Summary of "Analysis of the filtered non-premixed turbulent flame"

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In numerical simulation of non-premixed turbulent combustion using Large Eddy Simulation(LES), the author proposed a set of turbulent flamelet equations, which was based on the filtered governing equations. Then, database generated from Direct Numerical Simulation(DNS) was used to analyze the statistical relation between scalar dissipation and chemical reaction source term. Numerical results indicate that $P(|\frac{\partial Z}{\partial n}|)$ is strongly related to the filter scale, but $P(D_T)$ is almost invariant. Based on these observations, a scaling law was derived from the scalar structure function to describe the conditional mean of the difference between the filtered and original scalars, which is quite useful in estimating chemical source when sub-grid scale models were used.