



Impact of dynamics on cirrus clouds - a dynamical system approach

Peter Spichtinger (1) and Elisa Spreitzer (1,2)

(1) Johannes Gutenberg University Mainz, Institute for Atmospheric Physics, Mainz, Germany (spichtin@uni-mainz.de), (2) ETH Zurich, Institute for Atmospheric and Climate Science, Zurich, Switzerland

The formation and evolution of cirrus clouds is crucially driven by local dynamics. Model studies using process and 2D/3D models show strong variability in cirrus clouds depending on small changes in environmental conditions. However, a theoretical analysis of the underlying equations is still lacking. In this study we use a simplified cirrus cloud model consisting of a system of ordinary differential equations, forced by monochromatic waves. The system of equations is then investigated using theory of dynamical system and numerical integration. We find different regimes of qualitative behaviour, depending on amplitude and frequency of forcing, e.g. period doubling, quasiperiodic behaviour and even irregular regimes.