The host star as a crucial factor for the prevalence of Earth-like Habitats

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The existence of an Earth-like Habitat, that is, a rocky exoplanet within the Habitable Zone of Complex Life that hosts an N2-O2-dominated atmosphere with minor amounts of CO2, is depending on a certain set of known (and, potentially, unknown) astrophysical and geophysical requirements that have to be met to allow for its evolution and environmental stability. A few of these requirements are already quantifiable to a certain extent by our current scientific knowledge while others are still under debate. One crucial factor that has to be taken into account when estimating the prevalence of Earth-like Habitats within the galaxy is a planet's host star. Its radiation and plasma environment may affect the stability of an Earth-like atmosphere to such an extent that it can even render its existence over geological timescales unlikely around highly active stars. A star's metallicity and location within the galactic disk may pose further restrictions on the prevalence of Earth-like Habitats within the Milky Way. Taking these factors into account, we will, based on current quantifiable scientific knowledge, show that only a certain fraction of stars within the galaxy will in principle be able to host planets with Earth-like atmospheres. Interestingly, K dwarfs with a stellar mass around 0.8 MSun may constitute a particularly interesting environment for the existence of Earth-like Habitats. M stars, on the other hand, exhibit several different problems; planets suitable for life as we know it may therefore be a rare occasion around the smallest, but most abundant, stars within the galaxy.