Z106a The changing molecular cloud population in galactic interactions

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With the advent of modern observational efforts providing extensive giant molecular cloud catalogues, understanding the evolution of such clouds in a galactic context is of prime importance. While numerous previous numerical and theoretical works have focused on the cloud properties in isolated discs, few have looked into the cloud population in an interacting disc system. We present results of the first study investigating the evolution of the cloud population in galaxy experiencing an M51-like tidal fly-by using numerical simulations including star formation, interstellar medium cooling and stellar feedback. We see the cloud population shift to large unbound clouds in the wake of the companion passage, with the largest clouds appearing as fleeting short-lived agglomerations of smaller clouds within the tidal spiral arms, which are sheared apart as they leave the spiral arms. Clouds appear to lead diverse lives, even within similar environments, with some being born from gas shocked by filaments streaming into the spiral arms, and others from effectively isolated smaller colliding pairs. Overall this cloud population produces a shallower mass function than the disc in isolation, especially in the arms compared to the interarm regions. Direct comparisons to M51 observations show similarities between cloud populations, though models tailored to the mass and orbital models of M51 appear necessary to precisely reproduce the cloud population.