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Radiation Changes in GCM Simulations in the Late 19th and Early 20th Century

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We use the latest version of the ECHAM5-HAM model to perform transient climate simulations covering the late 19th and early 20th century. The aim is to estimate the impact of different aerosol forcings, such as SO2 and black carbon from fossil fuel combustion or volcanic aerosol, on the radiation balance of the earth. Aerosol emissions are taken from the National Institute for Environmental Studies (NIES). Besides a control run, simulations were carried out in which emissions of individual aerosols categories were frozen at their 1870 values (geographical distribution and total amount). The results from the different experiments are analyzed on the global and regional scale.