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The new microphysic cloud scheme implemented in RegCM4

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The Regional Climate Model RegCM4 presently lacks a detailed treatment of cloud microphysics. We therefore show preliminary results from a new cloud scheme currently under development. The approach is based on an implicit numerical framework that recently developed and implemented into the ECMWF operational forecasting model. This is used to solve a network of parameterizations that describe the sources and sinks of prognostic cloud variables of ice, liquid water, snow and rain. Results from the implementation of the initial scheme in the REGCM regional climate model will be shown along with a sensitivity test to the scheme parameters such as the microphysical fallspeeds. A novel aspect of the scheme that is currently under development is the attempt to implement the microphysics scheme in the mass flux convection scheme in a fully self-consistent way accounting for convective-scale as well as large-scale vertical velocity, which implies that the cloud properties and consequently the model climate will be insensitive to future increasing resolution as convection becomes increasingly resolved.