

B-12 Assessment of the Effects of Global Warming on Urban Environment and Its Countermeasures

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Key Words Global Warming, Integrated Assessment, Knowledge-base System, Urban Energy Consumption, Degree-Month, Eutrophication, Urban Water Systems, Urban Air Quality, Tropospheric Ozone, Risk Assessment, Urban Infrastructures

Objectives and Abstracts

The present research was carried out under following five sub themes and groups. The titles of sub theme and abstracts of each research were summarized as follows;

(1) Development of Systems and Methodologies for Impact assessment on Urban Environment,
by Dr. Masaaki Hosomi, Tokyo University of Agriculture and Technology

Effects of global warming on urban environments in many cities in the world were reviewed and their information was input to the integrated knowledge-base system including fuzzy model. Individual information related to global warming effects on urban environment was integrated into it systematically. The landfill methods for reducing green house gases emitted from municipal solid waste landfill site were investigated by field survey.

(2) Temperature Dependency of Energy Consumption in Urban Area and Optimization of Energy Recovery System in Urban Area,

by Prof. Tomonori Matsuo and Prof. Keisuke Hanaki, University of Tokyo

Relationships between the heating degree-month and the unit energy consumption in the household sector were examined in China and Japan. In china, the consumption of coal showed a good correlation with the energy consumption, and in Japan, the kerosene consumption showed similar relation. A simulator of energy consumption and supply was developed.

(3) Impacts of Global Warming on Water Systems in Urban Area,

by Dr. Hiroshi Tsuno, Kyoto University

The correlation between water temperature in euphotic zone of lakes and atmospheric temperature showed exact linear relation in the field data analyses of 28 lakes in Japan and 117 lakes in 50 countries. Influences of temperature rise in natural water environment were classified in details. The possible effects of the sea level rise on the progress of the corrosion of sewage facilities were analyzed by field observation.

(4) Effects of Global Warming on Urban Atmosphere,

by Dr. Sachio Ohta and Dr. Naoto Murao, Hokkaido University

PAN in the atmosphere contributes to the formation of ozone in the troposphere. The possibility of the higher ozone production under the higher atmospheric temperature was confirmed by the model analysis of photochemical reaction of PAN. A photochemical model with cloud and a two dimensional atmospheric transport model were developed.

(5) Impact Assessment of Global Warming on Urban Infrastructures,

by Prof. Kenji Jinno and Prof. Tetuya Kusuda, Kyushu University

The risk assessment of the damages of urban infrastructures by the high water flow due to the climate change were investigated. An evaluating concept of risk and damage of inundation in urban areas was presented.