

Long-Term Projection of Global Warming using an Earth System Model

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There are significant uncertainties in CO₂ concentration projection. It has been pointed out that there could be a positive feedback between climate warming and carbon cycle but its strength differs by an order of magnitudes among different models. Moreover, model-model differences in CO₂ concentration projection based on the same emission scenario are comparable to those among different SRES concentration scenarios. Therefore it is important to examine the role of biogeochemical processes, such as carbon cycle, in projection of future climate. Indeed, many of recent climate models include terrestrial and oceanic carbon cycle. Such climate models can contribute to establishing scenarios to achieve stabilization of CO₂ concentration by calculating backward emission pathways under stabilization scenarios. Another trend in global warming projection studies is to utilize simulation data in order to grasp impact of climate change on people's life. To establish a link between climate modelers and impact researchers, Task Group for Climate Scenario (TGCS) has been created in Japan. TGCS's first priority is to facilitate information exchange between KAKUSHIN by MEXT and S-5 (and S-4) by MOE, national programs for global warming projection and impact assessment, respectively, but it is hoped that TGCS's activities cover a wider scope and researchers outside the above-mentioned programs in future.