生産技術研究所 人間・社会系部門 Department of Human and Social Systems http://hydro.iis.u-tokyo.ac.jp/~patyeh/ 専門分野 水文気候解析とモデリング

陸面の水収支・貯留・循環、気候変動への応答

Hydrologic Responses to Climate Change

Our research focus is to enhance the understanding and better predict the fundamental hydro-climatic processes, and their mutual interactions governing the water and energy cycle over a wide spectrum of scales. The main approach we used is the macro-scale hydrologic modeling combining with in-situ and remote sensing observations over the global scale.



Fig. 2. Global distribution of the 1985-1999 mean groundwater table depth (below the surface) simulated by the land surface hydrological model MATSIRO.

YEH laboratory was established in September 2007 under the financial support of "Innovation Project Climate Change Prediction 21 (21世紀気候変動予測革新プログラム)".

The research in this laboratory has strived to investigate important issues under the changing climate conditions such as the impacts on the sustainability of regional water resources, water quality, agriculture and ecosystem, the prediction of regional hydrometeorological droughts and floods as sources of significant hazards to human welfare, and the assessment of mutual impacts and feedbacks between climate changes and regional to global hydrologic cycle.



Fig. 1 Environmental Problems related to Hydrology caused by climate change due to increased greenhouse gases.

Our current research directions include: (1) Representation of shallow water table dynamics in global hydrological model;

(2) Remote sensing in hydrology – GRACE observation of terrestrial water storage;

(3) Role and response of groundwater in the hydro-climate system and under changing climate;

(4) Scale issue: sub-grid variability and spatial aggregation.



Fig. 3. A schematic Diagram of the Land Surface Balance and Atmosphere Water Balance