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Abstract: One of the primary objectives of the Kepler mission is to determine the occurrence rate of potentially habitable Earth-size planets orbiting stars with a range of spectral types.

For M dwarfs, the small stellar sizes and close habitable zones mean that the Kepler data set is sufficient to constrain the rate of occurrence of potentially habitable planets. Analyses of the exquisite photometry collected by Kepler during the course of the four-year mission have revealed that the occurrence rate of Earth-size planets with periods shorter than 50 days is 0.51 planets per M dwarf and that the occurrence rate of Earth-size planets within the Kasting et al. (1993) habitable zone is 0.15 planets per M dwarf (Dressing & Charbonneau 2013). Adopting updated boundaries for the habitable zone increases the occurrence rate to at least 0.48 planets per star (Kopparapu 2013). The M dwarf planet occurrence rates from Kepler (Dressing & Charbonneau 2013; Gaidos 2013; Kopparapu 2013) are in agreement with the results of ground-based transit surveys such as MEarth (Berta et al. 2013) and radial velocity surveys such as HARPS (Bonfils et al. 2013).

Estimating the occurrence rate of Earth-size planets in the habitable zones of Sun-like stars is more challenging due to the relatively long orbital periods and small transit depths of planets in the habitable zones of Sun-like stars. Accordingly, the occurrence rate of Earth-size planets in the habitable zones of Sun-like stars is still unconstrained. Earth-size planets at shorter orbital periods appear to be common around Sun-like stars (Youdin 2011; Howard et al. 2012; Fressin et al. 2013; Petigura et al. 2013) and Kepler has already detected two larger planets (Kepler-22b and Kepler-69c) within the habitable zones of G stars (Borucki et al. 2012; Barclay et al. 2013). Further analyses of the final quarters of Kepler data may reveal small planets in the habitable zones of Sun-like stars and allow for estimates of the occurrence rate of Earth analogs.