The Last Glacial Maximum Climate over Europe and Western Siberia: a PMIP Comparison between Models and Data

Masa KAGEYAMA[1], Odile PEYRON[2,3], Sophie PINOT[1], Pavel TARASOV[4,5], Joël GUIOT[2], Sylvie JOUSSAUME[1], Gilles RAMSTEIN[1] and PMIP participating groups

[1] *Laboratoire des Sciences du Climat et de l'Environnement, UMR CEA-CNRS 1572, CE Saclay, L'orme des Merisiers, Bâtiment 709, 91191 Gif-sur-Yvette Cedex, France*
[2] *Institut Méditerranéen d'Ecologie et de Paléoécologie, UPRES A6116 CNRS, Faculté de Saint-Jérôme, case 452, 13397 Marseille Cedex 20, France*
[3] *CEREGE, Europôle de l'Arbois, BP 80, 13545 Aix-en-Provence Cedex 04, France*
[4] *Department of Geography, Moscow State University, Vorobievy Gory, 119899 Moscow, Russia*
[5] *International Research Center for Japanese Studies, 3-2 Oeyama-cho, Goryo, Nishikyo-ku, Kyoto 610-1192, Japan*

ABSTRACT. In the framework of the Palaeoclimate Modelling Intercomparison (PMIP) 17 climate models, 16 of which atmospheric general circulation models, have been used to simulate the climate of the Last Glacial Maximum (LGM, 21,000 years ago), using the same boundary conditions. Besides, new, consistent, databases have been developed on a continental scale. Here, we present a comparison between model results and pollen-based estimates of the temperatures and hydrological cycle for Europe and western Siberia. Taking the range of the model results and the error bar on the reconstructions into account, it is found that the climate simulated by all models is too warm, especially in winter, and too wet over western Europe. The discrepancies are smaller over central and eastern Europe and model results are in good agreement with data over the western Siberian sector. These results are interpreted in terms of large-scale atmospheric circulation changes but also in terms of the local influence of the glacial boundary conditions. Improvements, both for model simulations and for the reconstructions, are proposed in the discussion.

KEY WORDS: Last Glacial Maximum, Europe, western Siberia, climate models, pollen-based estimates.

References

Our results are detailed in the following reference:

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Numerical Modelling of the Mediterranean Sapropel S1 Ecosystem Structure

Lisa RICCI[1], Nadia PINARDI[2], Marco ZAVATARELLI[2], Cesare CORSELLI[3], Lucilla CAPOTONDI[4] and Paul MYERS[5]

[1] *Corso di Laurea in Scienze Ambientali, Bologna University, P.zza Kennedy 4, 48100 Ravenna Italy*
[2] *Dipartimento di Fisica, Bologna University, Viale Berti Pichat 6/2, 40127 Bologna, Italy*
[3] *Dipartimento di Scienze della Terra, Milano University, Via Mangiagalli 34, 20133 Milano, Italy*
[4] *Istituto di Geologia Marina-CNR, Via Gobetti 101, 40129 Bologna, Italy*
[5] *Dept. of Physics and Physical Oceanography, Memorial University of Newfoundland, St. John's, NF A1B 3X7 Canada*

ABSTRACT. A one dimensional ecosystem numerical model is used to simulate the ecosystem modifications occurred in the Mediterranean Sea during the Optimum Climaticum (9000–6000 BP) and test the hypothesis of high productivity and anoxia for Sapropel S1 deposition. The model is forced by physical conditions derived from present day and Optimum Climaticum period simulations. The change from present day to Optimum Climaticum physical conditions lead to a relatively little rise in paleoproductivity. Only the concurrent presence of the paleoceanographic hydrodynamic conditions and higher surface nutrients determines a considerable increase in paleoproductivity with a shift in the phytoplankton population specific composition.

KEY WORDS: Mediterranean Sea ecosystem, Optimum Climaticum, numerical model, sapropel S1.