# **Community Atmosphere Model**

Representing the key atmospheric processes in CAM5



## **CAM Development Process**

### Strategic Science Plan For Input

New science opportunities for CESM2 (high-level questions, can be done in the next 2-3 years)

> AMWG specific science targets

Cross-WG questions and performances

Bias reduction and new functionalities to enable science research

## **CAM Development Process**

### Strategic Science Plan For Input

New science opportunities for CESM2 (high-level questions, can be done in the next 2-3 years)

- high-resolution phenomena
- sea-level rise
- near-term prediction
- enhanced biogeochemistry
- climate-human interaction
- ??

## **CAM Development Process**

### Strategic Science Plan For Input

> AMWG specific science targets

- MJO and Intraseasonal variability
- Diurnal variation of rainfall
- Cloud feedback
- Aerosol indirect effects
- ENSO response
- Regional climate statistics
- ??

## **CAM Implementation Plan For Feedback**

### Draft documents

- CAM development protocols
- Simulation metrics
- Near-term development activities

#### Working Groups

About Administration

#### AMWG | ATMOSPHERE MODEL WORKING GROUP

Submitted by emarcum on April 23, 2013 - 1:00pm

The Community Atmosphere Model (CAM) is the atmosphere model component of the CESM. Information about running CAM as the atmospheric component of the CESM is found in the CESM1.0 release. For information on CAM microphysics, visit the CAM Microphysics Development Group.

Models Events Publications Projects

- CAM3.0 Diagnostics
- CAM4.0 Diagnostics
- CAM Strategic Plan

Home

NCAR

UCAR

- CESM AMWG Diagnostics Package
- CESM Support Network (NCL, data processing and visualization support)
- CAM Model Development

#### DEVELOPMENT DOCUMENTS

- CAM development protocols
- Current Simulation Metrics
- Near term developments

#### AMWG PROJECTS

- Linking Glimmer Ice Sheet Model to CCSM
- Additional information on these projects can be viewed by visiting the CCSM AMWG wiki.

#### Home » Working Groups

#### AMWG INFORMATION

#### AMWG Priorities

earth • modeling • climate

Research Highlights

Upcoming Meetings

CESM AMWG wiki

Draft CAM4 Implementation Plan

Draft Parameterization Development Document for Convection

#### AMWG COMMUNICATION

Email: AMWG Members

Subscribe to CESM AMWG List

### http://www2.cesm.ucar.edu/working-groups/amwg

## **CAM Implementation Plan For Feedback**

### CAM development protocols

✓ Code base and requirement
✓ Test steps and validation requirements
✓ Review of code and results
✓ Decision process

### CAM metrics

### Near-term activities

# Discussion

 Addressing systematic errors; what are the priorities? (Tropical precipitation, high cloud, MJO, humidity field) Let us know what you find and what you can help

- 2. How do we move towards a supported high-res model (horizontal and vertical)?
- 3. How do we maintain a university available model?
- 4. Supported model versions
- 5. Path(s) forward on model development (esp. physics)
- 6. Timeline of model development for CMIP6

# Supporting CAM5.2 configurations

Varying resolution, dynamical core and physics packages

Supported CAM5-SE ne30 (1°) General climate applications CAM5-FV 2° Paleo, chemistry and biogeochemistry applications + university users

In Development CAM5-SE ne120 (0.25°) *High resolution simulations* CAM5-SE ne30\_r\_ne120 Regional climate applications Functional CAM5-FV 0.25° and 1° CAM4-FV 1° and 2° CAM5-SE ne16 (2°) CAM5-SE ne240 (0.125°) CAM4-EUL (T180,T360)

Other Applications CAM5-EUL T31 CESM Tutorial configuration CAM5-FV 4° WACCM university users

> Ocean Mostly x1 x3 (university users) x0.1 (experimental)

## CAM Development Timelines The path towards CMIP6

	Test Replace GWD	ing alternative cloud phy (UNICON,CLUBB, ??)	ysics	cs Physics decisions for CAM6		
	scheme	MG2 implementation	RRTM radiation update MAM7 implementation		Control simulations with CAM6 physics	CESM2 for CMIP6
	MAM4 implementation	Test TMS and replace scheme with EC scheme				IS IS
High Res.	CAM5 Vertical res With	5 0.25 deg tuning solution testing (L60)? CAM5 physics	Decision for vertical resolution increase	CAM5 0.25 deg Vertical resolutio With new physics	y tuning n testing s options	0.25 deg CAM6 model
Low Res.	Prescribed MAM implementation	Prescribed MAM testing		Physics dec	isions CAM6	CAM6 low
	Consistent sub- grid orography	im	Efficiency provements for 2deg CAM5	for low-res (		resolution model
20		2) 204.4.4				046 (CESM2)
20		.2) 2014 (1	JESIVI1.3)	2015 (CES	IVI'1.4) Z	(CESIVIZ)
Со	mmunity Earth	n System Model	M			

## Please give us your feedback

### Potential questions

Will metrics be used to determine the candidate model components or configurations?

Will resources be available to support the implementation (computing and human)?

Can requests be made to support a particular configuration?

How can university people participate and contribute to the high-resolution efforts?