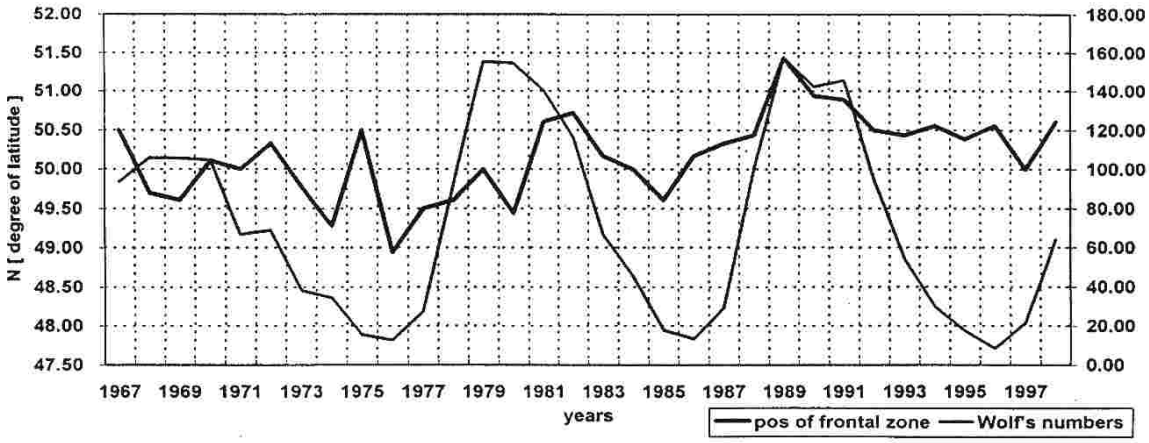

Fig. 12. The courses of solar activity (W) 1967–1998 and the position (N) of the frontal zone.

creasing trends of solar and geomagnetic activities and around their maxima (temperature and extraterrestrial trends are parallel, precipita-tion has its trends opposite). In this case we can expect inforcing of drier and warmer (in summer) weather in this region, it means extraordinary dry period. During the decreasing trends of extraterrestrial influences and around their minima we can expect only partial and weak moderating of continental clima because the green-house effect (melting of Ice Ocean = decreas of circulation intensity = less advection from Atlantic Ocean) will for ever retain the continental climate in Europe.

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What do we Learn on Tropical Cooling at the Last Glacial Maximum from Data and Modelling within the Framework of Paleoclimate Modelling Intercomparison Project and Associated Sensitivity Experiments

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ABSTRACT. Concerning past climate changes in tropical areas, one of the key issues after 2-years study of Glacial/Interglacial oscillations is: Are the tropics able to drastically change during Last Glacial Maximum? This question has been investigated through marine and continental data using different proxies to reconstruct temperature changes. An inconsistency raises when modellers prescribed global sea surface temperatures (SST) reconstruction (CLIMAP, 1981) to Atmospheric General Circulation Models (AGCM) and compared simulated results to continental data. The first to point out this problem were D. Rind and D. Peteet in the famous paper (1985) "Terrestrial conditions at the last glacial maximum and CLIMAP (1981) sea surface temperature estimates: are they consistent?"

More recently, within the framework of Paleoclimate Modeling Intercomparison Project, this question has been re-investigated from modeling point of view (Pinot et al., 1999), (9 different simulations) and from data perspectives with new estimates for SST from alkenone (Bard, 1999) and terrestrial data (synthesis of a large number of temperature reconstructions derived from different paleo-indicators (Farrera et al., 1999). This contribution will summarize the new results brought by the community (see two recent publications in Climate Dynamics 1999 (Pinot et al., 1999; Farrera et al., 19993), (see also Fig. 1 which summarize the state of the art in model/data comparison reaches by PMIP sub project "Tropics at LGM") and compare these results to new coupled simulations using AOGCMs (Bush and Phillander, 1998; Weaver et al.,1998) or intermediate complexity model (EMIC) (Ganopolski et al., 1998). Moreover, a short discussion of why possible changes in the lapse rate values may lead to a consistent

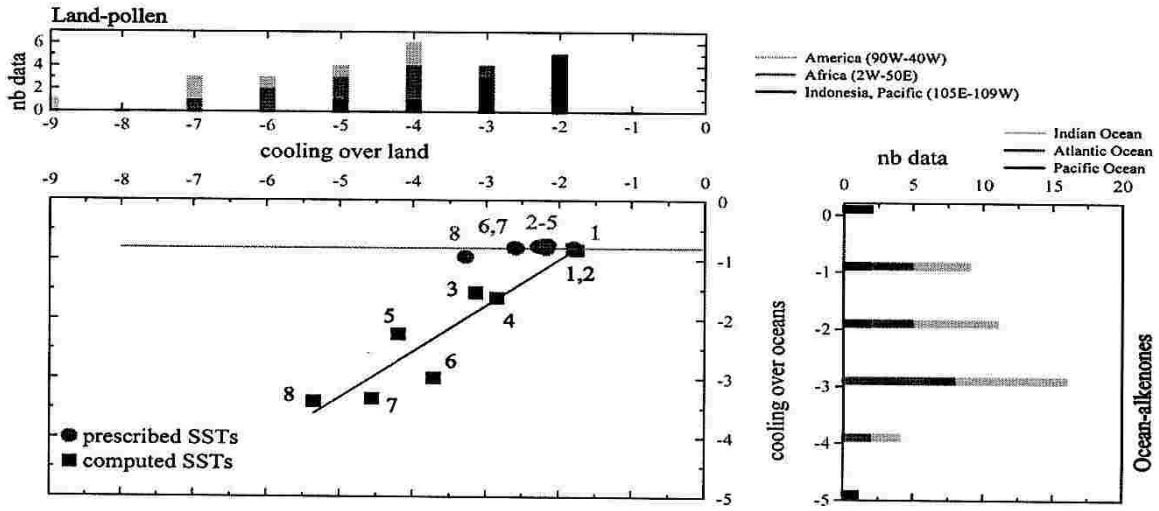

Fig. 1. State of the art in model/data compared with new coupled simulations using AOGCMs.

picture of terrestrial and marine data (Pierrehumbert, 1999) and some comments will be made on results obtained by models involved in PMIP but using computed SSTs derived from coupling the AGCMs with a slab ocean (9 different models (Pinot et al., 1999)).

KEY WORDS: tropical cooling, Last Glacial Maximum, model/data comparison.

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The Last Glacial - Interglacial Temperature Contrast Directly From the Present Subsurface Temperatures

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ABSTRACT. Ground surface temperature (GST) history can be evaluated by analysing the present-day temperature-depth profiles measured in boreholes. Due to the diffusive character of the process, however, the resolution of the method decreases quickly for the more remote events. The reconstructed GST at a given moment in the past is a weighted average of temperature over a certain period of time. The present study shows that because the cold climate of the last (Weichselian) glacial prevailed in the period of 75–10 ka, there is a chance to obtain its mean GST, despite the large averaging intervals, from temperature profiles measured in deep boreholes. Thise fact is on the GST inversions of carefully selected profiles, 3 from the Czech Republic and 2 from Slovenia, the depth of which ranges between 1.5 and 2.4 km. In order to suppress the non-climatic noise and to extract the common signal, were carried out for the Czech and the Slovenian boreholes, respectively. The Czech data show the minimum at 17 ka and the warming of 58 K. The Slovenian data have the minimum at 16 ka and the warming amounts to 7 K. These results agree well