# Sophistication of a coupled Earth-human system model and feedback analysis using it

*Kaoru Tachiiri[1,3], Ken'ichi Matsumoto[1,2], Xuanming Su[3], Tokuta Yokohata[3], Tomohiro Hajima[1]

1. Japan Agency for Marine-Earth Science and Technology, 2. Toyo University, 3. National Institute for Environmental Studies

A loosely coupled an Earth system model (ESM, MIROC-ES2L) and a computable general equilibrium model (CGE) has been improved by incorporating agriculture-land use model (MIROC-INTEG-LAND), and energy demand by heating/cooling, in addition to labor productivity that was already considered in the previous version.
By a preliminary test by CGE with cooling/heating degree-days derived from an ESM’s BAU experiment, considering heating/cooling demand decreases GDP by 0.5%, but increases CO2 emission by 6-10% in the end of the century.
In the presentation, we will be able to show some results of scenario experiments by using the coupled Earth-human system model.

Keywords: Earth system model, socio-economic model, land use, heating and cooling energy demands, labor productivity

 