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**Michael S Jolly\*** (msjolly@indiana.edu) and **Djoko Wirosoetisno**. *Tracer turbulence: the Batchelor–Howells–Townsend spectrum revisited.*

Given a velocity field  $u(x, t)$ , we consider the evolution of a passive tracer  $\theta$  governed by  $\partial\theta + u \cdot \nabla\theta = \Delta\theta + g$  with time-independent source  $g(x)$ . When  $\|u\|$  is small, Batchelor, Howells and Townsend (1959, J. Fluid Mech. 5:134) predicted that the tracer spectrum scales as  $|\theta_k|^2 \propto |k|^{-4}|u_k|^2$ . We prove that this scaling does indeed hold for large  $|k|$ , in a probabilistic sense, for random synthetic two-dimensional incompressible velocity fields  $u(x, t)$  with given energy spectra. We also propose an asymptotic correction factor to the BHT scaling arising from the time-dependence of  $u$ . (Received August 07, 2019)