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Cloud size and cloud spacing distributions of trade-wind cumuli observed at cloud base for a range of mesoscale organizations

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During the EUREC4A field campaign that took place near Barbados in Jan-Feb 2020, the French ATR aircraft flew in the lower troposphere and characterized the macrophysical, microphysical and turbulent properties of trade cumuli around the cloud-base level. Using horizontal lidar-radar observations and in-situ measurements, we characterize the cloud size and cloud spacing distributions of cumuli for a range of mesoscale organizations. Robust features, as well as organization-dependent features, will be highlighted and analyzed in the light of turbulent and microphysical measurements. The physical interpretation of these features, as well as their comparison with large-eddy simulation results published in the literature, will be discussed.

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