



National Aeronautics and Space Administration  
Goddard Institute for Space Studies

Goddard Space Flight Center  
Sciences and Exploration Directorate  
Earth Sciences Division

# GISS Perspective on CMIP6

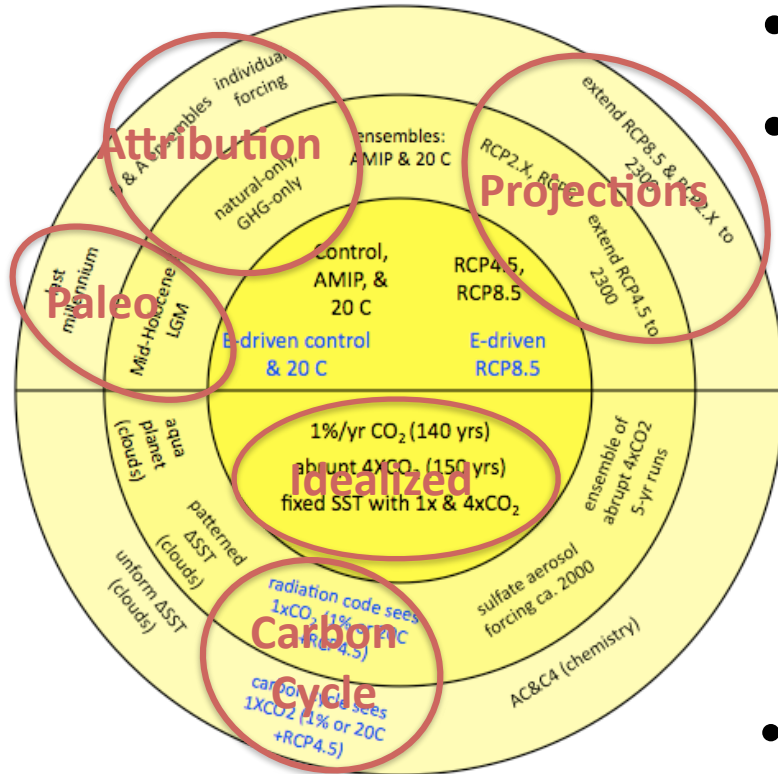
WGCM Oct 2014

Susanne Bauer, Gavin Schmidt and  
GISS ModelE Team



Goddard Institute for Space Studies

# GISS Contributions to CMIP5

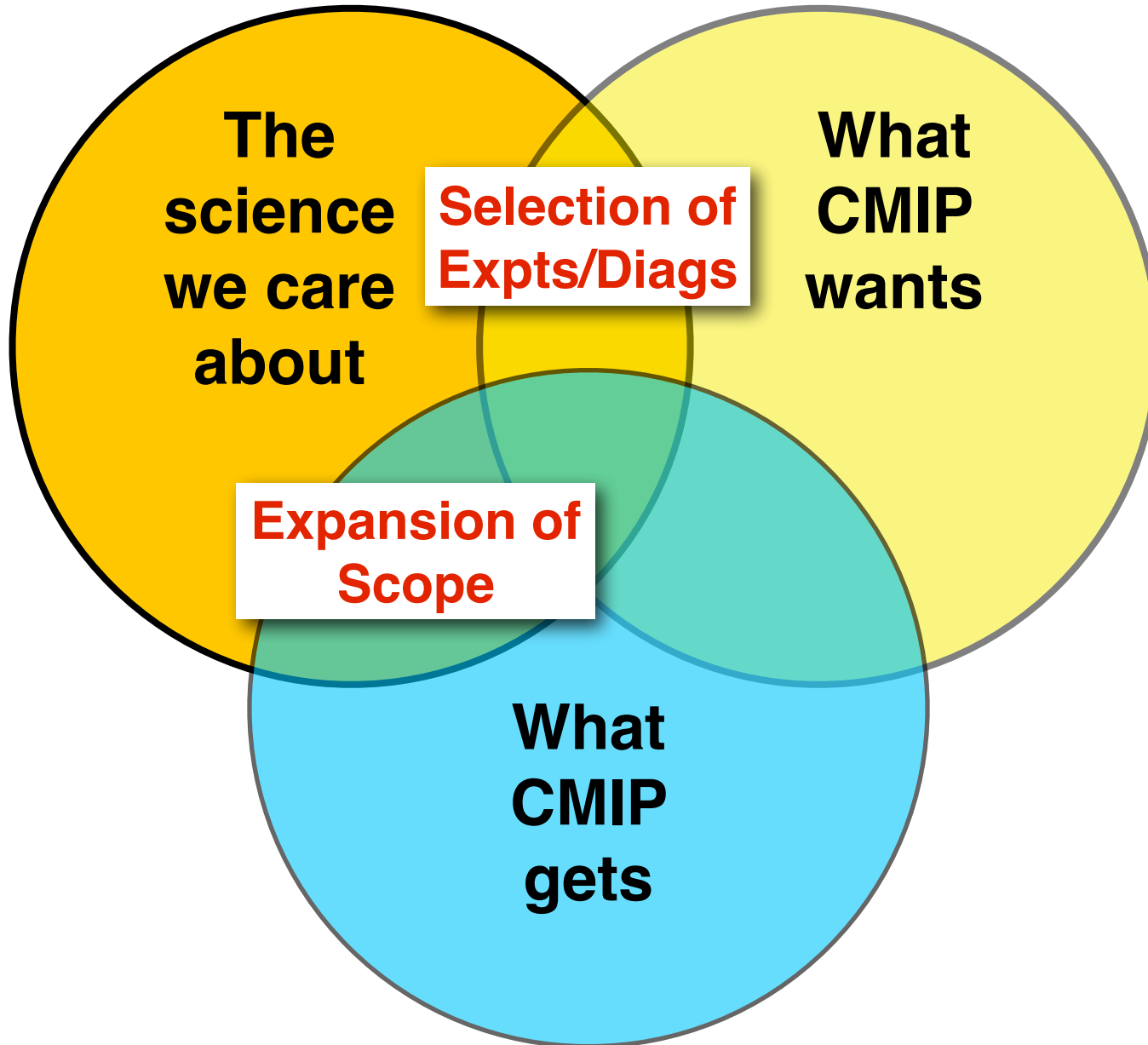


- GISS-E2-R GISS-E2-H
- 2 x 2.5 degree, 40 vertical layers
- 6 model configurations:
  - 2 oceans: Russell + HYCOM
  - 3 treatments of chem/aerosols/AIE
  - NINT: Non-INTERactive (tuned AIE)
  - TCAD: Tracers Chem/Aer/Direct Eff
  - TCADI: TCAD + first AIE
- 80,000+ model yrs; ~400 distinct simulations
- ~70 TB contributed to archive (internally ~500 TB)
- Extensive ensembles: forcings + IC



# Fitting CMIP into our research priorities

Goddard Institute for  
Space Studies





# GISS Contributions to CMIP6

Goddard Institute for  
Space Studies

- GISS-E3: AGCM configurations:
  - 2 treatments of chem/aerosols/AIE
    - Non-Interactive Chemistry: Aerosol, Ozone  
(or use CMIP6 off-line fields??)
    - MATRIX aerosol microphysics and cloud microphysics  
(AIE effects on warm/mixed/ice clouds)
- Cubed sphere C180 ( $\sim 0.5^\circ$ )
- Model top: 0.1 to 0.001 hPa (TBD),  $\sim 80$ -100 vertical levels
- OGCM:
  - 2 treatments within same ALE (Arbitrary Lagrangian Eulerian framework) ( $z^*$  and isopycnical)  $\sim 0.5^\circ$  - hoping for Cubed Sphere topography
- Full carbon cycle (GISS-E3-CC)



Goddard Institute for  
Space Studies

# Feedback on CMIP6-DECK

- In general we agree with the new DECK and NUCLEUS
- We strongly support frequent reruns of DECK simulations
- Strong recommendation that Historical-Ext be included as default for D&A purposes. Forcings to get updated each year.
- AMIP might as well be full period (1850+)



Goddard Institute for  
Space Studies

# Comments on CMIP6-endorsed MIPs

We have identified contact person for each MIP we intend to participate in.

However, new rules will need to be communicated (full commitment to Tier 1 experiments) and that might change some commitments.



Goddard Institute for  
Space Studies

# GISS interest in MIP's and contact person - so far 19 MIPs

1	AerChemMIP	Susanne Bauer
2	C4MIP	Anastasia Romanou
3	CFMIP	George Tselioudis
4	DAMIP	Larissa Nazarenko
5	DCPP	
6	FAFMIP	Joy Romanski
7	GDDEX	
8	GeoMIP	
9	GMMIP	Sonali McDermid
10	HighResMIP	
11	ISMIP6	Sophie Nowicki
12	JCOMM*	
13	LS3MIP	Michael Puma

14	LUMIP	Nancy Kiang
15	nonlinMIP	
16	OCMIP6	Anastasia Romanou
17	PDRIP	Drew Shindell
18	PMIP	Allegra LeGrande
19	RFMIP	Susanne Bauer, Ann Fridlind
20	ScenarioMIP**	TBD
21	SensMIP	Robert Field
22	VolMIP	Allegra LeGrande Kostas Tsigaridis
23	CODEX	Matthew Fulakeza
24	DynVar	David Rind
25	VIAAB	Alex Ruane



Goddard Institute for  
Space Studies

# Other issues

Moving targets:

MIP's will be done by CMIP5 or CMIP6 models? - By the end will  
might be a mix. Is that a problem?

COSP simulators: Should include Aerosols!

When is ESGF going to have:

- basic analysis (global/hemi means etc.)?

- contributed data and code repository?

Absolute necessity for forcings to be included as separate index: i.e.  
rip --> ripf

Diagnostic needs:

- Transient radiative forcings

- Complete budget terms (water/mass/energy/carbon)