# Identifying Potential Venus Analogs from Exoplanet Discoveries

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**Abstract**

With a radius of $0.95R_{Earth}$ and a mass of $0.85M_{Earth}$, Venus is the most analogous planet to Earth in the solar system. Study of Venus and Venus-like exoplanets is invaluable in understanding factors that determine a planet's habitability throughout its evolution. Fortunately, the best time to study Venus and Venus-like planets is now as the recently launched TESS (Transiting Exoplanet Survey Satellite) mission is sensitive to planets in close proximity to their host stars. TESS is predicted to discover hundreds of terrestrial planets within the inner boundary of their host star's Habitable Zone (HZ), placing them in the 'Venus Zone' (VZ). TESS data in tandem with the launch of the James Webb Space Telescope (JWST) in the coming years will allow for the characterization of these planets' atmospheres, providing a better understanding of atmospheric compositions of planets inside the VZ. This will help delineate the primary factors that determine whether a planet will develop sustainable, temperate surface conditions, or will be pushed into a runaway greenhouse state, leading to a more well-defined outer boundary for the VZ. Here we provide a progress report on discoveries from the TESS mission, identification of planets in the VZ, and methods used to determine runaway greenhouse scenarios. The observed properties of these planets will be used in Global Climate Models, such as ROCKE-3D, to better constrain the boundaries of the HZ and VZ, and study the atmospheric demographics of terrestrial planets.