



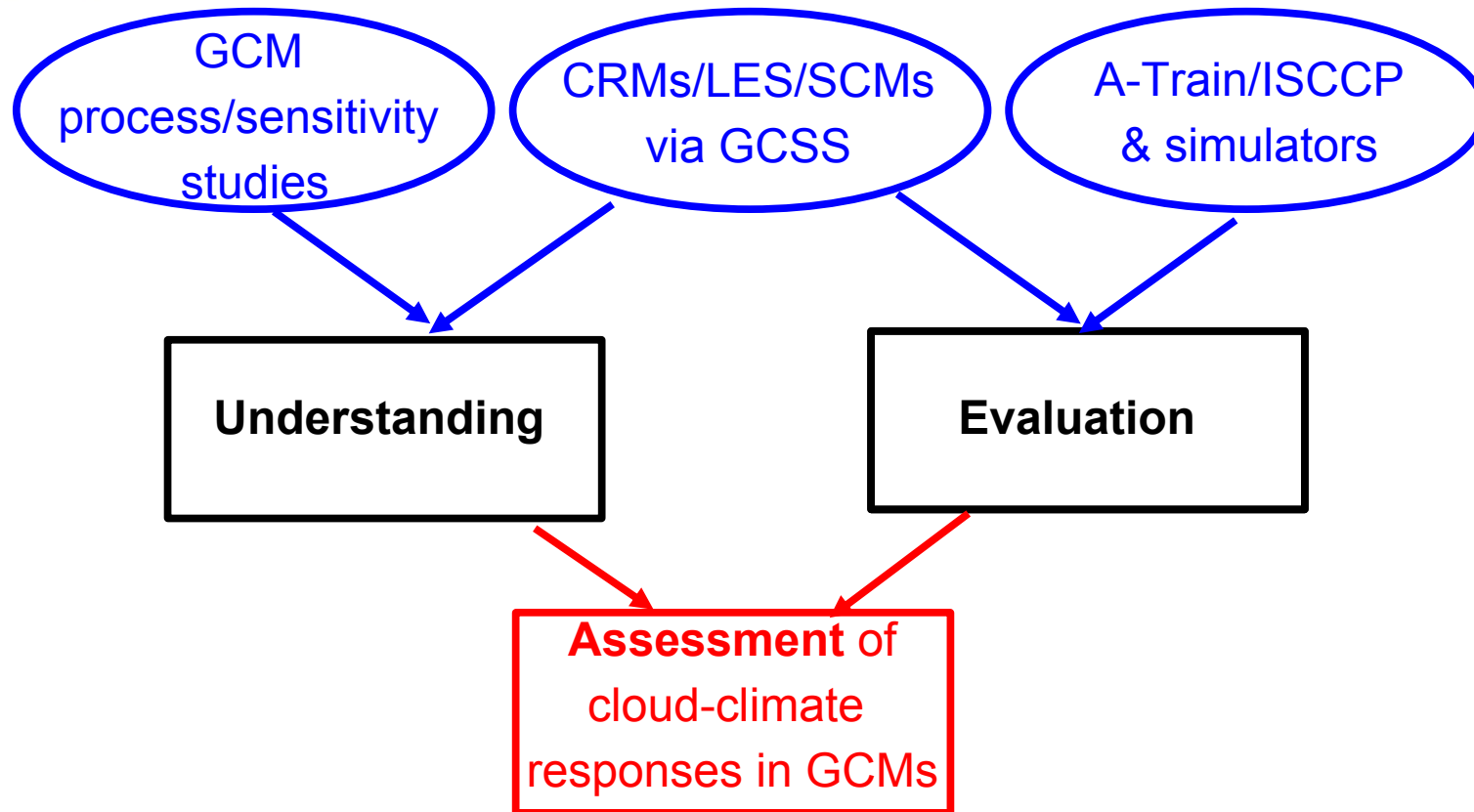
# Cloud Feedback/CFMIP Working Group

Mark Webb, Sandrine Bony, Chris Bretherton, George Tselioudis

4th PAN-GCSS meeting: "Advances in modelling and observing clouds and convection." Toulouse , June 2008



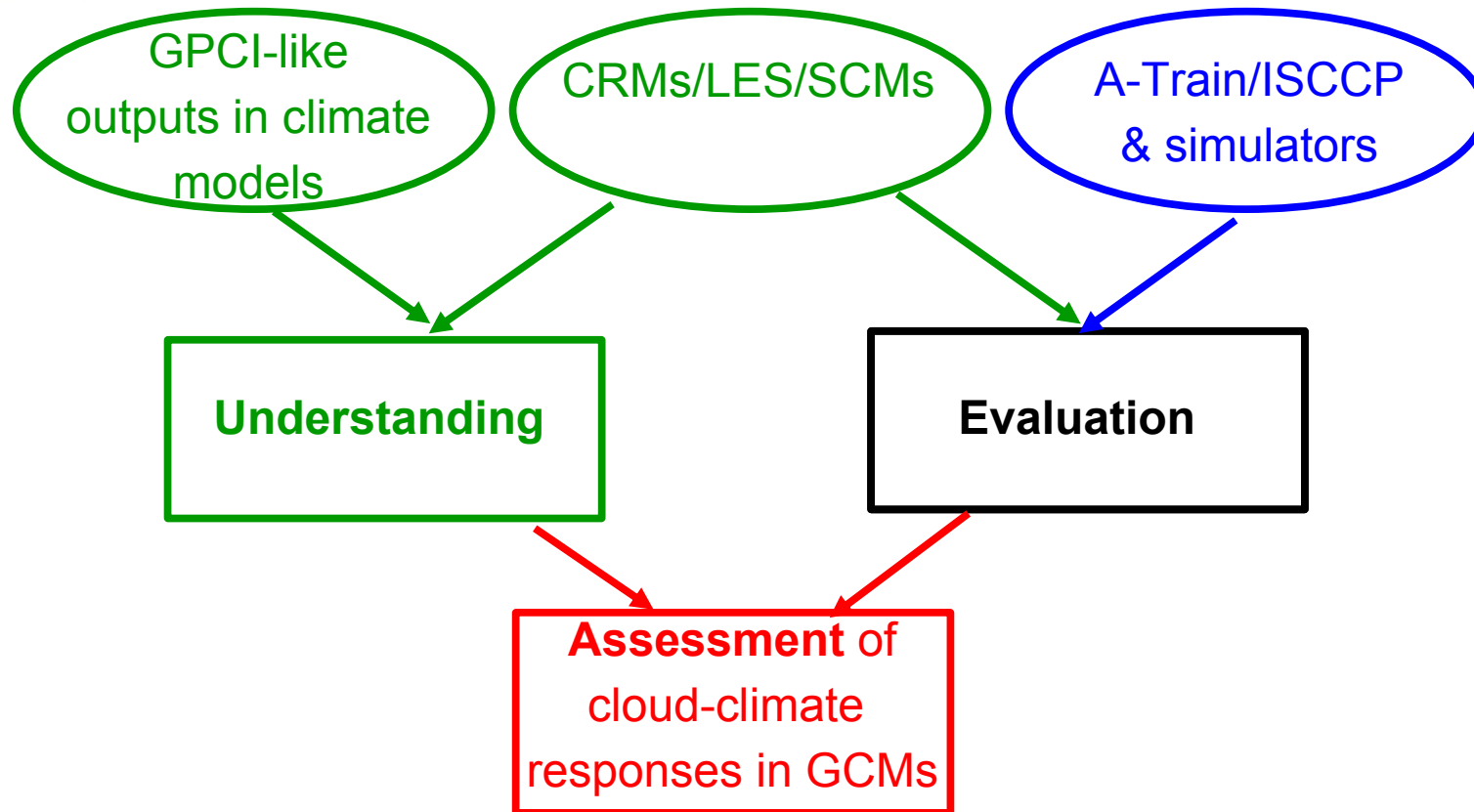
# Cloud Feedback Model Intercomparison Project Phase 2 (CFMIP-2)



Coordinators: Mark Webb, Sandrine Bony, George Tselioudis, Chris Bretherton

**[Full proposal available at: <http://www.cfmip.net> ]**

# GCSS related elements



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# CFMIP ISCCP/CloudSat/CALIPSO simulator (CICCS)

Being developed collaboratively  
(UKMO,IPSL, LLNL,CSU, UW)

Beta release available since February

CMIP5/CFMIP2 release aimed for July

Pilot studies (summer 08-summer 09)

Future modules: MISR, RTTOVS,PARASOL

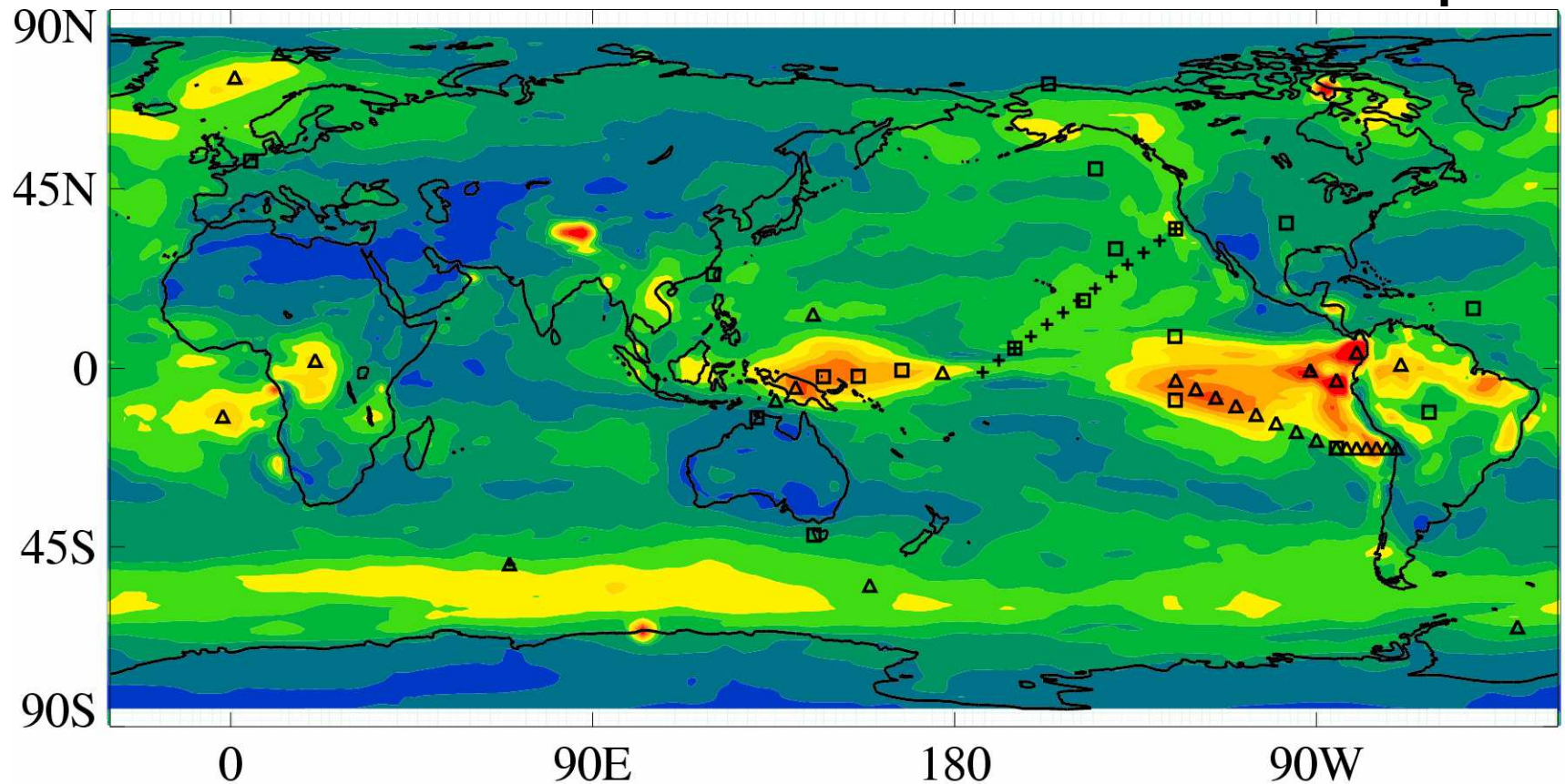
WG suggestions: joint CloudSat/CALIPSO products  
TRMM/passive microwave  
(code please!)



# CFMIP2 experiments

- atmosphere only integrations
- any carbon cycle run diagnostically with present day CO<sub>2</sub>
- 20 years long
  
- control forcing: observed SST/sea ice climatology (85-06)
- CO<sub>2</sub> forcing: control SST + 2CO<sub>2</sub>
- patterned SST response: control + CMIP 1% composite
- uniform SST response: control + 2K (-2K?)
  
- aquaplanet control (42 months)
- aquaplanet uniform SST response (+2K)
  
- sensitivity experiments

# Locations for GPCI –like CFMIP-2 output



0 2 4 6 8 10

- GPCI/Tropical West Pacific and SE Trop Pacific sections
- ARM/CPT. Field studies? AMMA-CROSS? CEOP?
- Indian Monsoon? Specific recommendations please!



# Additional output variables for CMIP5 and CFMIP2 experiments

TOA/surf fluxes, cloud fraction/water/mass fluxes/winds etc  
all years monthly, 20 years daily, 20 yrs 1-3hrly point data

ISCCP simulator output (run in models)  
all years monthly, 20 years daily

CICCS output (run offline or inline at local overpass time)  
2-3 yrs AMIP/C20C, 1 year climate change (daily/monthly)

CICCS inputs (T/q/cloud/3D precip) (present day only)  
1 year? of 3 hourly global instantaneous snapshots

Cloud/T/q tendency terms/3D rad flux accumulations  
20 years monthly, 1 year daily, 1 year timestep point data



# GCSS / CFMIP interactions around SCM/LES/GPCI

Ultimate goal: to understand and assess the credibility of cloud-climate responses in **climate models** using **SCM/LES**

Current focus: trade Cu and Sc over Cu regimes

H1/ **SCM case studies** can capture the different **GCM cloud climate responses** in these regimes. We can test this using existing **CFMIP output** (e.g. positive/negative SW responses)

H2/ **LES models** show less spread and expose **SCM flaws**

We also hope to **understand the cloud response mechanisms** in the **SCM case studies**, and to assess their **relevance to the full GCMs** using **GPCI-like** output from **CFMIP-2 GCMs**



# Acknowledgements

Alejandro Bodas-Salcedo, Sandrine Bony,  
Steve Klein, Tomoo Ogura, Brian Soden,  
Johannes Quaas, Mark Ringer, Karl Taylor,  
George Tselioudis, Joao Teixeira, Keith Williams,  
Rob Wood



# Proposed CMIP5 experiments

Those currently proposed include (but are not limited to):

- AMIP and 20C coupled
- CO<sub>2</sub> forcing: 4CO<sub>2</sub> atmos with SST/ice from coupled control
- coupled pre-industrial, 1% and instantaneous 4xCO<sub>2</sub>

Slab experiments will probably be dropped