New perspectives on hailstorms: processes, simulations and measurements

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Abstract:

Hailstorms regularly cause severe damage in Europe, and even a single event can cause insured losses surpassing $1 billion euros. The increasing exposure and vulnerability to hail, and changes to hail risk in a changing climate, is motivating a new wave of science aimed at improving predictability through the development of models which explicitly simulate hailstones. While these models offer exciting new possibilities, they remain limited by their reliance on outdated and often overly simplified characterisation of hail. Drawing on modern technology including drones, micro-sondes, 3D scanning and machine learning, several new approaches for collecting observational datasets will be introduced that assist in filling the knowledge gaps which limit the development of hail models. Current and planned use of these new measurement techniques includes international field campaigns in Germany (with the 2023 Swabian-MOSES and LIFT campaigns), Canada, USA and Australia.