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A Year of Eddy-Correlation Measurements of the Fluxes of Momentum, Heat and Moisture at Sea near the Dutch Coast

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During 2003, the momentum, heat and moisture fluxes have been determined from a research platform off the Dutch coast by means of eddy correlation techniques. Seawater temperature and wave age are measured as well. The measurements form a very large data set, of the order of 10^4 points, for windspeeds up to 15m/s. This makes it possible to establish functional relationships between fluxes and bulk quantities. The drag coefficient increases faster with wind speed than for a fixed Charnock parameter. The magnitude of the drag coefficient is somewhat smaller than reported for earlier measurements at the same site. Indications for a dependence of the drag coefficient on the wave state are discussed. For windspeeds between 5 and 15m/s, the heat and water vapour exchange coefficients increase with wind speed. In a number of cases, heat fluxes appeared to oppose a small positive air-sea temperature gradient. Interpretations of this result will be discussed.