

# BGCWG Update, June 2017

Co-Chairs: Keith Lindsay (NCAR), Jim Randerson (UC-Irvine)

Community Liaison: Keith Lindsay (klindsay@ucar.edu)

NCAR is sponsored by the National Science Foundation



## MARBL (Ocean BGC) Science changes

- use prognostic dust/iron deposition from atmospheric model
- automatic adjustment of sediment burial to achieve C, P, Si balance
- prognostic NH<sub>x</sub> emissions to atmosphere
- prognostic iron-binding ligand
- variable C:P ratios in autotrophs and POM
- restoring of PO<sub>4</sub>, NO<sub>3</sub>, SiO<sub>3</sub>, ALK in marginal seas
- follow OMIP protocols for gas flux parameterizations
- specified riverine fluxes coupled to EBM
  - inputs mapped to ocean grid the same way that liquid runoff is

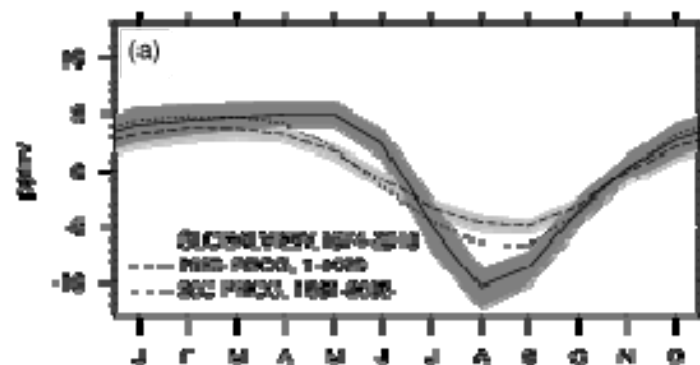
## MARBL Science not making the CESM2 cut

- N Isotopes
- Optional Phaeocystis functional group
- DMS module
- Methane module

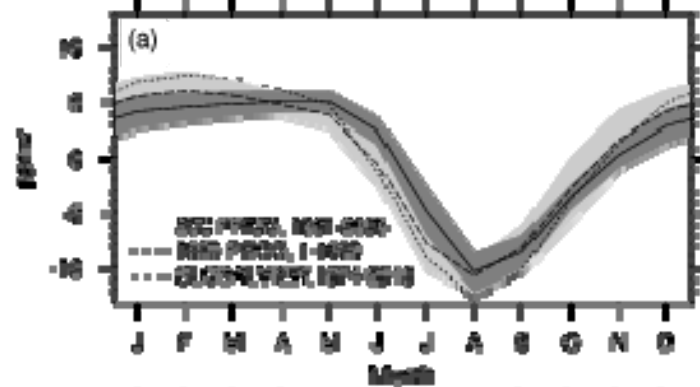
# Carbon Cycle Results in CESM2

Seasonal Cycle of CO<sub>2</sub> at Point Barrow, Alaska

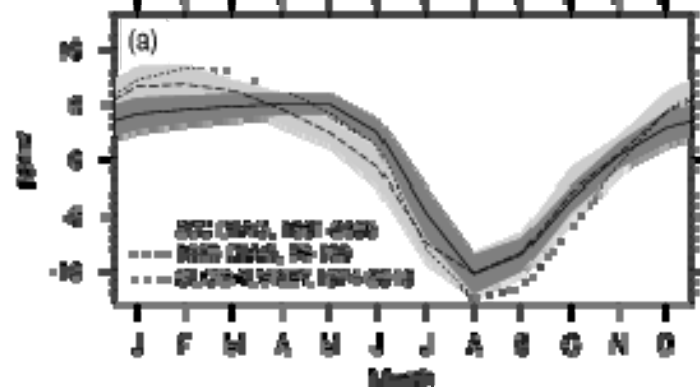
CESM1(BGC)



CESM1.2+(BGC)



CESM1.5



## Column mean annual cycle at Park Falls, Wisconsin

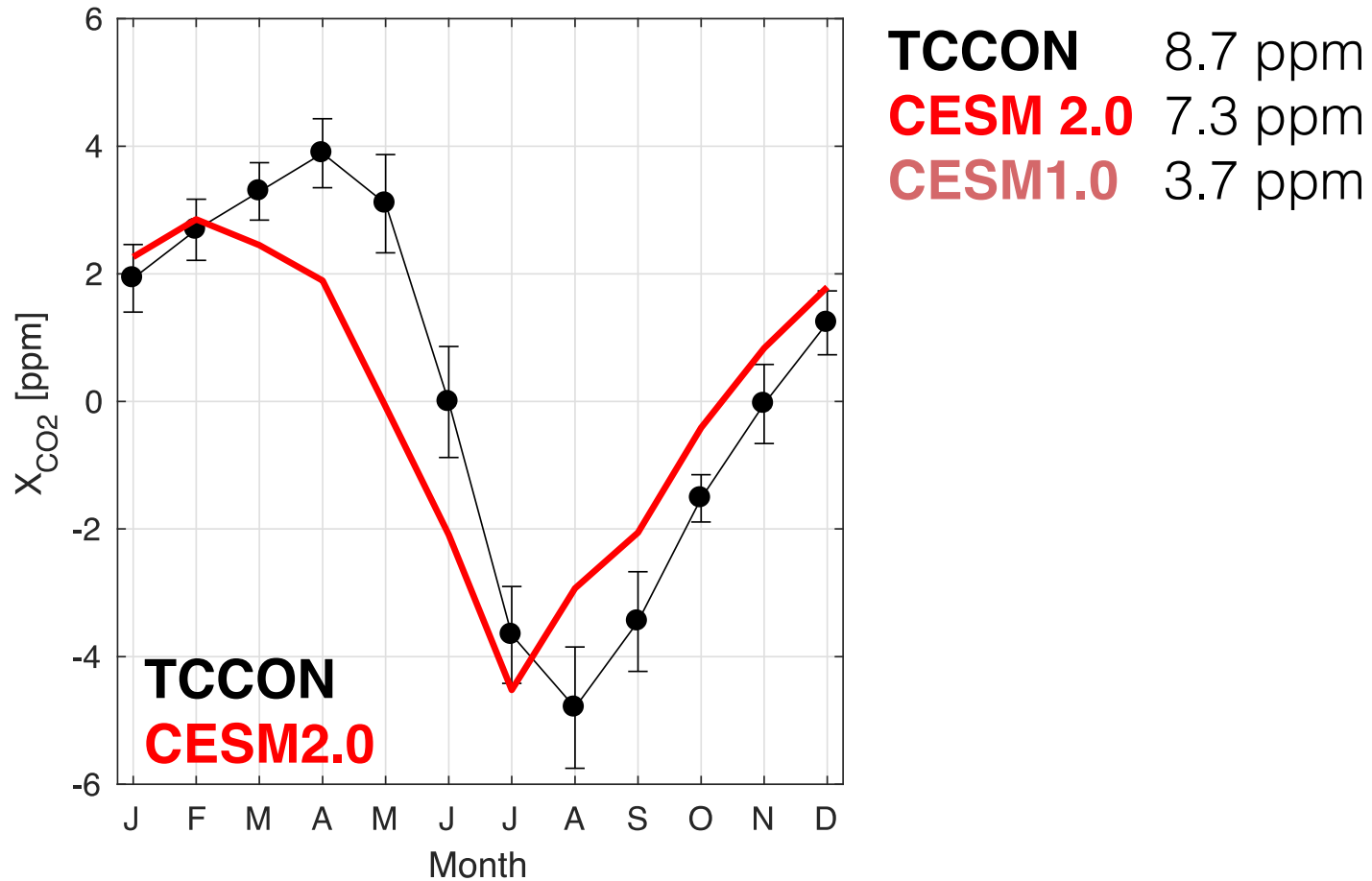


figure courtesy G. Keppel-Aleks

## Near Term Activities

- Switch coupled runs to recent version of MARBL
- Final tuning of MARBL parameters and forcings
- BGC spin-ups for CESM2/CMIP6
- C4MIP experiments for CMIP6
  
- CESM2 release
  - will include a version of MARBL
  
- BGCWG CSL allocation has core-hours for community requested coupled model sensitivity experiments