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## Is a Low Cloud Signal in Response to CO2 Forcing Potentially Observable in the Satellite Record?

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2014 AGU abstract for poster presentation

Michael Olheiser, Dr. Joel Norris

Is a low cloud signal in response to CO<sub>2</sub> forcing potentially observable in the satellite record?

Low-level clouds in the subsidence regime of the subtropical ocean have a net cooling affect on the climate and are an important factor to consider in regards to climate change. This study looks at the cloud fraction output from 6 different CMIP5 global climate models to understand how low-level clouds may respond to increasing CO<sub>2</sub> on different time scales. We examine simulations of 1% CO<sub>2</sub> increase per year, simulations of 4xCO<sub>2</sub> equilibrium change, and simulations employing historical radiative forcing during 1980-2005. In particular, we are interested to determine whether the century-scale transient cloud response is similar to the equilibrium cloud response, and whether simulated cloud changes occurring since 1980 are similar to the century-scale transient cloud response. Although different models produce different cloud responses to increasing CO<sub>2</sub>, the transient cloud change for a particular model resembles the equilibrium cloud change for that model, indicating internal consistency. Furthermore, if the simulated cloud change since 1980 resembles the century-scale transient cloud change, this would suggest that observed low-level cloud changes over the subtropical ocean since 1980 may be a response to climate change rather than natural variability.