

PREFACE

Severe inter-annual climate fluctuations are of major concern to society, in particular for the primarily agrarian societies in the tropics. Adverse climate events such as flooding and droughts cause disruptions. The 1982–1983 ENSO event was responsible for extreme weather on all continents with estimated economic losses of more than 13 billion US dollars. The development of forecasting methods for such and similar events is consequently of the highest priority for the meteorological community.

Advances in tropical ocean modelling, improved understanding of tropical atmospheric dynamics and the application of coupled ocean-atmosphere models to the simulation of inter-annual variability has led to the firm assertion that the tropical oceans and atmosphere behave as a coupled system with intrinsic time scales of variability and with a predictability of the order of 1–2 years. Over the last decade, the possibility of forecasting atmospheric climate changes on such time scales has been demonstrated by a variety of statistical forecasting techniques. The source of this predictive skill has been traced to low-frequency changes in the surface temperature of the oceans, particularly the tropical Pacific Ocean. Great progress in predicting ENSO events has been made under the successful TOGA program where both the prediction of El Niño episodes by different coupled models as well as reproduction of a realistic global response by an atmospheric general circulation model from prescribed sea surface temperatures, have been accomplished. Consequently, the meteorological and oceanographic communities are now set to jointly embark on the development of real-time forecasting systems for short-term climate variations.

The workshop **Forecasting short-range climate variations** was held at the Max-Planck-Institute for Meteorology in Hamburg, Germany, 28–30 April 1993. Topics of the Workshop included theoretical aspects of the El Niño phenomenon, coupled ocean-atmosphere models, ENSO prediction experiments and variability and predictability studies of global coupled models. The main objective of the Workshop was to summarise and review the present state of short-range climate prediction and to encourage the development of operational forecasting systems for these events. There were some 40 participants at the Workshop mainly from the United States and Europe. The K. Körber foundation supported the Workshop by provision of a research award. The Workshop was organised by the Max-Planck-Institute for Meteorology. Most of the papers presented at the Workshop have been collected in this issue of *Tellus*. They have all undergone the normal review process.

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