NSF Workshop: Community Sedimentary Model for Carbonate Systems

January 26-27, 2009

Kindly Hosted by: CSDMS

Community Surface Dynamics Modeling System

Dr. James Syvitski, Director

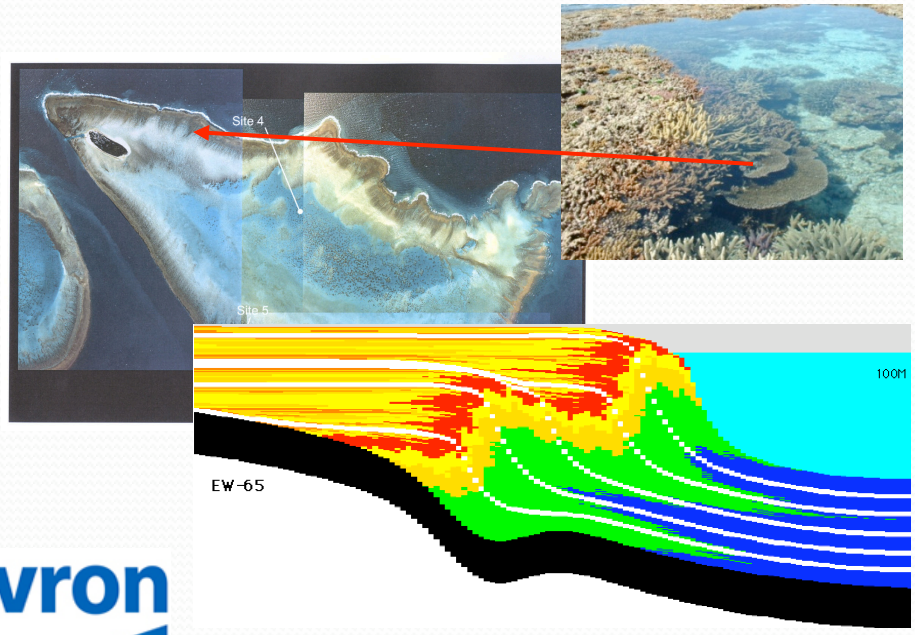
Co-conveners:

Peter Burgess, RHUL, UK

Rick Sarg, CERI, Colorado School of Mines

Gene Rankey, Univ. of Miami

Evan Franseen, Univ. of Kansas & KGS



With Appreciation, Support Provided By:

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Schedule

Monday AM	
09:00	Intro - scope and purpose of the meeting PB
09:15	Update on CSDMS JS
09:45	Review of results of last meeting – recommendations etc PB
10:15	Coffee
10:30	Brain storming to decide broad proposal structure e.g How many? Main themes? Etc etc
11:30	Decide groups accordingly
12:00	Lunch
Monday PM	
13:00	Generation of outline proposal/s:
16:30	Review of progress, plans for Tuesday work *(Skype with CG)*
17:00	End of day one

Schedule

Tuesday AM	
09:00	Brief review of day 1
09:15	Revise proposal/s
11:00	Review of progress & what remains to be done to complete proposals
11:45	Allocation of tasks to complete the proposal/s
12:00	Lunch
Tuesday PM	
13:00	Discussion of FRG group structure and working practice
15:00	End of meeting *(Skype with CG)*

Purpose of the C-FRG

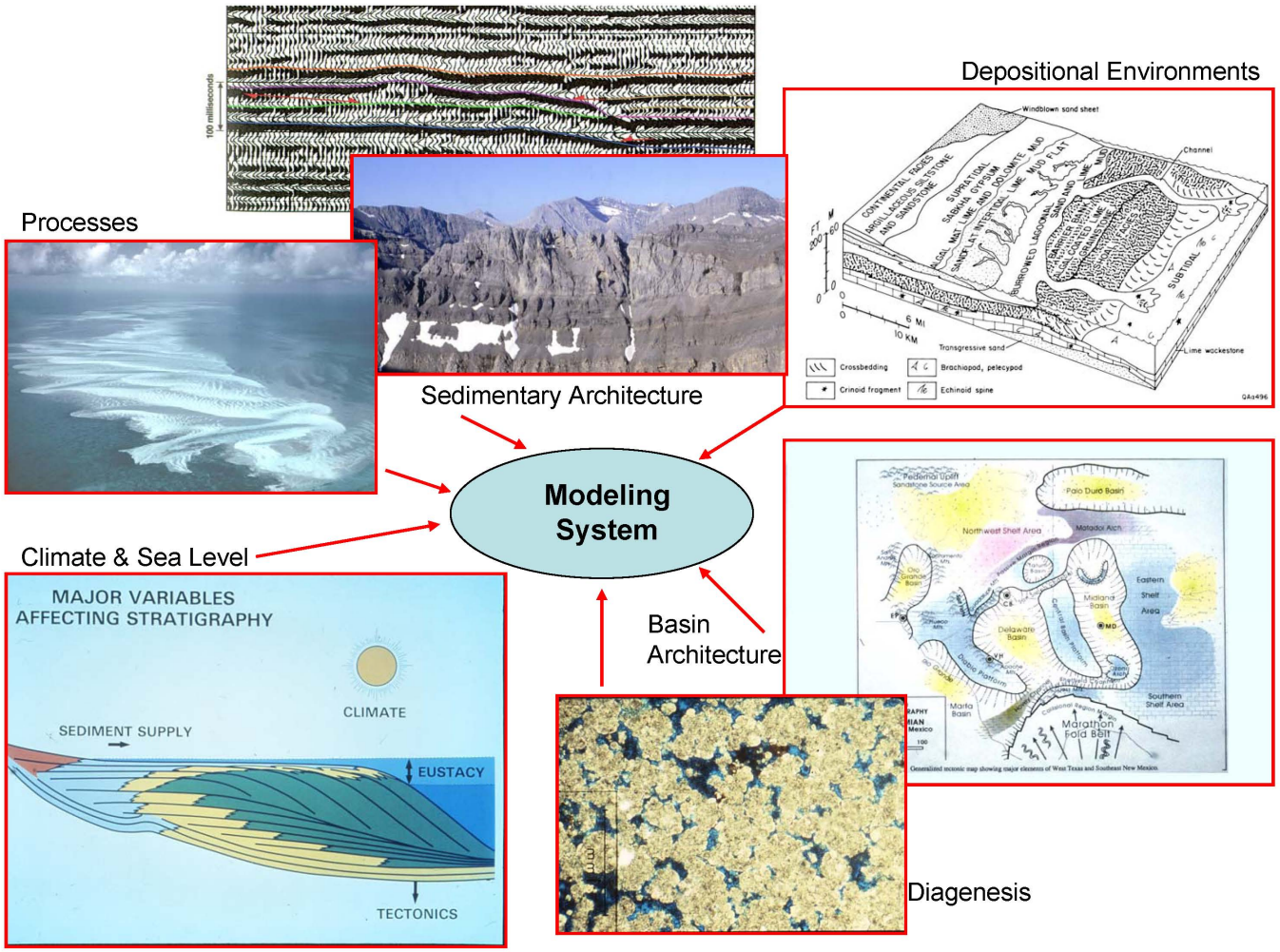
- The Carbonate Focus Research Group (C-FRG) has been created with the aim of identifying and then addressing the grand challenges for fundamental research on ancient and recent carbonate systems.
- This aim will be accomplished through creation of the next generation of numerical carbonate process models under the umbrella of the CSDMS initiative

Aims of This Meeting

- To kick-start C-FRG research activity and development of the carbonate community sedimentary model by:
  - Preparing one or more draft proposals to NSF (& other funding sources?) to fund research programs to carry out the plan outlined in the Feb 2008 meeting - development of next-generation carbonate numerical forward models along with the supporting field-based research activity
  - Deciding on the best structure and working practices for the group to achieve its stated aims

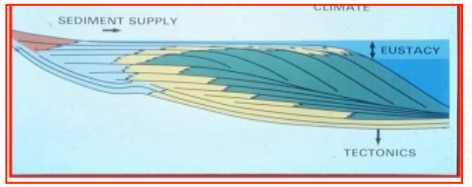
Carbonate Community Model System

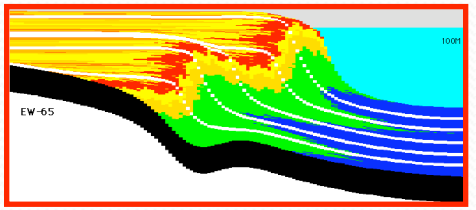
The carbonate community model should be an integrated repository for carbonate research, representing a range of carbonate systems, and with predictive power on various scales

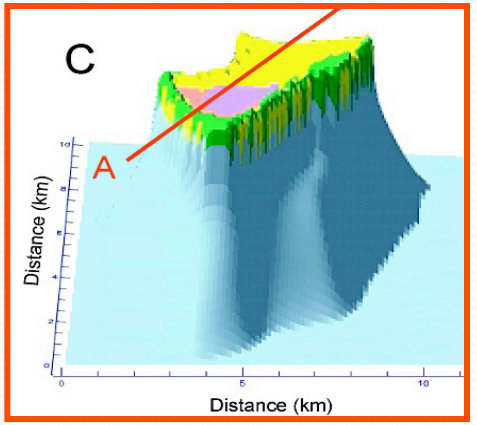


Carbonate Community Model System

- Research programme will consist of **model development** plus **field-based data gathering** with lots of mutual feedback
- Models will be the **storehouse of new knowledge** generated by **collaboration** between climatologists, sedimentologists, stratigraphers, geobiochemists, and biologists.
- Integration across scales and environments will require **partnerships** between modelers and field workers.
- Integration will require **3D forward models** and **1D & 2D inverse models** of carbonate platform sequences.

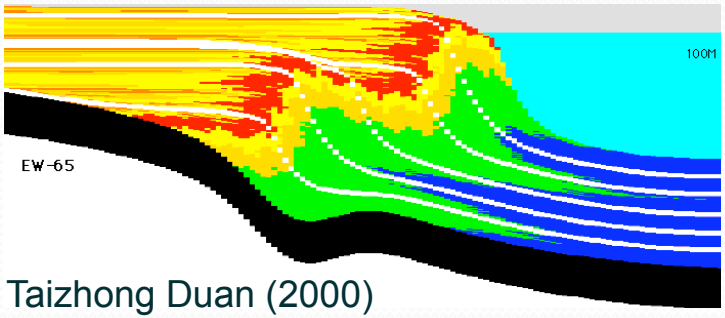




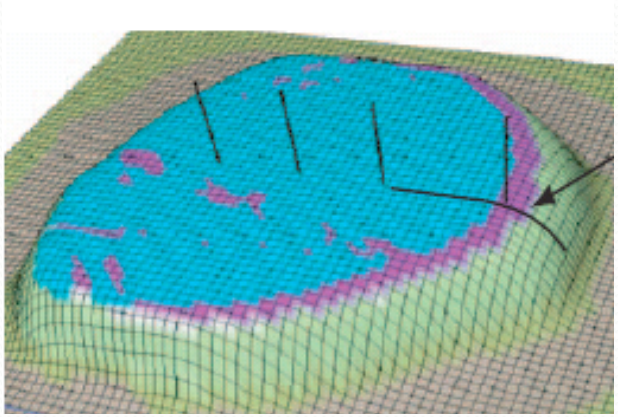


Carbonate Modeling Elements

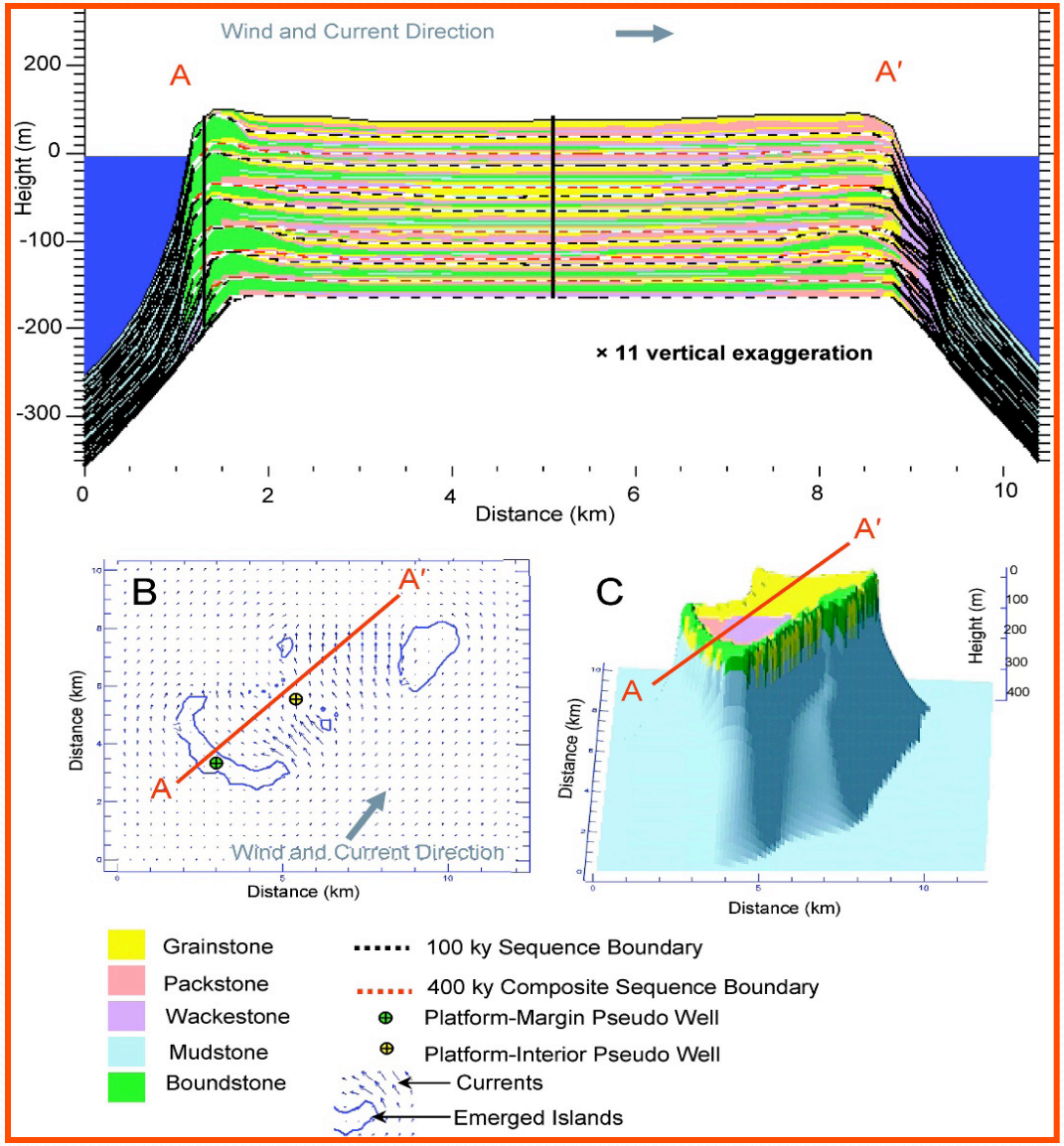
Depositional Models focused on large-scale architecture and external forcing



Taizhong Duan (2000)



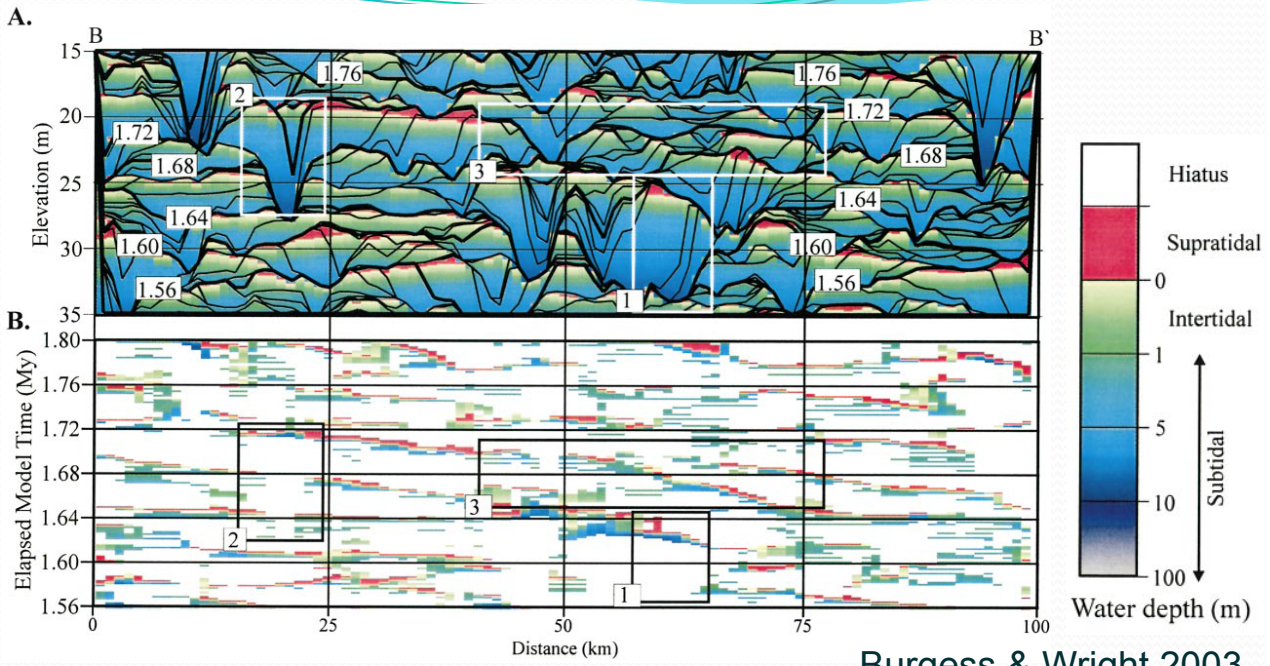
Bassant and Harris (in press) using IFP Dionisos model



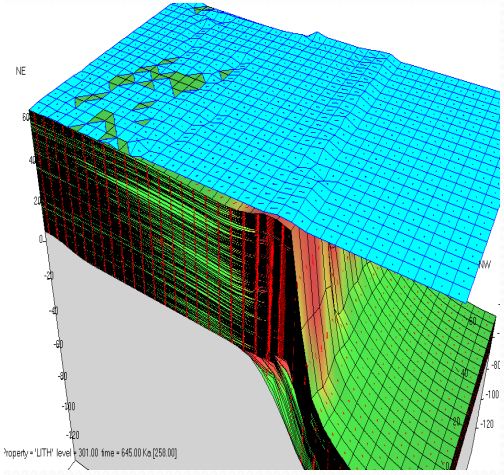
Paterson et al., 2006 using Carb3D+++

Carbonate Modeling Elements

Depositional models focused on small-scale architecture with or without external forcing

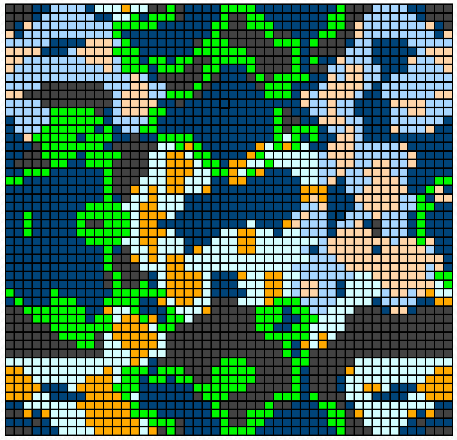


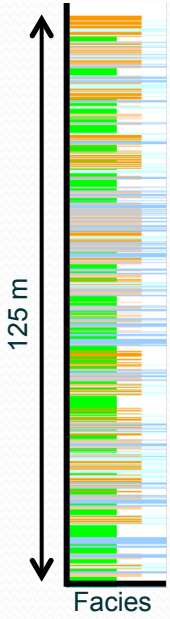
Burgess & Wright 2003

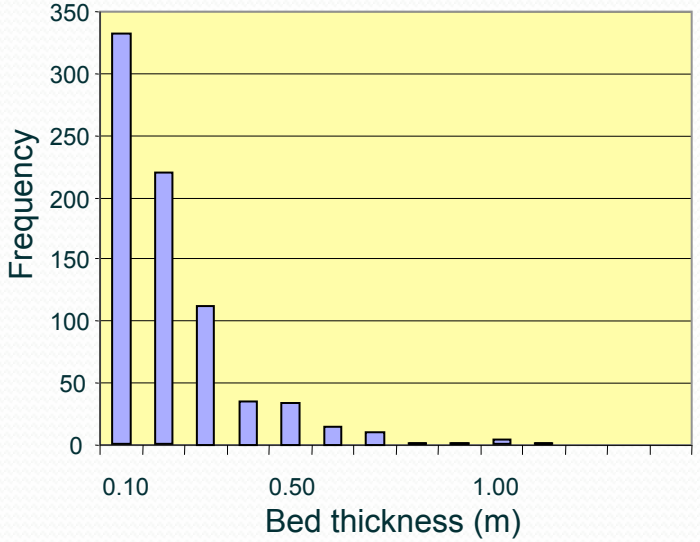


Hill et al in review?? in press??

Burgess, in prep



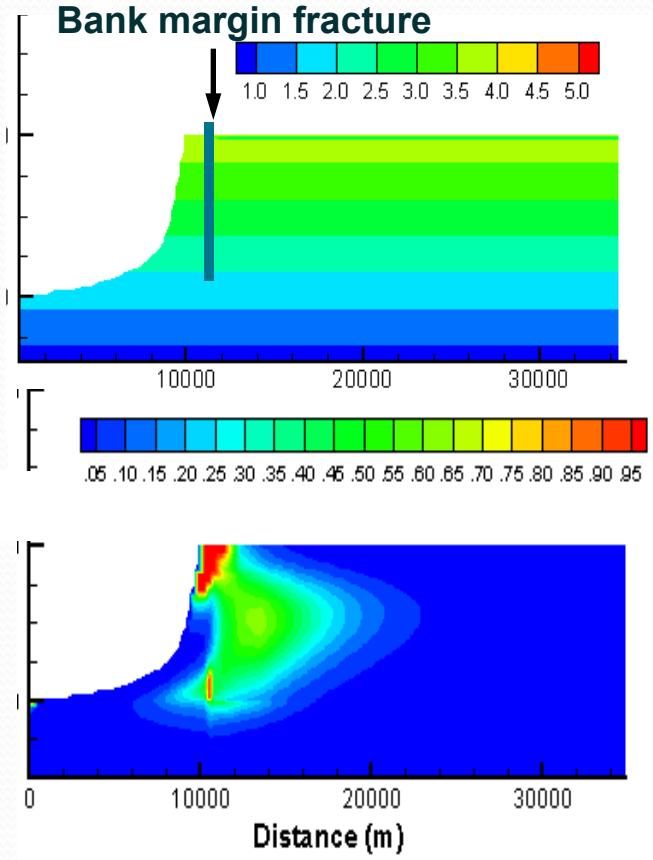


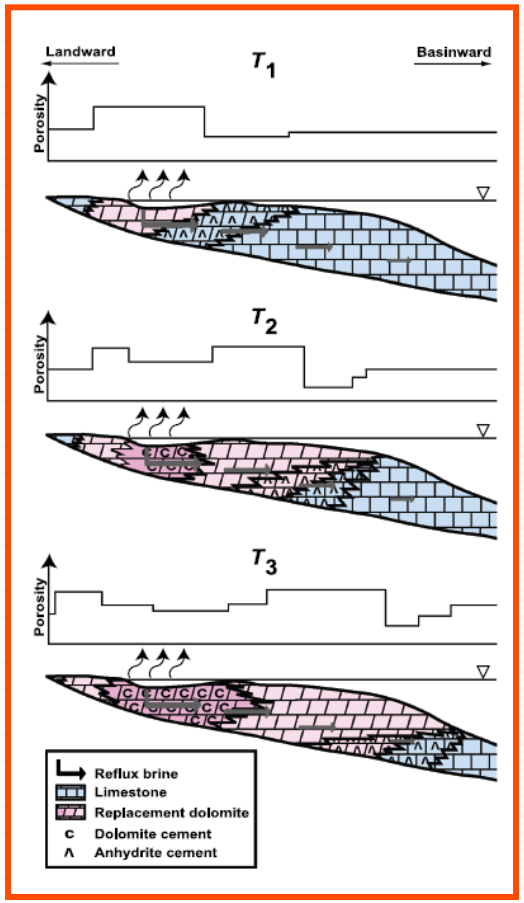


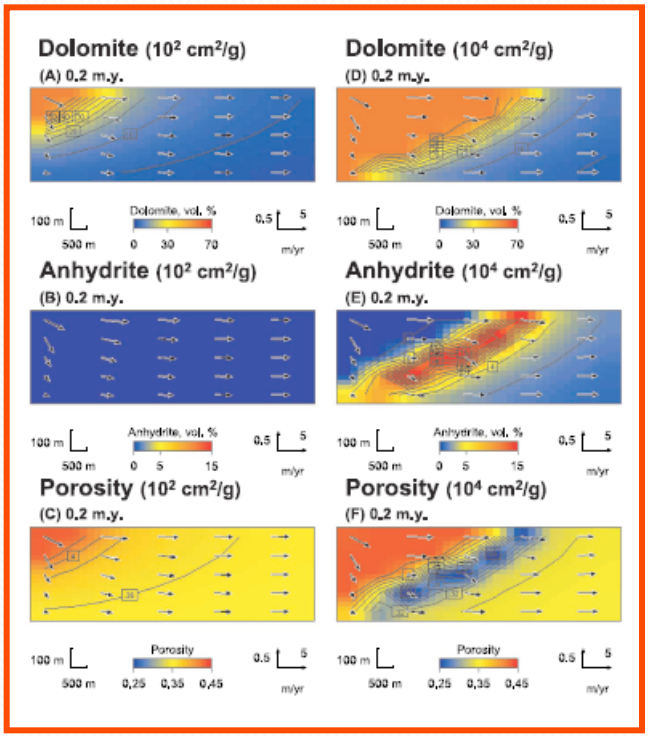
Carbonate Modeling Elements

Diagenetic models representing both syn and post depositional diagenetic processes

Whitaker & Xiao (2007)







Reactive transport modelling, Jones & Xiao, 2005

Aims of This Meeting

- Academic attendees:
  - Decide how can you contribute to the research objectives
  - Write yourself into the research proposals where appropriate
  - Identify absent colleagues with appropriate skills who could also be involved in the research proposals
- Industrial attendees:
  - What could you get from this research? Make sure the grant proposals address this OR consider industry funded elements that would...
  - What resources can you offer to the programme?

Over to James...

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