

Dear Carbonate FRG Members,

Carbonate FRG Newsletter Feb 2016

The Carbonate FRG will be active again at the upcoming CSDMS Annual Meeting in May this year. There are many new things currently afoot for the group. The detail is below, but in summary we are asking you to:

- Provide feedback on the proposed new direction for the FRG that is outlined below
- Consider attending the big CSDMS annual meeting Tues-Thur 17-19 May 2016 in Boulder
- Consider submitting to the CSDMS model repository any carbonate models that you are developing - as ever, this is a key thing that determines the success of this group
- Browse the list of all known carbonate forward models that has been begun (below) and add any that we have missed

Re-energizing the FRG

We now have co-chairs ! Chris Jenkins of U Colorado Boulder has been appointed to work with Peter Burgess for a period of re-energizing, and re-purposing of the group.

We need your help with this, specifically to get your feedback on changes suggested for the scope and naming of the group. (CSDMS by-laws require this.)

We propose a broadening of the scope encompassed in a name change to “Biogenics FRG”.

The idea is to widen the scope beyond carbonate stratigraphy to include models of:

- Ocean pelagics: silicates and carbonates (e.g., diatoms, forams and nannos) and even possibly organic carbon materials.
- Microbiological processes (‘microbialites’) and materials that are arguably mediated biologically like nodules/crusts (carbonate, phosphate, hydroxide).
- Carbonate reef / bank growth, especially human time-scale processes
- Population ecology, mutualisms, trophic flows, growth functions, and how all these relate to production and deposition of carbonate material

We see several advantages to this change of direction. It will broaden the group in terms of the people-membership, and increase the software modules available. We're thinking that earth surface biogenic deposits are central to many present-day debates - pelagics production and deposition under climate forcings, acidification ocean chemistry, and human-caused changes to biologic systems.

We're also thinking that modelling biogenics demands a common-core of population ecology, mutualisms, trophic flows, growth functions, taphonomy, chemistry and mineralogies. Similar software methods for these processes are needed across all biogenic situations - including the carbonate stratigraphic models that the FRG has focused on till now.

Please let us have your feedback on the change to ‘Biogenics FRG’ by email - whether a simple ‘agree’, or your views in more detail.

Sister groups

There is tremendous interest in coral reefs these days and this is reflected in the number of scientific cooperatives that are focused on reef data and modeling studies.

A new one has started in the Earthcube framework, devoted to the computational side: 'CRESCYNT: Coral Reef Science and Cyberinfrastructure Network' ("<http://earthcube.org/group/crescynt-coral-reef-science-cyberinfrastructure-network>").

Check it out before the Earthcube all-hands meeting in July 2016!

Catalog of models

Scanning the literature and citations, we see over 42 models dealing with the production, alteration, and fate of biogenic materials. They range from models of individual coral colony competition, to ecosystem trophics, to global ocean carbonate and silica saturation states. Amongst them are sure to be modules of interest to us and others - bringing the opportunities of extra citations, and enrichment → improvement of our own models.

A list which is posted now to the CSDMS site

"https://csdms.colorado.edu/mediawiki/images/CarbModelCatalog_2.pdf". CSDMS is working to have more of these model codes made open-source.

Why make the list ? These models will have methods that you want to implement yourself, but they are already explored, coded, and validated. For example, nutrients methods for pelagic carbonate production - of interest even to benthic carbonates - have long been included in the GCM (General Circulation Model; e.g., 'https://en.wikipedia.org/wiki/General_Circulation_Model').

CSDMS Annual Meeting

In Boulder Tues-Thur 17-19 May 2016, carbonates (and biogenics !) focused modelers will be able to mingle, market their ideas, and realize new ones. Additional benefits will be exposure to the discussions of the Ecology group ('<https://csdms.colorado.edu/wiki/Ecosystem>'), and the Coastal and Marine Groups ('<https://csdms.colorado.edu/wiki/Coastal>', '<https://csdms.colorado.edu/wiki/Marine>'). There will also be demonstrations of the new Landlab concept of work benching ('<http://the-landlab.readthedocs.org>').

The group will go into a joint session with the Ecology group, this promising to spark some interesting *cross-fertilization* and perhaps collaborations. A special dinner event for our group is also planned.

PBurgess, CJenkins; Feb 2016