



Intercomparison of global and regional model climatologies for Greenland and comparison to station data

Heinz Jürgen Punge (1), Masa Kageyama (1), Valérie Masson-Delmotte (1), Xavier Fettweis (2), Gerhard Krinner (3), David Salas y Méliá (4), Jesper Sjolte (5), Hans-Christian Steen-Larssen (5), and Konrad Steffen (6)

(1) Laboratoire des Sciences du Climat et de l'Environnement, IPSL, Gif-sur-Yvette, France (heinz-jurgen.punge@lsce.ipsl.fr), (2) Department of Geography, University of Liège, Liège, Belgium, (3) Laboratoire de Glaciologie et Géophysique de l'Environnement, UJF/CNRS, Grenoble, France, (4) Centre National de Recherches Météorologiques, Météo-France/CNRS, Toulouse, France, (5) Niels Bohr Institute, University of Copenhagen, Copenhagen, Denmark, (6) Cooperative Institute for Research in Environmental Science (CIRES), U of Colorado, Boulder, USA

We assess two global and three regional climate models with respect to the representation of Greenland climate, focussing on temperature and precipitation climatologies based on the 1980-1999 period.

The agreement in temperature and precipitation patterns is satisfactory - however, there are significant biases in some of the models.

We note that the ratio between summer and winter precipitation shows a similar increase from south-east to north-west in most of the models.

Global model data for paleo simulations for the Eemian show that this ratio is sensitive to climate.

An analysis of selected locations reveals strong biases with respect to observations in particular towards the coasts. These can be explained in part by the inaccurate representation of the orography especially in the global models.

A comparison of daily mean climatologies and percentiles shows that the global models tend to somewhat underestimate the variability on daily to weekly scales caused by weather regimes.