

Abstract Submitted
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LACIS-T - A moist air wind tunnel for investigating the interactions between cloud microphysics and turbulence DENNIS NIEDERMEIER, JENS VOIGTLÄNDER, HOLGER SIEBERT, Leibniz Institute for Tropospheric Research, Leipzig, Germany, NEEL DESAI, RAYMOND SHAW, Michigan Technological University, Houghton, MI, USA, KELKEN CHANG, University of Gothenburg, Gothenburg, Sweden, STEVEN KRUEGER, University of Utah, Salt Lake City, UT, USA, JÖRG SCHUMACHER, Technische Universität Ilmenau, Ilmenau, Germany, FRANK STRATMANN, Leibniz Institute for Tropospheric Research, Leipzig, Germany — Turbulence - cloud droplet interaction processes have been investigated primarily through numerical simulation and field measurements over the last ten years. However, only in the laboratory we can be confident in our knowledge of initial and boundary conditions, and are able to measure for extended times under statistically stationary and repeatable conditions. Therefore, the newly built turbulent wind tunnel LACIS-T (Turbulent Leipzig Aerosol Cloud Interaction Simulator) is an ideal facility for pursuing mechanistic understanding of these processes. Within the tunnel we are able to adjust precisely controlled turbulent temperature and humidity fields so as to achieve supersaturation levels allowing for detailed investigations of the interactions between cloud microphysical processes (e.g., cloud droplet activation) and the turbulent flow, under well-defined and reproducible laboratory conditions. We will present the fundamental operating principle, first results from ongoing characterization efforts, numerical simulations as well as first droplet activation experiments.

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