

Interactive comment on “Modeling Mediterranean ocean climate of the Last Glacial Maximum” by U. Mikolajewicz

U. Mikolajewicz

uwe.mikolajewicz@zmaw.de

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Dear Eelco,

I would like to thank for this comment. I was indeed not aware of the Kuhlemann et al. paper.

The hypothesis of enhanced inflow of cold and moist Atlantic air over southern France is matching the behaviour of the model (ECHAM5 T106, see Arpe et al., CPD 2010 for more information). This effect can be explained with a southward displacement of the westerlies (and of the jet stream) due to the presence of the ice sheet over Scandinavia. I added a comment on this in the paper.

However, I could not find a strong change in the vertical temperature structure and

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stability. In the paper it is stated (abstract) 'Anomalously steep vertical temperature gradients in the central Mediterranean imply local convective precipitation'.

In summer (JAS) the model does not show enhanced precipitation in the central Mediterranean. The vertical temperature structure is almost unchanged, at least in the lower troposphere (see Fig.1)

In the northwestern Mediterranean a signal in the planetary boundary layer can be seen indicating less stable conditions for LGM (see Fig. 2). However, compared to the reconstruction from Hayes et al. (QSR 24, 2005), the SST prescribed in the atmospheric model is too warm. Prescribing the reconstructed anomaly should lead to more stable conditions than at present.

Additional information for the figures:

The LGM data have been shifted to allow better comparison with the profiles from the present day preindustrial simulation. A standard profile of temperature vs height with $-6.5\text{K}/1000\text{m}$ has been removed from the data prior to plotting.

References can be found either in the original comment or in the paper.

Interactive comment on Clim. Past Discuss., 6, 2005, 2010.

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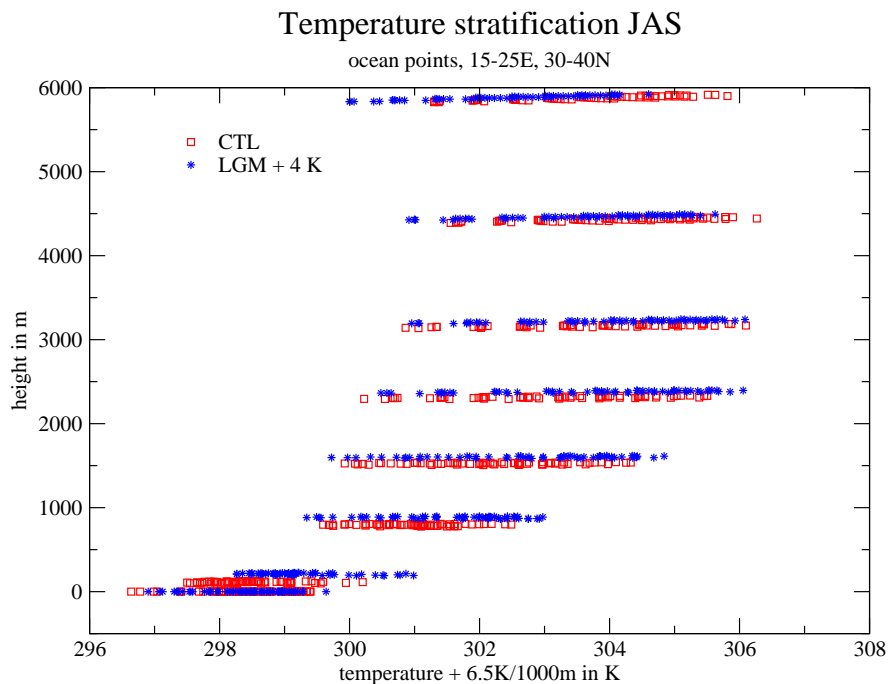


Fig. 1. Climatological temperature profiles for summer (JAS) in the central Mediterranean. All ocean points within 15 to 20E and 30 to 40N have been plotted.

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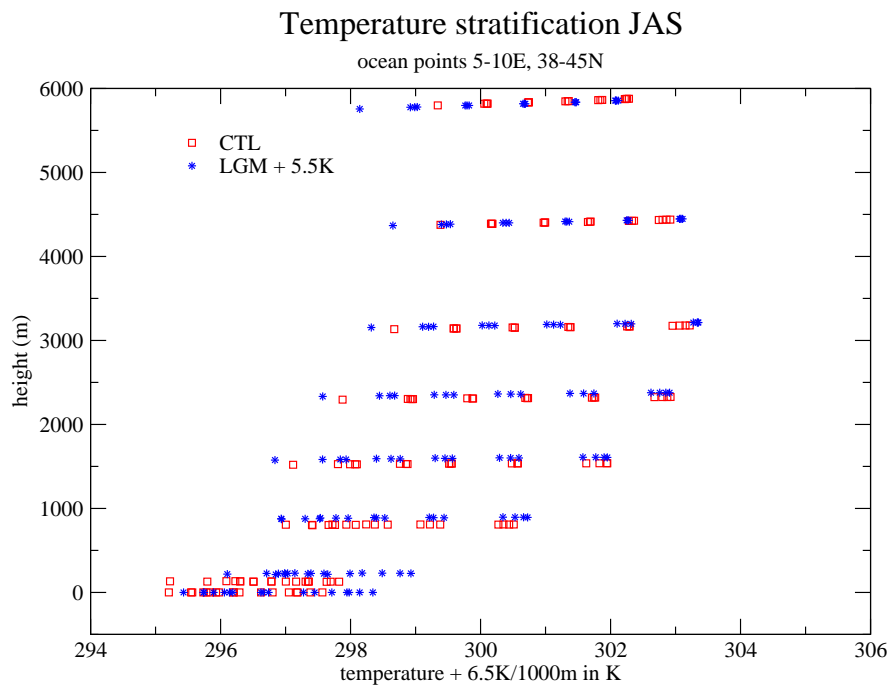
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Fig. 2. As Fig. 1 but for the northwestern Mediterranean (5-10E, 38-45N).

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