Simulating the dust cycle for Europe at the Last Glacial Maximum

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There are no major dust sources in Europe in present day, but the widespread loess deposits are proof that the situation was very different in glacial times. We present dust-cycle simulations for Europe at the Last Glacial Maximum (LGM, about 21ka BP), performed with the LMDZORINCA configuration of the IPSL Earth System model (LMDZ for atmosphere, ORCHIDEE for vegetation and INCA for dust). The dust simulations are global, run on a zoomed grid with resolution of 1.25°x0.62° on our domain of interest. The LMDZ and ORCHIDEE versions are those that have been used in the frame of the CMIP5 exercise. The boundary conditions for them are derived from PMIP3 runs. The imposed vegetation is computed using the ORCHIDEE dynamic vegetation model. The INCA model is adapted to simulate European dust sources, transport and deposition by taking into account the state-of-theart knowledge on European loess deposits. The model results are compared with data for dust deposition and grain size.