

H1: Life only originates in hydrothermal vents

Prediction

Planets with high-pressure ices do not show biosignatures.

- H1.1 Threshold in mass-density space for biosignatures
- H1.0 No correlation between planet mass/density and biosignature

H2: Life only originates in subaerial ponds with wet/dry cycles

Prediction

Biosignatures occur outside the tidal locking zone and at bulk densities consistent with exposed rock.

- H2.1 Threshold tidal locking timescale and threshold bulk density for biosignatures
- H2.0 No correlation between tidal locking timescale or bulk density and biosignature

H3: Life only originates on planets with particular UV irradiance

Prediction

Past UV flux and the occurrence of biosignatures are correlated.

- H3.1 Correlation between past UV flux and biosignature occurrence
- H3.0 No correlation between past UV flux and biosignature occurrence