

ICEMuSIC – A new Instrument Concept for Mm-wave Observations of Ice Clouds, and Temperature and Humidity Sounding from Space

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We present a new mm-wave satellite instrument concept for the study of the role of ice clouds in the global climate system, and for atmospheric temperature and humidity sounding. Ice cloud parameters in particular are poorly understood, and represent the biggest uncertainty in current global climate models.

We employ broadband antennae coupled to filterbank spectrometers, enabled by recent developments in kinetic inductance detector technology. Preliminary atmospheric radiative transfer modelling predicts potentially game-changing performance for the retrieval of atmospheric temperature and humidity, with significantly improved accuracy and vertical resolution.

We present the current instrument concept, the predicted performance, and outline future developments for the satellite instrument.