



## **Sustained Observations of Air-Sea Fluxes and Air-Sea Interaction at the Stratus Ocean Reference Station**

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Since October 2000, a well-instrumented surface mooring has been maintained some 1,500 km west of the coast of northern Chile, roughly in the location of the climatological maximum in marine stratus clouds. Statistically significant increases in wind stress and decreases in annual net air-sea heat flux and in latent heat flux have been observed. If the increased oceanic heat loss continues, the region will within the next decade change from one of net annual heat gain by the ocean to one of net annual heat loss. Already, annual evaporation of about 1.5 m of sea water a year acts to make the warm, salty surface layer more dense. Of interest is examining whether or not increased oceanic heat loss has the potential to change the structure of the upper ocean and potentially remove the shallow warm, salty mixed layer that now buffers the atmosphere from the interior ocean. Insights into how that warm, shallow layer is formed and maintained come from looking at oceanic response to the atmosphere at diurnal time scales. Restratification each spring and summer is found to depend upon the occurrence of events in which the trade winds decay, allowing diurnal warming in the near-surface ocean to occur, and when the winds return resulting in a net upward step in sea surface temperature. This process is proving hard to accurately model.