Modeling Cloud Dynamics for Accurate Climate Prediction


Scientific Achievement

- We developed a mathematical model that represents clouds in climate models faithfully.

Significance and Impact

- The leading source of uncertainty in climate projections can be traced back to the inability of climate models to represent clouds. Our model provides a way forward.

Technical Details

- The model is tested for stratocumulus, cumulus and cumulonimbus clouds.
- The model is time-dependent and captures well the diurnal cycle of convection.

A sketch of some of the processes captured by the proposed cloud model, including turbulence and convection. The box represents a single column within a climate model. Climate models rely on simplified mathematical models to represent all processes that have a scale smaller than the column width. Image courtesy the author (Schneider Research Group).