

1142-76-158

Michael S Jolly* (msjolly@indiana.edu) and **Djoko Wirosoetisno**. *Effect of energy spectra on tracer cascade.*

We first consider the effect the inverse cascade in 2D can have on the tracer cascade. In this case, we assume two spectra for the tracer which are consistent with the energy spectra according to Obukhov and Corrsin. We show that the tracer cascade range extends to a power of $5/6$ of the dissipation wave number of the fluid under certain reasonable constraints on the Grashof number of the fluid, and the gap between the injection of the tracer and the energy. For moderate Schmidt numbers the diffusive wave number is comparable to the dissipation wave number, so this provides a tracer cascade range which is close to optimal. It is shown that in both 2D and 3D, taking the Schmidt number sufficiently large in terms of the Grashof number, the tracer cascade range extends to a power arbitrarily close to unity of the diffusion wave number, up to a logarithm. These results are mainly due to the prefactors in the spectra, as opposed to the precise decay rate of energy as a function of wave number. (Received September 01, 2018)