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Plume emission statistics in turbulent Rayleigh-Bénard convection ERWIN VAN DER POEL, University of Twente, ROBERTO VERZICCO, University of Rome Tor Vergata, SIEGFRIED GROSSMANN, Philipps-Universität Marburg, DETLEF LOHSE, University of Twente — Rayleigh-Benard convection features ubiquitous coherent structures, which continue to survive in strong turbulence. The most prevalent are the thermal plumes and the large scale circulation (LSC). The thermal plumes and the LSC are intrinsically coupled, as thermal plumes cluster to form a LSC. We report statistics of the area, width and location of plumes extracted from high Rayleigh number ($\mathrm{Ra} \leq 10^{12}$) direct numerical simulations in a cylindrical domain of aspect-ratio 0.33. While the area of the plume is unimodally distributed close to the plates, far from the plates plume clustering results in a bimodal distribution. In addition, the analysis reveals that more plumes are emitted from areas with low shear as compared to areas with high shear.

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