

Abstract Submitted
for the DFD06 Meeting of
The American Physical Society

The effect of wind speed on the statistics of the temperature field of an air/water interface¹ J.R. SAYLOR, T.A. CONOVER, Clemson University — An experimental study is presented of the transfer of heat from a warm body of water to an air flow above it. This work was conducted in a wind/water tunnel, permitting these experiments to be conducted over a range of wind speeds and heat fluxes. The temperature field of the air/water interface was measured using an infrared camera. These temperature fields were used to compute the root mean square (rms) of the interfacial temperature. The relationship between the rms and the heat flux was obtained, and the sensitivity of this relationship to the wind speed was determined. The experiments were conducted for conditions where forced convection and natural convection both contribute to the heat transfer rate. Data are presented for cases where the water surface was covered with a soluble and an insoluble surfactant monolayer. Sample infrared images are presented for several wind speeds, and the relevance of this work to the remote sensing of heat flux will be discussed.

¹Supported by DOE through the Savannah River National Laboratory

J. R. Saylor
Clemson University

Date submitted: 03 Aug 2006

Electronic form version 1.4