

Preface

This special issue of the *Earth, Planets and Space* (EPS) includes selected papers presented at the International Symposium on Coupling Processes in the Equatorial Atmosphere (CPEA), which was held at the Kyoto University Clock Tower Centennial Hall, Kyoto, Japan, from March 20 to 23, 2007. The symposium was presided over by Prof. Shoichiro Fukao, and the conveners were Profs. Toshitaka Tsuda, Tadahiko Ogawa, J. M. Forbes, and Tetsuo Nakazawa. 172 senior and young scientists from 18 countries and areas participated in the symposium at which 2 extended reviews and 162 papers were presented.

It is well recognized that active cumulus convection in the equatorial region is the source of many unique atmospheric processes that couples the entire atmosphere vertically from bottom to top. In particular, it generates a variety of atmospheric waves, which propagate upward and interact with the background mean flow at high altitudes. It is widely believed that equatorial plasma irregularities in the ionosphere are seeded by small-scale atmospheric waves. The mechanisms of these coupling processes, however, have not yet been well understood, primarily due to the sparseness of observational data. Coupling Processes in the Equatorial Atmosphere (CPEA) was envisaged and carried out as a national research project of Japan for investigating the dynamical and electrodynamical coupling processes in the equatorial atmosphere by conducting coordinated observations in the Indonesian equatorial region. The CPEA Symposium was held at the end of this project which provided an excellent opportunity to review the current status of the related research, and to identify its future directions. For those who are interested in the details of the CPEA project and related studies, we recommend a general review (Fukao, S., What we have learnt from CPEA (Coupling Processes in the Equatorial Atmosphere): A review) published in "Climate and Weather of the Sun-Earth System (CAWSES): Selected Papers from the 2007 Kyoto Symposium", TERRAPUB, 2009, and another special issue from the CPEA project published in the *Journal of Meteorological Society of Japan*, Volume 84A, 2006.

This special issue of EPS journal includes 16 papers which were presented at the CPEA Symposium. The guest editors wish to express their gratitude to the authors for their contributions and to all the reviewers for their help in the evaluation of the papers.

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