

Promoting Studies under Future Earth supported by Super-High Resolution Simulations on the Global Environment

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The new terminology "Anthropocene", the geological era when anthropogenic activities substantially altering global environmental systems in which human beings are also a part of it, has been a popular word, but how the Anthropocene evolved? Population growth, economic development, and urbanization are inducing the climate change, the depletion of non-renewable resources, and the degradation of ecosystem services through the enhancement of the waste of resources, the emission of greenhouse gases, and the land use-land cover changes. Consequently, economic equity and the stable accesses to food, water, and energy are threatened, the potential risks to natural disaster are increased, and the minimum standards of wholesome and cultured living are in danger. How socio-ecological systems are changing and interacting with global and local environment?

In order to answer to these questions, it is necessary to understand the inter-linkages among factors of the socio-ecological systems through earth observations, field studies, data archive of social statistics and historical information on local and global changes, and the synthesis of them with integrated analysis and mapping. The study should have a scope with multi-spatial scale including Japan, Asia, and the globe, and with the target period of drastic changes for human beings in 300 years from the 150 years from the industrial revolution till now, and the 150 years from now on.

A research project of "Super-High Resolution Simulations on the Global Environment" is proposed in order to promote various studies under Future Earth. Cycles and budgets of energy, water, and materials such as carbon, will be eventually simulated by 1km (30 arc second) over global continent for past 150 and future 150 years considering social and climatic changes. Past and projected changes will prevail the historic transition and future anticipations in sustainable energy, renewable resources such as food and water, impacts and transition of health and ecosystem services with super-high resolution.

Research components to enable the study are mostly ready to start feasibility studies. Motivated researchers are welcome to join.

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