



Regional trends in the land carbon cycle and the underlying mechanisms over the period, 1980-2008

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In this study we identify regional trends in the land carbon cycle and investigate their underlying mechanisms for the period 1980-2008. A set of Dynamic Global Vegetation Models are run over the historical period 1901-2008. We output an extended list of variables in order to evaluate the model results against a wide range of evidence covering both hydrological and carbon related variables.

We explain simulated regional carbon sink/source trends in terms of the land response to regional changes in temperature, precipitation and radiation over this period, and their differential response on plant productivity and heterotrophic respiration. Results show that in some key regions the DGVM response is due to recent trends in reduced precipitation. Separate EO derived soil moisture data are in line with these findings in showing reductions in soil moisture over these key regions.