Hurst-Kolmogorov dynamics applied to temperature field of horizontal turbulent buoyant jets

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Two-dimensional (2D) spatial temperature records obtained from tracer concentration measurements on the plane of symmetry of heated horizontal jets is statistically analyzed using Hurst-Kolmogorov (HK) dynamics. A 2D stochastic simulation, direct extension of the 1D simple scaling process (fractional Gaussian noise), is used to generate the long-term spatial persistence (slowly decaying autocorrelation over scale) of the observed time-series. Moreover, the differences between 1D and 2D (generating temperature time series at a point and on the axis of maximum time-averaged temperature, respectively) scaling processes are also being investigated.