

The role of vegetation change upon polar amplification in warm climate by feedback analysis

*大石 龍太¹、吉森 正和²、阿部 彩子^{1,3}

*Ryouta O'ishi¹, Masakazu Yoshimori², Ayako Abe-Ouchi^{1,3}

1. 東京大学大気海洋研究所、2. 北海道大学、3. 海洋開発研究機構

1. Atmosphere and Ocean Research Institute, the University of Tokyo, 2. Hokkaido University, 3. JAMSTEC

Previous studies revealed that vegetation change in high latitude (e.g. from tundra to forest) in warm climate strengthens a polar amplification. This is due to lower vegetation albedo of forest than tundra, snow-albedo feedback caused by early snow melt due to forest coverage and ocean heat emission in autumn and winter. In the present study, we run a vegetation-coupled general circulation model with a slab-ocean, MIROC-LPJ, for two kinds of warming experiments. One is due to higher atmospheric CO₂ concentration (2xCO₂ and 4xCO₂) and the other is due to the difference of the Earth's orbit (mid-Holocene and the Last Interglacial). The result shows different mechanisms of warming amplification between CO₂-induced vegetation feedback and orbit-induced vegetation feedback. We also try to apply a feedback analysis (Cai and Luo 2009; Yoshimori et al. 2014) to the result of MIROC-LPJ experiments.

キーワード：極域増幅、植生、古気候

Keywords: polar amplification, vegetation, paleoclimate