BGCWG Update, June 2017

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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 NHx emissions to atmosphere
- prognostic iron-binding ligand
- variable C:P ratios in autotrophs and POM
- restoring of PO4, NO3, SiO3, 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$_2$ at Point Barrow, Alaska
Column mean annual cycle at Park Falls, Wisconsin

TCCON 8.7 ppm
CESM 2.0 7.3 ppm
CESM1.0 3.7 ppm

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