

# GO-ESSP 2008: Themes and Challenges

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# GO-ESSP 2008 themes:

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- Focus: Preparation for CMIP5/AR5
  - CMIP5: Fifth Phase of the Coupled Model Intercomparison Project
  - AR5: IPCC Fifth Assessment Report
- Also consider the bigger picture
- Cooperation

# CMIP5 / AR5 background

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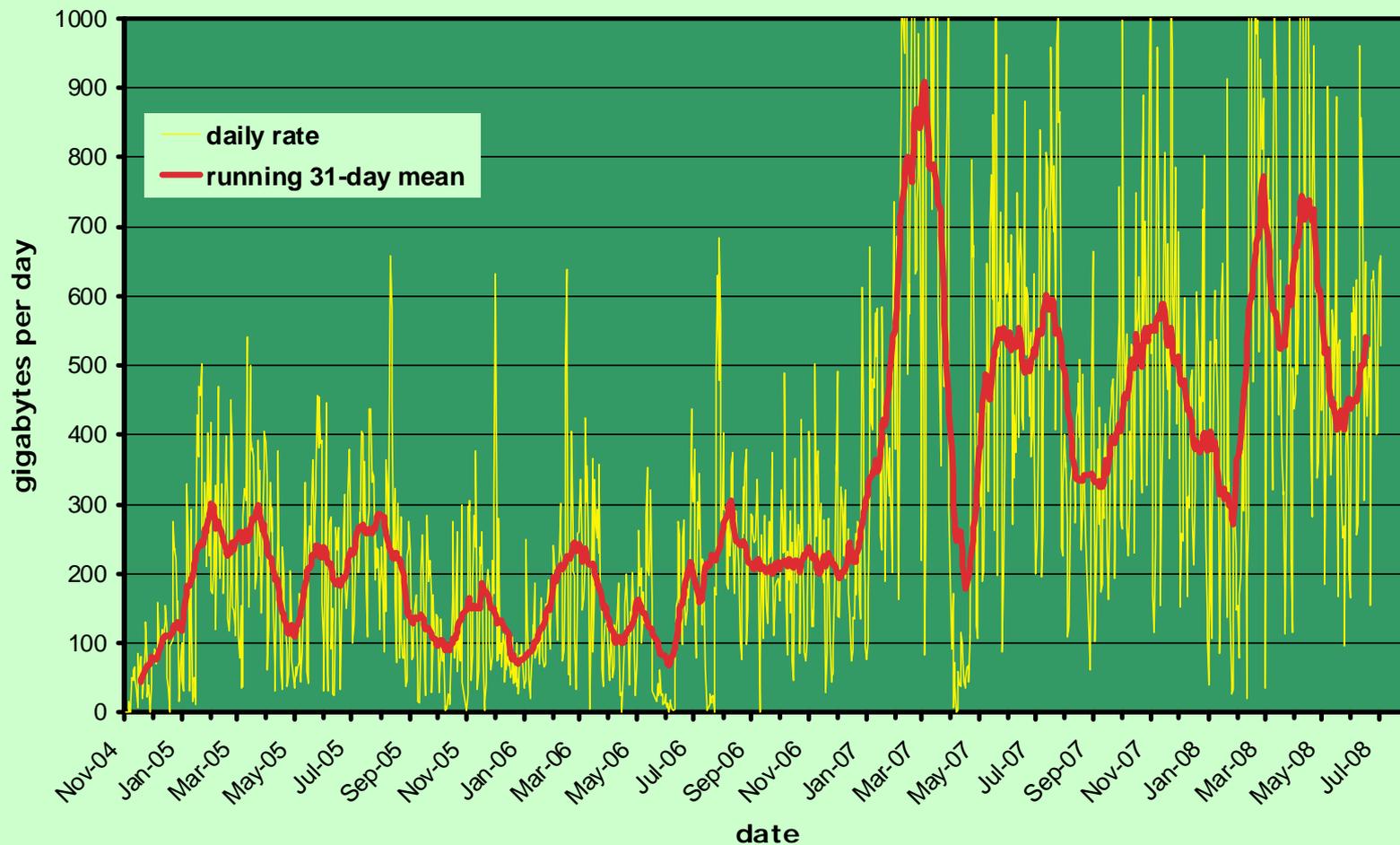
- CMIP3 / AR4 was most ambitious cooperative international climate modelling project attempted.
  - 17 modelling centers; 23 models
  - About a dozen simulations from each model (more than 2000 years simulated by each model)
  - More than 35 Tbytes of data archived at PCMDI
- CMIP3 has provided model output analyzed by:
  - More than 2000 registered users (1/2 petabyte downloaded)
  - Acknowledged in over 400 journal articles
- CMIP3 provided most of the new modeling results cited in the IPCC's AR4 (Working Group 1)
- The community expects as good or better next time around

# CMIP3 model output continues to serve scientists

Courtesy of Bob Drach

WCRP CMIP3 Multi-Model Dataset Download Rate

9/16/2008



# CMIP5 models, simulations, and output characteristics:

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- Models will be more comprehensive
  - Atmospheric chemistry
  - Carbon cycle
- Models to be run at higher resolution
- Future scenarios will cover:
  - "Near-term" 20-30 year projections (initial ocean conditions)
  - "longer-term" stabilization scenarios (carbon cycle)
- Model output will be perhaps  $O(10)$  times larger than for CMIP3 (i.e., 300-1000 Tbytes).

# CMIP5 / IPCC AR5 timeline:

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- September 2008
  - Experiment design agreed upon at WGCM meeting (next week)
  - Mandatory & recommended experiments specified
- November 2008
  - standard output finalized
  - New version of CMOR released, accommodating non-rectangular grids
- January 2009
  - Some modeling groups begin running benchmark experiments
  - January: ESG testbed established
- mid-2009-2010: Experiments run and made available through GO-ESSP
- 2013: AR5 published.

# Minimum data requirements of CMIP5

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- Made available as CF-compliant netCDF files
- Stored on rotating disks
- Transferred to users via scriptable instructions from users (or browser)
- Moved reliably from modeling centers (unable to serve as a node on ESG) to PCMDI
- Protected against unregistered users

## Valuable additional capabilities.

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- Ability to subset, concatenate, average.
- A general user-friendly “regridder” for putting all output on a common grid.
- Essential to inform users of corrections to archived data (automate this!).
- Provide additional documentation
  - Models
  - Experiment conditions (e.g., which forcings included)
- Coordinate/integrate data services of WG1 and WGs 2&3

# GO-ESSP challenges

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- Must not fail!
- More than enough work - no one will be left out.
- There are now several funded projects internationally with similar goals.

Can GO-ESSP help coordinate the efforts to maximize value and assure compatibility without stifling innovation and progress?