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Effects of smoke from peat burning in Indonesia on precipitation over the warm pool area

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A simplified convective cloud field model (sCCFM) is substituted for a standard mass flux parameterization of convective clouds in a limited area atmospheric model (REMO) and is tested for a whole annual cycle (July 1997 to June 1998) over the Maritime Continent. The use of sCCFM clearly improves the simulated precipitation patterns and total rainfall over the whole model domain. The years 1997/98 experienced severe air pollution in the area due to uncontrolled peat fires. The inclusion of a simple and a more sophisticated cloud microphysics into the sCCFM cloud model allows investigating aerosol effects on precipitation. Precipitation is diminished over the most polluted areas leading to increased smoke concentration and longer lifetime of the smoke.