

Modeling the climate of the Late Pleistocene: A general overview of results and comparisons with proxy-derived data

Modeling the climate of the Late Pleistocene: A general overview of results and comparisons with proxy-derived data

Wing-Le Chan^{1*}, Ayako Abe-Ouchi¹, Ryouta O'ishi¹, Kunio Takahashi²

Wing-Le Chan^{1*}, Ayako Abe-Ouchi¹, Ryouta O'ishi¹, Kunio Takahashi²

¹AORI, The University of Tokyo, ²JAMSTEC

¹AORI, The University of Tokyo, ²JAMSTEC

The Late Pleistocene was a period which lasted from the Eemian interglacial period, about 130,000 years ago, to the start of the warm Holocene, about 11,700 years ago. Much of the Late Pleistocene was characterized by glaciation. It was also a period which saw modern humans spread throughout the world and other species of the same genus, like the Neanderthals, become extinct.

Climate models of various complexities are used to simulate both past and future climates. In our present study, we have used three variants of MIROC (The Model for Interdisciplinary Research on Climate), a global climate model, for timeslice experiments within the Late Pleistocene: two mid-resolution models (an atmosphere model and a coupled atmosphere-ocean model) and a high-resolution atmosphere model. We discuss the general features of the simulated climate.

Climate models are not capable of simulating climates perfectly since a theoretical understanding of climate is not complete and models include simplifying assumptions and parameterizations. Biases are therefore present in models. As it is not possible to verify the reliability of simulations of future climate changes with observational data, comparing simulations of past climates against proxy-derived data provides a valuable tool to evaluate the models and investigate the degree of confidence in model estimates. We compare our climate model results with some available proxy data to elucidate where simulations show good agreement and how higher model resolution can offer further improvements.

キーワード: paleoclimate, climate modeling, Late Pleistocene, glacial-interglacial cycle

Keywords: paleoclimate, climate modeling, Late Pleistocene, glacial-interglacial cycle