## **Publications**

Ito, A and Oikawa, T. (1999) Geographical distribution of vegetation and global environment.

Nagare 18: 83-88. (in Japanese) → Chapter 4

Ito, A and Oikawa, T. (2000) The large carbon emission from terrestrial ecosystems in 1998: a model simulation. Journal of the Meteorological Society of Japan 78: 103-110. → Chapter 5

Ito, A and Oikawa, T. (in press) A model analysis of the relationship between climate perturbations and carbon budget anomalies in global terrestrial ecosystems: 1970-1997.

Climate Research 15: 161-183. 

Chapter 5

Ito, A and Oikawa, T. (1996) Simulation model of carbon cycle in land ecosystem (Sim-CYCLE): response to elevated CO2 and climate change. Proceedings of IGBP/BAHC-LUCC Joint Inter-core Projects Symposium on Interactions between the Hydrological Cycle and Land Use/Cover. pp. 92-95. → Chapter 6

Ito, A and Oikawa, T. (1997) Simulation of carbon budget in Monsoon Asia with a global-scale terrestrial carbon cycle model. *Proceedings of International Workshop on Global Change and Terrestrial Environment in Monsoon Asia*, pp. 182-185. → Chapter 6

Ito, A. and Oikawa, T. (2000) The role of the Siberian region in the CO2 anomaly in 1998: an estimation by the global carbon cycle model of terrestrial ecosystems. *Proceedings of the 8th Symposium on the Joint Siberian Permafrost Studies between Japan and Russia in 1999.* pp. 242-249. → Chapter 5

## Acknowledgements

The author wishes to express his gratitude to his supervisor, Professor Takehisa Oikawa, Institute of Biological Sciences, University of Tsukuba. The primary thanks are expressed to late emeritus professor Masami Monsi and emeritus professor Toshiro Saeki, University of Tokyo, for their foundation of the dry-matter production theory.

(The author also wishes to express his special thanks to Professors Shigeru Mariko, Takeo Hama, and Tetsuzo Yasunari, University of Tsukuba, for their valuable comments of the former manuscript of the thesis.) The special thanks are extended to Dr. Shinichi Ishikawa, Gunma University, Dr. Kazuo Mabuchi, Meteorological Research Institute, Dr. Wonsik Kim, University of Tokyo, Dr. Georgii A. Alexandrov, National Institute for Environmental Studies, Dr. Nobuko Saigusa, National Institute of Resources and Environment, Professor Hideji Kida, Kyoto University, Professor Katsu Imai, Meiji University, Professor Takakiyo Nakazawa, Tohoku University, Professor Hiroshi Koizumi, Gifu University, Dr. Kaz Higuchi, Canadian Meteorological Service of Canada, and Dr. Jerry S. Olson, for their suggestions and encouragements. The author owes the beginning of a series of his researches to Professors Takeo Umemura, Chisato Takenaka, and Hiroshi Tanaka, Nagoya University. The sound ecological thinking and attitude to research of Professor Izumi Washitani and her students helped the author to address ecological issues. The author thanks to his members of the Plant Ecology Laboratory for their helpful discussions with him, and to his old friends, Dr. Koji Fukumoto, Mr. Tadashi Ogawa, and Mr. Tsuyoshi Yamada, for their stimulation.

The reanalysis climate dataset was supplied from the U.S. National Centers for Environmental Prediction and U.S. National Center for Atmospheric Research. The UNEP/GRID-Tsukuba (United Nations Environmental Program / Global Resource Information Database), in the Center for Global Environmental Research (CGER), Tsukuba, provides a number of fundamental data sets. The climate scenarios used in Chapter 6 were provided by the respective institutes: U.S. Geophysical Fluid Dynamics Laboratory (GFDL),

U.S. Goddard Institute for Space Studies (GISS), and Japan Meteorological Research Institute (MRI). Several field data were supplied from U.S Oak Ridge National Laboratory Distributed Active Archive Center (ORNL-DAAC), including the data of the Oregon Transect Ecosystem Research (OTTER).

This study was financially supported, in part, by a Grant-in-Aid from the Ministry of Education, Science and Culture, Japan, a Grant-in-Aid of the Research Fellowships of the Japan Society for the Promotion of Science for Young Scientists (No.199702127), and the Special Research Project on Global Environmental Change at the University of Tsukuba.