

Some challenges for the future representation of clouds in global models

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The representation of clouds, precipitation and their impacts are fundamental for weather forecasting and climate models, yet many regime-dependent systematic errors continue to be present. This presentation considers a number of challenges for global models in the future to utilise: i) the increasing amounts of data from passive and active satellite instruments that can help to constrain properties of modelled cloud and precipitation across the globe; ii) the increasing computational power and advances in computational science allowing higher resolution and the potential for more complex physical parametrizations; iii) improved understanding of physical processes translating into more accurate representations of cloud and precipitation and their interactions with turbulence, radiation and other processes. Examples from the ECMWF global forecast model will be used to highlight potential directions for the future in each of these areas.