

Proceedings of the International COADS Workshop, Boulder, Colorado, 13-15 January 1992

Abstract

This volume constitutes the proceedings of an international workshop held 13-15 January 1992, in Boulder, Colorado. The workshop was organized to provide a forum for user feedback and evaluation of the Comprehensive Ocean-Atmosphere Data Set (COADS), and to help guide future development of the data set. COADS was assembled in the U.S. and is the most complete historical record of surface marine weather observations now available. The data set, composed primarily of worldwide international ship observations, presently covers the period 1854-1991, and therefore represents a critical resource for studies of long-term climate change. A compilation of scientific papers and technical material presented or contributed to the workshop is provided. A summary of the most salient findings presented at the workshop is given, together with a synthesis of key recommendations made to assist in updating and improving the data set.

Background

An international workshop was held at the Clarion Hotel in Boulder, Colorado, during 13-15 January 1992, to discuss the Comprehensive Ocean-Atmosphere Data Set (COADS). COADS is the product of a continuing cooperative project between NOAA its Environmental Research Laboratories (ERL), National Climatic Data Center (NCDC), and Cooperative Institute for Research in Environmental Sciences (CIRES; joint with the University of Colorado) and the National Science Foundation's National Center for Atmospheric Research (NCAR). The workshop was hosted by the Climate Research Division (CRD) of ERL's Climate Monitoring and Diagnostics Laboratory (CMDL), in cooperation with CIRES, NCDC, and NCAR.

The basic goal of the project is to assemble and update a comprehensive historical archive of in situ surface marine data for the world ocean. The 138-year COADS record presently covers 1854-1991, and is based on a collection of approximately 100 million individual marine reports. The observational data contained in each marine report were obtained primarily by merchant ships, but also in recent decades by buoys and other automated platforms.

For Release 1 of COADS (1854-1979), surface weather elements such as air and sea surface temperatures, wind, pressure, cloudiness, and humidity, were edited and summarized for 2° latitude x 2° longitude boxes and for each year and month of the period. In these monthly summaries, 14 statistics were calculated for each of 19 observed or derived variables.

The COADS basic observational data are available from NCAR or NCDC, and monthly summaries and other COADS products are available from NCAR. Also available from NCAR is a set of COADS interim products, consisting of preliminary observational data and a partial set of 2° monthly statistics for 1980-91.

The primary goals of the workshop were:

- To discuss basic processing changes planned for COADS Release 2, a complete re-issuance of the data set for the entire period 1854-date, and to announce products planned for COADS Release 1a (1980-91 update).¹
- To discuss possible new requirements for statistical products in COADS Release 2.
- To present results from different scientific studies using COADS. Topics included studies concerning the validity of wind speed or sea surface temperature trends through time, and checks of satellite data against in situ data.
- As a follow-up to the scientific presentations, to discuss and organize potential collaborations with interested parties on projects to adjust selected variables impacted by changes in instrumentation and observing practices.
- To discuss computer-aided analysis and display systems using COADS data and to evaluate new computer- accessible products, such as COADS “metadata” (information about COADS data).

Parts 1 and 2 of this volume (Overview and Improvement of the COADS Database) provide the background on the development and importance of COADS, and describe planned updates and improvements to the archive. Part 2 illustrates important elements of the international cooperation that is essential to compile, expand, and improve the global marine observational record. Shortcomings associated with sparsities of spatial and temporal coverage are also addressed. Parts 3, 4, and 5 (Evaluation of COADS Wind Fields, Sea Surface Temperature Fields, and Humidity Variables) document some scientific results on evaluation of the quality and homogeneity of commonly used variables. Parts 6 and 7 (COADS as an Analysis Tool I and II) contain papers describing the use of COADS in a variety of scientific work. Part 8 (Computer Applications) gives information about available computer systems that include capabilities to access and display COADS data or metadata.

On the last day of the workshop, following the scientific and technical presentations, each session chair presented a distillation of major points or common themes from the different session presentations; these included important issues raised in discussion. A summary of the main results and principal recommendations of the workshop follows Part 8. The names and addresses of participants at the workshop, or of lead authors of papers included in these proceedings, conclude the volume.

1. Release 1a is now planned for availability near the end of 1992; Release 2 for the mid 1990's