On the Habitability of Tidally Locked Planets

Adam Edson
Department of Meteorology
Pennsylvania State University
USA
Are131@psu.edu

Planets orbiting within the habitable zones of M-stars and late K-stars (stars with mass < 0.62 * M_{Sun}) lie within the tidal locking radius of their parent stars. This tidal locking induces dynamical regimes and circulations different from those on Earth. Here, the habitability of dry and wet planets orbiting with different orbital periods within the habitable zone of different stars is compared and contrasted. The dry planets all have habitable areas (here defined as between 273 and 323 K) in a generally thin annular area. The wet planets have a much larger, almost circular, habitable area.