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Examination of climate response to historical and projected forcings over years 850-4000 for EMIC-AR5 intercomparison study

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The MIT EMIC is used for a study of the climate response to various historical and projected forcings over the period 850-4000 AD. The runs are part of the EMIC intercomparison study for the IPCC AR5 report. The MIT EMIC includes a zonally-averaged atmospheric-land model coupled to a fully 3D ocean circulation and carbon model. Over the period 850-2005, a historical run with all time-varying natural and anthropogenic forcings is compared to a set of runs where only a single component of the forcing time series is varied. Over 2005-3000, climate projections as forced by four different Representation Concentration Pathways are compared. These projections are extended by decreasing forcings back to pre-industrial levels over years 3000-4000. In addition to changes in surface air temperature, carbon uptake in the ocean and land systems and changes in the oceans' large-scale circulation are a focus in analyses of these simulations.