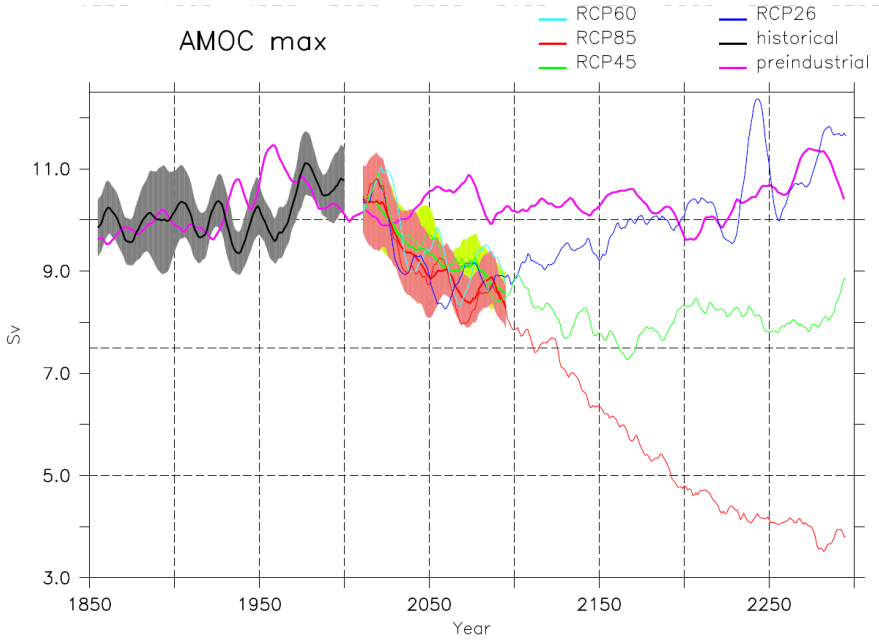
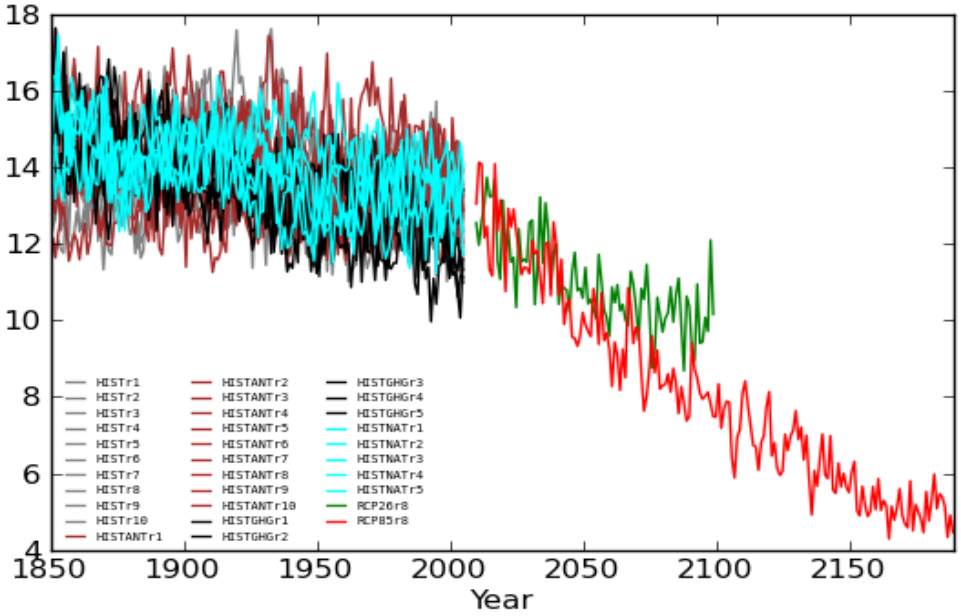
Projections









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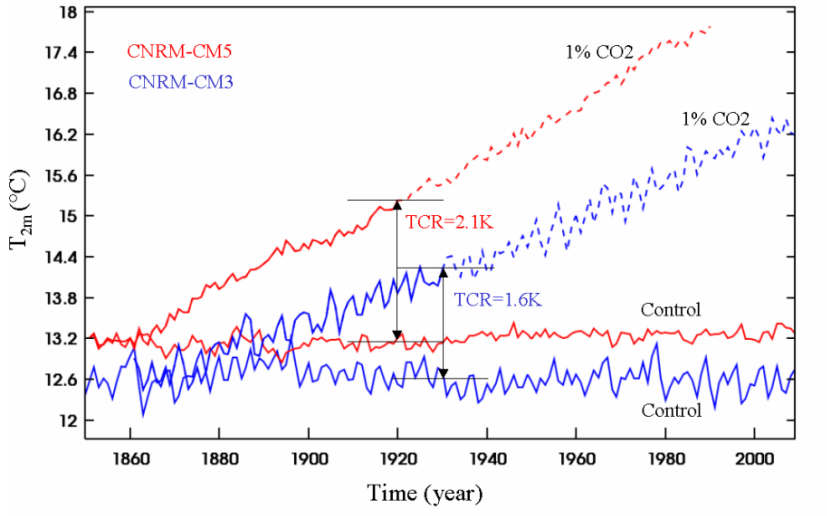
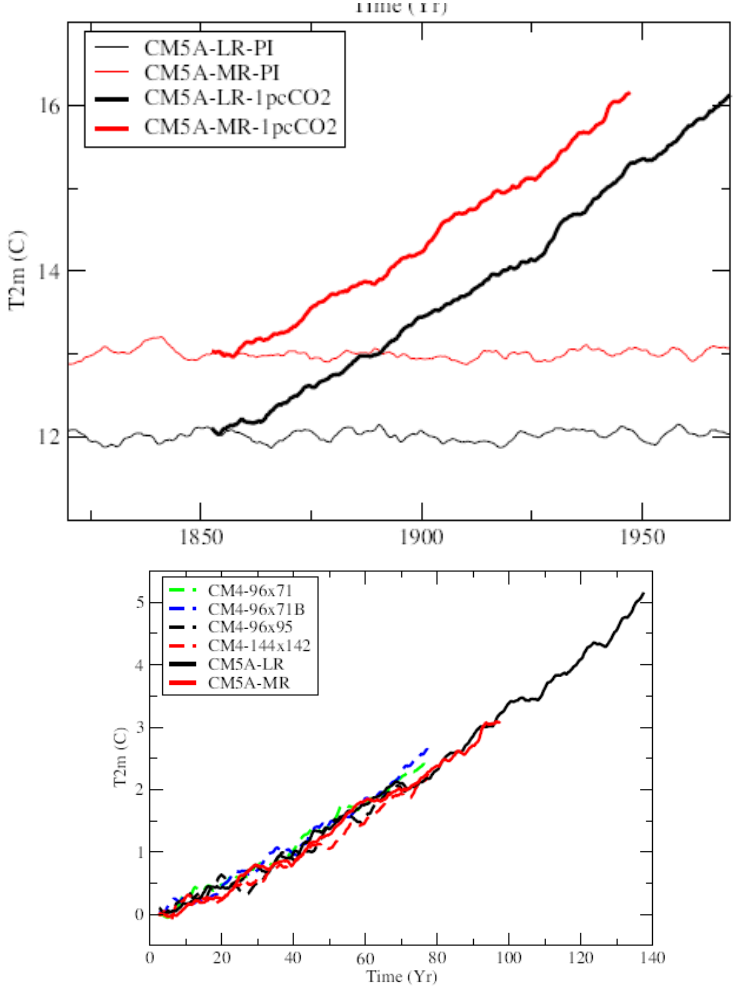
CNRM: comparison CM3 and CM5



IPSL: 2 resolutions



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Climate Dynamics special issue

Guess editors : S. Bony and J. Mignot

- The general purpose of this issue is:
  - To present the IPSL and CNRM Earth System Models.
  - To discuss few results obtained in the framework of the CMIP5 relative to the CMIP3, in terms of simulations and forcings.

  - Contributions IPSL/CNRM/LGGE
  - Major topics
    - Model description, evaluation and first
    - Process oriented evaluation
    - Analyses of climate variability and dynamics
    - Analyses of climate response to external forcing (historical simulations, climate projections, paleoclimates)
    - Interactions between climate/chemistry/biogeochemical cycles
    - Regional simulations
- Dead line : 31 October 2011

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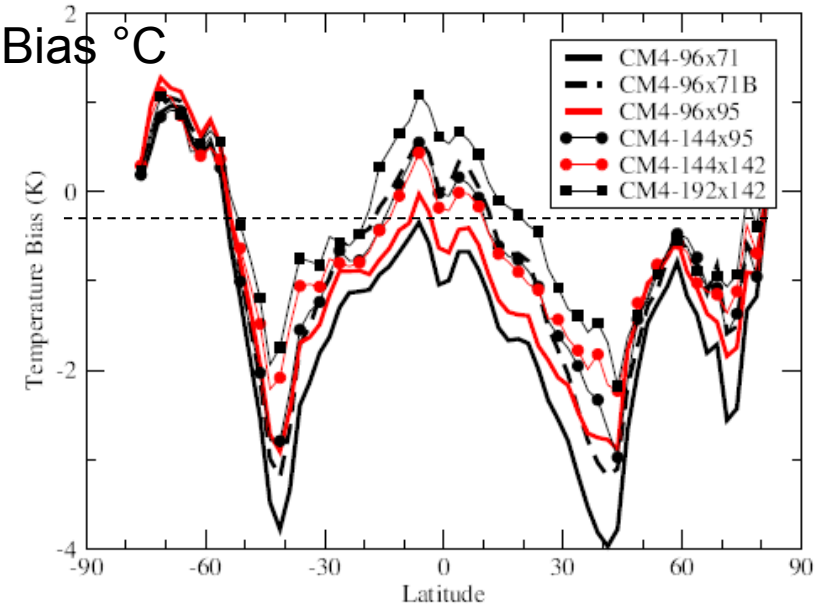
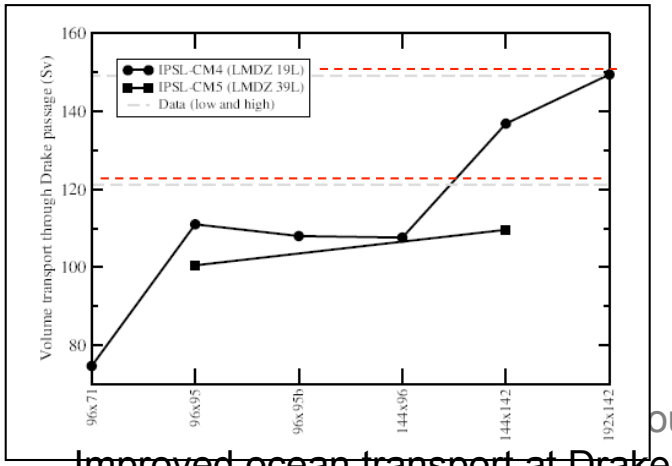
Sensitivity to atmospheric resolution

Horizontal resolution

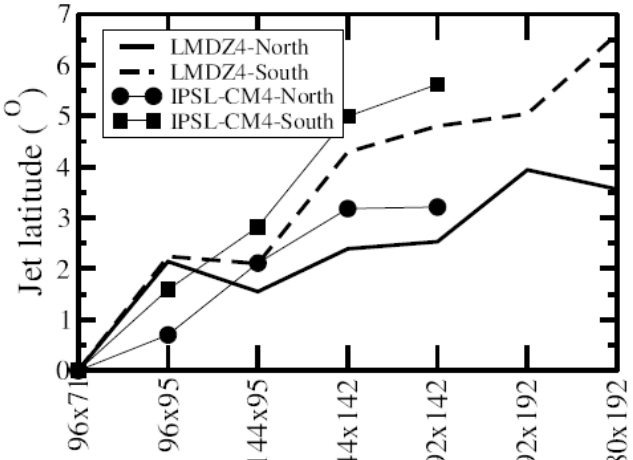
SST Bias °C



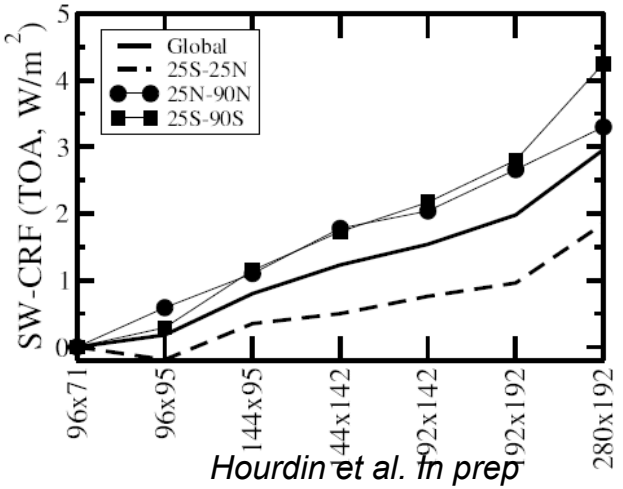


Improved ocean transport at Drake

Poleward shif of jet in AMIP and OA



Impact of mid latitude clouds on heat budget



Hourdin et al. In prep

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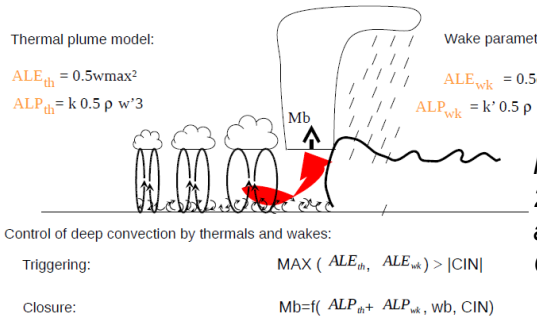
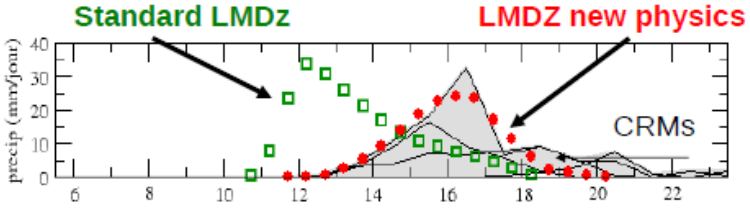
New atm physics

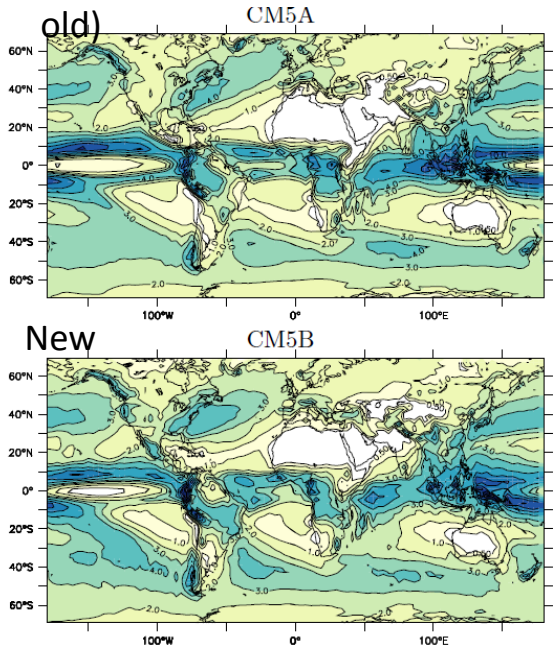


Hourdin et al., 2002 + Rio et al., 2008, 2009,1010 + Couvreux et al. 2010 + Jam et al., soumis+ Grandpeix et al., x2 2010

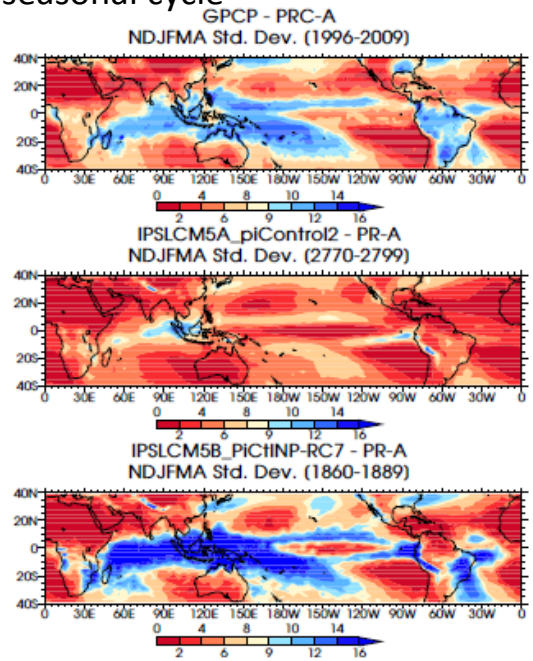
1D diurnal cycle precipitation (convection)



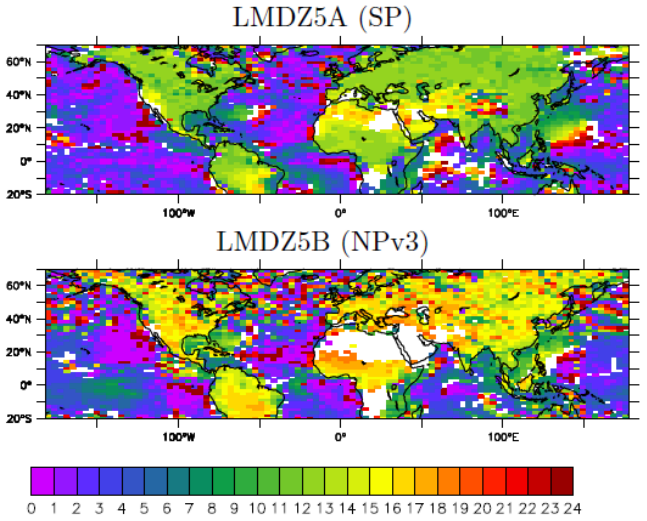
OA simulations: Precipitation



Precipitation 2-120 day std / seasonal cycle



3D : Local hour of max rainfall



Hourdin et al. In prep

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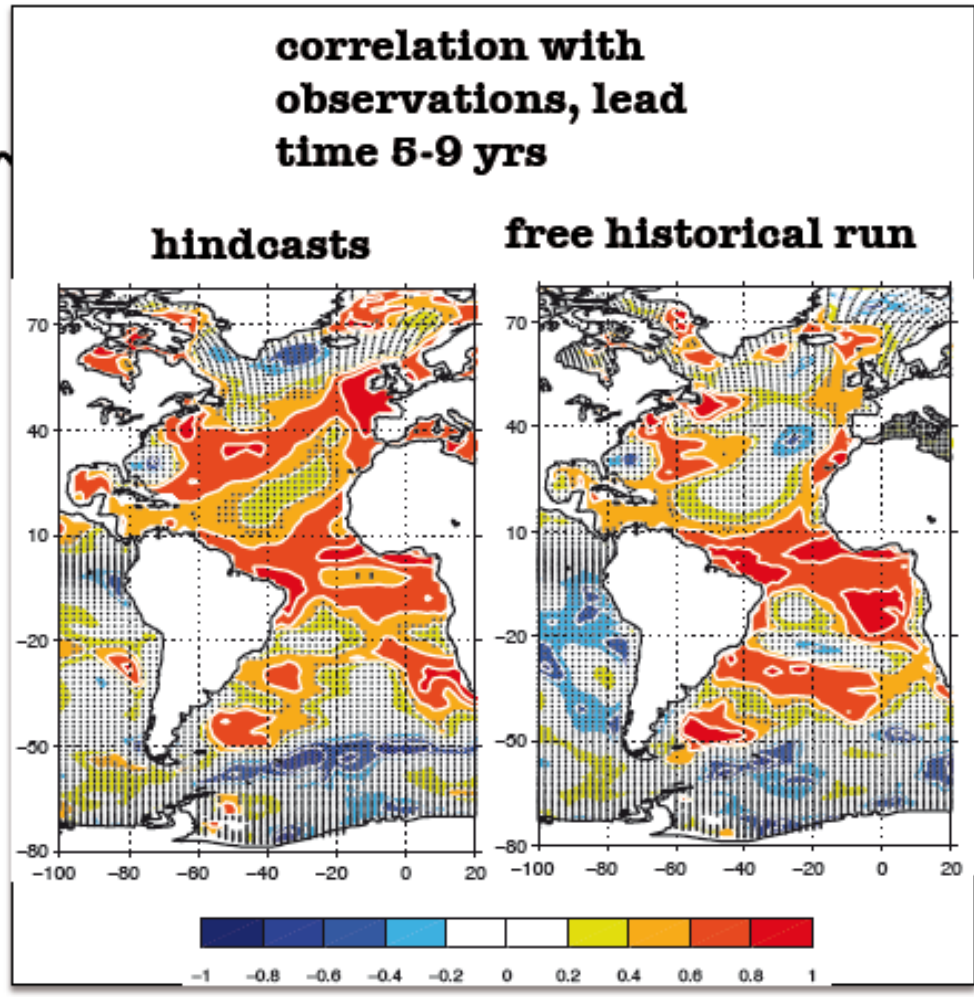
Decadal at IPSL



Initialisation
SST anomalies / Reynolds et al. (2007)
SST = SST climato historical simulation + SSTa
Q = -gamma (SST- SSTnudg)
Gamma = -40W/m2/K

Mignot et al, conf Reading

Laplace

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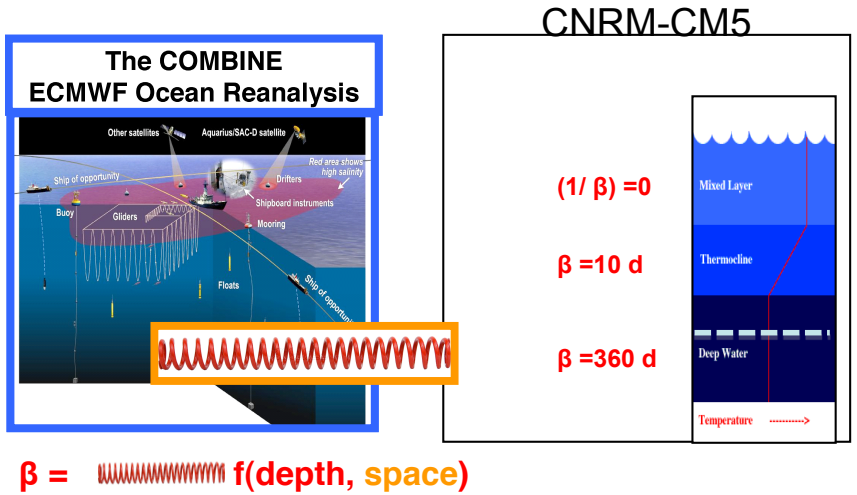
Decadal at CERFACS

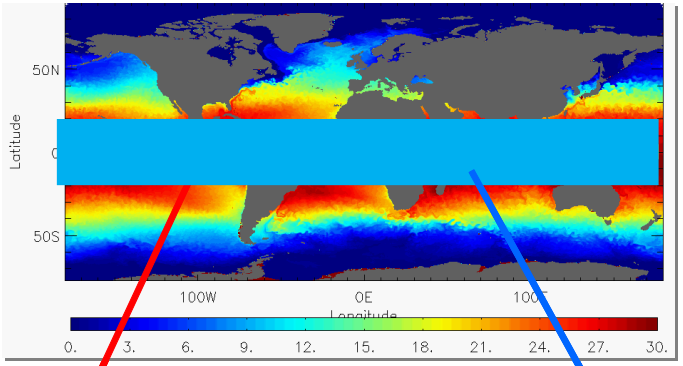
From C. Cassou

Full Initialization: Ocean Only in a coupled mode from 1958 to 2008



β = f(depth, space)

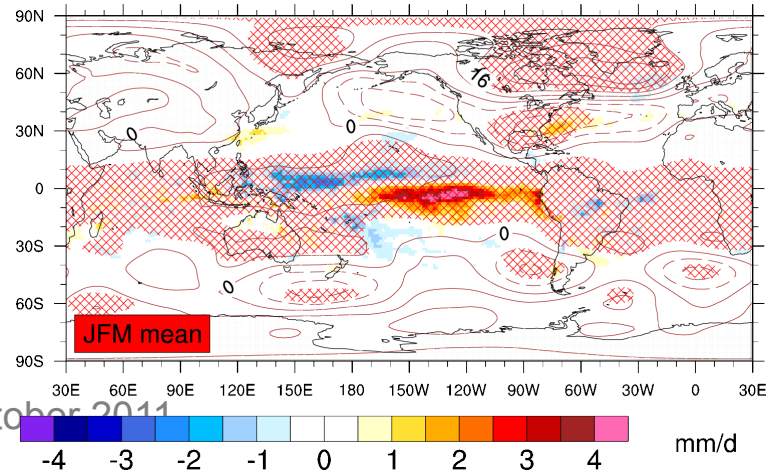
Sensitivity experiment to test ocean initialization



GLOB → No 3D nudging within the 1° S-1° N band

EXTROP→ No 3D nudging Within the 15° S-15° N

Color=precip / contour=Z500 (significance hatching)



- Extreme sensitivity to initialization
- Need test hypothesis that linear drifts can be simply removed from raw forecast fields to compute a posteriori predictive skills
- Some promising skill in CNRM-CM5 in Atlantic

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