



Paleoclimate constraints on Climate Sensitivity.

Julia Hargreaves (1), James Annan (1), Pascale Braconnot (2), Gavin Foster (3), Anna von der Heydt (4), Eelco Rohling (5), Gavin Schmidt (6), Steven Sherwood (7), and Mark Webb (8)

(1) BlueSkiesResearch.org.uk, SETTLE, United Kingdom (jules@blueskiesresearch.org.uk), (2) Laboratoire des Sciences du Climat et de l'Environnement, France, (3) University of Southampton, UK, (4) Utrecht University, The Netherlands, (5) Australian National University, Australia, (6) NASA Goddard Institute for Space Studies, USA, (7) University of New South Wales, Australia, (8) Met Office, UK

The aims of the WCRP Assessment on Climate Sensitivity are: to make a thorough assessment of climate sensitivity; to clarify the nature and limitations of key evidence; to assess the likelihood of very low or high climate sensitivity and provide robust 5-95% confidence ranges for it; and to highlight future research directions most likely to yield stronger constraints. Towards these goals, a review paper is currently in progress, to be submitted for publication in 2018. As part of this we hope to make available some simple code to allow the community to reproduce, test and build on the results.

There are three groups involved, focussing on process modelling/present day constraints, the Historical Record, and the Paleoclimate Record, plus a subgroup focussing on synthesising the different lines of evidence. Here we will overview progress to date on the evidence from the paleoclimate record. We consider the uncertainties in the information from cold and warm paleoclimate periods to be independent, so constraints from these are analysed separately. We find that cold and warm periods place stronger constraints on the higher and lower climate sensitivities respectively. Results are very preliminary but progress to date indicates that evidence from paleoclimates, once combined with various reasonable priors, produces an 80-85% probability that climate sensitivity lies in the 1.5-4.5C range.