Preface

An *International COADS Winds Workshop* was held during 31 May to June 2, 1994 at the Institut für Meereskunde in Kiel, Germany. Financial support was provided by the National Oceanic and Atmospheric Administration (NOAA) through its Office of Global Programs, and from the German Research Foundation Project "Warmwatersphere of the Atlantic Ocean."

The workshop had as its main objective to evaluate the quality of the marine surface winds in the global surface marine data archive known as COADS (for Comprehensive Ocean-Atmosphere Data Set), and to ascertain the usefulness of the products derived from the basic wind measurements. Papers were solicited in the area of documentation of sources of observational errors and biases, on work done to evaluate past and current observational methods and data processing procedures, and to evaluate how useful the data set is for climatological and climate change studies. In addition, the organizers of the workshop hoped to gather input from a broad cross-section of COADS users to help improve future COADS Releases and products, to promote greater communication and to foster cooperation among COADS users.

Surface wind data are needed to calculate the fluxes of momentum, sensible and latent heat and water substance at the ocean-atmosphere interface. Thus, knowledge of the long-term behavior of the surface wind for the world oceans is critical for understanding the causes of past variations in climate, as well as for predicting future climate behavior.

In particular, the following items were discussed at the workshop: i) how best to determine and quantify temporal homogeneity; ii) methodology aimed at standardizing surface wind measurements from the voluntary observing fleet and from other observing platforms (e.g., moored and drifting buoys); iii) an evaluation of the sufficiency of spatial and temporal data coverage, i.e., to consider the question of sampling adequacy for various space and time scales; iv) the work being carried out to develop a uniform (dynamically consistent) data set of marine surface wind fields; and v) review what the record actually shows about large-scale surface wind variations during the past several decades, consider whether these changes are physically plausible, and what kinds of supplementary, corroborating evidence is available to evaluate changes in the mean surface wind fields over the oceans.

This proceedings volume is divided into four thematic sections. The first one provides some background material and a summary of current efforts to enhance the COADS. The second section deals with comparisons of the long-term behavior of marine surface winds with other wind indices derived from the independently observed sea level pressure field. A third section addresses itself to the question of accuracy of wind measurements at sea and compares different methods, such as wind estimation based on the state of the sea (through application of the Beaufort wind scale(s)), and from the reading of anemometer platforms onboard the ships. The last section deals with various methodologies being applied by different investigators to improve the accuracy and utility of the existing COADS wind observations.

A list, with addresses, of all the participants is included as part of this proceedings volume. We hope that the papers presented here will assist the greater COADS user community to make better and more informed use, not only of the COADS wind products, but also of the other atmospheric and oceanic variables available from the COADS data set.