

Interactive comment on “Abrupt change in climate and climate models” by A. J. Pitman and R. J. Stouffer

Anonymous Referee #1

Received and published: 24 October 2006

This is a clear and concise review of the current state of play regarding how well climate models can simulate abrupt climate changes. The paper is generally well written, although below I have included a list of suggested text changes that should tighten up the article a little. Therefore, I recommend publication with only minor alterations. The only negative point I'd make is that it would have been useful if they had suggested how (or if?) future palaeoclimate studies could contribute to the abrupt climate modeling effort. In other words, what sort of palaeoclimate proxy data in the future would make a useful contribution to the refinement of these models? I invite the authors to respond to this in their discussion.

Overall, this is a welcome contribution to the field.

Suggested minor changes to the text

Abstract

Line 9: 'circulate' should be 'circulation'

Line 11-12: change to: 'but a collapse in the 21st century...'

Page 2

Parag. 1

Line 5: should be 'phenomena'

Line 7: should be a comma after 'future'

Line 8: should be a comma after 'System'.

Parag. 2

Lines 2-3: delete 'climate' and 'of the system' and second use of 'component' -too much repetition.

Line 9: should read: '...a point beyond which the climate system responds...' and '...and where the response...'

Page 3

Parag. 2

Delete the word 'see' in the two references (and elsewhere). Inclusion of references implies that the authors are already inviting the reader to consult them.

What is 'C4MIP?'

Page 4

Parag. 1

Upper case for N in 'north Atlantic'

Parag. 2

Line 1: Should read 'The palaeoclimate community has...'

Line 3: please include tree rings and speleothems in the list of archives.

Parag. 3

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Line 5: remove 'the' before 'deepwater' and add 'North' before 'Atlantic'.

Page 5

Line 5 and elsewhere: Suggest that when actively citing published works in the third person, the past tense is used, e.g. Williams et al. (2002) 'argued', not 'argue'.

Page 6

Parag. 2

Line 10: insert 'the' between 'affect' and 'net'

Page 7

Parag. 1

Lines 9-10: should read 'consistent with the findings of Joussaume et al. (1999).'

Parag. 2

Lines 4 and 5: Should read 'wet-climate equilibrium', 'dry-climate equilibrium' and 'sea-surface temperatures'

Line 6-7: the last clause of this sentence needs clarification.

Page 8

Parag. 1

Line 3: delete 'a'

Line 4: change 'on' to 'in'

Page 9

Parag. 2

Line 3: delete 'to'

Line 9: should read 'there is a wide range of responses'

Parag. 4

Line 8: 'Paleoclimate' should be 'palaeoclimate' for consistency

Page 11

Parag. 1

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Line 1: suggest change to ‘...evidence from observational data began to emerge...’

Parag. 2

Line 7: replace ‘to’ with ‘and’

Lines 10-11: change to ‘...due to other types of LCC, mainly deforestation...’

Line 13: lower case for human

Parag. 3

When ‘large scale’ and ‘long term’ are used together as an adjective, they should be hyphenated, e.g. ‘large-scale fertilization’, ‘long-term climate change’... etc.

Page 12

Top parag. (before 3.2.1): re-word the last sentence - difficult to follow.

Page 13

Last parag.

Line 2: should be ‘through’, not ‘thought’

Page 14

Section 4

Line 1: remove ‘observed’

Lines 6-7: should read ‘The evidence for abrupt changes in the climate record, and the fact that they are beginning...’

Page 15

Parag. 3

Line 2: should read ‘...in climate, suggests that climate models...’

Page 16

line 1: insert comma after ‘cropping’

Parag. 3

line 2: delete ‘observations of’

line 6: should be ‘phenomena’

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