



On scale break in the climate spectrum at glacial time scales

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The variability of climate over time is expressed in compressed form in the power spectrum. The power spectrum is comprised of narrow and broad spectral peaks as response to periodic and quasi-periodic orbital insolation changes, with a continuous background from climatic noise. However, the paleoclimatic records document that the climate spectrum is rather dominated by the continuous part, which seems to show scaling over large time spans, where only very few obvious pronounced spectral peaks, like the annual cycle, stands out above the continuum. The glacial cycles at the multi-millennial scale of the orbital periods are barely visible above the continuous background in the spectrum. They rather represent a scale break in the continuous climate spectrum. Here we discuss possible simple possible origins of this scale break in the spirit of the climate spectrum and stochastic climate modelling introduced by Mitchell (QR, 1976) and Hasselmann (Tellus, 1976).