

Climate and Radiative Properties of a Tidally-locked Planet around Proxima Centauri

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Red dwarf stars are the most common type of stars in our Galaxy and the most long-lived ones. For this reason the search for habitable exoplanets is generally focused around such stars though the exposure to high XUV fluxes can be responsible for a planetary atmospheric loss rate of heavy elements, e.g., oxygen and nitrogen.

We present a study about the climate of a tidally locked Earth-like planet, with preindustrial atmosphere, circular orbit and null axial tilt in the Proxima Centauri System, based on the intermediate complexity atmospheric general circulation model PlaSim and the 1-D radiative transfer model uvspec. The thermal emission of the planet-host star system is calculated in the mid-infrared region of the spectrum in order to evaluate the color-magnitude variability in function of the system inclination with respect to a distant observer.