



Climate and radiative properties of a tidally-locked planet around Proxima Centauri

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Three dimensional General Circulation Models (GCMs) are at the moment, the best available tools for investigating and predict the properties of the exo-atmospheres of Earth-like planets orbiting nearby stars. As a case study, we investigate the climate of the tidally locked Earth-like planet orbiting around Proxima Centauri via the 3-D GCM PlaSim and the 1-D radiative transfer model uvspec. A planetary preindustrial atmosphere, circular orbit and null axial tilt are assumed. The model output include the atmospheric dynamics, surface temperature and the presence of liquid water, as well as reflective and emission spectra of the planet at high resolution. Our tool can effectively retrieve atmospheric fingerprints of Earth-like planets of nearby systems, giving clues on the habitability of such planets, and has been used to set observational limits with space-born (e.g., JWST) and ground-based telescopes.