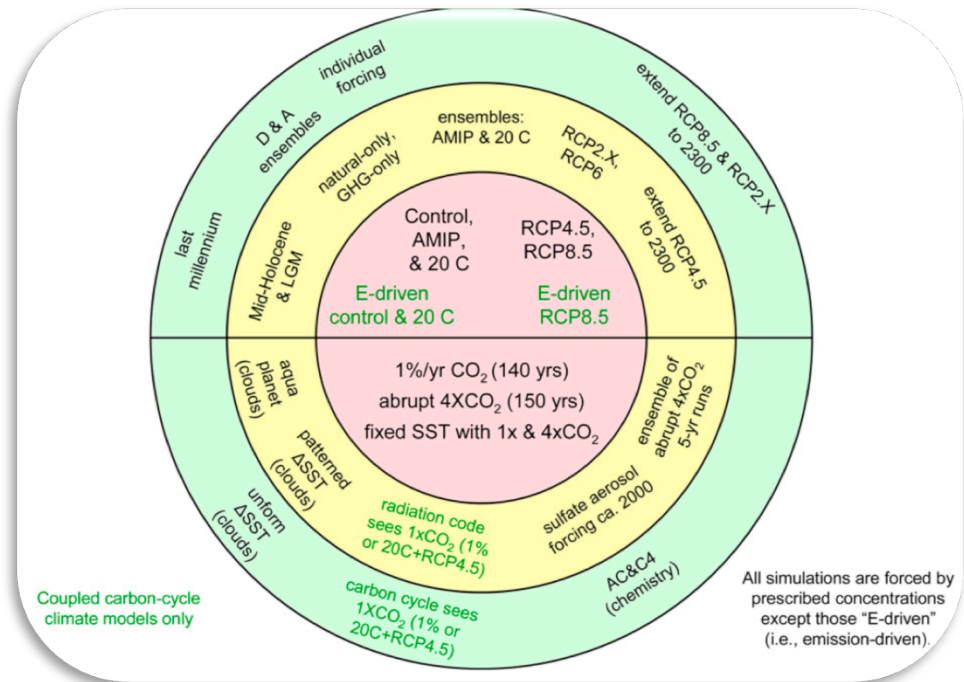


Paleoclimate Working Group CMIP5 simulations

- Last Millennium simulation: 850 – 2005 AD (Landrum talk)
- Mid-Holocene (6000 yrs BP): 500 years
- Last Glacial Maximum (21,000 yrs BP) simulation: 1000 years (Brady talk)

All with CCSM4 1-degree model; CMOR-ized & available from PCMDI and/or ESG



Paleoclimate Working Group

CMIP5 / PMIP3 simulations

List of PMIP3/CMIP5 participants
Information as of December 1st 2011

Up to date info: <https://pmip3.lscce.ipsl.fr/wiki/doku.php/pmip3:database:status>

	Group	Country	0k piControl	6k midHolocene	21k Igm	LM past1000	CMIP5	PlioMIP	Carbon cycle	Atm	Ocn	Model id
1	AWI	Germany	Completed	Completed	Completed		No	Yes	Yes	96x48 x L19	120x101 x L40	
2	BCC	China	CMIP5	CMIP5		CMIP5			Yes	128x64 x L26	360x232 x L40	bcc-csm1-1
3	BCCR	Norway	Running Spring 2011	Start Sum 2011 Fall 2011	Start Sum 2011 December 2011	Start Sep 2011 Spring 2012	No	Yes	Yes			
4	CAU IFM-GEOMAR	Germany	Completed	Completed			No	Yes	No	96x48 x L19	182x149 x L31	
5	CNRM/CERFACS	France	CMIP5	CMIP5	Running November 2011				No	256x128 x L31	362x292 x L42	CNRM-CM5
6	FUB	Germany	Completed		Running September 2011		No		Yes	96x48 x L19	120x101 x L40	
7	GFDL	USA	CMIP5		Start end 2011 Mid 2012				Yes/No	144x90 x L24	360x200 x L50	GFDL-CM3
8	GISS	USA	CMIP5	Running September	Running July 2011?	Running July 2011 ?		Yes	No	144x90 x L40	288x180 x L32	GISS-E2-R
9	IPSL	France	CMIP5	CMIP5	Running December 2011	Running February 2012		Yes	Yes	96x95 x L39	182x149 x L31	IPSL-CM5A-LR
10	KNMI	Netherlands	Completed	Completed				Yes	No	320x160 x L62	362x292 x L42	
11a	LASG/IAP	China	Completed	Completed	Not started October 2011				No	128x60 x L26 FGOALS_g2.0	360x180 x L30	
11b			Completed			Completed		Yes	No	72x45 x L26 FGOALS_gl		
12	LOVECLIM	Belgium	Completed	Completed	Completed	Completed	No		No	32x64 x L3	122x65 x L20	
13	MIROC	Japan	CMIP5	Running November 2011	Completed	Completed		Yes	Yes	128x64 x L80	256x192 x L44	MIROC-ESM or MIROC4m
14	MPI	Germany	CMIP5	CMIP5	CMIP5	CMIP5			No	196x98 x L47	256x220 x L40	MPI-ESM-P
15	MRI	Japan	CMIP5	CMIP5	Running Dec 2011?	Not started July 2012?		Yes	No?	320x160 x L48	364x368 x L51	MRI-CGCM3
16	NCAR	USA	Completed	Completed	Completed	Completed		Yes	No	288x192 x L26	320x384 x L60	
17	OSUvic	USA	Completed	Not started	Running November 2011		No		No	128x64 x L10	100 x 100 x L19	
18	QCCCE/CSIRO	Australia	CMIP5	CMIP5					No	192x96 x L18	192x192 x L31	CSIRO-Mk3-6-0
19	UK Groups (UBRIS/LEEDS/EDINB URGH - Hadley)	UK	CMIP5	Completed	Not started Spring 2012	Running Summer 2012		Yes	Yes	192x145 x L38	360x216 x L40	HadGEM2-ES
20	UNSW	Australia	Completed	Completed	Not started September 2011	Completed	No	Yes	No	64x56 x L18	128x112 x L21	

Legend

Status expected completion date	Available in the CMIP5 DB
No	
Yes	

PMIP3 + PlioMIP groups:

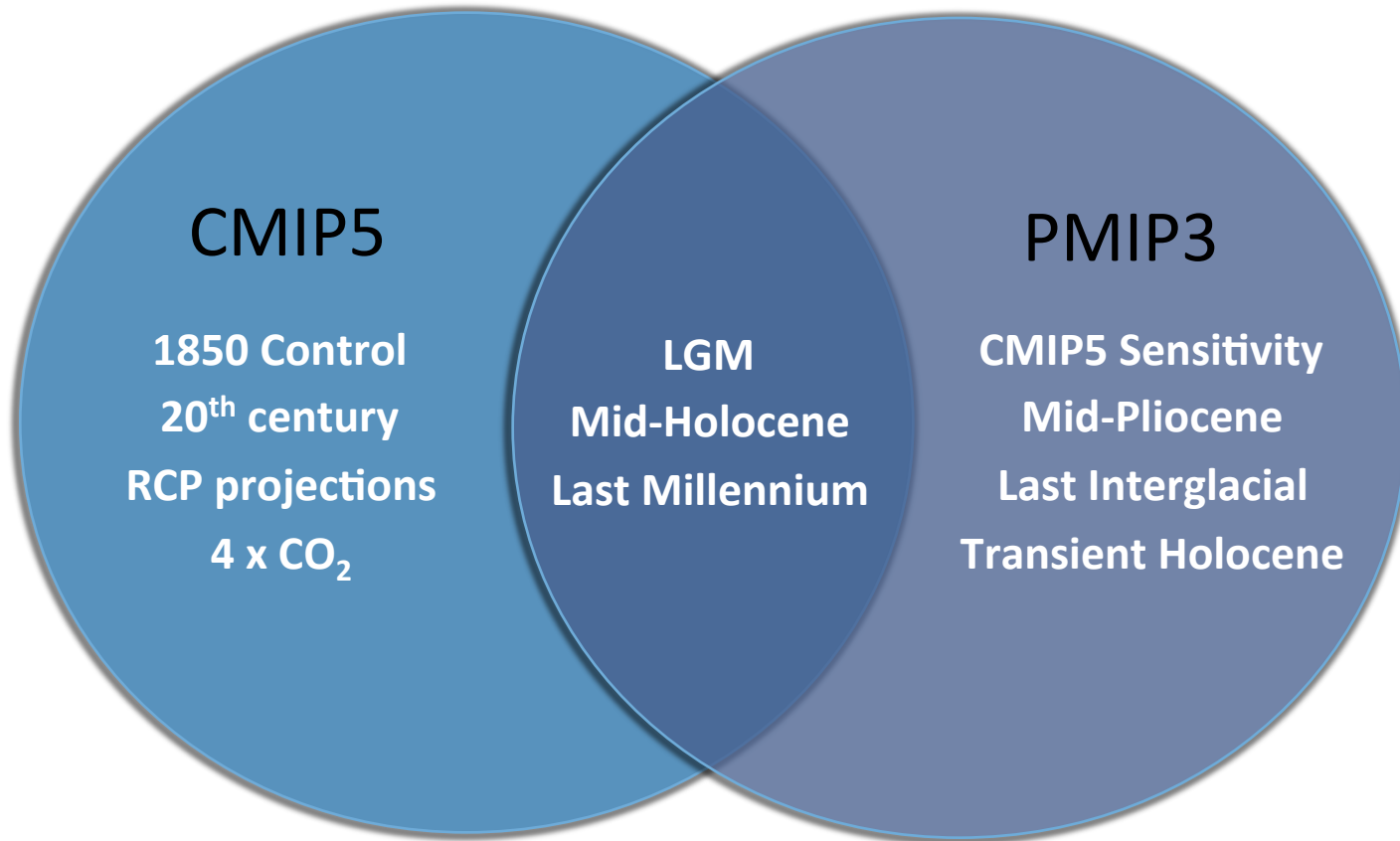
Note that the models used for PlioMIP are often
not (exactly) the same as the ones used for PMIP3/CMIP5

PlioMIP-only (not in the table):

LPAP, UoM

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Additional PMIP₃



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Additional PMIP₃

- Additional PMIP3 with CCSM3/4
 - LGM CO₂ sensitivity simulation: CCSM4, 1100 years – Talk yesterday by Esther Brady
 - Mid-Pliocene (3 million yrs ago): CCSM4, 500 years – Talk by Nan Rosenbloom
 - Last Interglacial, CCSM3 Snapshots

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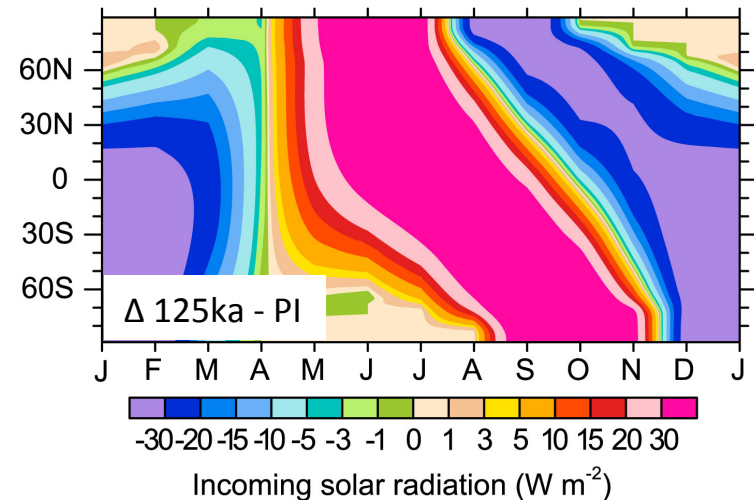
Additional PMIP₃

➤ Last Interglacial Time Slices

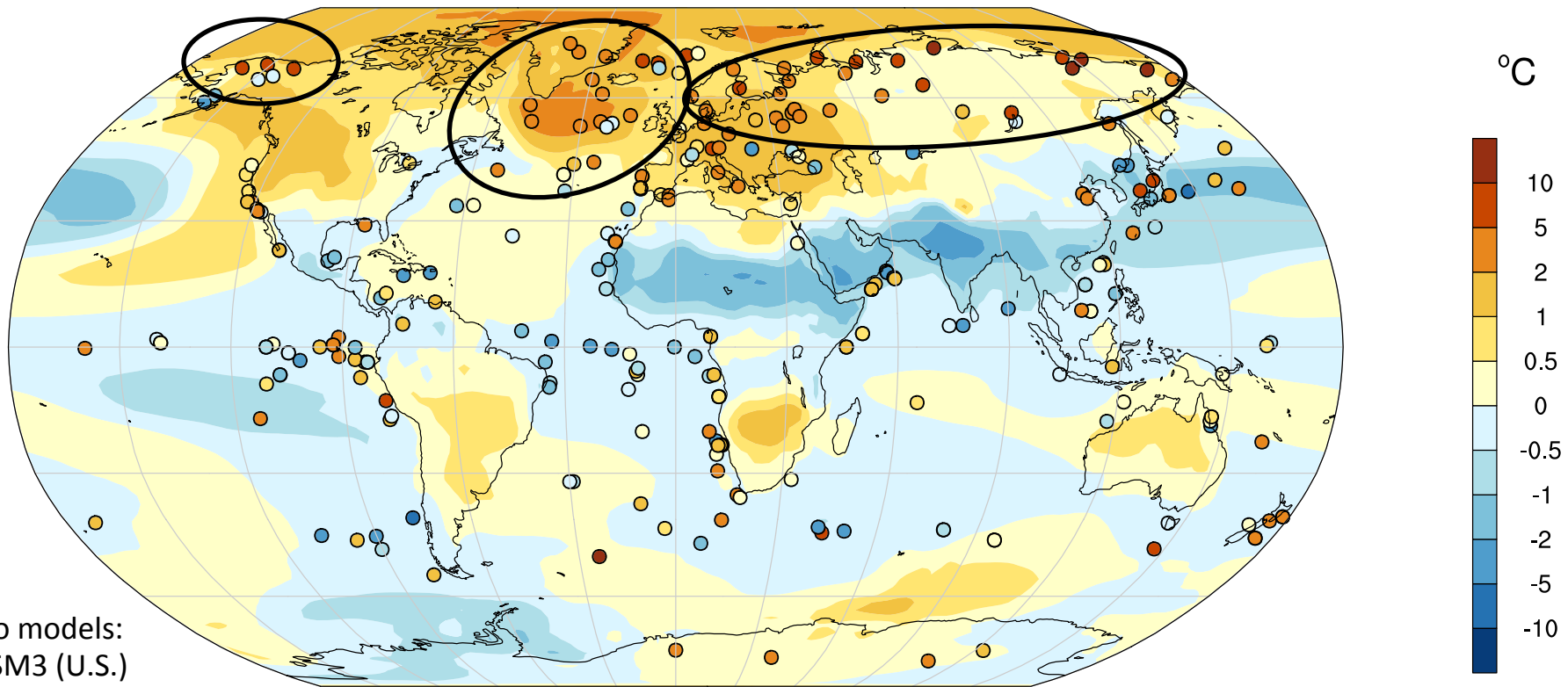
Goal: Run **early Eemian**, **mid-Eemian** and **glacial inception** snapshots. This will allow us to model the high latitude response to obliquity maximum (*130ka*) and minimum (*115ka*), and near precession optimum for ITCZ shift, ENSO and tropical monsoons (*125ka*)

➤ CCSM3 T85x1

➤ 130ka, 125ka, 120ka



Annual Surface Temperature Change: 125ka – PI

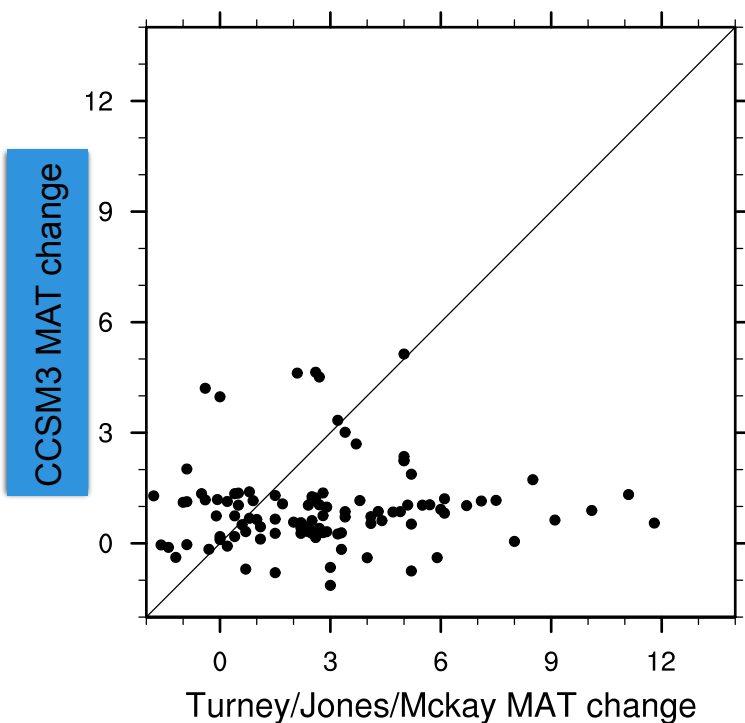


Two models:
CCSM3 (U.S.)
HadCM3 (U.K.)

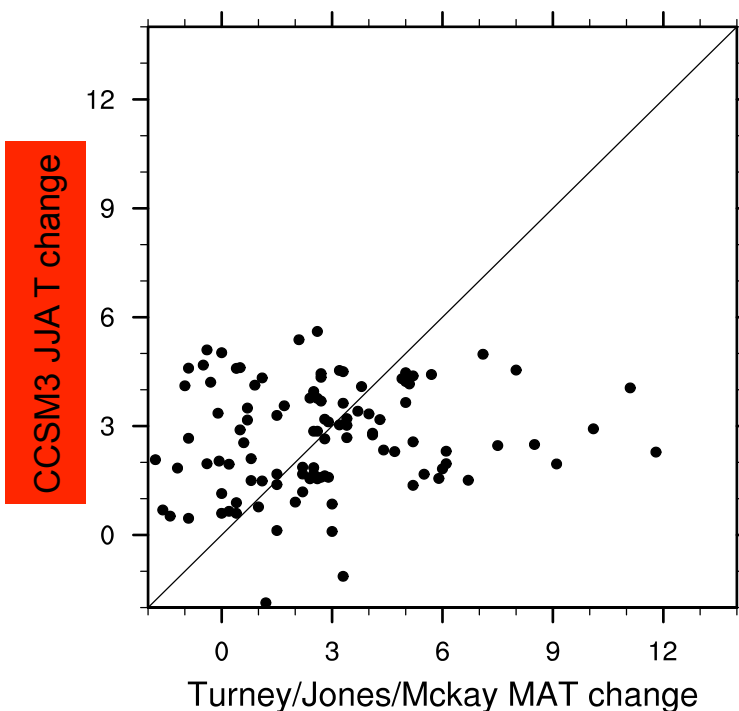
Data:
Turney & Jones, JQS, 2010
McKay et al., GRL, 2011

Annual vs Seasonal Surface Temperature Change: 125ka – PI

NH Extra-Tropics

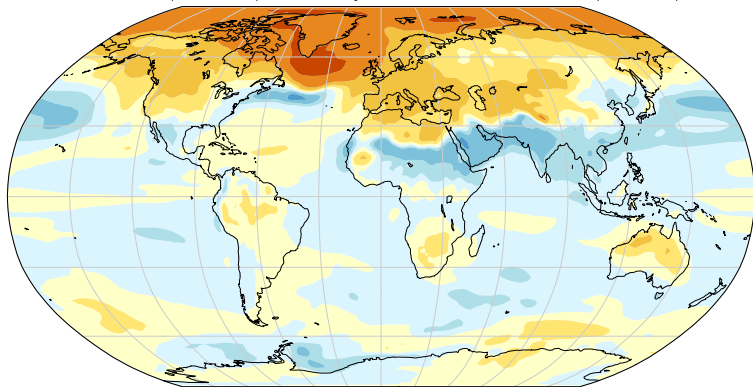


NH Extra-Tropics

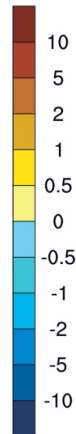


Maximum warmth is not globally synchronous

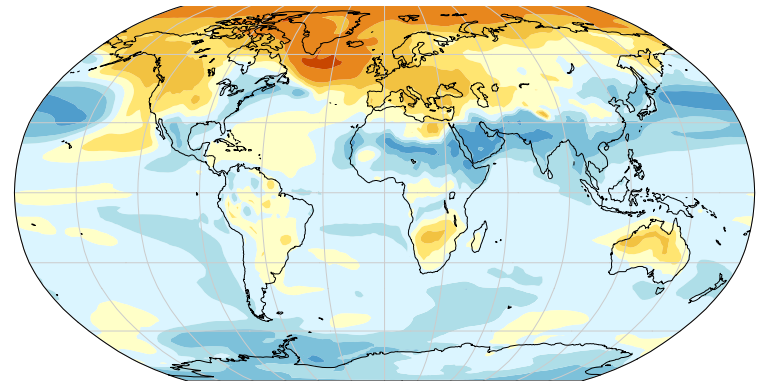
130ka – PI



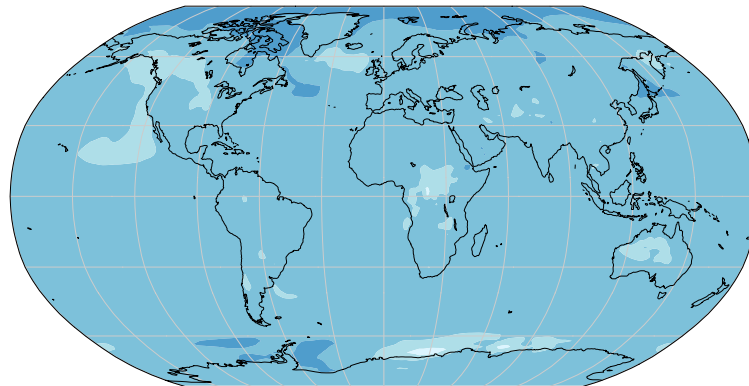
ΔT



125ka – PI



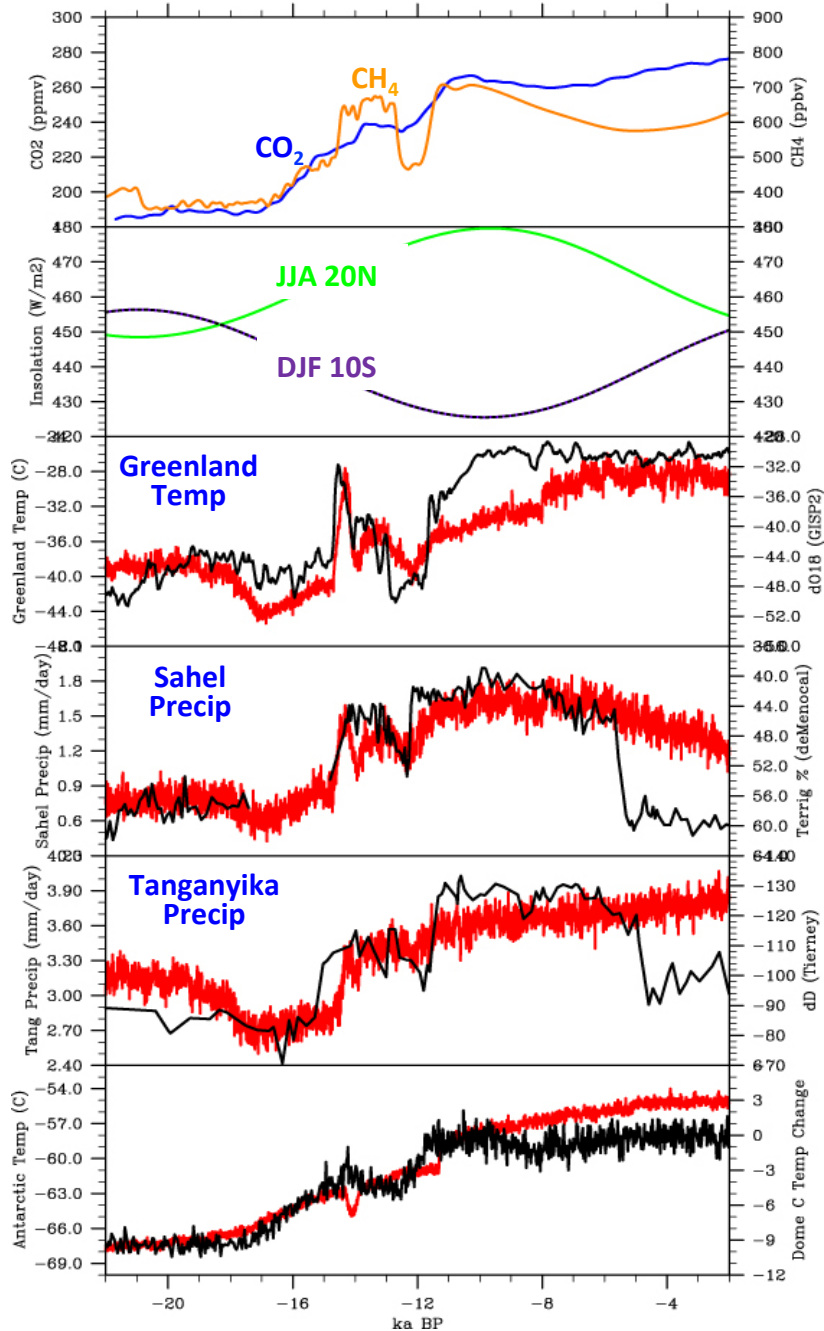
120ka – PI



Paleoclimate Working Group

Additional PMIP₃

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 - Last Interglacial, CCSM3 Snapshots
 - Transient Holocene (8-2ka), CCSM3 (TraCE-21,000)



Transient “forcings”

Greenhouse Gases: CO₂, CH₄, N₂O
 Orbital Insolation
 Ice Sheet Extents and Heights
 Meltwater Fluxes

Transient responses

Greenland Temperature

Sahel Precipitation

Tanganyika Precipitation

Antarctic Temperature

** Black: Proxy data estimates
 Red: CCSM3 simulations