Preface

The Tropical Ocean-Global Atmosphere (TOGA) program began as a program of the World Climate Research Program in 1985 with the following objectives: (1) To gain a description of the tropical oceans and the global atmosphere as a time-dependent system, in order to determine the extent to which this system is predictable on timescales of months to years, and to understand the mechanisms and processes underlying that predictability; (2) To study the feasibility of modeling the coupled ocean-atmosphere system for the purpose of predicting its variations on timescales of months to years; and (3) To provide scientific background for designing an observing and data transmission system for operational prediction if this capability is demonstrated by the coupled ocean-atmosphere system.

TOGA addressed these objectives by building the TOGA Observing System, by conducting a major process study in the tropical Pacific (the Coupled Ocean-Atmosphere Response Experiment, COARE), by developing a sequence of coupled ocean-atmosphere models of the tropical Pacific, by conducting a program of prediction studies through the TOGA Numerical Experimentation Group, by conducting analytic and diagnostic studies of the ENSO phenomenon, and by relating ENSO to seasonal-to-interannual variability in other tropical regions, especially in the monsoon region. These studies were coordinated by the TOGA Scientific Steering Group (SSG), were supported by the Intergovernmental TOGA Board, and were implemented by the International TOGA Project Office.

At the last meeting of the TOGA SSG, a decision was made to solicit a series of review papers in order to report on and solidify the progress made during the TOGA decade in understanding seasonal-to-interannual variability and predictability. The papers in this volume constitute the final set of review papers for the International TOGA Program and correspond directly to the major areas of effort during the TOGA decade. The authorship is international in scope and represents the wide range of countries and scientists that actively participated in the TOGA program.

The legacies of TOGA lie in the TOGA Observing System that is still maintained in the tropical Pacific Ocean; in the substantial progress that was achieved in both understanding the phenomenon of ENSO and in predicting its phases; in the establishment of an International Research Institute for Climate Prediction that grew out of a recommendation by the Intergovernmental TOGA Board; and in the follow-on program of the WCRP, the Global Ocean-Atmosphere-Land System (GOALS) component of the Climate Variability and Predictability (CLIVAR) Program, designed to pick up where TOGA left off by expanding the study of seasonal-to-interannual variability to the entire globe and by understanding its interactions with other crucial climatic timescales.

The editors would like to recognize the lives and work of two extraordinary people whose untimely deaths meant that they were not alive to see the fruits of a program that they were so instrumental in building: Adrian Gill and Stanley Hayes. Adrian Gill was the first Chairman of the TOGA SSG and got the TOGA program off the ground during a difficult time when no precedents were available to guide him. Stanley Hayes, through his untiring efforts, started building the observing system that would ultimately become the TOGA Tropical Atmosphere-Ocean (TAO) Array, a very crucial part of the TOGA Observing System. They would be both amazed and proud to see what their efforts had achieved.

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