

The role of the ocean surface—and its dynamics—in climate

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The oceans are the major reservoir of heat and carbon on short timescales, and the circulation of the oceans results from the wind and buoyancy changes that flow through the surface. All of this action for the climate system must pass through the ocean surface layer and its dynamics, which are interesting in their own right. I will discuss some of the most important processes in the surface layer, relate new results involving the roles of surface waves and submesoscale fronts and instabilities, and quantify the significance of these phenomena in the functioning and sensitivity of the climate system.