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Concepts of the Habitable Zone

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The HZ around a single star has been calculated by several authors. Two concepts are commonly used throughout the literature for cloud free (see Kasting et al.1993, Underwood et al.2003) and cloudy atmospheres (Selsis et al.2007) which have been derived from the same model originally proposed by Kasting et al.(1993). The main differences among studies of the HZ are the imposed climatic constraints such as a CO_2/H_2O/N2 atmosphere with varying CO_2/H_2O/N2 concentrations (e.g., Earth's), or model atmospheres with high H2 concentrations (Gaidos&Pierrehumbert 2010) or limited water supply (Abe et al.2011).

We discuss the implication of these constraints on the Habitable Zone and its resulting limits as well as detectable spectral features in a planet's rocky atmosphere that could be used to test our concept of the Habitable Zone.